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INDUSTRIAL HYGIENE PROBLEMS IN THE UNITED STATES

CHAIRMAN'S ADDRESS

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WASHINGTON, D C

Industrial hygiene has been defined as that branch of preventive medicine which has to do with the protection of health of the industrial population. It is much broader than the consideration of specific occupational diseases.

Occupational disease is a difficult term to define, for, in addition to the medical difficulties in determining the relationship between the associated industry and the disease, the difficulties are further increased by the fact that occupational diseases are often legally defined, and these legal definitions vary from state to state or from country to country. Many states have schedules of occupational diseases, and no other diseases can be considered as occupational in that particular state. In the Act on Occupational Diseases, recently passed in the U. S., it is stated "In this Act the term 'occupational disease' means the disease arising out of and in the course of the employment. Ordinary diseases of life to which the general public is exposed outside of the employment shall not be compensable, except where the said disease follows as an incident of an occupational disease as defined."

These definitions may be quite limited, and from the standpoint of preventive medicine inadequate, even though they may be necessary legally and administratively.

The objective of industrial hygiene, in addition to the control of specific occupational diseases, is to reduce the incidence in occupational increase in those diseases common to adults in general. Industrial hygiene deals with problems of occupational poisons and dusts, ventilation, temperature and humidity, light, the noises and nuisances, cleanliness and plant sanitation, overcrowding, hours of labor, rest periods and fatigue, child labor, women in industry, medical and nursing services, physical examinations, communicable diseases in a factory, and personal hygiene. From this aspect, industrial hygiene is nearly as broad as preventive medicine.

Before undertaking the control of industrial health hazards, it seems logical that knowledge be obtained as to where, when and how they occur. To secure such information, it has been found helpful to study the morbidity and mortality statistics of industrial workers and to make preliminary plant studies to locate the potential industrial hygiene problems, and medical and

engineering surveys, together with necessary laboratory research, in which all data pertaining to the particular problem are secured and correlated.

According to the census of 1930, about 49 million persons were actively employed in the United States. Of this number about 15 million were employed in the manufacturing, mechanical and mineral industries. In these industries there are more than 900 occupations that have been considered potentially hazardous to health. From the census data the distribution may be had of the workers by states and by industries, as building, chemical, clay, glass, iron and steel, or mineral production. These data are useful in that they show where studies can profitably be undertaken. Additional data can be obtained from statistical sources, and while the value of these is lessened by inaccuracies in occupational analysis and cause of death and by variation in reporting, some indication of the relative risk in various occupations is afforded. In the study of Dr. Louis Dublin the effects of occupational environment on three and one-half million wage earners insured by the Metropolitan Life Insurance Company from 1922 to 1924 were evaluated. This study showed, among other things, that the industrial worker at the age of 20 had an expectation of life of forty-two years, as compared with forty-nine years for the nonindustrial worker. Dr. Dublin concludes that, while hereditary differences may play some part, probably the most important factors are the conditions incidental to industrial employment. The value of mortality statistics is found to be limited in that they afford no information concerning illnesses that do not result in death. When supplemented by records of sickness it is possible to determine far more accurately the effect of any particular environment or process.

Since 1917 the U. S. Public Health Service, in cooperation with a number of industries, has been analyzing and reporting on the frequency of sickness causing disability of more than a week among approximately 160,000 male workers. The annual reports on this group contain the frequency rates for specific diseases. In one industry a high pneumonia rate was found. Factors apart from the working conditions, such as seasonal variation, influenza epidemics, economic status of the workers, their age and nationality, addiction to alcohol, and general prevalence of pneumonia in the community, were insufficient to account for the excess frequency of pneumonia. Analysis according to the conditions showed that the groups exposed intermittently to high temperatures, unsheltered work or drafty conditions experienced the disease and accounted for the major part of the excess for all groups under study.

In ascertaining the effect of occupation on the health of workers in dusty trades over a period of several years and causing an absence of more than a week, it was found that the incidence of respiratory diseases

was about three times as great in granite cutting as in general manufacturing, and that the rate of pulmonary tuberculosis was about forty times as great.

Employees in the groups studied in soft coal mining, textile plants and other industries experienced rates in absences of eight days or longer due to respiratory diseases which were not much above the average for male industrial workers in general.

At present industry does not possess data concerning the incidence of specific diseases for given ages according to sex and by geographic areas correlated with occupations. From experience it has been found that the records of industrial sick benefit associations and group sickness insurance plans are the most accurate available. A comparison of the sickness rates in any given group with the average or expected rate will indicate whether there is an increase in incidence associated with a particular occupation, and whether further study is needed.

PRELIMINARY STUDIES

In the absence of definite industrial morbidity and mortality statistics, some conception of the extent of the problem may be secured by a preliminary survey

example, size of room, ventilation, illumination, facilities for cleanliness, and drinking water. As an example of using the data from this form, under item 1 the size of the workroom is given, under another (item 12) the workroom population at full production is shown. The observations are then compared with that which is considered good practice, and recommendations are made accordingly. An occupational analysis will show the number of persons in each occupation, and the number of activities in each occupation, also the number exposed to various conditions to be studied. Quantitative determinations are made of the particular health hazard in each activity. These exposures are correlated with the activities and occupations of the men, together with a study of their physical condition and their past and present illnesses, both the engineer and the physician being acquainted with the requirements of each occupation in each industry and with the exposure. It is possible thus to make recommendations as to measures for the elimination or control of the disease.

The engineering methods include isolation of the hazardous processes, ventilation, general and exhaust locally, and personal protective devices, such as respira-

Frequency of Disabilities of Specified Duration Among Men Employed in Certain Industries

| Diseases Causing Disability | Cement Plant | Granite Cutting | Coal Miners | | Textile Plant | Silverware Manu- facturing | Municipal Dust | General Manu- facturing |
|--|--------------|-----------------|-------------|------------|---------------|----------------------------|----------------|-------------------------|
| | | | Anthracite | Bituminous | | | | |
| Annual Number of Cases per Thousand Men (in Terms of Years of Life Under Observation)* | | | | | | | | |
| Eight-day or longer cases | | | | | | | | |
| Sickness exclusive of accidents† | 140 | 176 | 193 | 111 | 99 | 138 | 138 | 87 |
| Respiratory diseases | 80 | 120 | 89 | 60 | 52 | 38 | 61 | 41 |
| Influenza and grip | 10 | 34 | 44 | 30 | 44 | 15 | 34 | 19 |
| Bronchitis | 18 | 30 | 19 | | 12 | 14 | 7 | 5 |
| Respiratory tuberculosis | 13 | 37 | 45 | 0 | 0 | 0 | 0 | 0 |
| Pneumonia all forms | 13 | 45 | 0 | 7 | 12 | 14 | 18 | 2 |
| Digestive diseases | 17 | 14 | 31 | 10 | 5 | 21 | 12 | 12 |
| Diseases of nervous system | 26 | 82 | 36 | 15 | 75 | 11 | 4 | 4 |
| Circulatory and genito-urinary | 11 | 67 | 83 | 15 | 5 | 14 | 0 | 5 |
| Diseases of the skin | 92 | 0 | 0 | 3 | 5 | 28 | 54 | 4 |
| Rheumatism acute and chronic | 13 | 45 | 21 | 46 | 62 | 56 | 0 | 52 |
| Two-day or longer cases | | | | | | | | |
| Sickness exclusive of accident† | 700 | 247 | 940 | 520 | 952 | 320 | 394 | |
| Respiratory diseases | 420 | 160 | 440 | 220 | 512 | 178 | 160 | |
| Diseases of upper respiratory tract | 212 | 60 | 231 | 101 | 309 | 162 | 64 | |
| Influenza, grip | 200 | 470 | 181 | 120 | 180 | 66 | 0 | |
| Asthma | 0 | 22 | 36 | 0 | 87 | 42 | 0 | |
| Pleurisy | 26 | 110 | 0 | 20 | 25 | 42 | 68 | |
| Tuberculosis active and suspected | 13 | 450 | 54 | 0 | 0 | 14 | 90 | |
| Number of years of life under observation | 7030 | 1,346 | 1,116 | 494 | 801 | 715 | 2,220 | 112,651 |

* Rates based on less than 10 cases are in bold face.
† Different periods covered between 1922 and 1927.
‡ Including diseases of the pharynx and tonsils.
§ For eight-day and longer cases, 650.

No severe epidemics of influenza occurred during these years.

or study of the industrial establishment or establishments by one trained in industrial hygiene engineering. Such a preliminary survey or study should be of a type that will reveal the number of persons employed in the various occupations, the materials, processes and conditions associated with these occupations, and the welfare facilities afforded the workers in the plant. It must be emphasized, however, that the information obtained in such a study must not be interpreted as indicating in any manner that an exposure to an industrial condition or material necessarily implies injury to a workman but merely indicates the potentialities of the situation.

Such preliminary data, however, does not give quantitative information as to exposure from the point of view of possible systemic poisoning. This is determined by medical and engineering studies. Bloomfield and DallaValle¹ have discussed the method of engineering procedure.

In the engineering studies a record is made of the general environmental conditions in the workroom—for

tors, canister type masks, fresh air or hose type masks, protective clothing, suitable bathing facilities, and good housekeeping within the plant. This last is a most important control measure in industrial hygiene and is included in the industrial sanitation codes in many states and in the Safety Code for Industrial Sanitation in Manufacturing Establishments, approved by the American Standards Association and sponsored by the United States Public Health Service.

The medical control for the protection of the health of the industrial worker depends on knowledge of the industry and of the occupation and activities within each occupation, and physical examination of all persons, especially those exposed to substances or conditions hazardous to health. Such physical examinations should be performed by some impartial person or agency mutually acceptable to the employer and the employee. It should be kept in mind that the purpose of physical examinations is for the protection of the health of the individual examined and the health of other workers with whom he is associated, great care being taken to insure that such physical examinations shall not be used to the detriment of the worker.

¹ Bloomfield and DallaValle. The Determination and Control of Industrial Dust. Pub. Health Bull. 217.

Recently a number of state departments of health have shown interest in establishing divisions of bureaus of industrial hygiene, with the following functions in view

Administrative

- (a) Arrange for securing and investigating reports of occupational diseases to the state department of health
- (b) Secure reports of all diseases for which sick benefits are paid by industrial sick benefit organizations in the state department of health
- (c) Cooperate and provide a source of information for other state departments such as industry, labor, insurance and medical interests, or any agency interested in industrial hygiene
- (d) Educational program to acquaint industry and various groups interested as to the importance of the problem

Field Investigations

- (a) Preliminary survey to determine the scope and nature of the industrial hygiene problems in the state
- (b) Surveys by field personnel of plant conditions causing or suspected of causing occupational diseases in order that the department may advise or make recommendations for the control of existing or potential health hazard

It is believed that, if such bureaus are administered in a way to obtain the cooperation of the employer, employee, medical profession and other interested state departments such as labor, mines and insurance commissions to whom they should be of service the life of the industrial worker may be materially prolonged

Office of Industrial Hygiene and Sanitation U S Public Health Service

TRANSITORY SYNOVITIS OF THE HIP JOINT IN CHILDHOOD

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Transitory synovitis of the hip joint in childhood often remains unrecognized despite its relatively frequent occurrence. Usually the disease is erroneously diagnosed as tuberculosis of the hip, although the subsequent course and ultimate prognosis in the two conditions are vastly different. Other terms employed to designate this disease are *coxitis serosa seu simplex*, *coxitis fugitiva*, *coxitis ephemera*, *coxitis fugax*, *coxitis incertae causae* and *transitory arthritis of the hip joint*. Twenty-two cases have been recognized in this clinic since 1916, it is significant that since our attention has been focused on this syndrome the diagnosis has been made seven times in the past two years.

ETIOLOGY

Various factors have been indicated as responsible for the development of transitory synovitis of the hip joint. Butler¹ believes that infection, rather than trauma, is the chief cause. However, septic embolus, chemical toxins, mechanical-static imbalance, and climatological fluctuations have been blamed.² I am inclined to agree with Butler that an underlying, nonspecific infective focus is usually responsible. Since the disease process per se is not specific, any one of several factors may be the cause of the syndrome.

In ten of our cases, five different factors which might have even a very remote contributory effect were

recorded. In four instances, trauma resulting from a fall was held responsible. Muscular strain (tap dancing and track athletics), contagion (measles and scarlet fever) and infection (influenza and tonsillitis) each accounted for two cases. Granting that the factors named may have played an etiologic role, I am still at a loss in demonstrating a plausible cause in more than half (twelve) of the cases. Butler could find no obvious reason in thirteen cases in his series of twenty-two.

Age—The youngest patient observed in this series was 11 months old, the oldest 14 years of age, the average for the whole group was 5.4 years. Nineteen children (86 per cent) who were affected were 8 years old or younger, the remaining three (14 per cent) were in the age group of 9 to 14 inclusive. The average age in Butler's group was about 7 years.

Sex, Laterality, Race—Males and females were equally affected, Butler found males to predominate over females in the ratio of 17 to 5. No racial predisposition was noted. The right hip was involved twelve times, the left ten times.

SYMPTOMS

Prodromal—In eight cases the active symptoms were preceded by prodromal events but the variety of manifestations precludes their specificity. In one case slight pain in the thigh preceded the onset for ten days, in a second, intermittent pain was noted in the knee for eighteen months, in a third, some stiffness was felt in the back of the knee over a five months period. One child was restless and slept poorly for one week, another ushered in the disease with vomiting and fever for two days, and in one instance an intermittent fever of unknown source, rising to 103 F, was repeated over a period of three months. In one case, symptoms developed during convalescence from influenza, while in another the syndrome became evident during the third week of scarlet fever.

In view of the protean manifestations of the prodromal events one may feel that some of the introductory phrases were unrelated to the oncoming disease. On the other hand, intermittent fever, restlessness, vomiting or infection of some type, which so often precede such diseases as the acute exanthema, acute anterior poliomyelitis, meningitis, influenza or bronchopneumonia, may carry the same relation to acute synovitis that they bear to the better known nosologic entities. In short, although the prodromes are nonspecific in character, their premonitory significance, as in other diseases, should not be disregarded.

Onset—The onset is about equally divided between the acute (ten cases) and insidious (twelve cases) types. The same ratio holds true in the eight cases preceded by a prodromal stage. The latent period during which symptoms progressed before the patient was presented for medical advice, varied from one day to ten weeks. The average patient came to this clinic after symptoms had persisted for slightly less than one month. During this period seven patients had had previous treatment elsewhere, bed rest was prescribed in six cases for alleviation of prodromal or initial symptoms, in one instance, osteopathy was tried.

Symptoms—The symptoms, in order of their frequency, are limp, pain, frequently referred, night cries and restlessness. Limp occurred in seventeen cases (77 per cent). It varied from a slight alteration of the gait, especially when the patient was fatigued, to a marked abnormality of locomotion. Pain was a

From the Department of Orthopedic Surgery Children's Hospital Iowa City service of Dr. Arthur Steindler

¹ Butler, R. W. Transitory Arthritis of the Hip Joint in Childhood. *Brit. M. J.* 1: 951 (June 3) 1933.

² Belmonte, A. C. Over Voorhijgaande Goedaardige Coxitis (Coxitis Fugax). *Nederl. tijdschr. v. geneesk.* 75: 5197 (Oct. 17) 1931.

prominent feature in thirteen cases (59 per cent), it was marked in nine cases, dull in two, and of aching character in two. The pain was often (eight cases) referred to the knee (five times), occasionally along Poupert's ligament into the groin (two instances) and once to the anterior aspect of the thigh. Five children (22 per cent) were known to have night cries, in one case associated with marked restlessness.

Signs—Tenderness to pressure, limitation of hip motion, and positive Patrick and Trendelenburg signs were the chief objective signs. Tenderness to pressure, anteriorly over the head or neck of the femur of the affected hip joint, was elicited in nine (41 per cent) of the cases.

Limitation of motion was noted in many of the cases. The position of protection was the one most frequently assumed—adduction, flexion and internal rotation—or an incomplete combination of one or more of its component attitudes. Limited abduction was present seven times, incomplete extension in four cases, and decreased external rotation in four cases. Internal rotation was limited in five instances; adduction and flexion each once. Five patients exhibited restriction of all hip motions, rather markedly in one child and slightly in the other four. About one third of all cases (seven) showed no limitation of hip motion.

Leg Signs The Trendelenburg sign was positive in six cases (27 per cent). This may be explained by a relative insufficiency and atrophy of the gluteal muscles as the result of their stretching by the attitude of adduction spasm or contracture. The Patrick sign was positive in four children (17 per cent). This finding is congruous with the relatively frequent contracture in flexion, adduction and internal rotation.

General Data—Foci of Infection. Infected tonsils were present in five children, three of whom had subsequent tonsillectomies. In a single case of otitis media, drainage by a myringotomy was done.

Temperature A slight elevation of temperature was recorded in most cases but rose above 100 F. in only one fourth of the cases.

White Blood Count The white blood count, which was recorded in six cases, varied between 7,700 and 14,100 with a mean of 10,325.

Tuberculin Sensitivity In fifteen skin tests the tuberculin reaction was negative twelve times and positive twice, in one case the reaction was negative but became positive when repeated at a later date.

X-Ray Examination—It is self evident that the roentgenograms in these cases are negative for demonstrable lesions, since the pathologic changes are presumably confined to the synovial membrane. In some joints, however, a certain degree of bone resorption develops as a result of atrophy from disuse. An interpretation of erosion of the joint end should be made with reservation, because the irregularity may merely represent changes of the subchondral bone consistent with increased vascularity of the joint end, collateral to the synovitis.

TREATMENT

Treatment is essentially conservative. In one case, apparently past the acute stage, restricted activity sufficed to bring about complete subsidence of symptoms. Bed rest, averaging about 2.3 weeks, was prescribed for eleven children (50 per cent), to two of these, Buck's extension was added. In those cases which appeared to be more severe and were of longer duration, immobilization in a plaster-of-paris hip spica was

done for an average period of two months. Ten cases were treated by this method. The period of immobilization was elastic, however, it was chiefly determined by the celerity with which symptoms and muscle spasm disappeared. In one instance the cast was removed after three weeks, but in another child it was necessary to prolong cast treatment for almost five months.

The after-treatment consisted of physical therapy, especially radiant heat, massage and diathermy, followed by passive movement, and finally active exercises through the full range of hip joint motion. General hygienic measures were considered an integral part of the treatment. Foci of infection were eliminated, diet regulated, plenty of rest advised and vitamin-bearing tonics prescribed.

PROGNOSIS

In genuine cases of transitory synovitis of the hip joint, the outcome is uniformly good. Belmonte says "it is wonderful how, in several days, the functional disturbance completely disappears. After ten to fourteen days all complaints depart." Butler is likewise optimistic. He concludes "The prognosis of this transitory arthritis is excellent. A follow up of twenty-two cases for an average period of three years has been given." A similar prognostic inference is made by Bradford and Lovett,³ who say that "in children the diagnosis of synovitis of the hip joint should be made only when recovery has occurred in a few weeks and has proved permanent." In our series of twenty-two cases there was complete cure of symptoms and restitution of function in twenty patients. In one child the positive Trendelenburg persisted for three months after all other signs and symptoms had disappeared. In the remaining case a mild recurrence in the form of referred knee pain developed with the onset of influenza five months after all original symptoms had disappeared. These secondary symptoms likewise vanished several days after weight bearing had been resumed in the convalescence. This particular case was instructive also in other respects and is considered in detail in the discussion which follows.

COMMENT

The disease under discussion has been designated as transitory synovitis rather than the broader term arthritis since the lesion seems to be confined to the synovial membrane. Many of the cases were undoubtedly seen in the acute stage, but in neglected cases the disease was more probably in the subacute or chronic stage. The histologic examination in one case was confirmatory. Although the symptoms may be protracted in some cases they may still be considered as "transitory," since resolution is ultimately complete.

The symptoms of transitory synovitis of the hip joint in children may be simulated closely by the early stage of other forms of hip joint disease. This is to be expected, since the synovial pathologic condition may represent the initial lesion in several types of coxitis. The local resistance and immunity of the synovial tissue may determine whether the infection subsides or progresses into a definite form of arthritis. In other words, in transitory synovitis of the hip joint the synovitis constitutes the entire disease but in other hip joint lesions the synovitis may merely represent the point of departure into any one of several disorders of the hip.

The greatest difficulty in diagnosis lies in those borderline cases which closely resemble an early tuberculosis of the hip joint. The physician is confronted with choosing between the needless embarrassment of joint motion by prolonged immobilization in a case of simple synovitis or the graver danger of aggravating tuberculous hip disease by physical therapy and motion after inadequate immobilization. A valuable diagnostic procedure lies in aspiration of the hip joint and inoculation of a guinea-pig with the joint fluid to establish or rule out tuberculosis. Low grade purulent arthritis may be discovered by a cell smear and culture of the cloudy fluid. An excellent point is made by Butler, who advises that these borderline cases should be regarded as "observation hips." By this regimen cases which formerly would have been accepted as definitely tuberculous are now put under observation until the trend of the disease becomes definitive.

REPORT OF CASE

The following case history is presented because it illustrates clearly the difficulty of diagnosis in borderline cases.

History—L. V., a white girl, aged 4 years, was first seen June 6, 1934. We learned that she had fallen from her tricycle eighteen months previously and had experienced intermittent pain in the left knee. Lately she had been improving when moderate pain developed in the left hip associated with a limp.

Physical Examination—This was essentially negative except for pain. There was an adduction (15 degrees), internal rotation (10 degrees) contracture.

Laboratory Examination—The temperature was 99.2 F. The white blood count was 9,200. The tuberculin test was negative.

Röntgen examination did not reveal any pathologic condition.

Treatment—Immobilization in a hip spica was done for eight weeks.

Course—When the cast was removed (August 10) the patient resisted all attempts to move the left hip but had a good range of painless active motion. The repeated tuberculin (Mantoux) test was now strongly positive to both human and bovine strains. Therefore another spica was applied. Two months later (October 11) the cast was removed and motion found to be good. Roentgenograms, however, showed an increase in loss of calcium density in the head of the femur and roof of the acetabulum. A slight roughening appeared in the articular surface of the head of the femur. These facts, plus the knowledge that the patient's mother had died of tuberculosis strongly suggested tuberculosis, so a biopsy was indicated to establish the diagnosis.

Operation—The left hip joint was exposed at operation October 15 through a Sprengel incision. The capsular synovium was hypertrophied and a thin pannus crept over the joint surface at the margins of the head. The femoral and acetabular cartilage were normal in appearance. The bone of the acetabulum was entered subchondrally above the margins of the cartilaginous roof. Curettements of the bone, which was hard, could be removed thus without injury to the underlying cartilage. After closure of the wound, a hip spica was applied.

Pathologic Examination—No signs of tuberculosis were noted in the specimens. The synovial tissue attached to the joint capsule showed only nonspecific inflammatory changes, which were also present to a lesser degree in the fibrous capsule. The bone of the acetabulum was normal except for moderate osteoporosis unassociated with inflammatory changes. The joint cartilage from the margins of the acetabulum showed some early degenerative changes in the middle noncalcified layers. No signs of specific inflammation could be found. The diagnosis was chronic synovitis of the hip joint with collateral osteoporosis.

Postoperative Course—The spica was removed after one month (November 15) and physical therapy was instituted. After four weeks there was complete, painless, unrestricted motion of the hip joint, one-fourth inch of atrophy of the thigh persisted.

Recurrence—The patient had an attack of influenza in May 1935, five months after being considered cured. The pain was referred to the knee, similar to the onset of the primary symptoms. However, by the time walking was resumed during the convalescence, she was symptom free. The hip, when examined one year later, was entirely normal.

SUMMARY

1 Transitory synovitis of the hip joint is essentially a disease of children under 8 years of age. Twenty-two cases are reported.

2 The chief symptoms are limp, pain and muscle spasm. The temperature and white blood count may be elevated moderately. The tuberculin skin reaction and roentgen examination are usually negative.

3 The disease must be differentiated from the early stages of other forms of coxitis, especially tuberculosis. Aspiration of the hip joint and examination of the fluid are suggested as an aid in diagnosis.

4 The treatment is conservative: bed rest, traction or immobilization is advised in the early stages, and physical therapy subsequently. The prognosis for functional recovery is excellent.

THE CONTROL OF MENINGOCOCCIC MENINGITIS EPIDEMICS

BY ACTIVE IMMUNIZATION WITH MENINGOCOCCUS
SOLUBLE TOXIN: A PRELIMINARY REPORT

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An epidemic of meningococcic meningitis is to be discussed in which all the present standard methods for prevention and control were given as thorough a trial as will usually be possible. A difficult problem presented itself in that cases continued to occur in spite of the application of these control measures.

Active immunization against the meningococcus, which heretofore had not been used in the presence of an epidemic, was then considered as a possible means of control, and a study of a meningococcus broth culture was begun to find a product for that purpose. The filtrate of the broth culture containing a soluble toxin¹ was selected as a skin testing and immunizing substance and was given a trial to determine its value as a means of control in the epidemic. It is recognized that to determine its value as a protective agent it will have to be used in numerous outbreaks.

SITUATION, CASE LOCATION, SEQUENCE AND MORTALITY OF THE EPIDEMIC

In the spring of 1935 an epidemic of meningococcic meningitis occurred in Atchinson County, Mo. There were seventeen cases, nine of these occurred in a CCC camp located in the environs of Tarkio, four in the adjacent town of Tarkio itself, three in Fairfax, a small village 8 miles distant, and one on a nearby farm.

The sequence is shown in chart 1. The first case occurred in Tarkio, in a middle aged housewife. Three months later the second, third and fourth cases occurred

From the Station Hospital and the Seventh Corps Area Laboratory. Read before the Spring Medico-Military Symposium arranged by the Kansas City Southwest Clinical Society and the Medical Department, Seventh Corps Area, United States Army, Kansas City, Mo., March 10, 1936.

¹ Ferry, N. S.; Norton, J. F. and Steele, A. H. Studies of the Properties of Bouillon Filtrates of Meningococcus. Production of Soluble Toxin. J. Immunol. 21: 293-312 (Oct.) 1931.

in the CCC camp Following this, as can be seen on the spot map, the sequence was not continuous in any one place

We were apparently dealing with a virulent strain or strains of the meningococcus There was a mortality of 83⅓ per cent in six untreated cases outside the CCC camp

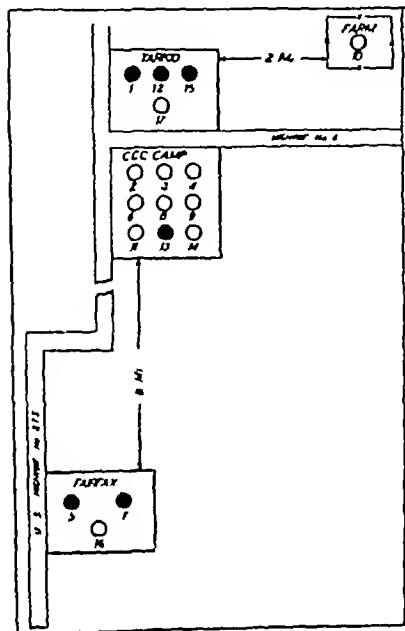
CASE INTERVAL AND SOURCE OF INFECTION

The epidemic was slow in pace as is frequently the case In the beginning in the camp, the first three cases occurred at intervals of seventeen days (chart 2), then,

as might be expected, the interval was shortened and later the interval was increased again

The source of infection in Camp Crystal² was highly problematic As indicated in chart 2, patient 1 may have received his infection from a carrier Patient 2 was an acting male nurse in the camp infirmary and nursed patient 1 a few hours before the case was diagnosed, and he was sent to Station Hospital, Fort Leavenworth Patient 2, before symptoms of meningitis developed and before he was sent to the station

Chart 1—Case location sequence and mortality in meningococcal meningitis epidemic The white circles indicate cases in which recovery occurred and the black circles the fatal cases



hospital, nursed patients 3, 5 and 6, who were convalescing from the mumps Of the remaining cases no close contact could be established Although the foregoing is mentioned as a possible chain of transmission, these patients could very well have been individuals carrying meningococci in the nasopharynx, whose immunity became lowered to such an extent that they became infected with their own organism and developed a meningococcemia and meningitis This could account for the long incubation periods that are noted on the chart

Other factors that may have influenced the spread of meningitis in the camp were

1 Weather conditions The epidemic occurred in the spring of the year during an unusually long cold rainy season

2 Crowding This seemed to be a most important predisposing factor The greatest number of cases occurred in Camp Crystal, where there was the greatest density of population

3 Lowered immunity There was a lowered immunity, as manifested by a high incidence of colds, influenza, nasopharyngitis, middle ear infections and mumps The general physical condition of the men appeared to be good, most of them were seasoned enrollees with from five to six months' service

CONTROL MEASURES

The usual measures for the control of meningococcal meningitis were instituted and were as follows

1 Early diagnosis and isolation of known cases The camp surgeon was alert and diagnosed his cases early, and the patients were immediately transferred to the isolation ward at the Station Hospital, Fort Leavenworth, Kansas

2 Quarantine The entire camp was placed under a working quarantine for fourteen days following each case

3 Daily medical examination Examinations were conducted daily to isolate promptly early cases of meningitis

4 Bacteriologic examination Bacteriologic examination for carriers and isolation of positive carriers were done

5 Sanitation A general clean-up program was instituted and maintained throughout the epidemic

6 Personal hygiene Detailed instructions were given to the men relative to this subject

7 Prevention of the spread of the infection through eating utensils, food handlers, and food Sterilization of eating utensils, culturing of food handlers and inspection of food were carried out

8 Crowding There was a reduction in crowding, fatigue and exposure

9 Proper ventilation and bed spacing Three feet between cots was required and head to foot sleeping was initiated

Before the epidemic was over it was expedient to divide the camp into four side camps of approximately fifty men each This, as can readily be seen, aided greatly in reducing close contact

RESULTS OF BACTERIOLOGIC CULTURAL STUDY AT CAMP CRYSTAL

Because by some a great deal of confidence is placed in the control of epidemics by taking cultures of and isolating the carriers, a cultural study at Camp Crystal was undertaken to attempt to determine the value of this procedure

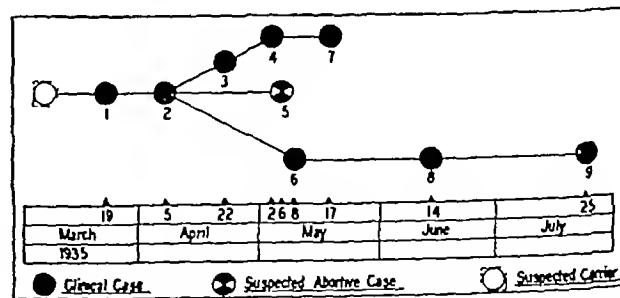


Chart 2—Case interval and source of infection Patient 2 a male nurse nursed patient 1 the first case in the camp The third fifth and sixth patients to contract epidemic meningitis had mumps and were attended by patient 2 while he was in the prodromal stage of epidemic meningitis

The plan of procedure was to take a culture of all the 250 enrollees, both positive and negative, on four successive weeks, also to take a culture of the members of another, nonepidemic camp, 20 miles distant, as a control, to determine whether the carrier rate was higher in the epidemic camp than in the nonepidemic camp Table 1 presents the results of this study

The greatest number of enrollees in the epidemic camp to yield positive cultures from the nasopharynx

² The CCC camp Company 1742 Tarkio Mo will be referred to as Camp Crystal

at one time was eleven, or 4.4 per cent, and in the control camp seven, or 3.5 per cent. The greatest number showing typical colonies at one time, only on blood plates, was twenty-five in the epidemic camp and seventeen in the control camp. The difference is hardly significant.

A study of the records also showed that there were four types of carriers: (1) early cases, (2) temporary carriers, (3) intermittent carriers and (4) chronic carriers. These different types of carriers demonstrate the futility of taking cultures of and isolating all indi-

TABLE 1—*Cultural Study of Camp Crystal Meningitis Camp, Missouri*

| Cultures Made on All Enrollees at Weekly Intervals on 4 Successive Weeks | First Culture 20 Men | Second Culture 21 Men | Third Culture 23 Men | Fourth Culture 23 Men | Control Camp 106 Men |
|--|----------------------|-----------------------|----------------------|-----------------------|----------------------|
| Plates showing gram negative diplococci with clear gray colony | 10 | 2 | 1 | 3 | 17 |
| Positive typical meningococcus sugar reactions | 3 | 7 | 11 | 8 | 7 |
| Positive typical meningococcus agglutination reactions | 3 | 7 | 11 | 11 | 7 |
| Total number chronic carriers | 2 | 2 | 2 | 2 | |
| Total number carriers | 7 | 7 | 11 | 8 | 7 |

viduals who were carriers of meningococci. In order to find all the carriers in a camp it would be necessary to take cultures of the entire surface of the upper respiratory tract of each individual in the group at frequent intervals during the day over a long period of time.

Of the control measures used in the epidemic, the one considered to be of the greatest value was separating individuals the greatest distance possible from one another. Although this is desirable, it is not always possible to do this effectively.

All the other control measures used are important and, unless they have been enforced, not all has been done that can be done in controlling the disease. However, the fact remains that although all the present methods of control available were carried out, cases did continue to occur in this epidemic.

CONSIDERATION OF SKIN TESTING AND ACTIVE IMMUNIZATION AS A MEANS OF CONTROL

The greatest success in controlling infectious diseases in the past has been through the medium of artificial immunization. Ferry and Steele³ in the spring of 1935 described the use of a meningococcus soluble toxin for skin testing and active immunization of 2,000 orphan children in Detroit. Two hundred and thirty-two children were immunized with meningococcus filtrate, eight weeks following immunization, 66.8 per cent were found to have negative skin test reactions.

If positive skin test reactions became negative after subcutaneous inoculation with soluble toxin it was reasonable to infer that the same procedure might possibly protect them from developing the disease. No conclusive clinical data were available as to the protective value of active immunization with this toxin in the presence of an epidemic or the impending danger of an epidemic, nor were there data as to what the skin test would show on individuals as they were coming down with the disease or after they had recently recovered.

³ Ferry, N. S. and Steele, A. H. Active Immunization with Meningococcus Toxin. *J. A. M. A.* 104: 983-984 (March 23) 1935.

TESTS CARRIED OUT TO DETERMINE THE MOST SUITABLE PRODUCT FOR SKIN TESTING⁴

Our method of producing a skin testing substance was similar to that of Ferry,³ which was simply to grow the meningococci in a hormone veal infusion broth medium⁵ in 1,000 cc Florence flasks. After cultivation for four days, the culture was killed by the addition of sufficient merthiolate to make a final concentration of 1:10,000 and was then passed through a Pasteur-Chamberland filter with a porosity of L₇. The most difficult phase of the production of the toxin was the technique of making cultures of recently isolated strains and the training of these strains to produce pellicles,⁶ which appear to be necessary for toxin production. The inoculation of large flasks to produce heavy simultaneous growths and the mediums used for carrying the cultures will be described at a later date.

For the purpose of studying the separable fractions of the broth culture, it was divided into the following five parts, and skin tests with each portion were made on the same individual.

1. Merthiolated broth culture. The whole culture was killed and used as a skin testing substance. In this instance the various fractions that were used for comparison were obtained from the same broth culture that contained 2,000 million cocci per cubic centimeter.

2. Exotoxin. The filtrate from the meningococcus broth culture. This fraction hereafter will be referred to as exotoxin for the purpose of identification. There are two reasons why we believe that this is an exotoxin: (a) The filtrate of the autolyzed meningococci with distilled water grown on solid mediums did not produce positive skin reactions and (b) in broth mediums meningococci were found to grow mainly on the surface in the form of a pellicle and up to the time of filtering.

TABLE 2—*Intracutaneous Tests Comparing the Reactions of Five Separable Fractions of Meningococcus Type I Broth Cultures**

| Name | Merthiolated Broth Culture | Exotoxin | Filtrate Exotoxin and Endotoxin | Heated Filtrate | Endotoxin |
|-----------|----------------------------|----------|---------------------------------|-----------------|-----------|
| Kuhn | + | + | + | — | — |
| Moore | ++ | + | + | — | — |
| Mortensen | +++ | ++ | + | — | — |
| Stohl | ++ | + | ++ | — | — |
| White | + | + | + | — | — |
| Olbons | + | + | + | — | — |
| Moorman | +++ | ++ | ++ | — | — |
| Dee | ++ | + | + | — | — |
| Hall | ++ | + | + | — | — |
| Oodrey | +++ | + | + | — | — |

* Criteria for reading skin tests: — no reaction; + — 5 mm in greatest diameter; ++ 1 cm in greatest diameter; +++ 2 cm in greatest diameter; ++++ 3 cm in greatest diameter. Edema as well as erythema was noted in reading tests of fractions named. All skin tests were made with a dilution of 1:100. All tests were made intracutaneously with 0.05 cc of test solution.

showed no detectable precipitation of the pellicle, and no ruptured forms of meningococci on microscopic examination.

3. Filtrate containing exotoxin and endotoxin. The culture was incubated twenty-four hours after it was killed with merthiolate to produce complete autolysis of the meningococci and then filtered. This filtrate was added to an equal part of 2, thus giving a solution containing both an exotoxin and an endotoxin.

⁴ These tests were carried out with the assistance of Miss Pea I. Moorman.

⁵ Todd, J. C. and Sanford, A. H. Clinical Diagnosis by Laboratory Methods, ed. 7. Philadelphia: W. B. Saunders Company, 1931, p. 661.

⁶ Smith, Theobald. *J. Exper. Med.* 1899, p. 373.

4 Heated filtrate The filtrate was heated to 120 C at 15 pounds pressure for one hour. Boiling for one hour did not make the toxin inactive. Ferry has reported recently that autoclaving for thirty minutes will destroy the toxin in some filtrates.

TABLE 3—Intracutaneous Tests Comparing the Reactions of Five Separable Fractions of Meningococcus Type 2 Broth Cultures

| Name | Methylolated Broth Culture | Exo toxin | Filtrate Exotoxin and Endotoxin | Heated Filtrate | Endotoxin |
|----------|----------------------------|-----------|---------------------------------|-----------------|-----------|
| Smith | ++ | ++ | — | — | — |
| Johnson | ++ | ++ | — | — | — |
| Ware | + | + | — | — | — |
| Dake | ++ | ++ | + | — | — |
| White | + | + | + | — | — |
| Ryerson | + | + | + | — | — |
| Winkler | + | + | + | — | — |
| Phillips | + | — | — | — | — |
| Crow | + | — | + | — | — |
| Wright | + | — | — | — | — |
| Barton | + | — | — | — | — |
| Park | — | — | — | — | — |

5 Endotoxin This was made from the meningococci that remained after the culture was filtered through the Pasteur-Chamberland filter. These meningococci were autolyzed by adding distilled water and incubating for twenty-four hours¹ and diluting to the original quantity of the broth culture with saline solution.

Tables 2, 3, 4 and 5 show a comparison of the intracutaneous reactions of the five named fractions.

Column 1 Skin reactions from the whole culture were the greatest. Further studies should be made of the whole culture to determine its value as a skin testing substance. The additional reaction is thought to be due to the membranes of the meningococci themselves. A further study of this fraction is being made.

Column 2 This is the product or filtrate of the meningococcus broth culture to be given a trial in skin testing and active immunization for and against meningococcal meningitis.

Column 3 The fraction containing the exotoxin and the endotoxin produced approximately the same skin reactions as the exotoxin. This would suggest that the endotoxin present in this fraction was inactive as far as skin reactions were concerned.

Column 4 The fraction containing the heated filtrate showed on skin testing that the exotoxin was rendered

TABLE 4—Intracutaneous Tests Comparing the Reactions of Five Separable Fractions of Meningococcus Type 3 Broth Cultures

| Name | Methylolated Broth Culture | Exo-toxin | Filtrate Exotoxin and Endotoxin | Heated Filtrate | Endotoxin |
|-----------|----------------------------|-----------|---------------------------------|-----------------|-----------|
| White | + | ++ | ++ | — | — |
| Godfrey | + | + | + | — | — |
| Sleap | ++ | + | + | — | — |
| Griffin | + | + | — | — | — |
| Hayes | + | + | + | — | — |
| Keeney | ++ | + | + | — | — |
| Owens | ++ | + | — | — | — |
| Ford | ++ | ++ | + | — | — |
| Stohl | + | + | + | — | — |
| Mortensen | ++ | — | — | — | — |

inactive by the amount of heat it had received and indicates that the reaction caused by the exotoxin is caused by a substance which can be destroyed by heat. This serves also as a control for the reaction of the whole culture and the exotoxin.

Column 5 The fifth fraction containing the endotoxin is shown by the tables to be inert as a substance

producing skin reactions. We also produced an autolysis of meningococcus grown on solid mediums in distilled water and found the exotoxin, when prepared in this manner, to be inert. Meningococci were also grown on solid mediums, washed with hormone broth and filtered, and the filtrate was used as a skin testing substance. It produced no reactions on ten individuals sensitive to the filtrate. This experiment was made to determine whether meningococci when grown on solid mediums would produce a toxin on their surfaces.

The results showed (1) that meningococcus exotoxin produces positive reactions on sensitive individuals, (2) that autolyzed meningococcus filtrate does not produce positive skin reactions on the same individuals, and (3) that the heated exotoxin does not produce positive skin reactions on the same individuals. The foregoing results are in confirmation of the experiment done by Ferry, Norton and Steele¹ in 1931, when the first study of a meningococcus soluble toxin was made.

Table 6 illustrates the average skin reactions to the five fractions in the order named.

TABLE 5—Intracutaneous Tests Comparing the Reactions of Five Separable Fractions of Meningococcus Type 4 Broth Cultures

| Name | Methylolated Broth Culture | Exotoxin | Filtrate Exotoxin and Endotoxin | Endotoxin |
|----------|----------------------------|----------|---------------------------------|-----------|
| Smith | ++ | ++ | — | — |
| Johnson | + | + | — | — |
| Ware | + | + | — | — |
| Dake | + | + | — | — |
| Ryerson | ++ | — | — | — |
| Winkler | ++ | — | — | — |
| Phillips | + | + | — | — |
| Crow | + | + | — | — |
| Wright | + | — | — | — |
| Barton | + | — | — | — |
| Park | ++ | — | — | — |

TABLE 6—Average Intracutaneous Reactions to Filter Separable Fractions of Meningococcus Broth Cultures

| | |
|----|--|
| ++ | Whole culture (exotoxin, endotoxin and meningococci) |
| + | Exotoxin |
| + | Endotoxin and exotoxin only |
| — | Heated filtrate |
| — | Endotoxin |

DETERMINATION OF THE SKIN TEST UNIT DOSE

In addition to using sensitive individuals to determine the skin test unit dose, similar to the manner of Ferry,³ it was conceived that the skin test unit dose should be the amount of exotoxin that will give a positive reaction in an individual who is susceptible to the disease (as proved by his developing meningitis) and not the amount to which the individual is sensitive (and who does not develop the disease).³ In using this conception there can be no question as to the susceptibility of the individual who develops the disease. A skin test on this individual, when the first symptoms are noted, should be the skin test unit of the susceptible. Accordingly, a patient developing the disease on the first day of symptoms was given skin tests in dilutions varying from 1:100,000 to 1:10. Only one case has been available for skin testing to determine the level of immunity reached before and after immunization. In the instance of Bales (table 7), when he came down with the disease he reacted to dilutions of 1:1,000. After recovery and following treatment with antimeningococcus serum he reacted only to 1:10, thus showing that a positive skin test with a dilution of 1:100 before

his illness would have indicated his susceptibility and would have been the proper skin test dose in this case. To determine more accurately the skin test dose to which the average susceptible individual will react and the average amount of immunizing substance necessary

TABLE 7—Skin Reaction Dose on a Susceptible Individual on Developing the Disease and After Recovery*

| Patient's Skin Tested 1st Day of Disease | Dilution* of Exotoxin Used | Reaction* Noted |
|---|-------------------------------|--------------------|
| Before treatment | 1:100,000 | — |
| | 1:10,000 | — |
| | 1:1,000 | + |
| | 1:100 | + |
| | 1:10 | + |
| After recovery. Bales had received 1 cc concentrated Lilly's antineurococcus serum. He reacted to type 3 and not to type 1 exotoxin | 1:1,000 | — |
| | 1:100 | — |
| | 1:10 | + |

* Case of Bales

to produce the level of immunity desired these skin test titrations should be done in a large series of cases in which the disease is actually developing.

Since beginning this work we have made skin tests of all patients with meningococcal meningitis four and six weeks after they recovered from the disease (table 8). Table 8 indicates that immunity to meningococcus exotoxin is present after recovery from the disease and that the exotoxin skin test may reflect the amount of immunity possessed by an individual.

For the purpose of obtaining further data as to what dilution of our toxin would produce a positive reaction on the average sensitive individual skin tests of twenty recruits for the army were made. The results are shown in table 9.

At this time we were unable to titrate the toxicity of our toxin by the use of animals. Of the animals used—rabbits, guinea-pigs and mice—only rabbits could be killed occasionally. We hope to give mice a further trial by active immunization with toxin for protection against meningococci suspended in mucin given intraperitoneally.⁶

Skin test reactions on individuals sensitive to the exotoxin were used to determine the toxicity of each new lot of exotoxin produced. In the future this dose may be controlled in a degree by testing individuals developing the disease.

TABLE 8—Intracutaneous Exotoxin Tests in Convalescent Cases

| Case | Skin Reaction 4th Week of Convalescence | Skin Reaction 6th Week of Convalescence |
|---------|---|---|
| Chapman | — | — |
| Sparger | + | — |
| Dumick | — | — |
| Others | — | — |

Dilution of 1:100 of filtrate used for skin testing

SKIN TESTING AND IMMUNIZATION AT CAMP CRYSTAL⁹

After all the control measures available were used, meningitis cases, as stated before, continued to occur at Camp Crystal, the last one being July 25, 1935. In addition to the continuation of control measures, it was

decided to make skin tests and to immunize all the enrollees at Camp Crystal with meningococcus exotoxin, August 8. Passive immunization by the use of antimeningococcus serum was considered but was not deemed practical in this situation.

Recently cultured meningococcus epidemic strain type 3 and stock strains from the National Institute of Health types 1 and 3 were used in producing the exotoxin for skin testing and immunizing the members of the camp. Equal parts of the filtrate from the three strains were used. The epidemic strain, type 3, was found to be a very virulent strain. The skin test unit dose of this exotoxin was 0.05 cc of 1:1,000 dilution of the filtrate. That is, it produced an edema and erythema 1 cm in diameter in sensitive individuals, seven out of twenty, as shown in table 9.

Recently 2,000 CCC enrollees, enrolled directly from urban and rural civilian life, were skin tested with 1:1,000 dilution of filtrate made in April 1936, and in this group 37 per cent were found to have a one plus or greater skin test reaction.

TABLE 9—Exotoxin Sensitivity Intracutaneous Tests in Twenty Recruits*

| 1:100 | 1:1,000 | 1:10,000 | 1:100,000 |
|----------------|------------|--------------|--------------|
| 14 to filtrate | 7 positive | All negative | All negative |

Exotoxin used in this test was one month old

TABLE 10—Results of Skin Tests at Camp Crystal Before and After Subcutaneous Inoculation with Full Strength Meningococcus Filtrate Types 1 and 3

| | |
|--|-----------|
| 1. Total number of men tested | 187 |
| 2. Total number men positive one plus or greater | 14 (7.4%) |
| 3. Total number men immunized with 0.1 cc, 0.2 cc, 0.3 cc, and 0.4 cc full strength filtrate at weekly intervals | 163 |
| 4. Results of skin tests three weeks following immunization | |
| a. Number skin tested | 64 |
| b. Number positive one plus + | 0 |
| c. Number positive plus minus + - | 5 |
| d. Number negative | 59 |

Table 10 gives the results of skin tests before and after immunization with full strength filtrate. This was given at weekly intervals, and after it was completed each individual had received a total of 1.3 cc of full strength filtrate, which, by use of the titration already stated, contained 26,000 skin test units.

Because of the rapid change in personnel in the camp, only ninety-four of the original 187 men were available for testing following immunization. The percentage positive of the ninety-four before immunization was 5.3 and following immunization 0. We were unable to take skin tests of these men at a later date to determine whether additional immunity had developed. There were only slight local reactions to the small immunization doses that were given. For this reason it is possible that larger doses of the filtrate could be tolerated. Experiments are being conducted at the present time to determine how large an immunizing dose of the full strength filtrate can be tolerated. Controls containing the same concentration of merthiolate and broth were used with all skin tests, and in all cases the results were negative. All new enrollees admitted to the camp following this were immunized on admission. No further cases of meningitis developed in the camp following immunization.

7. Branham Sarah, National Institute of Health, personal communication to the author. Rake, Geoffrey. Studies on Meningococcus Infections. J. Exper. Med. 67: 549-559 (April) 1933.

8. Miller, C. P. Experimental Meningococcal Infection in Mice. Science 78: 340 (Oct. 13) 1933.

9. This was done with the cooperation of Dr. Charles Fogarty.

The change in the confidence of the enrollees and all the civil groups was quite noticeable, so much so that the health officer and school board of Tarkio requested that the children of the high school and grade school be given the same advantages as the enrollees in the camp. With the cooperation of the Missouri State Board of Health, the camp surgeon carried out skin testing and immunization in the high school and grade school. The same exotoxin was used as for the Camp

immunized, and, although four additional cases have occurred during that time, not one has occurred among those who were immunized.

AN EXAMPLE OF HOW SKIN TESTING AND
IMMUNIZATION WITH MENINGOCOCCUS
EXOTOXIN MAY BE USED FOR THE
CONTROL OF A MENINGITIS
EPIDEMIC¹⁰

The ideal situation in which to use active immunization is not after the epidemic has progressed but obviously at the onset of the epidemic. Such a situation presented itself at Burlington, Kan., in Camp Coffey, a CCC camp. There again known control measures were used after the first case occurred but did not prevent a second case from occurring in twelve days. On the development of the second case, skin testing and immunization of the camp with our toxin were begun.

At the same time a culture study of the camp was made for carriers by Ross Laybourn, Kansas state bacteriologist, the results of which are included in table 13.

For skin testing and immunization, meningococcus exotoxin types 1 and 3, from one of the recently isolated Tarkio strains, and from stock strains from the National Institute of Health, were used. The skin test dose in this instance was 0.05 cc of 1:100 dilution of the filtrate. Table 14 gives the results of the skin tests before and after immunization. To prevent a reaction

TABLE 11—Comparison of Intracutaneous Reactions of Meningococcus Filtrate Made July 1935 and April 1936 on 840 Enrollees with from Four to Seventeen Months' Service

| | | |
|--|-----|-----|
| Meningococcus toxin made July 1935 | | |
| Number positive skin reactions one plus or greater | 151 | 18% |
| Meningococcus toxin made April 1936 | | |
| Number positive skin reactions one plus or greater | 23 | 23% |

Skin tests made May 18, 1936, 0.05 cc of a dilution 1:100 of full strength filtrate from a whole broth culture containing 2,000 million cocci per cubic centimeter was used.

Crystal group, but, since it had decreased in toxicity³ in the two months intervening, a dilution of 1:300 was equivalent to 1:1,000 by skin tests on controls.

Since the first batch of filtrate was made, ten new filtrates have been made and have been found to hold their potency remarkably well, 0.05 cc of a dilution of 1:100 of the filtrate has been found to produce constantly a reaction 1 cm or greater in sensitive individuals. A meningococcus filtrate made nine months ago shows 10 per cent less skin reaction when the old and the new filtrates were compared by skin testing on the same 840 enrollees (table 11). The filtrate is now being made from equal parts of types 1, 2, 3 and 4 stock strains from the National Institute of Health and types 1, 2 and 3 from epidemic strains in this area.

TABLE 12—Effect of Active Immunization on Intracutaneous Tests of School Children Tarkio Mo*

| | Before Immunization | | After Immunization | |
|-----------------------|---------------------|------------|--------------------|------------|
| | Number | Percentage | Number | Percentage |
| High School Children | | | | |
| Number tested | 61 | | 61 | |
| Plus minus | 16 | 26.0 | 7 | 10.0 |
| One plus | 5 | 7.8 | 0 | 0.0 |
| Two plus | 1 | 1.6 | 0 | 0.0 |
| Four plus | 1 | 1.6 | 0 | 0.0 |
| Grade School Children | | | | |
| Number tested | 86 | | 86 | |
| Plus minus | 39 | 45.3 | 9 | 10.4 |
| One plus | 7 | 8.13 | 0 | 0.0 |
| Two plus | 2 | 2.32 | 0 | 0.0 |

* Immunizing dose for high school children full strength filtrate 0.1 cc, 0.3 cc, 0.4 cc, at weekly intervals given subcutaneously 1:300 dilution of filtrate used 4,800 skin test units of toxin used. Grade school children full strength filtrate 0.1 cc, 0.2 cc, 0.25 cc at weekly intervals given subcutaneously 1:300 dilution of filtrate used for skin test log.

The results on the school children are included because of the value of the data obtained by using two different age groups (table 12). The last skin test was made one week after the last immunizing dose. A further investigation is being made to see how much and how soon immunity develops. In the school children it was noted that the children in a family that had recently moved to the community showed greater sensitivity on skin testing than the others. Seven months has elapsed since the children in this community were

TABLE 13—Cultural Study of Camp Coffey Burlington Kan

| | |
|---|----|
| Plates showing grain negative diplococci with clear gray colony | 67 |
| Positive typical meningococcus sugar reactions | 31 |
| Positive typical agglutination reactions | 7 |
| Total number chronic carriers | 2 |
| Total number temporary carriers | 5 |

due to trauma rather than to the toxin, 0.05 cc of skin testing solution was used. Up to the present time no skin reactions have been obtained from using the mercuriolated broth or the heated filtrate.

In table 14 a study of the results from skin testing at Camp Coffey before immunization show that 43 per cent of the enrollees gave a one plus or greater skin reaction. Seventy-two of this 43 per cent were immunized with the filtrate and 20 per cent gave positive skin tests six weeks after immunization was initiated. Four months following immunization, forty-one were available for skin testing, and of these only 2 per cent were positive, which indicated that there was a definite trend from positive to negative.

In selecting the enrollees for immunization, only those showing one plus or greater skin reaction were immunized. In order to prevent severe reactions when immunizing, the skin test may be used as a protective measure. If the individual on skin testing exhibits a skin reaction greater than 3 cm in diameter this fact should be considered as a danger signal and the size of the immunizing dose should be adjusted in direct proportion to the skin reaction. By using this criterion, immunization can be carried out without danger of severe reactions to the toxin. Six of the seven enrollees found on culture to be carriers had a one plus skin test. There were no severe initial cutaneous reactions in this series in which the following doses were used at intervals of four days (table 11). A four day interval was used because it had been found that

¹⁰ This experiment was carried out with the assistance of Dr. Timothy P. Flynn.

the local reaction usually disappeared in from two to three days and because of the fact that the more rapid the immunization the more valuable the procedure in the presence of a possible epidemic

The decrease in local reaction to the substance suggests that the enrollees in this instance developed immunity very rapidly. Up to the present time no further cases of epidemic meningitis have occurred in the camp or in the outside community

TABLE 14—Results of Skin Tests at Camp Coffey Before and After Subcutaneous Inoculation with Full Strength Meningococcus Filtrate Types 1 and 3

| | |
|---|-----------|
| 1 Total number men tested | 207 |
| 2 Total number men showing one plus or greater skin test reaction | 83 or 40% |
| 3 Total number men immunized with 0.2 cc 0.5 cc 1 cc 1.5 cc full strength filtrate at 4 day intervals | 80 |
| 4 Results of skin testing 0 weeks following immunization | |
| a Number tested of original positives | 72 |
| b Number showing one plus or greater skin test | 16 or 22% |
| c Number plus minus | 52 or 72% |
| d Number negative | 5 or 6.9% |
| 5 Results of skin testing 4 months following immunization | |
| a Number tested of original positives | 41 |
| b Number showing one plus or greater skin test | 1 or 2% |
| c Number plus minus | 16 or 39% |
| d Number negative | 24 or 58% |

0.05 cc of a dilution 1:100 of full strength filtrate was used for skin testing.
0.05 cc of methionated broth was used as a control on the skin tests and were negative

SUMMARY

1 An epidemic of meningococcal meningitis occurred in which there were seventeen cases

(a) The greatest number of cases occurred where there was the greatest density of population, in a CCC camp near a small town

(b) The mortality in the epidemic was 83 per cent in six untreated cases outside the CCC camp and 11 per cent in nine cases treated early with antimeningococcus serum

2 A culture for carriers was made in the CCC camp, Camp Crystal, on four successive weeks and the highest number found positive at one time was 4.4 per cent. A culture was made at the same time on a nonepidemic camp 20 miles distant and 3.5 per cent were positive

On another cultural study made by Ross Laybourn at Camp Coffey, 3.5 per cent were found positive

3 It was noted that cases continued to occur in the CCC camps after all the control measures available at the present time were enforced. The control measure considered to be of the greatest value was the separation of individuals the greatest distance possible from one another

4 A study of filter separable fractions of meningococcus broth culture was made to determine the skin reactive properties of Gordon's four types of meningococcus

(a) It was found that the whole culture produced the greatest reaction and the filtrate produced the next greatest reaction

(b) The heated filtrate produced no reaction and served as a control

(c) The filtrate from autolyzed meningococci, or endotoxin, produced no skin reaction

5 The filtrate was given a trial in an epidemic of meningitis to determine its value as a skin testing and immunizing substance

6 A new approach as to how to determine the level of immunity of a susceptible individual by skin testing with graduated dilutions of filtrate on an individual coming down with the disease and again after recovery is suggested as a possible method of determining the skin test unit dose

(a) The amount of filtrate necessary to change the skin test from positive to negative, in dilutions shown in table 7, should be the amount necessary to immunize the individual

(b) The skin test reaction could be a very valuable guide in the treatment of the individual

7 The filtrate was used in a dilution of 1:100 as a skin testing substance on two and four week convalescents and gave consistently negative tests

8 Skin testing on sensitive and susceptible individuals is the only available means at the present time of determining the toxicity of the exotoxin. Although the laboratory animals do react, the effects are not sufficiently consistent to titrate the potency of the product

9 A 1:100 dilution of a filtrate produced from types 1, 2, 3 and 4 meningococcus was used to make skin tests of 2,000 newly enrolled CCC members, 37 per cent gave a skin reaction of one plus or greater

10 Although the filtrate that was used in the Tarkio epidemic did not appear as stable as the one we are developing at the present time, the skin test there indicates a trend from positive to negative

11 A filtrate aged 9 months in a refrigerator held at 50°C reacts on 10 per cent less of the same enrollees than one made nine months later

12 An opportunity to observe the change in skin tests after subcutaneous inoculation with full strength filtrate, after an interval of four months was offered at Camp Coffey and the trend was definitely from positive to negative

13 Among 395 individuals receiving meningococcus filtrate subcutaneously, none have developed meningitis even though in the Tarkio epidemic four cases devel-

TABLE 15—Reactions from Active Immunization with Exotoxin

| Dose | Amount Full Strength Filtrate | Reactions |
|--------|-------------------------------|--|
| First | 0.2 cc | All 86 men had sore arms. 21 had mild systemic reactions (the presence of these was difficult to determine owing to the high percentage of upper respiratory diseases). 1 had a moderately severe reaction (headache, backache, malaise, clear discharge from nose). |
| Second | 0.5 cc | 23 had local reactions. 18 had mild systemic. 0 had moderately severe. 2 had urticaria, mild, local near site of injection (no increase on third dose for moderately severe or urticaria reactors). |
| Third | 1.0 cc | Local and mild systemic reactions similar to 2d dose. No severe reactors. |
| Fourth | 1.5 cc | Only one moderately severe reactor. |

oped among those not immunized. Ten months has intervened since this immunization was first initiated

(a) The filtrate has been used in three outbreaks not reported in this paper with the same results as described

14 It is to be remembered that this is only a preliminary report and in order to prove the value of the meningococcus filtrate as a skin testing and immunizing agent it should be used in a large number of beginning epidemics and over a long period of time

Station Hospital

TRICHOMONAS VAGINALIS INFESTATION IN THE MALE

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PORTLAND, ORE

Since Donne's¹ description of the parasite *Trichomonas vaginalis* in 1836, the reports of numerous observers have emphasized its very frequent occurrence in women, in fact, a clinical entity known as trichomonas vaginitis is known to every physician. Furthermore, *Trichomonas vaginalis* was reported as a cause of infection in the renal pelvis by Lewis and Carroll² and later by Ayer and Neil³.

Cystoscopic bladder manifestations in women suffering with trichomonas infestation have been observed by Visser⁴ and others. I myself have observed two instances. During cystoscopy in an unmarried woman, aged 22, it was noted that the bladder neck, trigon and lower half of the bladder were diffusely reddened. Though *Trichomonas vaginalis* was found in the urine and vaginal secretion, the presence of a rather severe interstitial cystitis (Hunner's ulcer) precluded any accurate elucidation of clinical symptoms. In the second patient, a married woman, aged 22, previous cystoscopy for ureteral stricture revealed a normal bladder. A second cystoscopy some three weeks later revealed an intense bright redness of the entire bladder mucosa. Individual vessel markings were lost. The right and left ureteral orifices, other than being included in the generalized redness, were normal. No edema was present. Right and left ureteral catheter specimens were clear and showed microscopically only an occasional red blood cell. Cultures of ureteral specimens showed no growth. The bladder urine was clear and was acid in reaction, and tests for both albumin and sugar were negative. Microscopic examination of the uncentrifuged specimen revealed an occasional epithelial, pus and red blood cell, and motile trichomonads. *Trichomonas vaginalis* was of course present in the vaginal secretion. Careful questioning of the patient failed to reveal any symptoms referable to the urinary tract. Cystoscopy two weeks later revealed a normal bladder. *Trichomonas vaginalis* was absent in the urine but present in the vaginal secretion. Urinary symptoms such as dysuria, nocturia, or both, with some burning on urination may have been present, however.

The discovery by Miura⁵ in 1893 of *Trichomonas vaginalis* in the voided urine of a man aged 52 revealed its occurrence in the male. Miura's patient did not complain of urinary symptoms. Marchand⁶ reported an instance of *Trichomonas* in the male in 1894, and Dock⁷ also reported its occurrence before the turn of the century. Since then, rather sporadic reports have found their way into the literature. In 1924 Katsunuma⁸ reported *Trichomonas vaginalis* in the urine of a 3 year old boy, the source of the parasite was later found in the preputial sac, where it caused a redness and edema.

Čapek⁹ in 1927 first reported trichomonas urethritis in the male but also observed microscopic and macroscopic blood in the urine. Grimm's masterly description in his report of five cases of trichomonas urethritis leaves little to the imagination.

Riba and Perry¹⁰ reported two instances of trichomonas infestation of the prostate in 1929, antedating May¹¹ by almost two years. May did, however, prove through cystoscopy that the bladder need not be involved in trichomonas infestation of the prostate.

The only instance in which involvement of the upper urinary tract might be suspected in the male was reported by Rosenthal¹² in 1930. A widower, aged 72, developed symptoms of infection of the urinary tract five weeks after an operation for removal of gallstones. *Trichomonas vaginalis* was found in the urine and in one instance a renal cast containing a flagellate form was seen. Rosenthal, however, attributes the symptoms to the presence of *Bacillus coli-communis*.

Concerning the frequency of *Trichomonas vaginalis* in men, accurate statistics are not available. Indeed, the literature reveals a number of opinions of wide variation, which, however, on closer scrutiny merely enlarge our knowledge concerning *Trichomonas vaginalis* in the male.

On the one hand, 32,000 examinations of prostatic secretion in the Mayo Clinic¹³ revealed the presence of *Trichomonas vaginalis* sixteen times. Pelouze¹⁴ reported eight instances of prostatic infestation in four years. Lately Allen¹⁵ has reported six instances of prostatic infestation found by examining the husbands of patients having trichomonas vaginitis. On the other hand, Grimm¹⁶ was able to demonstrate *Trichomonas vaginalis* five times in a series of twenty-five cases of nonspecific urethritis. In our own series we were able to demonstrate *Trichomonas vaginalis* five times in forty instances of so-called nonspecific urethritis.

Finally Drummond¹⁷ reported four instances of prostatic infestation with *Trichomonas vaginalis* found by examining the prostatic secretion of five men whose wives were suffering from trichomonas vaginitis. Drummond reached the conclusion that "the male infested with *Trichomonas* usually presents no symptoms or physical sign" and that "it has been confused with other nonspecific discharges of the male urethra."

During the past eighteen months we have observed the occurrence of *Trichomonas vaginalis* in the male five times in forty instances of so-called nonspecific urethritis. The process was one of elimination.

CASE 1—A man, aged 23, had been married one year when he was seen, Dec. 27, 1934. He had had gonorrhea two and one-half years before. He had had no extramarital relations. He complained of a slight watery discharge, which had been present intermittently for six months. There were no other complaints. The family physician had been treating the patient for gonorrhea.

Examination revealed a very slight grayish watery discharge present at the meatus. Gram's stain of a smear showed only

1. Donne cited by Dock.
2. Lewis Bransford, and Carroll Grayson. A Case of *Trichomonas vaginalis* Infection of the Kidney Pelvis. *J. Urol.* 19: 337 (March) 1928.
3. Ayer E. W. and Neil J. M. Protozoa in the Urinary Tract. *J. A. M. A.* 94: 1489-1490 (May 10) 1930.
4. Visser, J. W. Vesical Infection with *Trichomonas vaginalis*. *J. A. M. A.* 92: 2098-2099 (June 22) 1929.
5. Miura K. *Trichomonas vaginalis* im frischgelassen Urine eines Mannes, Centralbl. f. Bakt. 16: 67-74 (July 9) 1894.
6. Marchand F. Ueber das Vorkommen von *Trichomonas* im Harn eines Mannes, nebst Bemerkungen über *Trichomonas vaginalis*. Centralbl. f. Bakt. 15: 709-720 1894.
7. Dock George. *Trichomonas* as a Parasite in Man. *Am. J. M. Sc.* 111: 4 (Jan.) 1896.
8. Katsunuma cited by Grimm.¹⁶

9. Čapek A. cited by Grimm.¹⁶
10. Riba L. W. and Perry Eugene. *Trichomonas Prostatovesiculitis*, *J. Urol.* 22: 563-571 (Nov.) 1929.
11. May Ferdinand. Prostatic Verursacht durch *Trichomonas vaginalis* Infektion. *Ztschr. f. Urol. Band* 26: 407 1932.
12. Rosenthal D. B. Urinary Infection with *Trichomonas vaginalis* in the Male. *M. J. Australia* 1: 782 (June 27) 1931.
13. Stuhler L. G. *Trichomonas vaginalis* Infestation of the Prostate Gland. Proc. Staff Meet. Mayo Clin. 8: 221-222 (April 12) 1933.
14. Pelouze P. S. *Trichomonas* Infestation of the Prostate. Urologists Correspondence Club, March 5 1934 p. 3.
15. Allen Edward Jensen L. B. and Wood I. H. Clinical and Bacteriologic Observations in *Trichomonas vaginalis*. *Am. J. Obst. & Gynec.* 30: 565-570 (Oct.) 1935.
16. Grimm O. Die *Trichomonas vaginalis* Urethritis beim Manne. *Dermat. Ztschr.* 59: 314-319 (Oct.) 1930.
17. Drummond A. C. *Trichomonas* Infestation of the Prostate Gland. *Am. J. Surg.* 31: 98-103 (Jan.) 1936.

a few gram positive cocci and a few pus cells. Under ordinary urethral irrigations and prostatic massage, the urethral discharge disappeared. Though *Trichomonas* was suspected it was not found, either in the urine or in the prostatic secretion.

The urethral discharge reappeared in February 1935, and the manifestations were the same as those just described. The patient was told to have his wife examined by a gynecologist for trichomonas vaginitis, but this he refused to have done. After a few weeks of routine treatment the discharge again disappeared.

In June 1935 the discharge again reappeared and *Trichomonas vaginalis* was found in the prostatic secretion and an occasional parasite was present in the urine. A few days later the wife was examined by a gynecologist and *Trichomonas vaginalis* was found to be present in the vaginal secretion in large numbers.

CASE 2—A married man aged 34 was referred by a gynecologist June 13 1935 because he had a urethral discharge and his wife was suffering from trichomonas vaginitis. The history, except that the patient had had gonorrhea in 1931 with no complications was negative. The patient admitted extramarital exposure eighteen days before. The patient's only complaint was the presence of a slight urethral discharge for the last two days.

Examination revealed a scant grayish watery urethral discharge when the urethra was stripped. Stained smears were negative for gonococci and only a few pus cells were seen. Irrigation of the anterior urethra was done with warm physiologic solution of sodium chloride in a small bulb syringe and immediate examination of the contents as a warm wet specimen was negative for *Trichomonas*. Both glasses of urine were clear, but there were some large shreds in the first glass. The urine was acid. The tests for albumin and sugar were negative and microscopically a few pus cells were seen but no trichomonads were present. The patient was placed on irrigations.

June 17 rectal digital palpation revealed a slightly enlarged prostate the right upper pole of which was firmer than normal. The seminal vesicles were not palpable. Immediate examination of a wet specimen of prostatic secretion mixed with physiologic solution of sodium chloride revealed numerous pus cells and some few motile trichomonads. Gram's stain showed some gram-positive cocci and numerous pus cells. The prostate was again massaged five days later and the patient was not seen again for some time.

July 10 the patient had an attack of acute prostatitis with frequency, dysuria and terminal hematuria for which he was treated palliatively at home.

August 24 the prostatic secretion was again examined and the specimen was negative for *Trichomonas vaginalis*. Further treatment for chronic prostatitis was carried out. Some half dozen prostatic fluid examinations have since been negative for *Trichomonas*.

CASE 3—A man, aged 19, single, seen Nov 30 1935 complained of a urethral discharge, burning in the urethra at the end of urination and frequency. He stated that he had had no venereal disease. The patient admitted a dozen exposures to the same girl, the last exposure having been Sept. 14 1935. The symptoms began about October 1 and consisted of hourly frequency, burning on urination and a yellowish discharge which stained the clothing. Gonorrhea was diagnosed by the first physician consulted but no treatment was given. The patient later came to Portland for further examination.

Examination showed a small amount of thin watery discharge at the external meatus. Gram's stain of a smear showed a number of gram-positive cocci and short gram-negative bacilli. Numerous pus cells were present. As there was not enough discharge for examination of a wet specimen the anterior urethra was irrigated as previously described and some active trichomonads could be made out. Both glasses of urine were cloudy and acid in reaction and tests revealed the presence of some albumin but no sugar. Microscopic examination showed numerous pus cells singly and in clumps and a few motile trichomonads. Urine cultures showed *Staphylococcus albus* and *Bacillus coli*. As the condition was somewhat acute the prostate was not examined, but there is no doubt as to its involvement. The patient is still undergoing treatment.

The girl in this instance has been treated for some time and is still being treated for trichomonas vaginitis.

CASE 4—A man aged 26 had been married two and one-half years when seen, Dec 2 1935. The patient has had a urethral discharge off and on for the last two years. He also complains of a slight burning on urination and an occasional dull aching pain situated in the right lower part of the back. The patient was treated by his family doctor in January 1934 and also in the summer of 1935 by weekly prostatic massage. He was told he had a nonspecific urethritis.

Examination revealed a very slight (practically absent) grayish watery discharge at the external meatus. Irrigation of the urethra revealed no trichomonads. The urine was acid, and tests for both albumin and sugar were negative. Microscopically only a few pus cells were seen. A few days later a few trichomonads were seen in the urine, the first glass being used. Rectal examination revealed a small prostate somewhat firmer than normal at the right base. The normal markings were preserved and the seminal vesicles were not felt. After a few examinations *Trichomonas vaginalis* was found in the prostatic fluid.

After the patient was found to harbor *Trichomonas vaginalis*, his wife was sent to a gynecologist, who found a rather severe trichomonas vaginitis, the discharge of which contained many active trichomonads.

CASE 5—A man aged 33 had been married one day when seen Dec 14 1935. He complained only of a slight urethral discharge since exposure to a woman other than his wife. He stated that he was told afterward by the woman that she had a disease but could not "understand the name." This exposure took place in August 1935. The patient also had sex relations with his wife the day before.

The history other than gonorrhea at the age of 16 and again in 1934, was negative. The patient's complaints were limited to the slight discharge.

Examination revealed a very slight grayish watery discharge in the external meatus. There was not enough discharge for a wet specimen so the anterior urethra was irrigated with physiologic solution of sodium chloride as previously described. Examination of this fluid revealed a few motile trichomonads. The urine was acid and the test for albumin showed a faint trace but the test for sugar was negative. Microscopic examination showed an occasional pus cell and an occasional red blood cell. After several examinations *Trichomonas vaginalis* was found in the urine.

Rectal examination revealed a small prostate with no abnormalities. The seminal vesicles were not felt. Two different specimens from the prostate failed to reveal *Trichomonas vaginalis*. The patient left in a few days for his home in Idaho so further examination was impossible.

It was of course impossible to examine the first woman, but the wife was sent to a gynecologist who found that she had a trichomonas vaginitis of some duration. The history might lead one to believe that the first woman had a trichomonas infestation. However, if one disregarded the first instance, assuming that the patient's discharge was due to some other organism it might then be assumed that the trichomonads found in the anterior urethra were due to the first marital exposure of the preceding day and that the changes in the anterior urethra and the first glass of urine and not in the prostatic fluid could be explained on a time basis. I am of the opinion, however, that the parasite was harbored also by the first woman and that further examination would have revealed its presence in the prostate.

I have presented five instances of *Trichomonas vaginalis* infestation in the male. Each patient complained of a slight watery discharge. I do not maintain that *Trichomonas* is the cause of the discharge, for indeed even in this small group there is evidence that the parasite is not a pus producer per se and that the presence of other organisms increases the discharge, as is shown in case 3 and again in case 2, in which the discharge continued, owing to chronic prostatitis, after examination had shown that the parasite had disappeared from the prostate. I do believe, however, that *Trichomonas vaginalis* is present in a fair percentage of the discharges of so-called nonspecific urethritis, and for this reason should be looked for as a routine.

Treatment of *Trichomonas* infestation in the male may be approached from the standpoint of prophylaxis against reinfection of the female. That *Trichomonas vaginalis* may be present in the prostate of the husband and serve as a source of reinfection of the wife is only too apparent. That the male may not be aware of his infectiousness is aptly illustrated by the fact that in the first instance on record, reported by Miura, there were no urinary symptoms. Later Allen's¹⁵ routine observations and the instances disclosed by Drummond¹⁷ are ample evidence of this. In my own cases the discovery of *Trichomonas vaginalis* in males who complained only of a slight urethral discharge, some being intermittent in character and easily overlooked except by the most fastidious, together with the added important factor of finding the parasite in the female in every instance in which it was previously diagnosed in the male is most convincing. Finally, the examination of the lower part of the urinary tract in women should be remembered, even though symptoms are absent when one is treating *Trichomonas vaginalis* in the female.

Therapy in the male depends on two factors, the eradication of the source of the infestation that is in the female and the location of the site of the infestation. Abstinence from sexual relations should of course be stressed during treatment.

Medical literature, especially the German, repeatedly describes a *Trichomonas* urethritis of long standing in which the prostate is not involved and the careful observations given seem to substantiate this. It would seem plausible, however, and my own observations and those of others would lead one to believe that if the infestation is one of long standing the prostate is the site of the infestation.

For urethral irrigations, Grimm,¹⁶ Balkow¹⁸ and others recommend mercuric oxycyanide 1:4,000 to 1:2,000. Riba recommends acriflavine hydrochloride, to which I am more favorably inclined.

Pelouze¹⁹ recommends prostatic diathermy, after which 1:3,000 acriflavine solution is injected into the bladder with a bulb syringe, also some of the solution is held in the anterior urethra for ten minutes. Pelouze states that no trichomonads have been found after the fourth treatment on alternate days, and in only one case was it present after the second diathermy. He insists, however, on six consecutive treatments and two more a week later.

Drummond¹⁷ advocates irrigating the posterior urethra with 1:8,000 metaphen and the injection of 3 cc of a colloidal silver preparation into the lateral lobes of the prostate, through a McCarthy panendoscope and specially devised intraprostatic needle.

For a better understanding of *Trichomonas* infestation, it may be said that the cycle of infestation is ostensibly different than in gonorrheal infection. In gonorrheal infection the female is infected by an infected male. She then infects other males. With *Trichomonas* no such condition exists. Here one is dealing with an infestation in which the exact mode of infestation is not clear but the incidence of which in both the married and the unmarried woman is comparatively high and not dependent to any large extent on sex relation for primary infestation. However, through sex relationships it may be transferred to a less fertile field in the lower urinary tract of the male.

Though the incidence of infestation in males is higher than statistics would lead one to believe, the difference of incidence between sexes is easily accounted for, anatomically by the close proximity of the rectum and vagina in the female and the less fertile field offered by the longer tubed male urethra, physiologically by the presence of the urinary stream in the male, biologically by the size and delicateness of the organism, pathologically by the comparative superficiality of the disease process, and finally by the fact that its widespread presence in the female is not dependent on sex relationships but possibly occurs by contamination from the intestinal tract.

233 Medical Arts Building

FLUID POSTOPERATIVELY

A STATISTICAL STUDY

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Since physicians have learned to give fluid intravenously without immediate ill effects, streams of fluid, literally, have been pumped into the veins of defenseless patients with very little actual knowledge of what becomes of it or of them. A recent article by Cutter¹ shows that in this country the choice of the kind of fluid to be used is largely sectional and therefore probably irrational.

It is barely two years since the Cook County Hospital established its "Solutions Laboratory." Prior to this the "Drug Room" prepared these solutions with commercial distilled water, and the incidence of "reactions" was so high that the staff doctors were afraid to order them so that but little of these solutions was used.

Now there are no reactions due to the solutions, chiefly owing to the fact that water that has just been distilled—but only once distilled—is being employed, and that sterilization follows immediately on preparation of the solution. The Solutions Laboratory now dispenses over 7,000 flasks a month, and the consumption is still going up. Hypodermoclysis and rectal administration of fluid have become practically obsolete. Whether properly so demands investigation.

In an endeavor to determine what becomes of these solutions and to what degree patients are benefited or possibly harmed by them studies have been going on—since the inauguration of this service—to secure data that might be of value in drawing conclusions. The present report is given at this time, even though it raises more questions than it answers with the hope that it may inspire similar studies elsewhere, for it is necessary that some of these questions be answered promptly.

THE QUANTITY

The amount of solution introduced has varied from 2,000 to 7,000 cc. In chart 1 the quantities are shown in the abscissa, while the height of the column or the figure on top of it indicates the number of patients in each group and the black portion of each the number that died. The curve in the graph indicates the percentage of deaths in each group.

This and the other graphs give the gross statistics including all kinds of seriously sick patients as secured

¹⁸ Balkow. Zur Bedeutung der *Trichomonas vaginalis* als Erreger einer kolpitis purulenta und der unspezifischen Urethritis beim Manne. *München med. Wchnschr.* 82: 331-332 (Feb. 28) 1935.

¹⁹ Pelouze. P. S. Personal communication to the author.

From the Cook County Hospital. Essential help was given in this study by Stella F. Walker, medical statistician of the Cook County Hospital by the registered nurse Cora Oesterblom and by the technician Ann Kane.

¹ Cutter, R. K. The Use of Large Volume Intravenous Injections. *J. A. M. A.* 106: 1250-1252 (April 11) 1936.

from the "Recovery Ward," to which all these are sent after operation for a day's special care. It will be noted that the average mortality rate of all these patients is about 10 per cent. The total postoperative mortality at this institution is, of course, much less than this, as only the sickest patients get "Recovery Ward" service.

The most charitable interpretation one can give to this graph is that "the sicker the patient, the more fluid he gets." The other possibility is that the more fluid the patient gets the worse are his chances of recovery. The truth probably lies somewhere between the two extremes.

In these graphs two series (A and B) of more than one thousand cases each are shown. Series A was studied during approximately the first year and series B during the second year of this study.

That there is a danger of overwhelming a patient's system with fluid becomes evident when one contemplates the table and chart 2. The table gives the percentage of fluid eliminated in the urine in relation to the quantity of fluid ingested during the first twenty-four hours postoperatively. It will be seen that there is a progressive decrease in the percentage of fluid eliminated as the quantity of fluid administered increases.

Chart 2 shows that the mortality rate is the higher, the lower the percentage of fluid eliminated in relation to that injected.

From it one can see that the smaller the percentage of the injected fluid that is eliminated, the greater the mortality rate. For patients who eliminated less than 10 per cent, the mortality rate has been 23.4 and 19 per cent respectively in the two series, about twice the average mortality rate, and from there on it declines in an almost straight line. Why this should be so requires further study. There are at least three possibilities:

- 1 The very sick patient cannot eliminate fluid freely and the sicker he is the less he eliminates. The retained fluid may be harmful.
- 2 The patients may have lost so much fluid during or after the operation that they had to retain most of it and died in spite of liberal intake.
- 3 The patients who died may have come to the operating room in so serious a condition of hypohydration that no amount of fluid could save them.

The question then is: Did the patients who died get too much fluid, not enough of it, or not nearly enough, or would they have died anyway owing to the hopelessness of their condition?

The answer to these questions can come only from a careful analysis of suitable statistics. These are not at present available. It is only on the basis of such analysis that it will be possible to decide how much fluid patients should receive postoperatively.

This much can be said from the data available that the patients of the first group, those who eliminated less than 10 per cent of the fluid injected and who died, had received fairly liberal amounts of it, as shown by the table.

Percentage of Fluid Elimination as Related to Quantity of Fluid Ingested During the First Twenty-Four Hours Postoperatively

| Cc. of Fluid Administered | No. of Cases | Lowest % | Highest % | Average % |
|---------------------------|--------------|----------|-----------|-----------|
| 0-500 | 14 | 0 | 37.5 | 19.14 |
| 501-2,000 | 12 | 22 | 154.5 | 42.66 |
| 2,001-3,000 | 127 | 0 | 80 | 19.31 |
| 3,001-5,000 | 82 | 0 | 70 | 16.75 |
| 5,001- | 21 | 2.9 | 34.3 | 14.28 |

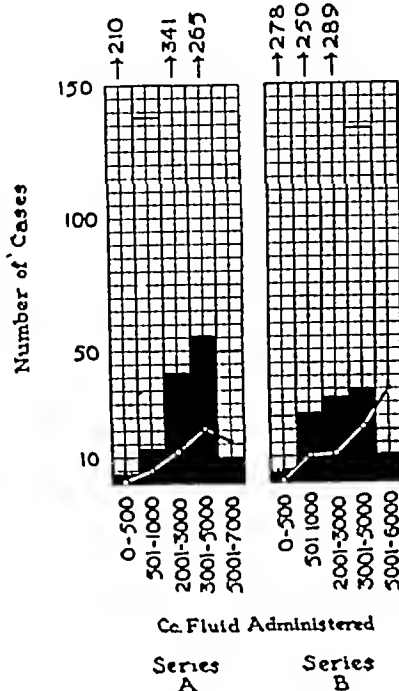
There is a progressive decrease in the percentage of elimination as the quantity of fluid administered increases.

As these quantities of fluid did not save the patients' lives, the question is: Might not a more moderate amount of fluid injected have put some of these patients into the second group, namely, those who eliminated 11 to 25 per cent of the injected fluid and whose gross mortality was only 11 per cent? It should be noted that the patients who received less than 500 cc of fluid lived. This was probably due to the fact that they were not very sick and that they had been given the fluid by mouth. Otherwise the doctor, in his anxiety, would have "pushed fluids" intravenously.

It should be pointed out here that, contrary to what one might expect, the intravenous injection of fluid is much less diuretic than is oral ingestion, for it is administration of fluid by mouth that is largely responsible for the cases of more than 100 per cent elimination of fluid shown in chart 2. All the patients with huge elimination (from 201 to 1,000 per cent) had fluid administered to them by mouth. All recovered, obviously because none of them were sick enough to demand parenteral fluid administration. That fluid absorbed through the alimentary tract has a diuretic quality has been shown previously (Starkenstein,² Dresel and Leitner³).

² Starkenstein E. Elimination of Water with Various Salt and H Ion Content. *Klin Wchnschr* 3: 1274-1275 (July 8) 1924.

³ Dresel, Kurt and Leitner Zoltan. Zur Physiologie des Wasserhaushalts. Veränderungen Flüssigkeitsaufnahme und ihre Beziehungen zur Milzfunktion und zur Diurese. *Klin Wchnschr* 7: 1362-1365 (July 15) 1928.



In all the graphs the black columns indicate the actual number of deaths in each group.

Chart 1—Mortality rate in relation to the quantity of fluid administered. The sicker the patient the more fluid he gets. Series A: 1,018 cases, 120 deaths. Series B: 1,016 cases, 108 deaths. Curve shows percentage of deaths in each group.

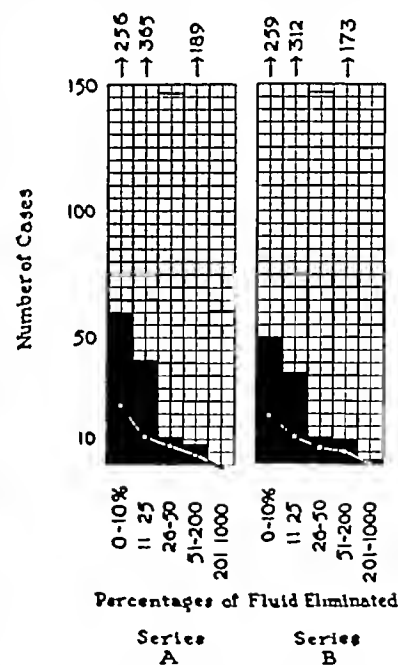
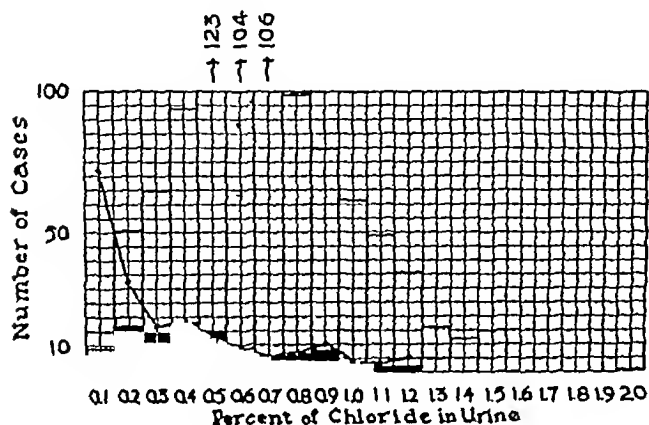


Chart 2—Mortality rate in relation to the percentage of fluid elimination to postoperative fluid intake. The sicker the patient the less of the injected fluid does he eliminate. Series A: 1,018 cases, 120 deaths. Series B: 1,016 cases, 108 deaths. Curve shows percentage of deaths in each group.

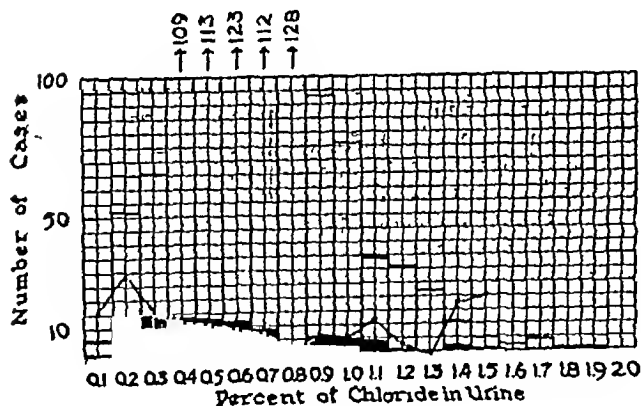
CHLORIDE

The relation of the death rate to postoperative chloride elimination is shown in chart 3, which again gives the two series of about 1,000 cases each of the first and second year's study respectively. Series A shows that the group of patients with less than 0.1 per cent of chloride in the urine that is passed after operation had a mortality rate of 75 per cent and that the mortality rate line then descends down to the lowest point in the 0.6 and 0.8 per cent groups respectively. From these points a tendency to a rise manifests itself.

It should be stated here that in the A series 5 per cent dextrose solution was the one most commonly used.



Series A



Series B

Chart 3—Relation of the mortality rate to postoperative chloride elimination. Series A—923 cases, 105 deaths. Series B—987 cases, 99 deaths. Curve indicates percentage of deaths in each group.

As it appeared from a study of series A that some of these patients might have died from salt starvation, the more or less routine use of a mixture of equal parts of physiologic solution of sodium chloride and 5 per cent dextrose was employed during the time the statistics were gathered for series B. This probably is responsible for the fact that the first group, the one passing less than 0.1 per cent of chloride in the urine, has almost disappeared. The relatively low mortality rate in this group in series B may be accidental and due to the small number of cases, for it will be noted that the height of the death rate line picks up and is 30 per cent in the second group, with elimination of less than 0.2 per cent of chloride in the urine, and that from there on the two graphs are similar to each other, with the exception that the rise in mortality rate in the range of the high percentages of chloride elimination

manifests itself more definitely. Apparently patients passing excessively concentrated urine also have a high mortality rate.

The high death rate in the low salt elimination groups may be due either to the patients who died not having been given enough salt, or not early enough, or that certain moribund patients are unable to eliminate salt in the urine.

The solution now used almost as a routine in this hospital contains 0.425 per cent sodium chloride and 2.5 per cent of dextrose. The total mortality rate of the two series (A and B) of chart 3 does not seem to favor this solution over that of pure dextrose solution. It may be that, as is shown by series B, lives that may have been saved at one end of the line were lost at the other end. There may be danger of overburdening the system with an excess of salt, as there also is danger from salt starvation.

As is shown by Cutter's article, the solution at present largely favored in this country is 5 per cent dextrose in physiologic solution of sodium chloride. Whether this is better than the solution employed at the Cook County Hospital remains to be demonstrated. A priori, there seems to be a decided possibility that such solution may introduce an unphysiologic amount of salt into the system. As each thousand cubic centimeters of fluid contains 8.5 Gm of sodium chloride, the patient who receives 5,000 cc of such solution would be given 42.5 Gm of salt in the twenty-four hours. This certainly seems an excessive ingestion for most patients. It is, on the other hand, possible that, in certain emergency operations on salt-starved patients, hypertonic solutions of sodium chloride, e. g., 3 per cent, might be of life-saving importance. Higher concentrations of salt should probably not be employed, because of their damaging effect on the intima of the vein, which favors the production of thrombosis.

SUGAR

The reason for the routine use of dextrose can probably be given on the ground of its importance in the prevention of starvation ketosis, for the postoperative patient is a starved patient. Common sense should dictate not to force more into the system than can be taken care of. Therefore, the moment the patient, receiving dextrose infusion, passes sugar in the urine it is obvious that his sugar tolerance has been overwhelmed. The sugar thus wasted gives no concern because sugar is cheap, but along with it there is wasted a considerable amount of the fluid that has been introduced with it, as each gram of sugar eliminated takes 20 or more cubic centimeters of fluid with it.

No one seems to know what the average sugar tolerance of the postoperative patient is. It is probably a highly individual matter. It is certainly not the average sugar tolerance of the normal individual, as is shown by chart 4, from which known cases of diabetes have been excluded.

It will be seen (chart 4, part B, solid line) that the more sugar that is injected the greater the percentage of sugar-positive urines. It will be noted from this line that about one third of all patients given between 100 and 149 Gm of dextrose in the twenty-four hours eliminated sugar in the urine. As this solution is injected in a routine way by means of drip phlebotomy and we are dealing with adult patients, it is obviously less than the accepted sugar tolerance for normal individuals, which on the basis of the work of Woodyatt,

Sansum and Wilder⁴ has been assumed to be above 0.8 Gm and below 0.9 Gm per kilogram of body weight hourly. Were this true a person weighing 70 Kg should tolerate 63 Gm of dextrose per hour.

The group given between 150 and 199 Gm in the twenty-four hours had glycosuria in more than one third of all cases, and in the group given above 200 Gm one half of all patients passed sugar. Chart 4 shows that the total mortality rate increases suddenly when the intake of 100 Gm is exceeded.

That this is not due to the loss of sugar in the urine is shown by part B chart 4 broken line which shows that the patients whose urine was sugar positive curiously enough had a lower mortality rate in the highest brackets than those who were sugar negative.

Part C, chart 4, broken line which indicates the percentage of deaths in those whose urines were sugar negative, rising as it does progressively as the quantity of sugar given increases points to one of two possibilities. Either this is due to the fact, first established in this study that "the sicker the patient, the more fluid he gets" or else there is intrinsic harm in giving very sick patients a large quantity of sugar. Even if the first-mentioned proposition is true it can be concluded that the large ingestion of sugar did not do them any good for all of the patients being discussed died.

RECOMMENDATIONS

Excepting in emergency hypohydrated and salt-starved patients must not be sent to the operating room. If it were a standing order that no patient should be sent to the operating room unless he had passed at least 1500 cc of urine in the preceding twenty-four hours and this urine contained at least 0.5 per cent of chloride, this requirement would be automatically met.

Patients who cannot be prepared in this way for the operative ordeal should receive special care during, as well as after operation to minimize the disadvantage from which they are suffering.

Patients who have undergone serious operations should have a salt and fluid balance sheet established for them in which the quantities of fluid administered and of urine eliminated are carefully recorded and a balance is struck at least every twelve hours to warn the attending physician of approaching danger.

The salt elimination in the urine should be estimated postoperatively and we have a very simple, roughly quantitative test for this purpose that can be carried out by any trained nurse or other intelligent person.

SIMPLE QUANTITATIVE CLINICAL TEST FOR CHLORIDE IN URINE

Place 10 drops of urine in a test tube. Add 1 drop of a 1 to 5 potassium chromate solution. The fluid will now assume a somewhat distinctly yellow color. Add drop by drop with the same dropper or one of the same caliber, a 29 per cent silver nitrate solution until a permanent and distinct color change to red-brown occurs (resulting from the formation of silver chromate). The number of drops required to produce the change of color expresses in grams the content of chloride per liter of urine.

Sugar should also be tested for in the urine not only preoperatively but postoperatively as well, and the

qualitative test probably suffices. When sugar is found to be present in the urine of a patient who is given dextrose, it is an indication that the patient is receiving more dextrose than he can take care of. If the patient is receiving large quantities of dextrose the obvious indication is to reduce the intake. If his intake has not been excessive, the administration of insulin may possibly be life saving, for some of these patients may have been rendered temporarily diabetic.

Such studies as these must be carried on extensively to answer the various questions raised as well as others that have not been touched on e.g., that of alkali balance before we may consider ourselves able to secure the maximum benefit with the minimum harm from this relatively new therapeutic measure. One thing is certain—less routinism and more individualization is desirable. Even if subsequent studies show that the mortality rate statistics were due to the patients' condition rather than to the use or nonuse of solutions, the data given are of value from a prognosis standpoint.

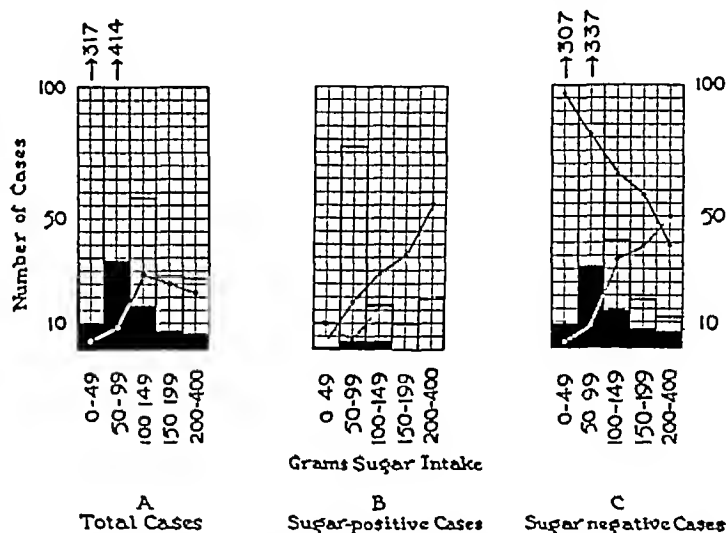


Chart 4—Relation of the mortality rate to sugar intake and elimination. The more sugar the patients get and the higher the mortality rate the more of them eliminate sugar in the urine. Part A Cases tested for sugar 844 deaths 74. Curve indicates percentage of deaths in each group. Part B Sugar positive cases 129 deaths 7. Solid line indicates percentage of sugar positive cases in the entire group of cases (844). Broken line indicates percentage of deaths in sugar positive cases. Part C Sugar positive cases 715 deaths 67. Solid line indicates percentage of sugar negative cases in the entire group of cases (844). Broken line indicates percentage of deaths in sugar negative cases.

CONCLUSIONS

- 1 There is a tendency among surgeons to give the more fluid, the sicker the patient.
- 2 The smaller the percentage of the injected fluid that is eliminated the greater the mortality rate.
- 3 Excessively low or excessively high salt elimination in the urine passed postoperatively carries with it a relatively high mortality rate.
- 4 The more dextrose that is injected, the greater the percentage of sugar-positive urines. The sugar tolerance of the patients after operation is less than that of the normal individual.
- 5 Proper preoperative preparation of the patient demands prevention of hypohydration as well as of salt starvation.
- 6 Postoperative use of fluids, to be properly individualized, demands observation of balance between fluid intake and fluid elimination, the determination of the percentage of chloride in the urine and the testing for the presence in it of sugar.

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⁴ Woodyatt R. T. Sansum W. D. and Wilder R. M. Prolonged and Accurately Timed Intravenous Injections of Sugar. J. A. M. A. 65: 2067-2070 (Dec. 11) 1915.

CALCIFICATION OF THE AORTIC VALVE

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Calcification of the aortic valve is not a newly discovered condition although one might gather from the recent literature that it was first described by Monckeberg in 1904. William Cowper¹ in 1706, however did not consider it unusual. He reported, in the case of "a spare man about 30 who languish'd with an Ulcer in the Thigh, attended with a Caries or Rottenness of that Bone at its Articulation with the Tibia and Patella, The three Semilunary Valves of the Aorta were somewhat thicker and not so pliable as naturally owing to a Bony or stony body." He described also the case of another man of about 40 whose "Left Ventricle was found larger than that of an ordinary One." The Valves of the Great Artery were Petrify'd, inasmuch that they could not approach each other. But an Orifice remain'd always open by the Petrifications." We have seen no more beautiful illustrations of the gross appearance of calcification of the aortic valve than those Cowper presented in 1706.

Excellent descriptions were also recorded by Vieussens² in 1715 and Morgagni³ in 1769.

Osler⁴ was quite familiar with calcification of the aortic valve at the time of the first edition of his textbook (1893). He recognized that it was much more common in men, usually elderly men. He proposed to divide the cases into "two groups, those with and those without arteriosclerosis." In discussing aortic incompetence, he said "Long before any signs of fail-

ing compensation, pain may become a marked and troublesome feature.

Attacks of true angina pectoris are more frequent in this than in any other type of valvular disease.

Sudden death is frequent." In regard to aortic stenosis, he wrote "The older the patient the more likely it is that the valves will be rigid and calcified.

Palpation reveals in many cases a thrill

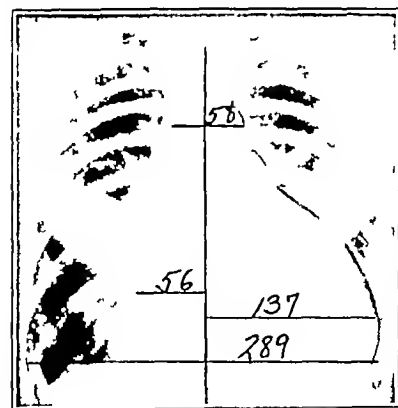


Fig 1—Teleoroentgenogram on Dec 10 1935. Tremendous hypertrophy of the left ventricle is shown. The transverse diameter of the heart is 19.3 cm, the transverse diameter of the chest is 28.9 cm.

at the base of maximum force in the aortic region. With no other condition do we meet with thrills of greater intensity." In his fourth edition (1901) Osler was more specific about rheumatism. "The valvulitis of rheumatism, while less rarely aortic, is common

enough in children, and insufficiency is caused by nodular excrescences at the margins or in the valves, which may ultimately be calcified." Further, he wrote, "in the endocarditic group in which the valve segments are united and often covered with calcified vegetations and excrescences, the systolic murmur is rough and may be accompanied by a thrill."

Interest in calcification of the aortic valve was revived five years ago with a report of forty-two cases observed at necropsy by Margolis, Ziellessen and Barnes.⁴ This was quickly followed by a discussion of the clinical aspects by Christian⁵ who announced that Sosman had perfected a technic for demonstrating



Fig 2—Multiple areas of calcification lying in the region of the aortic valve. Right anterior oblique view.

the calcification under the fluoroscope. Sosman and Wosika⁶ two years later described the roentgenologic technic in detail and reported twelve cases diagnosed in life. In 1934 Sparks and Evans⁷ added a case, as did Cooley.⁸ Last year Willius and Camp⁹ in a second paper from the Mayo Clinic announced the diagnosis during life of fifteen additional cases. It would appear that less than fifty cases of calcification of the aortic valve diagnosed during life have been reported in the literature and few have been followed to necropsy.

Boyd¹⁰ has said "The cusps of the aortic valve may be thickened, adherent to one another and

calcified. When this is associated with a similar lesion in the mitral valve it is probable that the condition is secondary to rheumatic endocarditis. Although it is not possible to be certain, it appears probable that the calcified nodular group is also due to a preceding rheumatic infection."

REPORT OF CASE

A well developed Negro aged 36 came to the dispensary on April 8, 1935, complaining of shortness of breath and swelling of the legs for several months and of pain in the chest over a number of years. This pain would come on after exertion, particularly after coitus, or at night following a full day's work. It began just within the left nipple and radiated up across the sternum often involving the left arm. Twice the pain had been so severe that he thought he was going to die. The pain, with palpitation and shortness of breath lasted usually from one to three hours. These attacks had been growing more frequent and more severe and since August 1934 there had been some edema and nocturnal cough.

From Emory University School of Medicine and the Grady Hospital Presented before the Fulton County Medical Society April 2 1936
1 Cowper William Of Ossifications or Petrifications in the Coats of Arteries, Particularly in the Valves of the Great Artery, Phil Tr Roy Soc (London) 24 197 1706 republished in Major R H Classic Descriptions of Disease, Springfield Ill Charles C Thomas 1932 p 307
2 These two papers can also be found in Major's book.
3 Osler William The Principles and Practice of Medicine, ed 1 New York, D Appleton & Co 1893 p 602

4 Margolis H M Ziellessen F O and Barnes A R Calcific Aortic Valvular Disease Am Heart J 6:349 374 (Feb) 1931
5 Christian H A Aortic Stenosis with Calcification of the Cusps J A M A 97 158 161 (July 18) 1931 Aortic Stenosis with Calcification, Internat Clin 3 51 54 (Sept) 1930
6 Sosman M C and Wosika P H Calcification in Aortic and Mitral Valves with Report of Twenty Three Cases Am J Roentgenol 30:328 348 (Sept) 1933
7 Sparks J V and Evans Courtenay Radiography of Calcification in Cardiac Valves During Life, Brit M J 1 1028 1029 (June 9) 1934
8 Brit J Radiol 7:463-466 (Aug) 1934
8 Cooley L E Aortic Stenosis with Calcification J Iowa M Soc 24 18-20 (Jan) 1934
9 Willius F A and Camp J D Clinical and Roentgenologic Comments on Calcareous Aortic Stenosis M Clin North America 19 487 497 (Sept) 1935
10 Boyd William The Pathology of Internal Diseases ed 2 Philadelphia Lea & Febiger 1935 p 49

Precordial bulging, a diffuse, heaving apical impulse and pulsation in the vessels of the neck were seen. Great cardiac hypertrophy and a systolic thrill at the base were also noted. The systolic blood pressure was 146, the diastolic 42, the pulse was 108. There was a loud, harsh systolic murmur in the second right interspace, transmitted across the sternum and up into the carotids. A diastolic murmur was loudest in the third interspace at the left border of the sternum. Slight pulsation was noted in the retinal arteries, which showed a minimal degree of sclerosis (Dr J R Paulk).

The electrocardiogram showed a rate of 100 with a normal rhythm. The PR interval was 0.24 and the QRS 0.12. In lead I the T wave was inverted, and in leads 2 and 3 the S wave was deep.

A diagnosis of aortic incompetence was made and symptomatic treatment instituted.

In May the patient was admitted to a veterans' hospital in another city. He was discharged November 23 and three days later he returned to the Grady Hospital. He said that the edema had cleared up promptly but that the "misery" over the heart and the aching in the left arm had persisted. At this time a more detailed history was secured. He had enjoyed perfect health until 1918, when on account of pruns in the ankles he

vigorous and "rocking." Viewing the cardiac shadow in the region of the atrioventricular junction through a small aperture revealed several distinct areas of calcification. These lay high and just to the left of the border of the spine in the direct postero anterior projection in the middle third and just above



Fig 3—The heart. The left ventricle occupies about three fifths of the anterior surface of the heart. Along the outer border of the left ventricle adherent pericardium has been turned back.

was admitted to an A E F hospital. On dismissal after six weeks he was told that there was "a little something wrong" with his heart. While at work in 1923 he suddenly became dyspneic and experienced dull aching over the heart, that night he suffered severe pain near the apex with orthopnea lasting about an hour. He was then able to make a living without much difficulty for the next six years in spite of occasional heart attacks, many aches and pains in his joints and back, and repeated gonorrhea. In October 1929 he was admitted to the urologic service. A junior intern noted, "over the aortic region the second sound is not heard, but there is a continuous blow until the next systole." The blood pressure was 116/60. After this cardiac symptoms varied sometimes for six consecutive months they would be mild. He consulted other physicians and several times entered government hospitals before returning to the Grady Hospital in 1935. "Fifty Wassermanns" had been reported negative.

In view of the long history, the intense thrill and the harshness of the systolic murmur in the aortic area, one of us thought that calcification of the aortic valve was present and referred him for roentgenologic verification.

Roentgenoscopy according to Sosman's technic showed marked cardiac enlargement, particularly of the left ventricle. The left atrium was not enlarged. The beat was regular,

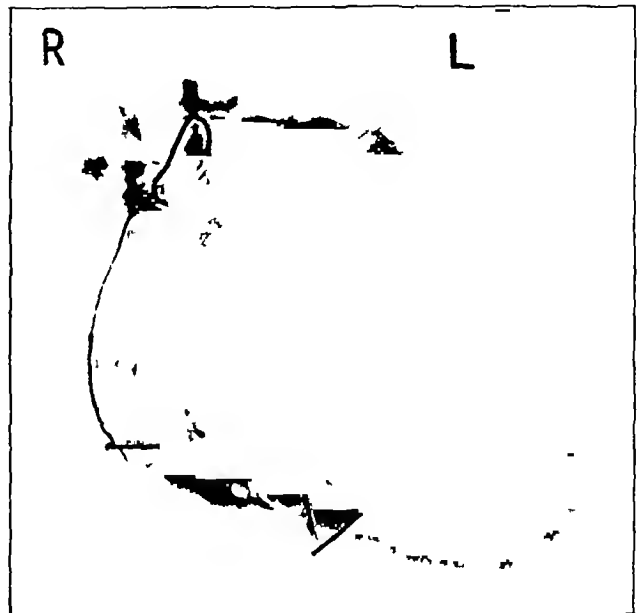


Fig 4—Roentgenographic appearance of the heart post mortem. A heavy wire ring is in the aorta just above the calcified valve. A fine wire separates the right border of the right ventricle from the atrium. The second wire was accurately placed at the left border of the right ventricle on the anterior surface. Note the thickness of the walls of the left ventricle.

a line drawn through the cardiac shadow along the atrioventricular junction in the right anterior oblique, and high and anterior in the left anterior oblique. The components of calcification moved synchronously and quickly toward the shadow of the base with each systole and returned slowly



Fig 5—The aortic valve from above. Arrows point to the peaks of the commissures. The right cusp, the left cusp and the posterior cusp are indicated by R.C., L.C. and P.C. respectively. The edges of the right cusp are largely obscured and the cavity of each cusp is black with retained blood. Note that the aortic intima is smooth and glistening. Natural size.

toward the apex in diastole. The aorta was normal. The shadows were recorded in films exposed one-twentieth second (fig 2). The diagnosis of calcification of all cusps of the aortic valve was made.

The patient was not willing to enter the hospital for intensive study until frightened by an anginal attack on Jan 21, 1936. During the two weeks of hospitalization, systolic blood pressure

ranged from 120 to 180, and the diastolic from 40 to 60. A second electrocardiogram revealed that the PR interval had increased from 0.24 to 0.36 second. Other reports were without interest.

On the night of March 30, after working all day, he suddenly complained of excruciating precordial pain and shortness of breath. He was dead when his car reached the hospital.

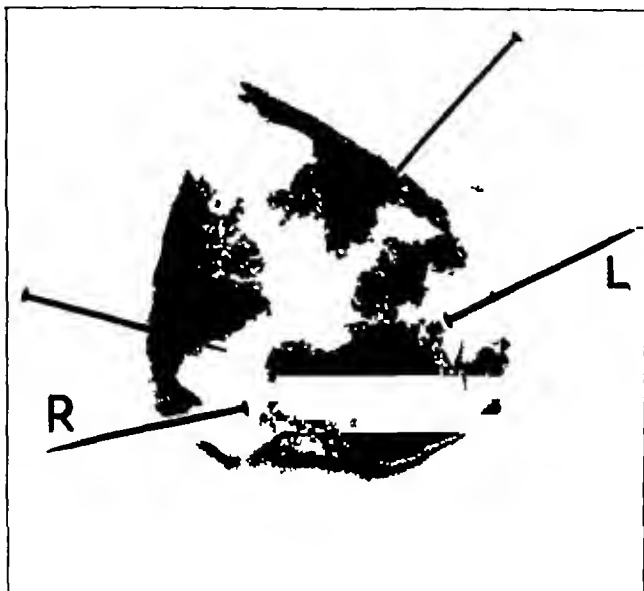


Fig 6—Axial roentgenogram of the excised aortic valve. Pins have been inserted to divide the cusps as in figure 5. The pin pointing to *A* lies in the right coronary artery, the pin pointing to *L* is in the left coronary artery but its point should be 16 mm lower to indicate direction of the artery. Natural size.

Necropsy was done after embalming. Except for evidence gross and microscopic of chronic passive congestion interest was confined to the heart. The heart weighed 1070 Gm. It measured 17.5 cm from apex to base, 13.5 cm across the base

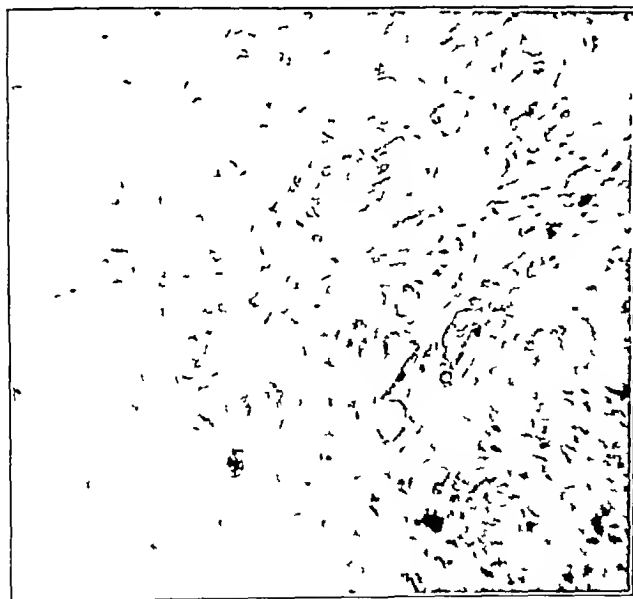


Fig 7—Myocardium under low power. Note the extensive fibrosis.

and 11 cm through the base. The left ventricle occupied about three fifths of the anterior surface, the apex of the right ventricle did not come within 5 cm of the apex of the heart. The greatest width of the right ventricle on the anterior surface was 6.5 cm. Just posterior to an artery on the border of the left ventricle a branch of the anterior descending ramus of the left coronary, the pericardium was adherent for 5 cm. The atria were neither dilated nor hypertrophied, the wall of each

averaging 4 mm in thickness. The foramen ovale was patent, forming a slit of 8 mm. The normal tricuspid valve measured 12 cm. The cavity of the right ventricle was small from the tricuspid ring to its apex measured but 7 cm. The conus arteriosus was prominent. The pulmonic valve was normal, its inner circumference measuring 9.4 cm.

The mitral ring measured 9 cm; the valve was thickened and scarred but not calcified. From the ring to the apex of the cavity measured 11 cm. The wall of the left ventricle and the interventricular septum was from 2 to 3 cm thick. The muscle was firm and there was irregular scarring throughout. The commissures between the aortic cusps were adherent and densely calcified (figs 5 and 6). The free edges were rolled and thickened but even after embalming could be moved 1 or 2 mm. The coronary ostia were widely patent but just distal to them there was sharp angulation of both arteries. The inner circumference of the right coronary 1 cm from the aorta measured 13 mm. Just proximal to the bifurcation of the left coronary its inner circumference also measured 13 mm. The branch adjoining the adherent pericardium was greatly nar-

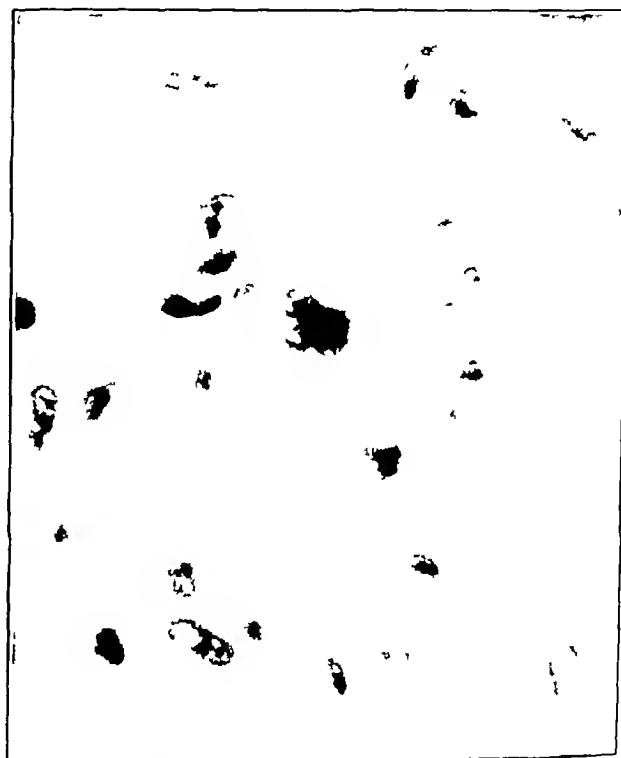


Fig 8—Appearance of an Aschoff nodule under high power.

rowed if not occluded but otherwise the coronary arteries showed no gross lesion. The inner surface of the aorta just above the valve measured 9.3 cm. The ascending aorta was smooth and glistening without gross changes. 2 cm above the valve it measured 8.3 cm. Just distal to the origin of the left subclavian the inner circumference of the descending aorta was only 4.4 cm.

Histologic study of the myocardium (by Dr Jack C. Norris) showed extensive fibrosis characterized by proliferating fibroblasts with a few lymphocytes (fig 7). Fusiform groups of fibroblasts intermingling with atypical epithelioid cells (fig 8) were diagnosed as quiescent Aschoff bodies.

COMMENT

Osler first divided cases of calcification of the aortic valve into "those with and without arteriosclerosis." In this case arteriosclerosis was singularly lacking in the retinal and coronary arteries, and in the aorta. From the history and microscopic studies we feel justified in saying that it belongs to the group Osler described as of rheumatic origin. We have diagnosed but one other case of calcification of the aortic valve, and this was in a man of 59 who is still living; it was typical of the

more common type. A calcified aortic valve is a matter of importance in differential diagnosis because in the South as soon as an aortic diastolic murmur is detected, particularly in a Negro, we are only too apt to make a diagnosis of syphilitic aortic insufficiency. One of us has studied more than 140 cases of the syphilitic type of valvular involvement but has not heard such a harsh murmur in any of them, nor has the occasional aortic thrill (noted by Corrigan) even been so intense.

The electrocardiograms gave evidence of severe myocardial damage and a serious prognosis. The "T-1 and S-2 combination" remarked on by Proger and Minnich, the bundle branch block and the increase in the PR interval.

It has often been said that the Negro is not subject to angina pectoris. Aside from the frequency of retrosternal pain in syphilitic cases we have noted cardiac pain in a number of cases of hypertension and arteriosclerosis and in one case of biventricular aorta with pulmonic stenosis. We have also seen several cases of angina in rheumatic heart disease although rheumatic heart disease is not common in Atlanta. This patient suffered from classic angina pectoris.

SUMMARY

In a Negro aged 37 with a long history of cardiac pain and a relatively short history of congestive heart failure the diagnosis of calcification of the aortic valve was made during life.

104 Ponce De Leon Avenue

DURATION OF FRACTURES AND OPERATIVE DEFECTS OF THE SKULL

AS REVEALED BY ROENTGENOGRAMS

(A FOLLOW-UP STUDY OF ONE HUNDRED PATIENTS)

MARK ALBERT GLASER M.D.

AND

EDWARD S. BLAINE M.D.

LOS ANGELES

The persistence of skull fractures and other cranial defects over a period of years as visualized by the roentgenogram, is not only of medicolegal importance but of great academic interest. In order to obtain some idea of the reaction of the skull to traumatic and surgical defects, 100 cases have been studied by repeated x-ray examination over a period of from one to ten years. Certain technical difficulties have arisen in this follow-up study, mainly the taking of x-ray films at similar angles of the original and the utilization of similar tube distances, milliamperage and voltage, as well as the time and temperature for film development. In certain shelving fractures or some depressed fractures great difficulty of x-ray detection was encountered because of the obliquity to the line of cleavage which necessitated the taking of numerous films. Attention was concentrated on all these points of technic, and efforts were exerted to duplicate such technic as nearly as possible. These traumatic and surgical defects which comprise this series, have been classified as follows:

1 Linear fractures

- (a) Linear fractures under 5 years of age
- (b) Linear fractures in adults

2 Depressed fractures

- (a) Depressed fractures without elevation of fragments
- (b) Depressed fractures with elevation of fragments
- (c) Depressed fractures fragments hammered out
- (d) Depressed fractures, fragments removed

3 Operative defects

- (a) Simple decompressions
- (b) Bone flaps with degeneration
- (c) Bone flaps without degeneration
- (d) Regeneration of osteoperiosteal graft
- (e) Degeneration of bone islands left in skull defects

LINEAR FRACTURES

(a) *Children*—In this series there are fifty patients with linear fractures, five of these occurring in children under the age of 5 years and the other forty-five in adults ranging in age from 18 to 58 years. In all the children the linear fracture entirely disappeared within six months after injury. On rare occasions the skull around the fracture becomes absorbed and a large bony defect becomes apparent. None of the cases in this series showed this situation.



Fig. 1—Linear fractures in a child

A child, aged 2½ years, fell from a two story window and was unconscious for two days (fig. 1). The original film reveals a linear fracture crossing the superior portion of the left and right frontal bone extending backward into the parietal bone, another linear fracture was present in the left parietal bone and extended into the squamous portion of the temporal bone thence into the base. Films taken five and a half months later failed to demonstrate any evidence of fracture.

(b) *Adults*—In the forty-five adults, very definite variations occurred. In one patient the x-ray evidence of fracture existed five years after injury, but films taken eight years after injury showed a complete disappearance. In another patient the disappearance of x-ray evidence was complete within a year after injury. In the majority of cases, however, fading of the fracture line commenced approximately eighteen months after injury and the fracture entirely disappeared in approximately four years. This marked variation in adults may be explained by the difference in the depth of the fracture as well as the amount of separation. A man, aged 45, was injured in an automobile accident. He was rendered unconscious and remained irrational for a period of four weeks. Roentgenograms taken Oct. 13, 1930, revealed a linear fracture of the left parietal bone, extending to the anterior part of the squamous portion of the temporal bone. A roentgenogram taken April 17, 1933, some two and a half years

11 Proger S. H. and Minnich W. R. Left Axis Deviation With and Without Heart Disease. *Am. J. M. Sc.* 189, 674-681 (May) 1935.
Read before the Radiology Section of the California Medical Association at the sixty-fourth annual session, Yosemite National Park, May 13 1935.

later, revealed a definite fading of the fracture but evidence of its existence was still present. This is characteristic of the usual skull fracture.

DEPRESSED FRACTURES

(a) *Without Elevation*—Depressed fractures have been divided into four groups each of these groups comprising six or less cases. A man, aged 57, fell from



Fig. 2—Note rounded appearance of depressed area.

a two-story building striking his head and was rendered unconscious. Films taken immediately after the injury revealed a depressed fracture of the temporo-



Fig. 3—Depressed fracture with fragments removed. The size of the defect is the same after a period of seven years.

parietal regions. Elevation was not carried out. Approximately a year and two months later x-ray films were again taken. In the lateral view the line of fracture had entirely disappeared. In the postero-anterior view (fig. 2) the rough lines are rounded and the appearance of a complete union of the fragments is

apparent. In these cases the roentgenographic evidence reveals extreme pathologic change, but in spite of this the fracture seems to heal better, roentgenographically, than a simple linear fracture. It is possible that the overlapping of bone and the close approximation of these depressed fragments are responsible for a more compact bony union than occurs in the linear cases.

(b) *Depressed Fractures with Elevation of the Fragments*—In this series of cases the fragments were elevated into position. None of these were removed. In all these cases evidence of depression or evidence of fracture were entirely obliterated in from two to four years. In the case of a man aged 29, receiving a depressed fracture of the right parietal region elevation was carried out. X-ray films taken four years later revealed entire disappearance of the fracture line with complete bony union.

(c) *Depressed Fractures with Fragments Hammered Out*—A man aged 38 was struck on the head by a timber receiving a large depressed fracture in the right

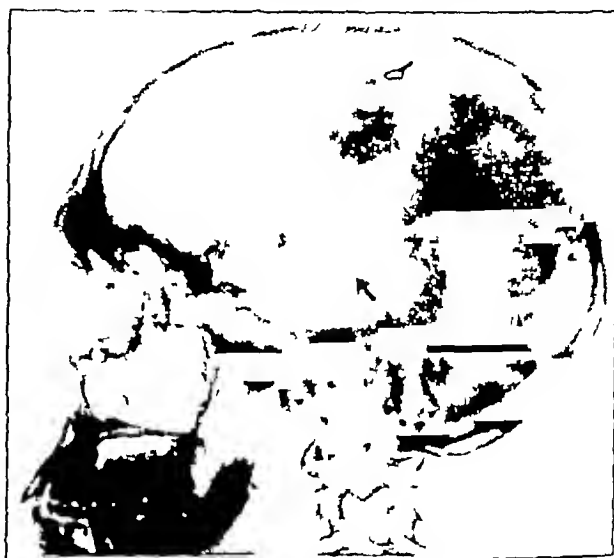


Fig. 4—Degeneration of a bone flap. Linear fracture present.

parietal region. A bone flap was turned down and the fragments were hammered out. Films taken nine months after the injury showed no evidence of depression with a complete disappearance of the fracture lines. Films taken four years later were the same, the flap being normal and showing no evidence of degeneration.

(d) *Depressed Fractures with Fragments Removed*—In cases with depressed fractures in which the fragments were removed the bony defect persisted (fig. 3). A man aged 32, was injured in an automobile accident, receiving a compound comminuted depressed skull fracture. The fragments were elevated and removed. Films taken seven years later differ in no way from the films taken shortly after operation, excepting that the bony edges have become smoother, the size of the defect has not decreased in any way.

OPERATIVE DEFECTS

(a) *Simple Decompressions*—Simple decompressions act similarly to depressed fractures with the removal of fragments. The bone never fills in and the edges become smooth and rounded. Cases in this series have shown bony defects extending as long as thirty years.

(b) *Bone Flaps with Degeneration*—A man, aged 29, was struck on the head with a blackjack, receiving a linear fracture of the skull. A subdural hematoma developed shortly afterward, for which a bone flap was turned down in another clinic. Films taken four months after surgery revealed a linear fracture as well as osteolytic changes in the entire bone flap with osteoporosis and large areas of complete disappearance of bone structure (fig 4). Films taken five and a half years after injury revealed a progressive loss of bone structure in the bone flap. Only a few islands of bone still remained and the fracture line had disappeared (fig 5). On palpation there is no evidence of softening, and the bony covering is firm and solid.

(c) *Bone Flap Without Degeneration*—Osteoplastic bone flaps of the skull turned down for tumor or hemorrhage usually do not degenerate. In this series of cases the majority appeared entirely normal and the outline was always apparent on the roentgenograms up to ten years after operation, the longest lapse of time in our series. On autopsy and secondary surgery no evidence of calcification or bony union was found between bone flap and skull. The flap was firmly held in place and united to the skull by heavy bands of fibrous tissue.

(d) *Regeneration in an Osteoperiosteal Graft*—A man aged 38 had a compound comminuted depressed fracture of the vault with a subsequent development of an extradural abscess. The depression was elevated, the fragments were removed and the abscess was drained. The patient made an uneventful recovery. One year later (fig 6) an osteoperiosteal graft was placed in situ. Films taken from time to time revealed a gradual formation of bone over the graft. The graft at all times was firm and solid.



Fig 5—Increasing degeneration of bone flap. Disappearance of fracture five and a half years after injury.

(e) *Degeneration of Bone Island Left in a Depressed Fracture*—A man, aged 43, was struck on the head by an iron hook, with a resultant depressed skull fracture, which was elevated in another clinic. Some of the fragments of bone were left in situ. Films taken two years later revealed a progressive absorption of these fragments. Palpation did not reveal any evidence of softening or irregularity.

From this study it will be seen that skull fractures heal quite differently than do fractures of the long bones. No visible callus forms and the healing is affected by the formation of connective tissue, which slowly becomes osseous as the result of the slow deposit of inorganic material. In none of these cases has there been any radiographic evidence of callus formation.



Fig 6—Fragments removed at first operation. An osteoperiosteal graft inserted. Note formation of bone islands in the graft.

The presence or absence of skull fracture, as visualized by the x-rays is of little or no importance in the prognosis of the case. We are primarily interested in brain injury and not skull fracture. The presence of fracture, however, is positive evidence that a definite blow has been struck and that an injury has been received. Thus radiographic evidence of fracture is an aid in eliminating malingering. Unfortunately, the public, including attorneys, place altogether too much emphasis on the existence of a fracture line. The results of this study will be of great aid in determining the difference between an old and a recent fracture. Furthermore, when there is a question of doubt as to the presence of fracture, films taken at a later date will help to show the status of the particular shadow in question.

From this study it is quite apparent that x-ray films taken from eight months to several years after injury are of equal value to those taken immediately after the injury in determining the presence or absence of skull fracture.

CONCLUSIONS

1. Linear fractures in children under 6 years of age disappear within six to twelve months after injury.

2. In the minority of cases, linear fracture in adults begins to fade from six to nine months after injury and disappears in from twelve to eighteen months. The majority, however, show fading from eighteen to twenty-four months after injury and entirely disappear from four to five years, rarely longer.

3. In depressed fractures without elevation, the fragments become rounded and unite, and the lines of fracture cannot be detected, though the depression is apparent.

4. In operative defects wherein the bone has been removed, or in cases of depressed fracture wherein the fragments have been removed, the cranial defect never becomes smaller, the only change being a rounding of the edges.

5 Bone flaps may either undergo absorption or appear normal

6 Bone grafts properly placed form a definite covering over the defect

7 In medicolegal cases of old and recent injury the approximate age of the existing line of fracture may be determined

8 The status of questionable fracture lines may be determined by their fading and disappearance

9 X-ray films taken from six months after injury in children to nine months after injury in adults are as valuable as those taken immediately after injury in determining the presence or absence of fracture

Roosevelt Building

BENZEDRINE SULFATE AND ITS VALUE IN SPASM OF THE GASTRO- INTESTINAL TRACT

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The problem of the muscular activity, normal and abnormal, of the gastro-intestinal tract is one that has intensely engaged the attention of physiologists, roentgenologists and clinicians. The alimentary canal is so linked up with the emotional state of the human being that every profound disturbance in mood, particularly any sudden shock of fear or disagreeable emotion is associated with marked changes in the activity and tonus of the digestive tube. This set of hollow organs rivals the circulatory system in its relationship to the affective life of man. Abnormal motor activity, especially spasm, is definitely caused by organic disease of the gastro-intestinal tract and, too, the gastro-intestinal tract responds by spasm and abnormal motility reflexly to diseases of other structures of the body. It is especially with spasm of functional organic and reflex type that we have concerned ourselves in this paper.

We shall not discuss in detail the physiology of the muscular activity of the gastro-intestinal tract. This is very complicated and in many particulars is still obscure. It may be stated that in a general way the action of the parasympathetic nervous system and of drugs of the parasympathomimetic type such as mecholyl and physostigmine increases the tonus and peristaltic activity of the stomach and intestine. On the other hand, the action of the sympathetic nervous system and of drugs of the sympathicomimetic group is to decrease tonus. This is true only as a general statement and has many exceptions, which depend mainly on the fact that these two divisions of the autonomic nervous system are in a state of equilibrium. Disturbances of the delicate balance between these two portions of the autonomic mechanism may be as important as sympathetic or parasympathetic stimulation. Also it is well established that the type and degree of stimulation, and the antecedent state of the organs before the application of the stimulus, play a very important part in determining the final result in increase or decrease of tonus and peristaltic activity.

Spasm in the gastro-intestinal tract is a major clinical problem, it is particularly important to the roentgenologist, as it occurs frequently and since it may be a very confusing and annoying factor in the roentgen examination of the stomach and intestine. Spasm may involve any part of the alimentary canal or several portions simultaneously, it may be of any degree, from slight and superficial to deep and extensive contractions, it may be of fleeting duration or persist intermittently or constantly for long periods of time. The deformities caused in the stomach and intestine by reflex or functional spasm may closely simulate organic disease and often make accurate roentgen diagnosis difficult or actually impossible. In other instances, spastic manifestations may mask or obscure the true pathologic process and lead to incorrect conclusions.

Spasm originates from diverse causes. It may result from (1) functional disturbances such as worry, dislike of the opaque meal, fear caused by the darkness and surroundings of the roentgenoscopic room, apprehension as to the result of the roentgen examination, and other psychologic factors, (2) the neuroses and psychoses, (3) intrinsic disease of the gastro-intestinal tract for example, cancer, peptic ulcer or appendicitis, and (4) extra-alimentary conditions such as renal colic, plumbism or tabes dorsalis.

Roentgenologists and clinicians have long felt the need of a drug or other means of abolishing spastic manifestations in the gastro-intestinal tract. If the spasm is due to psychologic factors reassurance is effective in a small percentage of cases. Massage of the abdomen and pressure over the stomach and intestine with the gloved hand during the roentgenoscopic studies may at times lessen or abolish the spasm, if there is local tenderness or rigidity of the abdominal muscles, these measures cannot be applied. Many drugs, particularly atropine and benzyl benzoate, have been used, but it is generally agreed that these are unavailing and their use has been practically abandoned.



Fig. 1—A before the administration of benzedrine sulfate the pylorus was markedly spastic. The duodenum filled only partially and the stomach emptied very slowly. B after the drug was given the spasm disappeared in about ten minutes and the pylorus and duodenum filled normally.

As discussed in a previous communication by Ritvo and Weiss,¹ a drug or other antispasmodic method which is to be of value to the clinician and roentgenologist should have the following characteristics: (1) The effect should be of sufficient duration to permit of thorough study, yet not unduly prolonged, (2) it should not cause unpleasant or dangerous reactions, (3) it should be rapidly and uniformly effective when

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The authors are indebted to Smith, Kline & French Laboratories for their generosity in supplying the benzedrine sulfate.

From the Division of Psychiatric Research, Boston State Hospital, Mattapan, Mass., aided by grants from the Commonwealth of Massachusetts and the Rockefeller Foundation and from the X-Ray Division of the Boston City Hospital.

1. Ritvo, Max, and Weiss, Soma. Physostigmine as an Aid in Gastro-Intestinal X-Ray Diagnosis. *Am. J. Roentgenol.* 18:301 (Oct.) 1927.

given orally, as some patients may object to injection methods, (4) the routine roentgen studies should not be interfered with and (5) it should be generally available and inexpensive.

We have studied the effect of benzedrine on the spastic states of the gastro-intestinal tract. Benzedrine is a synthetic derivative of ephedrine with the chemical formula $C_{10}H_{15}CH_2CHNH_2CH_3$. In the form of benzedrine sulfate it is stable and can be administered orally. It causes stimulation of the sympathetic nervous system and has been used successfully in the treatment of narcolepsy. Our study definitely demonstrates that benzedrine sulfate in nontoxic doses lessens or abolishes spastic manifestations of the gastro-intestinal tract within a few minutes.

In cases of pylorospasm, roentgen examination may be greatly interfered with, the opaque meal leaves the stomach only after considerable delay and then may pass out in such small spurts that the sphincter and duodenum do not fill sufficiently for satisfactory roentgenoscopic visualization. Ulcer craters and other pathologic processes may therefore be obscured and until the spasm disappears there is no way to determine with

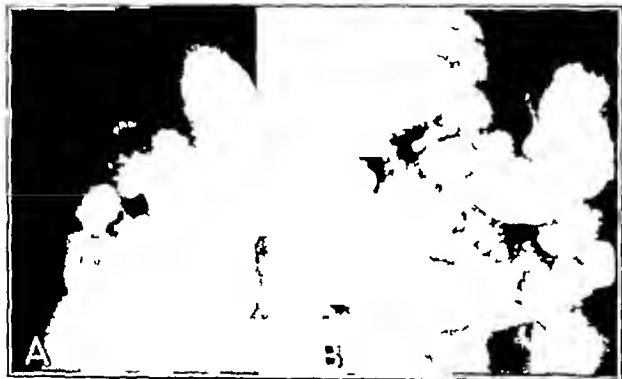


Fig 2—The examination before the drug was given revealed *A* a small contracted and irregular duodenum. There was spasm of the pylorus and duodenum with very slow emptying of the stomach. The manifestations suggested ulcer, however the duodenal outline was so poorly visualized that a positive diagnosis was not possible. *B* after the ingestion of 30 mg of benzedrine sulfate the spasm relaxed and the opaque meal filled the pylorus and duodenum clearly demonstrating a duodenal ulcer. Note that the stomach shows good tonus and peristaltic activity under the influence of the drug.

certainly whether or not there is intrinsic disease in the region of the pylorus. After the administration of benzedrine sulfate, the relaxation of the sphincter permits the passage of a broad stream of the barium sulfate mixture through the pylorus and duodenum. The nature and extent of the pathologic process may then be demonstrated with greater certainty and with saving of time and energy to both the patient and the physician, or, if the defects and irregularities that were present disappear under the influence of the drug, the presence of local disease can be definitely excluded. The drug has shown itself to be of especial value in the diagnosis and localization of peptic and duodenal ulcer. During the routine roentgen studies it is frequently impossible, even after the most careful and prolonged observation, to state more than that the pylorus and cap are contracted and fill irregularly. We have on numerous occasions in this type of case clearly demonstrated a definite ulcer crater after the administration of benzedrine sulfate.

Gastric tonus is affected to some extent by the drug, the effect being to lessen the tone moderately. Stomachs that were previously hypertonic become more nearly normal in this respect. The stomach with normal

or poor tonicity may, however, show little if any change. Peristaltic activity is diminished slightly, if at all, after the administration of benzedrine and in some instances may be increased. We had expected that a drug which abolished spasm would at the same time cause atonicity and a marked decrease or absence of peristaltic activity. This would be of distinct disadvantage both to the roentgenologist, who depends greatly on peristalsis in

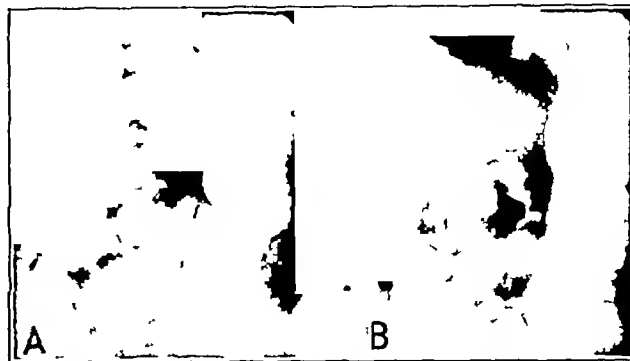


Fig 3—The examination revealed *A* a narrow, irregular pylorus with unsatisfactory visualization of the duodenum. Peristalsis was active but only very small amounts of the opaque meal passed through the sphincter during prolonged fluoroscopic observations. *B* after the administration of benzedrine sulfate the pylorus and duodenum filled well and the stomach emptied rapidly. An ulcerous crater in the region of the pylorus was distinctly visualized.

determining the constancy and extent of filling defects and irregularities in the stomach and duodenum, and to the clinician, who naturally does not wish to substitute atonicity and inertia for spasm. For example, during roentgen examination peristaltic waves pass through areas in which there is a filling defect due to extrinsic pressure or spasm, whereas with intrinsic lesions the waves are arrested or completely broken on reaching the process in the stomach wall. Therefore the fact that peristaltic action is not interrupted by benzedrine sulfate is of great clinical importance. The stomach actually empties more rapidly than normally under the influence of the drug, the relaxation of the

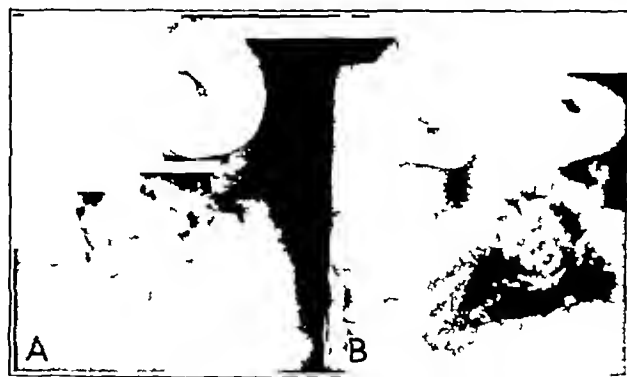


Fig 4—The examination without an antispasmodic revealed *A* a moderate degree of pylorospasm and a defect on the lesser curvature side of the duodenal cap which appeared constant. *B* after the giving of 30 mg of benzedrine sulfate orally a broad stream of the opaque mixture passed through the pylorus and duodenum and the deformity of the duodenal cap disappeared. The second and third portions of the duodenum showed angulation and displacement caused by adhesions from the gallbladder.

sphincter allowing the food to pass out of the stomach more rapidly than normally. This is in direct contrast to observations after the administration of ephedrine.²

2 Van Liere, E. J., Lough, D. H., and Sleeth, C. K. The Effect of Ephedrine on the Emptying Time of the Human Stomach. *J. A. M. A.* 106: 535 (Feb. 15) 1936.

In the intestine, the effects are similar in character to those described in the stomach. After the administration of benzedrine sulfate the lumen of both the large and the small bowel is increased, the haustrations become broader and shallower, and contractures or irregularities due to spasm diminish markedly or disappear entirely. The barium enema examination in cases of spasticity of the colon can be carried out more

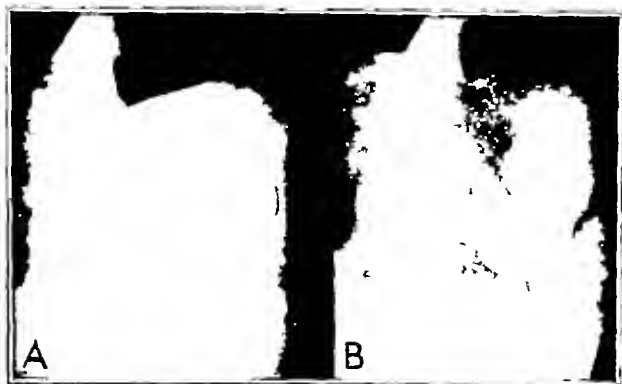


Fig. 5—The film before benzedrine was given showed *A* irregularity of outline and narrowing of the pyloric region. *B* after the drug was taken a large irregular filling defect typical of carcinoma involving the distal third of the stomach was clearly outlined. The extent and character of the lesion are visualized with much greater clarity and the diagnosis is made more certain by the use of the benzedrine sulfate.

rapidly and with much less discomfort to the patient when benzedrine sulfate is used, as the patient is enabled to retain the enema more satisfactorily after the abolition of the spasm. The drug has been found to be of value also in the treatment of spastic conditions of the colon.

The dosage for the average patient is 30 mg. of benzedrine sulfate orally, very stout patients may require 40 mg., while thin and very young individuals are given from 10 to 20 mg. The patient ingests the opaque meal, and roentgenoscopic observations are carried out as usual. If there is spasm that does not disappear after manual pressure, reassurance and the other customary maneuvers, the benzedrine sulfate tablets are given with a few sips of water. After from

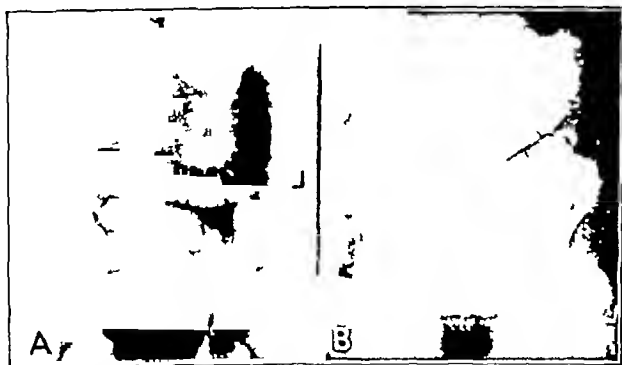


Fig. 6—The barium enema examination of the colon without the drug shows *A* a markedly spastic colon. The haustrations are deep and numerous. The caliber of the colon is very narrow. *B* after the administration of 30 mg. of benzedrine orally the haustrations diminish in number and depth. The colon is wider and distinctly less spastic than previously.

five to ten minutes the roentgenoscopic observations and taking of films are again carried out. The six hour, twenty-four hour or other desired observations are made as usual. In over 85 per cent of our cases, the drug has brought about satisfactory disappearance of the spastic manifestations. If the desired effect is not

obtained, we feel that it is preferable to repeat the examination with slightly greater dosage on a subsequent date rather than to give an additional dose. The effect begins in about ten minutes and reaches its height in from fifteen to thirty minutes, it lessens within an hour and gradually disappears.

Unpleasant effects may occur in a very small number of cases (about 2 per cent in our series) and consist of chilly sensations, flushing, diarrhea and general malaise. We have administered the drug to more than 200 patients and in only one instance was there a severe reaction. This patient had chills, nausea, collapse, restlessness and diarrhea, however, these symptoms did not occur until several hours after the drug was taken, and there is doubt in our minds as to whether the drug was responsible. There is a definite feeling of well being after the use of benzedrine sulfate; there may be sleeplessness or restlessness during the following night if the drug is administered late in the afternoon. The drug causes moderate rise in blood pressure (about 20 to 50 mg. of mercury) and we therefore recommend caution in its use in the presence of severe cardiac disease. On the whole we believe that the drug is nontoxic and in the doses recommended may be used



Fig. 7—The routine examination of the colon by opaque enema shows *A* a spastic contracted colon. *B* after the administration of benzedrine sulfate the colon is atonic with but few shallow haustrations.

safely wherever desired. In a series of several hundred patients given similar doses during the course of other investigations by Myerson and his co-workers, no ill effects were observed. There has been noted no idiosyncrasy to the drug in single doses except in some cases of mental disease.

SUMMARY

1 Benzedrine sulfate is a sympathicomimetic drug which has been found to be of great value in diminishing or abolishing spasm of the gastro-intestinal tract.

2 This effect is observed when the spasm is due to whatever cause, such as unpleasant emotion, organic disease of the gastro-intestinal tract, and reflex spasm due to disease elsewhere in the body.

3 This effect greatly facilitates the roentgen study of the gastro-intestinal tract, makes differential diagnosis between functional and organic spasm more certain, and gives better visualization of organic lesions.

4 The effect is almost immediate and is, on the whole, unattended with any side effects of importance.

5 Clinically it has been found useful in relaxing spasm, such as is found in spastic colitis and pyloric spasm, and this has been of therapeutic benefit to the patient.

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THE STATE OF THE STERNAL
BONE MARROWIN A CASE OF MACROCYTIC (PERNICIOUS)
ANEMIA OF PREGNANCYNORMAN HEILBRUN, MD
BUFFALO

Normal hematopoiesis depends among other things on the formation of an antinutrient factor, which comes from the interaction of an intrinsic factor found in the gastric juice and an extrinsic factor present in the diet.¹ The antinutrient factor which produced is apparently stored in the liver.² If there is a lack of intrinsic factor or extrinsic factor or if there is disease of the liver so that the antinutrient factor is not stored, macrocytic anemia will develop.

The macrocytic anemia of sprue has been studied and the relationship between it and true pernicious anemia both from the point of view of a lack of essential factors and the similarity of the bone marrow in relapse has been emphasized.³ Clinical studies have shown that in the macrocytic anemia of pregnancy there is a temporary lack of the intrinsic or the extrinsic factor.⁴ This brings about a blood picture similar to true pernicious anemia which therapeutically responds to substances containing the antinutrient factor. Adequate reports of the condition of the marrow in macrocytic anemia of pregnancy are few and somewhat inconsistent, the cases reported were seen in India. One author states that the marrow is mostly aplastic but that megaloblastic cells are present.⁵ Another⁶ reports that the marrow is hyperplastic and that non-granular mononuclear cells and myelocytes are greatly in excess. No studies of the state of the marrow of cases seen in the Occident seem to have been described. The case given here presented the opportunity of studying the sternal marrow of a young American woman with this condition. Biopsies were obtained both before and thirty-one days after treatment with liver extract was started.

METHOD

A small incision was made in the sternum between the third and fifth costal cartilages. The periosteum was elevated and a small button of bone removed with a trephine. Smaller fragments were obtained by means of a small curet. The periosteum was next sutured with fine catgut, and the skin was approximated with horsehair sutures. A tight bandage was then applied. The button and larger fragments were used for sections. These were fixed in Zenker's fluid and 5 per cent acetic acid, decalcified, embedded in paraffin, sectioned, and stained with eosin-methylene blue and Giemsa stain. Smears, prepared from the smaller fragments, were stained with Giemsa stain.

From the service of Drs. N. G. Russell and A. H. Aaron (First Medical) of the Buffalo General Hospital and the University of Buffalo School of Medicine.

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2. Goldhamer S. M., Isaacs Rapbael and Sturgis C. C. The Role of the Liver in Hematopoiesis. *Am. J. M. Sc.* 188:193-199 (Aug.) 1934.

3. Castle W. B. and Rhoads C. P. Observations on the Etiology and Treatment of Sprue in Puerto Rico. *Tr. A. Am. Physicians* 47:245-247 (1932). Rhoads C. P. and Castle W. B. The Pathology of the Bone Marrow in Sprue Anemia. *Am. J. Path.* 9:813-826 (Nov.) 1933.

4. Strauss M. B. and Castle W. B. Studies of Anemia in Pregnancy. The Etiologic Relationship of Gastric Secretory Defects and Dietary Deficiency to Hypochromic and Macrocytic (Pernicious) Anemias of Pregnancy and the Treatment of These Conditions. *Am. J. M. Sc.* 185:539-551 (April) 1933.

5. Balfour M. T. The Anemia of Pregnancy. *Indian M. Gaz.* 62:491-496 (Sept.) 1927.

6. Gupta N. The Anemia of Pregnancy. *Indian M. Gaz.* 67:421-432 (Aug.) 1932.

REPORT OF CASE

A white woman, aged 21, married, admitted to the First Medical Service of the Buffalo General Hospital April 24, 1935, had been delivered of a normal female child three months previously. She complained that for the past month she had suffered a loss of appetite, which had been accompanied by more or less continuous nausea and vomiting during the two weeks prior to admission, and that slight exertion brought on severe dizziness with spots and blackness before the eyes, followed by marked prostration. Precordial pain on exertion had been present a week and swelling of the ankles was noted two days prior to her entrance. However, with difficulty she had been able to carry on her work up to the day before admission.

During the last month of her pregnancy her appetite had begun to fail and she had eaten little more than a small daily portion of fruit and vegetables with meat once or twice a week. After term her appetite did not improve and during the four months before admission she had lived largely on milk and a small amount of fruit with little or no meat.

On admission she was extremely sick. Pallor and dyspnea were marked. All the accessory muscles of respiration were used. The temperature was 100.5 F, the pulse 120 and the

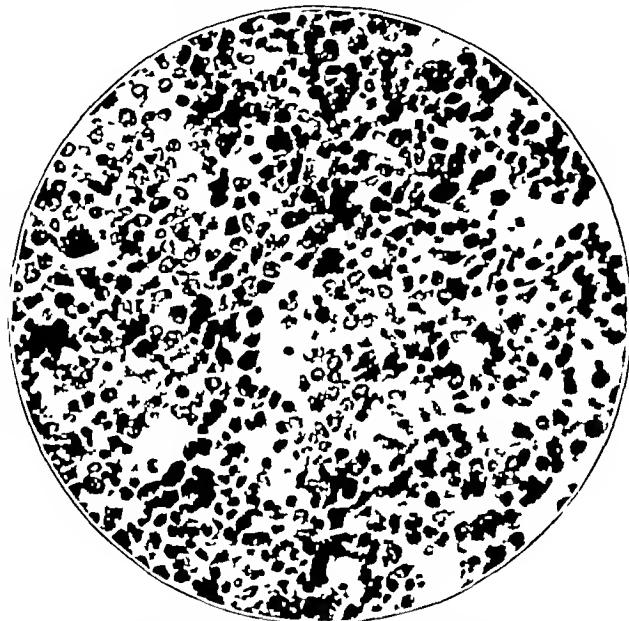


Fig. 1—Section of sternal marrow removed at biopsy before treatment was started. Note the absence of fat and the presence of great numbers of megaloblasts with a reduction of the normoblastic and myelocytic elements. (Low power)

respirations 26 per minute. The pupils reacted to light and to accommodation. Small flame shaped hemorrhages were present in both fundi. The tongue was pale and smooth, but no glossitis was present. Dental caries was present. Percussion showed that the heart was slightly enlarged to the left. A loud, harsh, systolic murmur was heard over the precordium and most intensely over the second left interspace. The blood pressure was 90 systolic, 40 diastolic. The liver was moderately enlarged and tender. Pitting edema was noted over both lower extremities, but there were no pathologic neurologic manifestations. The blood count on admission showed 450,000 erythrocytes with hemoglobin of 15 per cent by the Newcomer method. Examination of the stained smear revealed a macrocytic type of anemia, characterized by large oval cells well filled with hemoglobin which was in no respect different from that seen in true pernicious anemia. There was a slight leukopenia, but no abnormal white cells were seen. The icteric index was 25, and the quantitative van den Bergh test showed 14 mg. of bilirubin per hundred cubic centimeters of blood. The blood urea nitrogen was 39 mg. per hundred cubic centimeters of blood. The total serum proteins were 4.5 per cent, the albumin 3.1 per cent, and globulin 1.4 per cent. This low level of the proteins no doubt accounted in part for the edema that was present. The urine was of normal concentration. It showed a slight trace of albumin and a sediment containing many pus cells.

Urobilinogen was present in a dilution of 1 to 40. Vomitus obtained on admission showed the presence of free hydrochloric acid and pepsin.

A transfusion with 500 cc. of blood was performed soon after admission and the following day a sternal biopsy was made. Large doses of liver extract were then given intramuscularly daily during the first week and once a week thereafter. Marked improvement was noted during the first few days, and the patient made a progressive recovery. The blood examinations are listed in the accompanying table. The temperature ranged from 99.5 to 102 F. for about three weeks and gradually fell to normal at the end of the sixth week. During the first week hoarseness was noted, and a laryngoscopic examination revealed a complete paralysis of the left vocal cord which, however, had almost disappeared by October. From the table it is seen that there was a prompt reticulocytic response to the liver extract, and the count showed a steady increase in the red blood cells and hemoglobin. It is interesting to note that about six weeks after treatment was started, the marrow began to change from the macrocytic type to the more common microcytic hypochromic variety, it is not unlikely that both conditions were present in this case at the beginning but that the iron deficiency did not become apparent until the count reached the higher levels. At the end of June the patient was put on ferrous sulfate which she continued until the first part of August when the number of red cells and the hemoglobin concentration were within normal limits. She was not seen again until October. The count then revealed that the hemoglobin had dropped in spite of the steady increase in the number and size of the red cells. Ferrous sulfate was started again.

BIOPSY BEFORE TREATMENT

The smear stained with Giemsa stain showed numerous megaloblasts. The hemoglobin in the cytoplasm varied from none at all to almost normal concentration. These cells comprised at least half of all the nucleated cells. Normoblasts and granular leukocytes were present. The granular cells consisted of neutrophilic myelocytes, young polymorphonuclear

blasts with dense small nuclei, which were oval, round or clover shaped. The cytoplasm of some of these was slightly more abundant than others. Some were deficient in hemoglobin and stained grayish blue or had small purplish granulations in the cytoplasm. Here and there were megakaryocytes, the nuclei of which had the same characteristics as the primitive cells. There were some small deeply stained naked nuclei, apparently

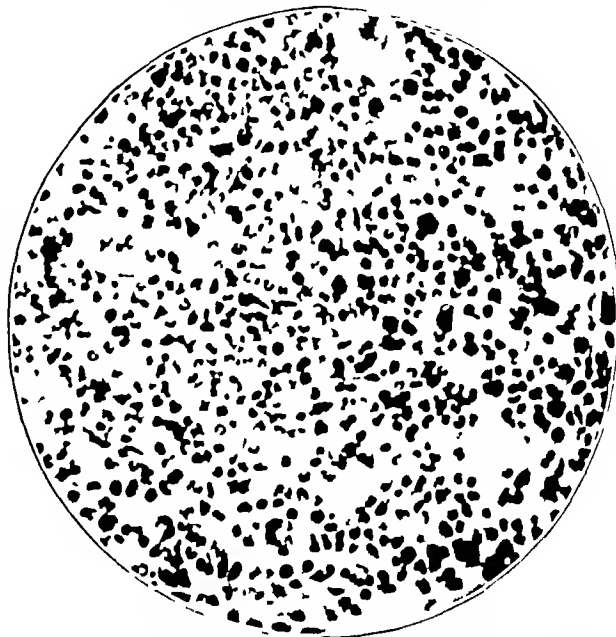


Fig. 3—Section of sternal marrow removed at biopsy thirty-one days after treatment was started. Note the large number of normoblasts, myelocytes and young polymorphonuclear cells. The megaloblasts are almost completely absent. (Low power.)

normoblastic in origin. Myelocytic elements were strikingly infrequent. The eosinophilic cells appeared to be slightly increased. Some had large oval nuclei and others the typical polynuclear lobulations. Histologically this was a distinctly abnormal marrow.

Blood Examinations

| Date | Erythrocytes | Hemoglobin % | Reticulocytes % | Hematocrit % | Volume Index | Color Index | Saturation Index |
|---------|--------------|--------------|-----------------|--------------|--------------|-------------|------------------|
| 4/25/35 | 4,000,000 | 15 | 2.7 | 7.0 | 1.66 | 1.00 | 1.00 |
| 4/26/35 | | | 2.2 | | | | |
| 4/27/35 | 7,900,000 | 20 | 2.7 | 11.0 | 1.66 | 1.29 | 0.84 |
| 4/28/35 | | | 4.7 | | | | |
| 4/29/35 | | | 6.4 | | | | |
| 4/30/35 | 1,580,000 | 33 | 8.7 | | | | |
| 5/1/35 | | | 18.4 | | | | |
| 5/2/35 | | | 24.8 | | | | |
| 5/3/35 | | | 23.0 | | | | |
| 5/4/35 | 1,130,000 | 36 | 20.7 | | | | |
| 5/5/35 | | | 27.8 | | | | |
| 5/6/35 | | | 22.7 | | | | |
| 5/8/35 | 1,010,000 | 30 | 20.1 | | | | |
| 5/9/35 | | | 10.0 | | | | |
| 5/12/35 | 2,140,000 | 42 | | | | | |
| 5/13/35 | | | 10.0 | | | | |
| 5/17/35 | 2,140,000 | 46 | | 23.0 | 1.10 | 1.01 | 0.92 |
| 5/22/35 | 2,600,000 | 42 | | | | | |
| 6/1/35 | 2,040,000 | 60 | | 32.0 | 1.10 | 1.14 | 0.96 |
| 6/3/35 | 3,500,000 | 72 | | 34.0 | 1.00 | 1.03 | 0.97 |
| 6/13/35 | 3,300,000 | 62 | | 33.0 | 1.08 | 0.91 | 0.80 |
| 6/23/35 | 3,300,000 | 62 | | 33.5 | 1.04 | 0.81 | 0.78 |
| 7/1/35 | 3,810,000 | 62 | | 33.5 | 0.89 | 0.83 | 0.93 |
| 7/8/35 | 4,360,000 | 73 | | 33.0 | 0.87 | 0.81 | 0.90 |
| 7/16/35 | 4,480,000 | 71 | | 33.0 | 0.92 | 0.8 | 0.84 |
| 7/23/35 | 4,650,000 | 71 | | 33.0 | 0.94 | 0.90 | 0.90 |
| 7/30/35 | 4,610,000 | 62 | | 33.2 | 0.94 | 0.90 | 0.90 |
| 10/4/35 | 4,610,000 | 74 | | 40.3 | 0.90 | 0.85 | 0.84 |

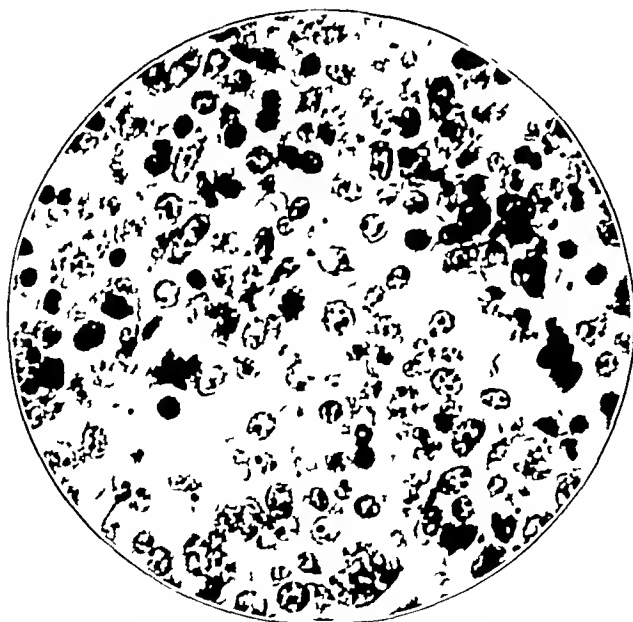


Fig. 2—Field from figure 1 under higher magnification. Note the large number of megaloblasts (round pale nuclei) almost in syncytial arrangement and the small number of normoblasts (round dense nuclei).

cells, and eosinophilic myelocytes and leukocytes. The latter seemed to be slightly increased in number. A few megakaryocytes were seen.

The section of marrow showed complete cellularity and an absence of fat. The microscopic appearance is illustrated in figures 1 and 2. Fully half the cells were large, with faintly staining nuclei and abundant pale blue cytoplasm. These were somewhat irregular in shape but the nuclei were round or slightly ovoid with one or two nucleoli. The cells seemed almost syncytial. There was a moderate number of normo-

BIOPSY THIRTY ONE DAYS AFTER TREATMENT

The stained smear was strikingly different from the previous one. Very few megaloblasts were seen. There were large numbers of normoblasts, many neutrophilic and eosinophilic myelocytes and many young neutrophilic leukocytes and eosinophils. These cells seemed to be in normal proportions. An occasional megakaryocyte was seen.

As in the first biopsy the marrow was completely cellular. The microscopic appearance is illustrated in figures 3 and 4. However, there was a very marked reduction in the number of immature red cells (megakaryoblasts), which were present only in small numbers in a few isolated areas. Some of these stained faintly pink. There were many more mature erythrocytes, and the number of normal nucleated red cells (normoblasts) was greater. The myelocytic elements were markedly increased above the number in the previous biopsy. There were many eosinophilic myelocytes and leukocytes and a great abundance of neutrophilic myelocytes and leukocytes. The megakaryocytes appeared to be about the same in number as before. The constituents were normal but the marrow was hyperplastic.

COMMENT

The material from the sternal marrow in this case indicates that in the macrocytic anemia of pregnancy the change is fundamentally the same as that in true pernicious anemia and in the macrocytic anemia of sprue.

During relapse, both in pernicious anemia and in sprue, the marrow is characterized by extensive cellularity, chiefly owing to megakaryoblastic proliferation with a diminution of normoblastic and myelocytic elements.⁷ On the administration of liver extract this megakaryoblastic proliferation ceases and the normoblastic and myelocytic cells return to their normal ratios. The changes are somewhat proportional to the degree of the anemia, i. e., the more severe the anemia the greater the megakaryoblastic hyperplasia. The sternal marrow in this case showed a similar megakaryoblastic hyperplasia with reduction in the normoblastic and granular elements and after therapy with liver extract showed a similar return to normal.

Strauss⁴ has pointed out that in the macrocytic anemia of pregnancy there is a failure in the formation

was found both in the vomitus and in the gastric juice. Wintrobe and Shumacker⁸ have recently suggested that the fetus in the development of its blood-forming tissues utilizes the antianemic factors elaborated by the mother. There is a definite macrocytosis of the red cells early in fetal life and as term is reached, the cells approach normal size. If the amount of antianemic factor formed is too small (owing to insufficient amounts of either intrinsic or extrinsic factors as shown by Strauss), and this is all utilized by the fetus, the maternal blood forming tissues are inadequately supplied. The soil for the development of macrocytic anemia in the pregnant mother is thus prepared.

CONCLUSION

The bone marrow in a case of severe macrocytic anemia of pregnancy was studied. It was found, first, that the bone marrow resembles that seen in true pernicious anemia and in the macrocytic anemia of sprue during relapse and, secondly, that under the influence of specific therapy the cell constituents return to normal, as has been found when pernicious anemia and the macrocytic anemia of sprue are treated in a similar manner.

40 North Street

Clinical Notes, Suggestions and New Instruments

PACHYONYCHIA CONGENITA

ELMORE B. TAUBER, M.D., LEON GOLDSMAN, M.D., AND
HARRY CLAASSEN, M.D., CINCINNATI

Pachyonychia congenita is a rare and uncommon condition. It is quite possible, however, that many cases are overlooked and they may be diagnosed as a simple congenital deformity of the nails. Most of the cases reported have been in children for the reason that this condition is a particular form of a congenital abnormality.

This particular syndrome includes more than deformities of the finger nails. The title of Jadassohn and Lewandowski's paper in 1906 'Keratosis Dissemuata Circumscripta Tylosmata and Keratosis Linguae' shows the essential features of this condition. Pachyonychia seems to be the constant symptom in all the cases reported. The others include bullae palmar and plantar keratoses, leukoplakia, anomalies of the hair, follicular keratoses of an acneform type especially on the knees and elbows, and dyskeratosis of the cornea. Heller¹ includes these changes under the term congenital dyskeratoses. Most of the cases seem to have been reported in males, chiefly Jews of Slavonic origin. Kumer and Loos² recently have studied a family of five generations and found thirty-four cases. From their cases and from a survey of the literature, they believe that pachyonychia congenita can be divided into three classes:

- 1 Type I Symmetrical keratoses of hands and feet with follicular keratoses of body.
- 2 Type II Symmetrical keratoses of hands and feet, follicular keratoses of body and leukokeratoses oris, this is the commonest type (typus Riehl).
- 3 Type III Symmetrical keratoses, follicular keratoses of the body and corneal changes.

The recent reports in the American literature of Diasio,³ Sohrweide⁴ and Andrews⁵ give excellent summaries of the

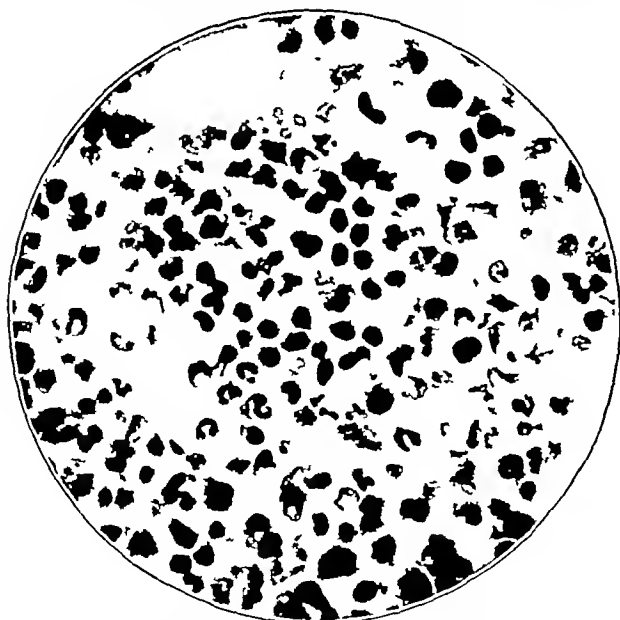


Fig. 4.—Field from figure 3 under higher magnification. Note the cluster of normoblasts just above the center. This is surrounded by myelocytes and young polymorphonuclear cells.

of antianemic factors similar to that in true pernicious anemia except that this failure is only temporary. This deficiency of antianemic factor may be the result of a lack either of the extrinsic factor in the diet or of the intrinsic factor in the gastric secretions. The diet in the case reported was deficient. Free hydrochloric acid

⁷ Rhoads and Castle³, Peabody, F. W., The Pathology of the Bone Marrow in Pernicious Anemia, *Am. J. Path.* 3: 179-202 (May) 1927.

⁸ Wintrobe, M. M. and Shumacker, H. B., Jr., Comparison of Hematopoiesis in the Fetus and During Recovery from Pernicious Anemia. Together with a Consideration of the Relationship of Fetal Hematopoiesis to Macrocytic Anemia of Pregnancy and Anemia in Infants, *J. Clin. Investigation* 14: 837-852 (Nov.) 1935.

¹ Heller, Julius, Die Krankheiten der Nagel, *Handbuch der Haut u. Geschlechtskrankheiten*, Berlin, Julius Springer, 1926, vol. 13.

² Kumer, L. and Loos, H. O., Ueber Pachyonychia congenita (Typus Riehl), *Wien klin. Wchnschr.* 6: 174 (Feb. 8) 1935.

³ Diasio, F. A., Pachyonychia Congenita, *Jadassohn Arch. Dermat. & Syph.* 30: 218 (Aug.) 1934.

⁴ Sohrweide, A. W., Pachyonychia Congenita, *Arch. Dermat. & Syph.* 32: 370 (Sept.) 1935.

⁵ Andrews, G. C., Pachyonychia Congenita, *Arch. Dermat. & Syph.* 33: 183 (Jan.) 1936.

literature and add three new American cases. The case reported here combines all the features of pachyonychia congenita. This case was overlooked for a long time, being considered an atypical type of epidermolysis bullosa presenting nail deformities, chiefly because of the prominence of the bullae on the extremities.

REPORT OF CASE

The diagnosis in this case was made at the Mississippi Valley Central States Dermatological Conference in Cincinnati, Nov

ments, calcium and viosterol. The recent addition of the x-rays to the therapy, one erythema dose in divided doses, gave the patient great relief for a time.

Examination of the patient shows that she is well developed, of the brunette type. The skin in general, especially over the extremities, is dry and scaly. There is a mild papulopustular acne of the face. The finger nails show wrinkling and thickening and, for the most part, are deformed completely. The toe nails exhibit the same changes, perhaps a little more exaggerated. There is also a small amount of deformity visible on the great toe on the left. Scattered over the soles of both feet are large, oval, oozing areas covered with a red, smooth, moist base. These lesions have a foul odor. No inflammatory reaction has been noted about these lesions. There are similar lesions over both heels. On the lateral aspect of the right foot, and in the mesial aspect of the left foot, are thin bluish-like scars representing healed areas. Sweating of the hands and feet is present, though not marked. Dermoglyphism is not present. Nikolsky's sign, even on the plantar surfaces of the feet, is negative. The mouth is normal except for the tongue, which shows definite atrophy and whitish leukoplakial areas along the lateral portion. The buccal mucosa is normal. Palpation shows no thickening. Vaginal examination was not done. The remainder of the physical examination was negative. Repeated examinations were negative for fungi on the nails of the hands and feet. Smears of the oozing skin lesions show staphylococci.

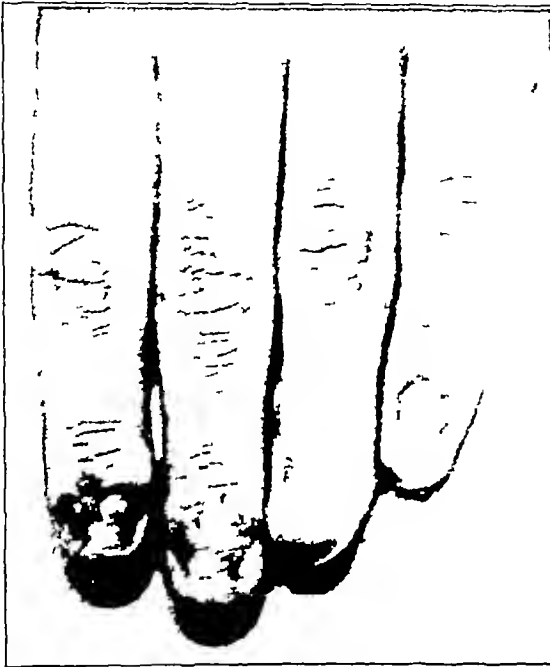


Fig 1—Deformity of nails and thickening of derma

16, 1935. A Jewish girl, aged 20, had had since birth thickening and wrinkling of the nails of the hands and feet. Shortly after birth also some dryness of the skin was noted. In 1930, painful blisters appeared spontaneously over the soles of the feet and

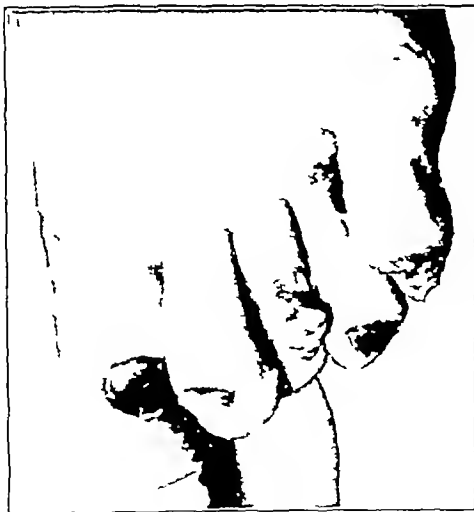


Fig 2—Nails are deformed, thickened and wrinkled

about the toe nails. About this time also the patient complained of some slight burning of the tongue. No blisters appeared on any other surface of the body or about the hands at any time. In 1932 the large toe nail on the left foot was removed surgically. Since 1930 the lesions on the feet have shown some slight improvement. Some of the large bullae have healed completely. The therapy has consisted of various mild local oint-



Fig 3—Scars on side of right foot

The patient has been under observation for some time and the nails show no definite improvement, but there has been some spontaneous healing of many of the small bullous lesions about the toes and of several of the larger lesions on the plantar surfaces of the feet. The patient believes that she got the greatest relief from roentgen therapy. At the present time she is wearing a special shoe and a protective cotton boot.

COMMENT

This case then, showed pachyonychia palmar and plantar keratoses, mucous membrane changes, and a generalized degree of mild ichthyosis. Our patient was disturbed, outside of cosmetic disfigurement, by the presence of the large, painful bullae, which so frequently became secondarily infected. During the period of observation of the patient we could watch the spontaneous healing of some of the bullae. From the pathogenesis of this condition repeated trauma and friction seem to be a predisposing factor for the development of these bullae. With the institution of bed rest, elevation of the feet, and protection of the feet with cotton boots, and special shoes when walking the patient secures some relief. Because of the presence of areas of leukoplakia in her mouth the patient was cautioned about the importance of good dental care, the avoidance of tobacco and any irritating articles in her diet. In the reports in the literature, no cases of malignancy superimposed on this condition have as yet been described.

19 West Seventh Street.

DIVERTICULUM OF THE PROSTATIC URETHRA WITH STONE

J. HAROLD CLARK, M.D., NEW YORK

Diverticula of the prostatic urethra, whether congenital or acquired, are exceedingly uncommon. A search of the literature reveals some half dozen cases that may be considered authentic.

A man aged 53, a plumber, seen in November 1932, had been suffering acutely for several days from an overdistended bladder from which the urine was being expelled in drops and with great difficulty.



Fig 1—Cystogram showing extravascular position of stone

The past history revealed nothing of interest to this report beyond a gonorrheal infection when he was about 20, which was followed by the characteristic story of stricture and periodic relief obtained by the ancient method of rapid expansion.

He was removed to the hospital, where gradual dilation of the strictured urethra was instituted and a physical examination

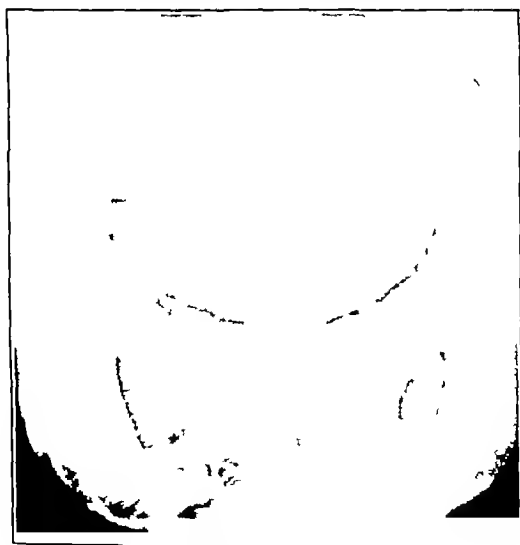


Fig 2—Cystogram and urethrogram showing diverticulum of prostatic urethra

revealed also an infected urine, a four plus Wassermann reaction and, according to the x-ray report, a stone in the bladder.

He was told on leaving the hospital that after the stricture had been sufficiently dilated and the syphilitic condition favorably influenced by treatment, the stone could be removed.

Since the patient was willing and cooperative, the treatment outlined was successfully carried out and in July 1934 a cystoscopic examination was made to check the roentgenographic observations. The examination showed a pale dull trabeculated bladder with two small apertures behind the right ureter mouth but no stone.

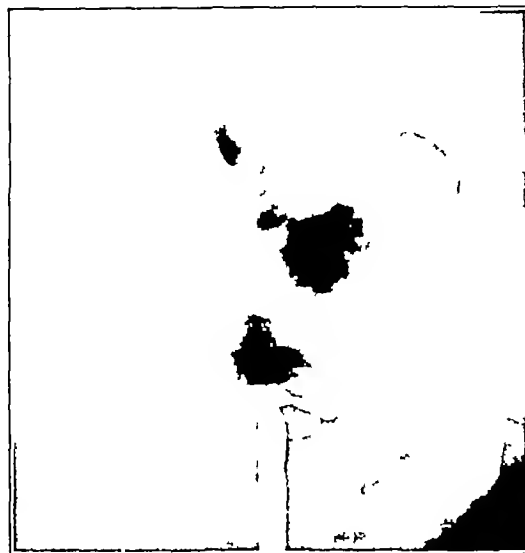


Fig 3—Urethroscope in prostatic urethra with catheter passed into cavity of diverticulum

A new set of stereoscopic roentgenograms was then made by another technician and the report was again made of stone in the bladder. Comparing these plates with the original pictures of one and one-half years before, nothing of interest was noted except the fact that the shadow had assumed a lengthwise instead of a transverse position.



Fig 4—Urethroscope in prostatic urethra with flexible forceps passed into cavity of diverticulum

After another negative check-up cystoscopy a number of cysto-urethrograms were made which clearly revealed not only a small vesical diverticulum but a large prostatic urethral diverticulum. This group demonstrated the fact that the stone shadow was extravascular.

A urethroscopy was then done, which showed with brilliant clarity the orifice of the prostatic urethral diverticulum. This opening was about one-fourth inch in diameter and to the left of the colliculus and in the middle of the lateral sulcus, about half an inch below the level of the utricle and ejaculatory ducts. It was a simple matter to pass a ureteral catheter into this pouch for a distance of an inch or more.

On a subsequent day the patient was prepared for operation. This was preceded by a preliminary urethroscopy and an attempt to pass a flexible forceps into the diverticulum on the chance of clicking against the stone and possibly grasping and withdrawing it, thus obviating an open operation. This not succeeding, the urethra was opened, under spinal anesthesia and with the finger the stone was easily milked out of the pouch and delivered. Digital examination revealed the diverticulum to be a patch pocket affair, which might easily have been removed had I not reasoned at the time that with restored urethral caliber and drainage this would be of no particular advantage.

The wound was healed and the patient was out of the hospital in a week, no better or worse than he was before, as neither the diverticulum nor the stone had ever given him any uneasiness.

The pathologist's report stated that the calculus was very hard, covered by a thin brown layer under which the center was chalky white. The outer layer was composed of cellular debris and urates. The core and main bulk were calcium carbonate with a little earthy phosphate.

As the pyuria did not entirely clear up during the succeeding two or three months I decided to obliterate the wall of the sac by fulguration. This was very simply carried out in two sittings.

This diverticulum seemed clearly to be of the acquired type and it was occasioned by the urinary back pressure brought on by a distal urethral stricture. It seems probable also that the opening of a prostatic duct was the starting point of the diverticulum.

140 East Fifty-Fourth Street

ELIMINATION OF CONFUSING GAS SHADOWS DURING CHOLECYSTOGRAPHY BY THE USE OF PITRESSIN

E. N. COLLINS, M.D. AND J. C. ROOT, M.D., CLEVELAND

The recent publication by K. I. Melville¹ on the 'Pressor and Oxytocic Fraction of Posterior Pituitary Extract' prompts this preliminary report of our experience with the use of the

pressor fraction of posterior pituitary extract (pitressin) in selected patients having cholecystographic examinations. In the course of 600 cholecystographic examinations the use of this preparation was deemed advisable in seventy-three instances.

Confusing densities in the right side of the abdomen, usually in the intestinal tract constitute one of the most common handicaps to the accurate interpretation of cholecystograms even though cleansing enemas are used as routine procedures. Not uncommonly more gas is found in the intestinal tract after enemas have been used than was present before their administration.

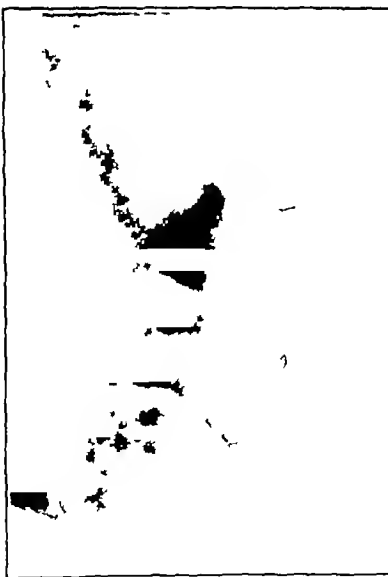


Fig. 1—Cholecystogram made fourteen hours after oral administration of 5 Gm of sodium tetraiodophenolphthalein.

We have found the use of pitressin more effective than the use of enemas. It is a simpler procedure, requires less time, is less troublesome to the patient, particularly if not in a hospital

and has not been attended by any unpleasant reactions. It has precluded the necessity for reexaminations in numerous instances.

METHOD

Details of our routine cholecystographic examinations have been published elsewhere.² The single dose oral method is used, but in those instances in which nonvisualization occurs, a second dose of the dye has been given the second night even though studies of the stomach and small intestine following a barium sulfate meal have been made in the meantime. In the absence of cardiovascular contraindications we now use one ampule (10 pressor units) of pitressin as a routine in cases in which confusing shadows in the right side of the abdomen interfere with the accurate interpretation of the cholecystograms. Additional cholecystograms are made from forty-five to sixty minutes after the injection of the drug. The increased tone of the intestinal tract after the administration of pitressin has permitted accurate study of the gallbladder area even though the colon contains barium sulfate. There has been no apparent interference with roentgen studies of the stomach and duodenum in which the barium sulfate meal is used or in examinations of the colon in which the barium sulfate enema is used on the same day on which pitressin is used. This preparation has not been used in patients having a systolic blood pressure below 100 mm of mercury or in patients who have advanced hypertension or suspected coronary disease.



Fig. 2—Cholecystogram made on same patient forty-five minutes after the intramuscular injection of pitressin.

RESULTS

Effective results were obtained in 82 per cent of the seventy-three cases (figs. 1 and 2). 75 per cent of these patients had one or more stools within thirty to forty-five minutes after the intramuscular (deltoid) injections of one ampule (10 pressor units) of pitressin. In practically all instances in which it was used, intestinal activity was evidenced by mild cramplike sensations in the abdomen together with a feeling of expected defecation if this did not actually occur.

No change in either the systolic or the diastolic blood pressure was encountered in 9 per cent of this series of seventy-three cases. In approximately 50 per cent there was a drop in blood pressure. A drop in both systolic and diastolic pressure occurred in 35 per cent, lowered systolic with no change in the diastolic in 7 per cent, lowered diastolic with no change in the systolic in 5 per cent. The average drop in systolic pressure was 15 mm of mercury and the average drop in the diastolic pressure was 14 mm of mercury.

In 36 per cent of the seventy-three cases there was an increase in blood pressure. This increase occurred in both systolic and diastolic pressure in 17 per cent, in systolic with no change in the diastolic pressure in 16 per cent, and in systolic with lowered diastolic pressure in 2 per cent. The average rise in systolic pressure was 10 mm of mercury and the average rise in diastolic pressure was 10 mm of mercury.

In those instances in which the blood pressure was taken every five minutes for one hour, there was a gradual and progressive fall in both the systolic and the diastolic blood pressure during the first thirty or forty minutes and then a gradual and progressive rise in both until the end of the hour, but in no instance was the terminal reading as high as that before the administration of pitressin.

From the Cleveland Clinic.
1. Melville, K. I. 'Pressor and Oxytocic Fractions of Posterior Pituitary Extract,' J. A. M. A. 106: 102-105 (Jan. 11) 1936.

THE TREATMENT OF A LUNG ABSCESS DUE TO
BACILLUS COLI WITH A LYTIC FILTRATESAMUEL MORRISON M.D. AND RAYMOND E. GARDNER Sc.D.
BALTIMORE

Numerous reports on bacteriophage therapy in human infections have been made with some apparently favorable and some poor results. A critical review of this form of therapy has been published by Eaton and Bayne Jones¹ who call attention to the more plausible and possible means of application of the lytic principle *in vivo*. This review indicates from the experimental and scientific points of view those cases in which such therapy is at least warranted. Eaton and Bayne Jones called attention to the specificity of the agent for the organism producing the pathologic condition, the inhibitory action of body fluids, the species susceptibility of the organism in *in vivo* experimental infections, and the mode of application. They also state that it is not certain whether the bacteriophage itself or other constituents of the lytic filtrates produce the effects observed," when an improvement in a disease process is noticed.

In the following case² is a measure of last resort bacteriophage therapy was tried, particularly since the conditions for its application were apparently suitable.

N. S., a woman, aged 22 who had previously been in excellent health suddenly experienced a severe diffuse abdominal pain Aug. 5, 1934 which was mistaken for menstrual cramps. During the following two days enemas were given but with no relief. On the third day the patient's condition became critical and she was rushed to the Chambersburg (Pa.) Hospital where an emergency operation was performed by Dr. L. H. Seaton. When the abdomen was opened a gangrenous appendix with generalized peritonitis was disclosed. The remainder of the appendix was removed and drains were inserted. The postoperative course was stormy and the patient's condition was indeed grave. The temperature was hectic ranging from 98 to 105 F with intermittent chills. Owing to the general peritonitis, hot packs were used to localize the inflammatory changes in the lower right quadrant. These hot packs were used continuously for six weeks along with daily saline irrigations through the midline incision. Thick purulent contents were obtained throughout this period.

August 29 the patient complained of a sudden severe pain under the left shoulder blade, which was first interpreted as pleurisy, and the clinical signs were those of pleurisy. There were no signs of an infection of the upper respiratory tract such as a sore throat or the ordinary common cold. The patient's chest was strapped with resulting temporary relief. For one week after the strapping the pain was usually dull but there were occasional mild exacerbations. However, at one time after an excruciating pain, examination disclosed massive collapse of the left lung. During the subsequent few days slight signs of partial return of pulmonary function were observed, but relapse followed. Clinical and x-ray signs of effusion developed. Aspiration was performed September 12 and 500 cc of very heavy purulent material with a foul and typical colon odor was obtained. A culture of the pus at this time yielded only *Bacillus coli*. Three days later because the material was too thick to be aspirated, rib resection was done with a virtual gush of pus. A bronchial fistula developed shortly after the rib resection and the patient was expectorating the same kind of material as that which drained from the resection wound. The appearance of the area around the resection opening was necrotic and 'mossy' and failed to show any improvement on local irrigations with 1000 cc of saline solution twice a day. Digital examination through the resection wound disclosed many walled off abscesses surrounded by necrotic tissue. In view of the hectic fever and the general condition, which indicated toxic absorption, an especially resistant abscess which failed to open was incised by an approach between the ribs just above the rib resection. A drain was inserted and in a few days healing took place.

Since the appearance of the resection wound showed advancing necrosis and continued drainage of from 1 to 2 liters of pus seemed to add to the rapidity of necrosis the outlook was altogether discouraging. At this time (September 16) we learned of the patient's condition and obtained Dr. Seaton's ready permission to try bacteriophage therapy. The decision to use bacteriophage was made for the following reasons: 1. The apparent invader was a colon bacillus. 2. One of us had at hand a polyvalent colon lytic filtrate which could be tested for specificity and potency. 3. The site of invasion was local and inhibitory body fluids could be diluted by salt irrigation even though pus supposedly has little action on colon bacillus bacteriophage.³ 4. The type of pathologic condition presented a means whereby concentrated bacteriophage could be returned in the chest and wet dressings of bacteriophage applied to the necrotic resection wound.

A second sample of pus was collected at this time (September 16) and another pure culture of colon bacillus isolated which was fairly readily lysed by a bacteriophage that was active against various strains of *B. coli* isolated from other sources. Within two days the activity of the bacteriophage was increased to a titer of 1 to 200,000,000 against the specific organism completely sterilizing young cloudy broth cultures within two hours.

After a cutaneous test September 20 of 0.1 cc of the lytic filtrate twelve hours previously had given little or no reaction and after irrigating the chest with 1 liter of physiologic solution of sodium chloride, 1 ounce (30 cc) of the phage was instilled and allowed to remain for two hours. This was followed by saline irrigation and the wound covered by a dressing saturated with the bacteriophage. The following day the observation was made that the discharge had become thin and watery and had lost its offensive character for the first time since the resection was done five days before even though saline irrigations had been administered twice daily during this five day period. A second and equally remarkable change had occurred at the resection wound itself, where the mossy necrotic character was entirely changed to a clean, fresh healthy appearing incision. Since the first use of bacteriophage had given such excellent results a second application seemed indicated and therefore the procedure was repeated. However, within ten minutes a violent generalized rose-colored urticaria appeared and the patient complained of nausea and vomited. The bacteriophage was drained immediately and the chest irrigated with large quantities of saline solution. Epinephrine was administered and the eruption cleared within an hour. The patient, among others known to one of the authors reacted to the epinephrine with a thready pulse and cold and clammy skin. The epinephrine reaction however completely subsided in the course of another hour. After such a marked allergic reaction to the bacteriophage had occurred it was decided to discontinue bacteriophage instillations and continue only with saline irrigations and external dressings saturated with bacteriophage. The dressings of bacteriophage were continued for a week along with irrigations of physiologic solution of sodium chloride. Throughout this period the resection wound maintained its healthy normal appearance and the discharge remained clear watery and non-odorous. The temperature reached 102.2 F each day for the thirteen days prior to the urticarial reaction. On that day the reading was 103.2 F after the reaction. After this reaction the temperature did not go above 102.2 F.

The patient's general condition was remarkably improved and within six weeks she was able to leave the hospital. The appendiceal wound had healed but the fever, less hectic in type continued as well as the thin nonodorous drainage. At home the fever gradually subsided as well as the drainage, and healing was practically complete toward the end of December.

At the present time the patient has regained her weight (65 to 120 pounds or 29.5 to 54.4 Kg) and is perfectly healthy and has resumed her occupation. Interestingly enough, the loss of hair that had occurred during the continued and prolonged febrile illness has entirely regenerated.

SUMMARY

A ruptured appendix with peritonitis was followed by an infected embolus, which produced a massive collapse of the

¹ Eaton M. D. and Bayne Jones Stanhope. Bacteriophage Therapy. Review of the Principles and Results of the Use of Bacteriophage in the Treatment of Infections. *J. A. M. A.* 103: 1769 (Dec. 8) 1934; (Dec. 15) (Dec. 22) 1934.

² We are indebted to Dr. L. H. Seaton Chambersburg Pa. for allowing us to report this case.

³ Appelbaum Martha and MacNeal W. J. Influence of Blood and Exudates on the Action of Bacteriophage Against Colon Bacillus. *J. Infect. Dis.* 50: 269-276 (March) 1932.

left lung, followed by empyema, all resulting from the colon bacillus. The patient's life was despaired of and it was agreed to use any measure that might offer some hope. Bacteriophage therapy was resorted to, especially since the conditions for its application seemed suitable. The procedure adopted apparently played an important role in the patient's recovery because of her immediate change after the application of the filtrate, whereas surgical measures promoting drainage as well as repeated irrigations with physiologic solution of sodium chloride, did not seem to control the necrosis and suppuration in the chest. Whether the bacteriophage acted as a specific or indirectly as a synergist to antibody formation cannot be stated. In addition, the progression of the infectious process gave no time for trial and error methods with plain broths, since we had at hand a liter of extremely potent specific lytic filtrate.

If any conclusions can be drawn, the rapidity of clearing (twenty-four hours) in a chronic process would seem to suggest specifically rather than marked antibody formation.

1013 North Charles Street

Special Clinical Article

TREATMENT OF ATROPHIC ARTHRITIS

CLINICAL LECTURE AT KANSAS CITY SESSION

W PAUL HOLBROOK, M.D.

AND
DONALD F HILL, M.D.

TUCSON, ARIZ

Atrophic arthritis is a constitutional disease which manifests itself as a profound systemic disturbance and by a chronic deforming polyarthritis. It should be clearly understood in the beginning that atrophic arthritis is a disease without a known single specific etiologic agent and likewise there is no single specific cure. In a previous paper one of us¹ reported carefully controlled experiments with various types of therapy. This consisted of placing a large group of patients with atrophic arthritis on a general program which included dietary correction, bowel management, prevention and correction of deformity rest, exercise, general physical therapy and climatic residence. After a control period of several months one group had foci of infection removed, another group was given blood transfusions, the third group was given vaccine of various types, and the remainder were given special forms of heliotherapy. Progress was observed over periods ranging from months to years. The results of this study emphasized the nonspecificity of any single therapeutic agent used and the necessity of using a comprehensive program of management. Because of this lack of a specific cure the medical profession, much like the Children of Israel, is prone to wander after strange gods and attempt first one form of treatment and then another in the hope of finding an easy and miraculous remedy. While it is true that no specific and certain cure is yet available for this unhappy disease, enough is now known regarding its manifestations and treatment to prevent most of the deformities and to restore a large majority of these patients to useful lives.

There are undoubtedly multiple factors involved in the etiology of atrophic arthritis. Heredity, infection, climate, body types, fatigue, trauma, exposure, nervous

strain, circulatory disturbance, gastro-intestinal dysfunction, endocrine disorders, and no doubt many other factors play some role as etiologic agents. It is because of the many sided constitutional manifestations of this chronic disease that treatment, to be effective, in our present state of knowledge must depend not on one single agent but on a combined program of treatment in which every available therapeutic aid is utilized.

It should be remembered that atrophic arthritis may be initiated with all the acuteness of rheumatic fever, or it may begin most insidiously with very few symptoms. The disease may progress rapidly to crippling deformity or progress but slowly with little change from year to year. Because of these wide variations in onset and course, therapeutic measures must be selected for each individual and in relation to the acuteness of the disease. To simplify the beginning of treatment, we have adopted the plan of treating each new patient as an acute case and then, under observation as rapidly as possible advance him to the degree of activity for which he is ready. Before discussing the various therapeutic aids in detail, we present a case history illustrating the therapeutic procedures used in the different phases of the disease.

REPORT OF CASE

An unmarried woman, aged 36, presented as the chief complaints (1) pain, swelling, deformity and limitation of motion in both hands, wrists, elbows, shoulders, knees, ankles and feet of two years duration, (2) belching, nausea and pain in the right upper quadrant, (3) weight loss of 29 pounds (13 Kg) during the past year.

The positive conditions found on physical examination were (1) malnutrition (weight 81 pounds, or 36.7 Kg), (2) anemia, (3) fever of 99.5 to 100.5 F daily, (4) persistent tenderness over the gallbladder area, (5) both shoulders painful and motion limited to 50 per cent, both elbows were flexed and extremely painful, both hips showed a flexion contraction with extension limited to 140 degrees, the knees were hot and swollen, with extension limited to 145 degrees, the ankles and feet were swollen painful and useless.

Laboratory examination revealed 4,100,000 red blood corpuscles, hemoglobin 10.9 Gm, 79 per cent (Sahli), white blood corpuscles 6,500, sedimentation of red blood corpuscles 116 mm in one hour (Westergren). Stomach analysis revealed no free hydrochloric acid. Gallbladder drainage was four plus pus. Culture from the results of drainage showed a green producing streptococcus and enterococcus.

Röntgen examination revealed marked demineralization of the bones in the hands compared with a normal hand. Both knees showed increased density of soft tissue but there was no demonstrable erosion of cartilage. The gallbladder failed to fill with dye.

Treatment in the acute phase consisted of

- 1 Bed rest
- 2 A semibland, high vitamin and high calory diet with no limitation of starches
- 3 Dilute hydrochloric acid with meals
- 4 Tincture of belladonna to tolerance, three times daily before meals
- 5 Hot wet packs to the abdomen after meals
- 6 Bowel regulation without cathartics
- 7 Gallbladder drainage once weekly
- 8 A firm, non-sag bed
- 9 Plaster shells to both legs as posterior splints
- 10 Cockup splints for the wrists
- 11 Corrective exercises. Every joint was assisted through its full range of painless motion daily. Gradually decrease of assistive work and increase of active exercises were carried out.
- 12 Acetylsalicylic acid for relief of pain.
- 13 Transfusions, three of 250 cc each one week apart
- 14 Minute doses of vaccine subcutaneously at weekly intervals (autogenous from gallbladder and strongly skin positive)
- 15 General climatic advantage and air baths. No direct sun.

Read in the General Scientific Meetings at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 11, 1936.

¹ Holbrook, W. P. Evaluation of Therapy in Chronic Atrophic Arthritis. *Ann. Int. Med.* 7: 457 (Oct.) 1933.

At the end of four months the patient had gained only 10 pounds (4.5 Kg). The hemoglobin was up however from 79 to 97 and the acute phase had partially subsided. Flexion contractions of the hips and knees were only partially corrected and severe pain was continuing. The following routine was then carried out:

- 1 Under general anesthesia both hips and both knees were manipulated and completely straightened.

- 2 Plaster casts were applied to both legs and allowed to remain in place for one week. Casts were then removed and used as posterior shells.

- 3 Corrective and assistive exercises of the legs were re-instituted. Emphasis was placed on the extensor groups and on foot exercises.

- 4 Light massage was started and heat was applied to the muscles as tolerated.

- 5 Heliotherapy, local and general was given.

At the end of ten months the patient had gained 20 pounds (9 Kg) and no longer had fever. The blood count was normal. The hips and knees were perfectly straight and not painful or swollen. Muscle tone was excellent from bed exercises. The patient was able to move about on the bed moving all the joints freely without pain. The following routine was then begun:

- 1 The patient was allowed to stand on her feet with (a) corrective shoes with supports, (b) ice bandages to the knees and (c) properly fitted crutches.

- 2 The patient was instructed in correct posture and the use of crutches as walking was begun.

- 3 All corrective exercises were increased and a gradual increase in walking was permitted.

- 4 The diet was changed to a high vitamin diet, with limitation of concentrated starches.

The patient has been walking for nine months with no recurrence of knee or hip pain. There is no residual swelling or deformity. In the course of her management the patient became free from gallbladder symptoms and the laboratory and x-ray examinations showed a return to normal conditions.

THERAPEUTIC PROCEDURES

General—From the case history it will be seen that the treatment of atrophic arthritis can be clearly divided into two parts, constitutional and local. Every effort should be made by any and all proved methods to correct the constitutional factors and thus arrest the progress of the disease. The local treatment of the joints consists of prevention and correction of deformity with maintenance of muscle tone during the entire period of the disease so that no matter how long the disease may remain active the patient will retain the maximum joint motion with the minimum deformity.

No attempt will be made to review the literature on therapeutic procedures, as this has recently been done most completely by Hench, Bauer and their co-workers.²

Diet and Nutrition—Nearly every type of diet has been tried in atrophic arthritis. It is our experience that the patient does best on that diet which would be selected for him if he had no arthritis. If the patient is underweight, a full high calory high vitamin diet with no limitation of starches is given. A bland, semi-bland or high roughage diet is used, according to the patient's individual needs. Obese patients are given low starch and low fat diets for reduction of weight. In short, the patient's general condition should be considered, his gastro-intestinal tract studied, and a suitable diet prescribed. When the patient has gained adequate weight we then usually order for him a high vitamin weight maintaining diet, low in concentrated starches. This is done not because the starch is harm-

ful but because bread, potato and pastry eaters will seldom eat enough food containing adequate vitamins and minerals.

Bowel Management—Many patients with chronic arthritis worry constantly regarding toxic poisoning from the colon. Physicians in this country in particular have seized on the toxic colon as a ready explanation for the persistent arthritis after the patient has been relieved of all surgically removable organs. It is true that the colon may be the seat of chronic infection, but there is little justification for the many appliances, irrigations and antiseptics used in the colon to combat "toxic poisoning." Adequate intestinal elimination is important and should be secured without the use of drastic cathartics. A simple lubricant, proper diet, abdominal exercises, massage and habit time are usually sufficient. Tincture of belladonna and hot wet packs to the abdomen after meals are also of much help in selected cases. Local conditions such as rectal spasm, fissure and hemorrhoids should of course, be corrected.

Removal of Foci of Infection—If removal of foci is to be of value in the treatment of this disease it should be accomplished early. It is during this phase, however, that the procedure may be most hazardous. Many patients who are undernourished, anemic and fatigued experience an acute exacerbation and spread of the disease following removal of foci. In our experience this has been particularly true of infected tonsils. When infected teeth or tonsils are removed, the infection itself is not removed at once but more rapidly invades the surrounding tissue for a time thus giving the patient a sudden overload of infection. Every attempt should be made to raise the patient's level of resistance before submitting him to the shock of a surgical procedure and an overload of infection as well. We frequently precede such operations with a blood transfusion and, if it is feasible, a period of weight gain and rest. In far advanced arthritis of long duration with joint destruction foci should be removed only because of general considerations and not with the hope of arresting the disease. Finally, the removal of foci of infection will benefit but few patients unless it is carried out only as a part of a comprehensive plan of management.

Vaccines—No single phase of treatment is more controversial than the use of vaccine in atrophic arthritis. Scarcely a year goes by that some new vaccine does not make its appearance. Autogenous and stock vaccines, usually made from some particular strain of the streptococcus, are advocated by the majority of workers using vaccine. However, there is no unanimity of opinion among users of vaccine regarding the particular strain of streptococcus used or the preparation and administration of the antigen. In previous papers we³ have described a series of patients on vaccine therapy compared with control groups. Our results failed to show any better results in the group receiving vaccine than in the groups not receiving it. In spite of this unconvincing evidence in its favor, we have continued to use autogenous vaccines showing skin positive reactions in a small percentage of our patients. The vaccine is given in minute doses intravenously or subcutaneously. We believe but cannot prove that some patients are benefited, at least psychically, by its use. Until some organism is proved to be the specific etiologic agent for atrophic arthritis, it is not surprising

3 Holbrook, C. C., Katharine E. and Hill, D. F. Chronic Arthritis. *Serologic and Clinical Studies*. Arch. Int. Med. 54: 27-39 (July) 1934.

2 Hench, P. S., Bauer, Walter, Fletcher, A. A., Christ, David, Hall, Francis and White, Preston. The Present Status of the Problem of Rheumatism. A Review of Recent American and English Literature on Rheumatism and Arthritis. Ann. Int. Med. 8: 1315 (April) 1935 (May) 1673 (June) 1935. B 883 (Jan) 1936.

that stock vaccines prepared from a great variety of bacteria have failed to show specific results in treatment. We continue to condemn the indiscriminate use of vaccine and its use as a specific as this results in neglect of the basic constitutional management so essential in the treatment of every patient with atrophic arthritis.

Transfusions—We have given a large number of blood transfusions to patients with atrophic arthritis. The first two transfusions are usually given one week apart. At the end of a month if improvement has not been definite, additional transfusions are given. Patients with relatively acute or subacute arthritis respond well and often dramatically. The appetite improves, the red blood count and hemoglobin rise, the low grade fever usually disappears and joint swellings diminish. The very chronic disease with far advanced joint destruction may be somewhat improved symptomatically but no striking results are seen in this group. In using several donors on the same patient we have often observed that the blood from one donor would regularly produce a better response than the blood from the other donors. Further study in the selection of donors is indicated. Blood transfusions are in no sense a specific cure but in our experience they have been an extremely valuable adjunct in building up the patient and arresting the disease.

Medicines—Acetylsalicylic acid for the control of pain, iron in correcting anemia and arsenic (as solution of potassium arsenite or neoarsphenamine) have a rightful place in the list of medicines used.

Sulfur injections and the use of gold salts have been disappointing in our experience.

Dilute hydrochloric acid provides better digestion and nutrition in the patient with low or absent gastric acid.

Vitamin A in the form of cod liver oil is given almost as a routine.

Many forms of vitamin B are available and we usually prescribe it in the form of wheat germ or yeast.

We have given crystalline vitamin C intravenously in 150 mg doses three times weekly to a small group of patients over a period of several months without observing any striking benefit.

A series of twenty-five patients in various stages of atrophic arthritis were given concentrated vitamin D in doses of from 200,000 to 350,000 units daily. All these patients had a control period of treatment of several months before beginning the vitamin D. This has been administered now over a period of four months. Five patients have reported less pain and four have had marked drops in their sedimentation rate. Sufficient time has not elapsed to evaluate this method of therapy.

Fever Therapy—In the treatment of atrophic arthritis, fever therapy has been disappointing. In a series of fifty patients who were given fever treatments, no patient was rendered symptom free. These patients received from four to seven treatments each and the temperature was maintained above 104 F for five or six hours. Approximately 25 per cent of these patients were temporarily improved. This is in accord with the recent reports from other workers.

Foreign Protein Injections—Injections of typhoid vaccine intravenously and various nonspecific proteins have been used for a number of years in the treatment of arthritis. We have discontinued all such injections, particularly the protein shock therapy, except in the

occasional young well nourished individual whose disease is not acute. We have seen a number of patients who have had a rapid spread of the disease following this type of therapy.

General Physical Therapy—There is at present a widespread belief that a department of physical therapy must be equipped with several kinds of lights, bakers, a variety of electrical appliances, paraffin baths, and other appliances. It is true that most of this apparatus can be used with some benefit to the patient psychologically and physically. However, 85 per cent of our physical therapy requires only a thoroughly trained personnel. Postural correction, assistive exercises, and the teaching of corrective exercises constitute the major work in the physical therapy of atrophic arthritis. All this can be done with no apparatus at all. Motion should be limited to within the painless arc but pushed to the limit with some assistance. All exercises must be done slowly and exactly with a rest interval. The maintenance of muscle tone and of maximum joint motion depends on wisely directed exercise daily. Massage and heat is a much abused procedure. If used vigorously in the early stages of the disease, increased pain and soreness will result. If used wisely over muscles in the more chronic phase, it relieves muscle spasm and increases circulation. Active exercises of muscle groups are much more effectual and as soon as the patient is able replaces massage. No attempt will be made to discuss the various mechanical and electrical appliances used in the physical therapy of atrophic arthritis, as they are too numerous. Finally, it should be emphasized again that joint motion and muscle tone can best be secured by teaching the patient to help himself.

Prevention and Correction of Deformity—Flexion contractions and deformities that occur in this disease are making thousands of invalids yearly. In every patient with atrophic arthritis the possibility of residual deformity in all involved joints should be anticipated and prevented. If flexion contractions are present, they should be corrected at the earliest possible moment. The prevention of such deformities may be accomplished quite easily but their correction is more difficult. The deformities usually occur in flexion, particularly in the knees, hips, elbows, wrists and hands. Unfortunately, the patient develops the worst possible bodily posture. He lies in a bed that sags, and he places pillows under his knees and head. The hands, wrists and elbows lie flexed across the body. Such flexion deformities are increased if walking is allowed with bent knees or hips.

The patient should be at rest on a bed that does not sag. During the day he must spend several periods in bed without pillows and with all joints fully extended. If pain and muscle spasm interfere, plaster shells or posterior splints for the legs should be used. All painful joints should be splinted so far as is possible in extension. Group muscle exercises of the extensors should be given. Chest, abdominal and postural exercises must be stressed and practiced daily. Every joint must be moved through its full range of painless motion at least once daily. It is entirely possible in the treatment of this disease for the patient to attain the muscular development of an athlete by bed exercises alone. It is essential that posture be correct, knees straight and sufficient muscle strength be developed before the patient is allowed to begin walking. Correctly fitted shoes with good arch supports are an

dages to the knees, and a pair of crutches properly used will often make walking a painless and useful exercise instead of torture. The advice so often given to patients with bent and painful knees to keep walking no matter how much it hurts is the shortest route to the wheel chair. It is especially important that no weight be borne on a bent or painful knee. This only results in further damage to inflamed joint structures and is often the cause of irreparable damage. If flexion contractions of the knees or hips are present, a series of plaster shells will often provide sufficient relaxation to secure a correction of the deformity. Failure to secure complete correction may be due to an adherent capsule or adhesions. If by the use of posterior splints (relaxation casts) and physical therapy the knees are not promptly straightened in one or two months further measures are essential and the following procedure is carried out. With the patient under deep anesthesia to avoid voluntary muscle spasm the joints are carefully manipulated and the deformities corrected. Occasionally more than one manipulation is necessary for complete correction. The technic of the manipulation will not be discussed at this time. Plaster casts are applied and allowed to remain approximately one week, at which time the cast is spread and the leg taken out for assistive exercises. The casts are then used as posterior splints. Within a few weeks after straightening the legs we have been astounded to find a foot or knee that had been cold, clammy and swollen with the swelling gone and the extremity quite warm. In flexion contractions of the knee, manipulation alone cannot always be done safely to secure a full correction of the deformity. In such cases posterior capsular adhesions are usually present or there is marked shortening of the ligaments and fascia. A posterior capsulotomy⁴ by the Wilson method is done immediately if the manipulation fails and while the patient is still under anesthesia. The treatment following capsulotomy is identical to that following manipulation and does not delay the postoperative assistive exercises. It has been the general impression that manipulation of joints should under no circumstances be attempted during the active phase of the disease. However, many of these patients are in an active phase of the disease for months or years. It is true that the patient should first be improved constitutionally if possible, but recent experience has convinced us that the hazard of waiting longer than a few weeks or months is far greater than the hazard of straightening a joint in any stage of activity.

During the past two years we have done fifty-seven such manipulations of the large joints after careful control periods of treatment. We shall report on nineteen of these patients because they were under observation for from six months to seven years and had been refractory to all conservative attempts to correct their deformities. All had flexion contractions of the knees or knees and hips and were unable to walk. This group seemed destined to remain hopeless cripples. Seventeen of the nineteen patients improved from the standpoint of pain, swelling and circulation. Fourteen of the nineteen patients are now walking with straight legs. Three have straight legs but are not yet far enough advanced in muscle training to begin walking. Two have shown no marked improvement and probably will never walk, owing to far advanced joint destruction. The average duration of the flexion contractions was two and one-

half years. The oldest flexion contraction was in a woman, aged 65, who had had hip and knee flexion contraction of seven years' duration with considerable cartilage destruction in both knees and hips. She is now able to walk with crutches. Posterior capsulotomy was necessary in six of the knees manipulated to complete the straightening procedure. When capsulotomy is done, manipulation should be done with it to correct subluxation and restore full extension. Most knees, following correction of flexion contractions maintain motion and rapidly develop muscle tone. Occasionally one tends to become fixed in extension and then several subsequent anesthetics may be necessary to restore flexion. The hip flexion contractures are more difficult to correct and maintain because of a marked associated lumbar lordosis. Usually a few months on a hard bed after the manipulation will prevent the return of this disability when walking is begun. Many of the other joints, particularly the shoulders and feet, may be mobilized by careful manipulation.

Correction of joint deformity by manipulation is in no sense a cure for arthritis but wisely combined with a comprehensive program of treatment it is invaluable in relief of pain, increase in circulation, and in returning many bed invalids to useful lives. Manipulation of the joints should not be attempted unless one is prepared to give a full program of carefully supervised follow-up treatment over a period of months.

There are undoubtedly hazards in this procedure, such as fracturing demineralized bones, rupturing ligaments, damage to cartilage and injury to blood vessels. If the manipulation is carried out carefully, it is our belief that it can be done with relative safety, as we have had no complications in the group we have treated. Finally it is essential to emphasize that flexion deformity should be corrected early, beginning with the easiest and simplest method but progressing rapidly to whatever measure is necessary to effect a correction of the deformity.

Climate—We have observed a large number of patients with atrophic arthritis during their residence on the Tucson desert. Acute exacerbations of the disease are exceedingly rare. The incidence of atrophic arthritis among native whites and Indians is extremely low. Rheumatic fever is a medical curiosity. A large group of children have been sent to the Tucson desert because of recurrent rheumatic fever. Of this group not a single child has had a frank recrudescence of the disease during the past eight years of observation. Activity of rheumatic fever has been evaluated by means of fever, white count sedimentation of the red cells, electrocardiogram and clinical observation. Again it must be said that ideal climate is not a panacea for atrophic arthritis, but when utilized as a part of the constitutional management there is little doubt that it influences the disease favorably.

COMMENT

We believe that the successful treatment of these patients with atrophic arthritis is more satisfactorily carried out in a warm, dry climate. Most of our patients have traveled long distances for climatic change and are at least in some measure prepared financially to provide themselves with adequate care. We also are aware that thousands of patients not only cannot afford climatic change but cannot provide adequate medical and nursing care at home. For this underprivileged group, the establishment of hospitals and teaching cen-

⁴ We are indebted to Dr. J. B. Littlefield of Tucson for his cooperation in doing the capsulotomies reported in this paper.

ters devoted to the care of arthritis, much as it has been done for tuberculosis, appears to be the only solution. A survey of the state of Massachusetts recently revealed that there were more people suffering from chronic rheumatism than from tuberculosis, heart disease and cancer combined. Tuberculosis, cancer and heart disease may cause death, but unchecked arthritis leaves its victims a lifetime of crippling deformity. Almost every state and county has special institutions for the treatment of tuberculosis, yet not a single state or county in this country has such a hospital for arthritis.

Finally, a specific cure for atrophic arthritis is not yet available. It is not our intention to sound a pessimistic note, for we have every reason to be most optimistic regarding the results to be secured when adequate treatment can be obtained. We do believe, however, that it is time for the medical profession as well as the victims of this disease to recognize that there is no easy way. The wasting of time and money on measures of doubtful value should be stopped and all time and attention centered on the few simple measures of proved worth. A striking advance in the therapy of this disease can occur if physicians will stop treating these patients half-heartedly with each new remedy as it appears and frankly tell their patients what the problem of adequate treatment includes.

SUMMARY

Atrophic arthritis is a disease without a known single specific etiologic agent and likewise there is no single specific cure. Being such, and admittedly a constitutional disease, emphasis is placed on the necessity of a comprehensive program of treatment, utilizing accepted methods to correct all factors at fault and to build up the patient's general condition to arrest the disease.

Of equal importance is the prevention and correction of deformities. With proper and continuous care from the onset of the disease there should be very few deformities requiring special treatment.

Nineteen patients with flexion contractions of knees or knees and hips averaging two and one-half years in duration were submitted to manipulation after conservative measures had failed to correct the deformities. Fourteen of these patients are now walking with straight legs.

4 East Congress Street

Medicine and Machinery—Today we are witnessing the apotheosis of the machine in human life and it is not surprising to find that medicine, like other spheres of action is being mechanized. The public has come to believe that machinery is revolutionizing the healing art and is dispensing with the need for human judgment. It is true that the introduction of instruments of precision into medicine has been of great service but the interpretation of the results obtained by them in the individual case still demands wisdom and experience on the part of the doctor. Where the machine is greater than the man the patient perishes. A large section of the public does not understand this. It has such an incorrigible love for apparatus, and what it produces, that it hailed with acclamation a box of gadgets, constructed in defiance of all scientific principles which claimed to hand out an exact diagnosis and even the appropriate treatment, and thus make the application of so fallible a thing as the human mind unnecessary. Failing the reduction of medicine to machinery, the public seeks salvation in the specialist and the expert, and the more apparatus, and the more complicated, employed by these, the greater its confidence.—Lord Horder. *The Clinician's Function in Medicine* *New York State J. Med.* 36 843 (June 1) 1936.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS IECHE, Secretary

USE OF THE TERMS "STERILE," "STERILIZE" AND "STERILIZATION"

In an official communication from the Food and Drug Administration of the U. S. Department of Agriculture, the Council was asked to express an advisory opinion as to the use of the terms 'sterile,' 'sterilize' and 'sterilization,' especially when it appears on the labels of agents used 'for sterilization of the skin.'

The Council adopted the following statement and authorized its transmission to the Food and Drug Administration:

The Council on Pharmacy and Chemistry has formally gone on record as disapproving of the use of the terms 'sterile,' 'sterilize' and 'sterilization' in a bacteriologic sense other than in their correct scientific significance, i. e., meaning the absence or destruction of all micro-organisms. These terms are not relative and to permit their use in a relative sense not only is incorrect but opens the way to abuse and misunderstanding. It is questionable that there are any chemical agents tolerated by the skin which will produce sterility although there are some which will reduce the bacterial flora of the skin to such an extent that they may properly be described as disinfecting agents. For such agents there is no objection to the use of the terms 'disinfecting,' 'bactericidal' and 'bacteriostatic.'

Reference was also made to the decision of the Committee on Foods, which is as follows:

USE OF TERMS 'STERILE,' 'STERILIZED' AND 'STERILIZATION'

The terms *sterile*, *sterilized* and *sterilization* shall be used in food advertising in their correct scientific significance only. Foods processed to be free of pathogenic organisms or to keep sound and wholesome are not necessarily sterile, i. e., free from viable micro-organisms.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



FRANKLIN C. BING, Secretary

LARSEN'S "FRESHLIKE" STRAINED APRICOTS

Manufacturer—The Larsen Company, Green Bay, Wisconsin

Description—Canned, sieved apricots

Manufacture—Apricots heated, sieved and canned in vacuum. The cans are processed and promptly cooled.

Analysis (submitted by manufacturer) —

| | per cent |
|--|----------|
| Moisture | 87.6 |
| Total solids | 12.4 |
| Ash | 0.8 |
| Fat (ether extract) | 0.2 |
| Protein (N X 6.25) | 0.7 |
| Crude fiber | 0.6 |
| Carbohydrates other than crude fiber (by difference) | 10.1 |

Calories—0.5 per gram, 14 per ounce

Vitamins—The method of preparation, sieving and processing are considered efficient for protecting the vitamins.

Claims of Manufacturer—For all table uses of strained apricots but especially intended for infants, children and convalescents and for special 'smooth' diets. Only warming is required for serving. The natural mineral and vitamin values are retained in high degree.

KING BRAND SYRUP

Manufacturer—Mangels-Herold Company, Baltimore

Description—A table syrup, corn syrup with refiners' syrup and cane sugar

Manufacture—The ingredients are purchased from the manufacturers are mixed in formula proportions, heated from thirty to forty minutes at 77 C, strained, and filled into friction top lacquered cans

| Analysis (submitted by manufacturer) — | per cent |
|--|-------------|
| Moisture | 19.1 |
| Ash | 0.4 |
| Protein (N × 6.25) | 0.1 |
| Reducing sugars as dextrose | 36.4 |
| Sucrose | 11.7 |
| Dextrins (by difference) | 32.3 |
| Color | Natural |
| Specific gravity @ 20 C | 1.397 |
| Specific gravity @ 60 F | 41.2 Beaume |

Calories—3.2 per gram 91 per ounce

Claims of Manufacturer—A syrup for cooking baking and table use.

WHITE SWAN PINEAPPLE JUICE

Distributor—Waples Platter Company, Fort Worth Texas

Packer—Hawaiian Pineapple Company, Ltd, San Francisco

Description—Canned Hawaiian Pineapple Juice retaining in high degree the natural vitamin content the same as Dole Hawaiian Finest Quality Pineapple Juice (Unsweetened) (THE JOURNAL, June 3 1933 p 1769)

"WONDER" BRAND EVAPORATED MILK

Manufacturer—Meyenberg Milk Products Company, Salinas Calif

Description—Unsweetened sterilized evaporated milk. The same as Meyenberg All Pure Brand Evaporated Milk (THE JOURNAL, Feb 22, 1936 p 617)

ANNUAL MEETING OF THE COMMITTEE
ON FOODS

The annual meeting of the Committee on Foods was held in the Palmer House, Chicago, March 12, 1936. There were present

| | |
|----------------------|---------------------|
| Dr E M Bailey | Dr G F Powers |
| Dr F C Bing | Dr Lydia J Roberts |
| Dr Joseph Brennemann | Dr Mary Swartz Rose |
| Dr Morris Fishbein | Dr Russell M Wilder |
| Dr P C Jeans | |

Dr Fishbein was elected Chairman of the Committee and Dr Jeans Vice Chairman. Among the topics discussed during the meeting, the following may be of interest to physicians and to manufacturers

The Scope of the Committee—The Committee discussed at considerable length the question of the scope of its work, the food products to be considered and those which might well be classed as requiring no special consideration by the Committee. It was the consensus of opinion that a number of food products which now stand accepted present no special nutritional problems which necessitate their continued consideration. It was decided that the list of accepted foods be examined to determine which food products should continue to be considered as falling within the purview of the Committee. A statement of the Committee's action will be published shortly

The Committee also voted that the period of acceptance shall be limited to two years, at the end of which time products shall be considered again

Fortification of Foods Other than Fortification of Milk with Vitamin D—Fortified foods have not previously been defined by the Committee. While no definition is attempted at the present, it is understood that in general a fortified food is one in which the percentage of mineral elements or the unitage of vitamins has been made significantly beyond that of the same food as it exists in nature. This enhancement of

the vitamin (or inorganic salt) content is brought about by the addition of a concentrate or rich source of the material or the actual salts or vitamins themselves

The Committee discussed at considerable length the problems involved in the addition of vitamin preparations to foods. While the Committee has shown by its actions that it is not opposed to the addition of vitamin concentrates to foods under all circumstances, yet it desires that such fortification shall not be made unless (a) it has been demonstrated that there is a need for such fortification and (b) unless suitable experimental evidence shows that the fortified food suitably serves the purpose desired. It was voted that the policy of the Committee in general shall be as follows

'If in exceptional cases a general need for vitamin (or inorganic salt) intake above that afforded by the usual mixed diet of common foods is indicated the Committee shall require (a) acceptable and convincing evidence that there is a need for enhanced amounts of vitamins (or inorganic salts) in the general food supply, and (b) that the food vehicles proposed for the distribution of such vitamins (or inorganic salts) are suitable and appropriate'

In line with the foregoing policy it was voted that manufacturers of accepted vitamin D fortified products including breads and cereals be requested to produce evidence meeting points a and b above before a date to be specified. If satisfactory evidence is not forthcoming, the Committee will be obliged to rescind acceptance of such products

Significance of Terms Excellent, Good and Fair to Denote the Relative Value of Food as Sources of Vitamins—The Committee discussed the possibility of preparing suitable tables to give the value of foods as sources of the vitamins. The majority of tables available at the present time contain the well known plus and minus marks, which are hardly suitable for refined dietary calculations

Vitamin E—The Committee again considered the claims for vitamin E and concluded that no adequate scientific data are available which establish the role of vitamin E in human dietetics. It is a ruling of the Committee that neither claims for vitamin E nor mention of the vitamin shall appear on food labels or in advertising for accepted foods addressed to the public. It was the consensus of opinion of the Committee that mention of vitamin E in advertising addressed to the profession of accepted food products shall not be permitted if inferentially such advertising recommends the use of the preparation because of its vitamin E content

Special Purpose Foods—The class of foods called "Special Purpose Foods" was defined by the Committee three years ago. In this group are included a number of products specially intended for carbohydrate restricted diets. The referee reported on the question of the labeling of such products. At the present time the importance of carbohydrate restricted diets for diabetic patients is probably secondary to the usefulness of ketogenic diets in the treatment of pyelitis and cystitis and other infections of the urinary tract. The value of water packed foods is limited to a large extent to people who need to know the amount or composition of what they eat more accurately than most people. It is therefore important that the composition shall be stated on the label and expressed in percentages. The referee suggested that the language of the ruling be changed to have the mineral content and also the vitamin unitage recorded in units per hundred grams. It was pointed out that carbohydrate should preferably be expressed in terms of available carbohydrate, although the difficulties of chemically defining available carbohydrate are realized.

The following addendum to the decision of the Committee regarding the labeling of special purpose foods was presented by the referee and adopted by the Committee

"In the case of water packed fruits and vegetables the designation 'Special Purpose Food' will not be required provided it is replaced by a statement to the effect that this food or these foods are prepared with special reference to the needs of invalids and have no added salt or sugar. The vitamin and mineral content should be stated on the label as well as the calories per gram or ounce and the grams each of total carbohydrate, protein, and fat per hundred gram weight of fruit or vegetable and liquid'

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SATURDAY, JULY 4, 1936

HORNER'S SYNDROME

A distinguished Swiss ophthalmologist, Johann Friedrich Horner, described in 1869 a symptom complex generally known by his name. The syndrome is characterized by sinking in of the eyeball, drooping of the upper lid, slight elevation of the lower lid, constriction of the pupil, narrowing of the palpebral fissure, and certain changes in the vasomotor and sudorific activity of the skin of the face. With the developments in neurosurgery and the ever increasing number of industrial and motor accidents this syndrome is now more frequently observed than formerly. Previous to Horner's clinical observations, experimental work on laboratory animals that would in part explain the syndrome had been accomplished by several workers. Claude Bernard, who in 1852 sectioned the cervical portion of the sympathetic trunk, had observed retraction of the eyeball and narrowing of the palpebral fissure. Budge had found that the sympathetic nerves to the head arise in the first and second dorsal segments of the spinal cord. Langley had identified the levels in the cord at which the various types of sympathetic fibers arise. He had found that vasomotor control to the conjunctiva and to the external ear comes from the third and fourth dorsal segments, and the pilomotor fibers to the face from the fifth and sixth dorsal segments. Langley also discovered that the preganglionic fibers to the dilator pupillae muscle end in the superior cervical ganglion and establish synaptic relations there with the postganglion fibers that go direct to the pupillary muscles. Although Horner in his original paper, as translated by Fulton,¹ did not refer to this experimental work, his clinical observations were in correlation with the physiologic data. Horner's priority to the discovery seems unquestioned today, in 1838, however, Hare, a house surgeon at the Stafford County General Infirmary, had described the clinical syndrome and the pathologic changes found post mortem in a case of carcinoma that involved the nerves and blood

vessels on the left side of the neck and the phrenic and lower cervical ganglions of the sympathetic. Hare understood the connection of the tumor with the paralysis of the arm in his case but apparently did not understand the relation of the drooping eyelid to the sympathetic nervous system. Had Hare been familiar with the experimental work of Claude Bernard, Crunkshank, Petit and others, he might have made the discovery which later was made by Horner.

Horner's syndrome may follow disease or injury to the brain stem, to the lower part of the cervical portion of the spinal cord or the upper part of the dorsal portion or to the superior cervical sympathetic ganglion or the postganglionic nerves, as well as to some of the nerve roots. There is some difference of opinion about the exact etiology of each of the elements of the symptom complex. Certain constituents of the typical syndrome are not present in all cases. This may be due to the destruction of certain nerve fibers in some cases while in other cases these fibers escape. Cobb and Scarlett² have found that the most severe oculopupillary syndromes are those due to injuries of the seventh and eighth cervical and first dorsal nerve roots, less severe symptoms are produced by injuries to the cervical portion of the sympathetic trunk, and the least pronounced symptoms follow definite injuries to the spinal cord.

According to DeJong³ the most frequently mentioned causes of Horner's syndrome are tumor of the spinal cord, or syringomyelia at the level of the seventh or eighth cervical or first thoracic segment of the spinal cord. Other causes may be cervical tumor or enlarged lymph nodes, cervical rib, cervical pachymeningitis, aortic aneurysm, mediastinal tumor, disease of the pulmonary apices, radiculitis, disease of the esophagus and adenoma of the thyroid gland. The symptom complex may follow trauma, especially bullet or stab wounds or surgical operations on the cervical portion of the sympathetic chain and occasionally on the thyroid or the phrenic nerve. Horner's syndrome may develop in conjunction with lesions in the brain stem or in the midbrain or cortex, it has been reported as occurring in epidemic meningitis, epidemic encephalitis, anterior polyneuritis and mitral stenosis. Jacob⁴ reported that cases of tumor of the upper portion of the pulmonary sulcus are characterized by Horner's syndrome. In his recent paper, De Jong reports ten cases illustrating different causative factors of the syndrome observed in one year at the University Hospital in Ann Arbor. Paralysis of the cervical portion of the sympathetic nervous system is probably more frequent than reports in medical literature indicate.

² Cobb Stanley and Scarlett H W. A Report of Eleven Cases of Cervical Sympathetic Nerve Injury Causing the Oculopupillary Syndrome. Arch Neurol & Psychiat 3 636 (June) 1920.

³ DeJong R N. Horner's Syndrome. Arch Neurol & Psychiat 34 734 (Oct) 1935.

⁴ Jacob H W. Superior Pulmonary Sulcus Tumor. J A M A. 103:84 (July 14) 1934.

¹ Fulton J F. Horner and the Syndrome of Paralysis of the Cervical Sympathetic. Arch Surg 18 2025 (April) 1929.

MESENTERIC LYMPHADENITIS

Acute mesenteric nontuberculous lymphadenitis is a clinical entity is a comparatively recent concept. The lymph nodes of the mesentery received but scant attention from the surgeon, probably because they are neither palpable nor visible except in the presence of lymphangitis or regional involvement secondary to inflammation, malignant tumor or tuberculosis of the bowel. The mesenteric lymph nodes may show but little enlargement with severe inflammation of the appendix or the gallbladder. Enlarged mesenteric lymph nodes in the young were formerly considered invariably tuberculous. Wilensky¹ in 1920 and Heusser² in 1923 described cases in which the enlarged lymph nodes were definitely involved by simple nontuberculous inflammation. The later reports of Wilensky and Hahn³ in this country and of Pribram⁴ in Germany established the existence of acute mesenteric lymphadenitis as an independent clinical entity. The condition is seen preponderantly in children but also in young adults. Following an acute infection, most frequently tonsillitis, a lymphangitis develops within the peritoneal cavity which leads to enlargement of the mesenteric lymph nodes, injection of the leaves of the mesentery, and a hyperemia of the intestinal serosa. The ileocecal segment appears to be the seat of predilection. The clinical symptoms resemble closely those of acute appendicitis. At operation a small amount of serous or turbid fluid, a normal appendix and swollen lymph nodes running up to the root of the mesentery are found. The nodes vary in size and may attain that of a bean. Following the appendectomy, the clinical signs subside in the course of a few days.

In a recent analysis of cases observed in Pribram's clinic during the last ten years, Kleiber⁵ points out that after an appendectomy cases of mesenteric lymphadenitis, unlike those of acute appendicitis, show a tendency to recurrence of attacks of abdominal pain. Particularly characteristic is the coincidence of these attacks with repeated attacks of sore throat. The inflammation subsides in the course of a few days. Occasionally there remains a tenderness in the ileocecal region leading to an erroneous diagnosis of postoperative adhesions. The course of the disease is mild. A few cases have been observed, however, with a stormy onset and symptoms of acute peritonitis, such as high fever, prostration, abdominal distention, vomiting, constipation and a pronounced leukocytosis. At operation, diffuse redness of the distended intestinal

loops, a turbid exudate, fibrinous deposits and gluing together of the intestinal loops were found. The appendix was unaltered or only slightly involved. The lymph nodes were swollen and the leaves of the mesentery hyperemic. The prognosis in these cases is grave, the patient dying of peritonitis in the course of a few days regardless of whether or not an operation is performed. In a few of the cases streptococci were isolated from the lymph nodes. Kleiber stresses that a careful history almost never fails to bring out the existence of pathologic tonsils. The tonsillar infection is considered the primary focus from which streptococci reach the mesenteric lymph nodes by either the hematogenous or the enteric route (organisms swallowed with saliva). In his report on eighty-six cases of mesenteric lymphadenitis personally observed, in seventy-eight of which operation was performed, Coleman⁶ stresses the association of this condition with acute respiratory infections in the winter months and with intestinal infection in the summer. He likewise found the tonsils "usually infected and enlarged." Goldberg and Nathanson⁷ isolated hemolytic streptococci from every one of the throats of patients when cultures were made. They have isolated the same organism from a small percentage of nodes removed.

The treatment of the condition is surgical intervention. Accurate preoperative differentiation of mesenteric lymphadenitis and acute appendicitis is not possible. Tonsillectomy is definitely indicated in cases in which postoperative attacks of abdominal pain recur.

RECOGNITION OF CONGENITAL HEART DISEASE

Recently McGinn and White¹ have reviewed the records of 7,500 necropsies at the Massachusetts General Hospital to determine the frequency with which congenital heart disease has been seen there since 1895. Congenital heart disease was found sixty-seven times, representing an incidence of 0.9 per cent. About one third of the patients, or twenty-one, were infants under 1 year of age, 3,400 of the necropsies were performed in the last fifteen years. The clinical records of the forty-one cases in which there were congenital lesions were studied in detail. The incidence of congenital heart disease in this group was 1.2 per cent. It is therefore suggested that more congenital defects are recognized when the hearts are examined with such lesions especially in mind. The clinical records showed that a correct diagnosis of this lesion had been made seven times, four in adults and three in infants under 1 year of age. The cases consisted of three with

1 Wilensky A. O. Mesenteric Lymphadenitis. *M. Rec.* 98:770 (Nov. 6) 1920.

2 Heusser H. *Beitr. z. klin. Chir.* 130:85 1923.

3 Wilensky A. O. and Hahn L. J. Mesenteric Lymphadenitis. *Ann. Surg.* 83:812 (June) 1926.

4 Pribram B. O. Lymphangitis Mesenterialis. *Arch. f. klin. Chir.* 140:589, 1926.

5 Kleiber N. Erfahrungen neber die Lymphangitis mesenterialis. *Deutsche Ztschr. f. Chir.* 246:393 (Nos. 7-8) 1936.

6 Coleman E. P. The Diagnosis of Mesenteric Lymphadenitis. *Illinois M. J.* 68:408 (Nov.) 1935.

7 Goldberg S. L. and Nathanson I. T. Acute Mesenteric Lymphadenitis. *Am. J. Surg.* 25:35 (July) 1934.

1 McGinn Sylvester and White P. D. Progress in the Recognition of Congenital Heart Disease. *New England J. Med.* 214:763 (April 16) 1936.

idiopathic congenital hypertrophy, two with interventricular septal defect, one with the tetralogy of Fallot, and one with pulmonary stenosis. In five other patients, including one infant, the correct diagnosis had been suspected during life. These twelve cases therefore represent the correct or suspected diagnosis in 29 per cent of the congenital lesions coming to necropsy in the last fifteen years.

In reviewing these cases with the aim of improving the percentage of correct diagnoses, a large group of lesions were encountered, namely, those of defective valve structure and abnormal coronary vessels, which at the present time provide no adequate evidence to suggest their presence. Certain clinical clues, however, can be recognized, according to the authors, as affording suggestive evidence for the recognition of some of the congenital lesions. The most characteristic clinical sign of patent ductus arteriosus is a typical murmur. It is generally heard best in the second left interspace and is a harsh, humming murmur with a sound similar to a mill wheel or the machine-like purr of a large motor. It is continuous with accentuation during systole and may be accompanied by a thrill. X-ray examination is generally characteristic. The most important evidence of interventricular septal defects is the presence of a harsh systolic murmur heard best at the third interspace and more or less confined to that immediate area but frequently heard in the back between the scapulae. There is usually a thrill accompanying the murmur. X-ray examination fails to show gross enlargement in spite of the loud murmur. Blunting of the apex is sometimes present. Idiopathic congenital hypertrophy of the heart refers to enlarged and dilated hearts observed at birth or early infancy and for which no cause can be discovered. There are five signs which when they occur in association, permit the diagnosis of the tetralogy of Fallot with a high degree of certainty: cyanosis of the lips, cheeks, ears, fingers and toes, clubbing of the fingers and toes, a loud systolic murmur heard best in the pulmonary valve area and in the third left interspace, extreme right axis deviation seen in the electrocardiogram, and, finally, disclosure on x-ray examination that the heart is boot shaped, owing to enlargement of the right ventricle without enlargement of the pulmonary artery. Coarctation of the aorta can often be recognized by five diagnostic criteria. These are hypertension occurring in children and young adults, a blood pressure higher in the arms than in the lower extremities, conspicuous blood vessels of the trunk, especially of the intercostal and mammary arteries, a harsh systolic murmur at the base of the heart and in the back, and evidence of left ventricular hypertrophy on x-ray examination. The presence of symptoms of persistence of a right aortic arch is dependent on the degree of constriction that might be caused. A heart with a "water bottle" shape should be sufficient to suggest a *cor biatricum trilobulare*. Interauricular

septal defects are common at necropsy. Four observations suggest this anomaly: late cyanosis, a large pulmonary artery, enlarged lung hilus shadows and an enlarged right ventricle seen radiographically, right axis deviation in the electrocardiogram, and paradoxical embolism.

While admittedly the correct clinical diagnosis of congenital anomalies of the heart is difficult, an awareness of their possibility and the knowledge leading to a correct diagnosis should increase the frequency of diagnosis previous to necropsy.

Current Comment

DOCTORS AND DIAPLEX

In a recent trial the federal government was defeated in its attempt to prove one Horace Wayne Pierce, manufacturer and shipper of a herb tea called "Diaplex," guilty of fraud under the criminal clause of the Food and Drugs Act. Diaplex, the dried leaves and stems of *Atriplex canescens* (salt bush), is offered as a specific for diabetes. The advertising exaggerates the dangers of insulin and dwells on the simplicity of taking Diaplex. The government lost its case principally because of the premature enthusiasm of a physician for the nostrum. As told in a brief summary of the case issued by the United States Department of Agriculture, the government contended that the falsity of the claims made for Diaplex as a remedy for treating diabetes was fully proved. The breakdown in the government testimony came when two witnesses—one a doctor and the other a layman—admitted the writing of complimentary and optimistic letters to the manufacturer. Both these witnesses testified nevertheless that they had been misled, as the herb tea turned out to be worthless in their later experience. At the trial Pierce claimed that he depended on these letters as expressions of opinion from persons competent to judge the effects of his treatment. In the face of this testimony, the jury was not convinced of the fraudulent intent, which, under the law, must be shown in all criminal cases involving curative claims for medicines. The testimony of physicians called by the government that Diaplex could not affect the course of diabetes was entirely nullified by the careless endorsement of one physician. Endorsements given by physicians to "patent medicine" vendors, either carelessly or wilfully, are invariably distorted into bait for the uncritical patient as a means of luring him away from proved methods of treatment. The case of Diaplex should serve as a warning to the physician against haste in judgment of therapeutic results. The difficulty of evaluating remedies for arthritis, diabetes, nephritis, hypertension and similar chronic conditions should be realized. The lack of suitable controls is apparent in all these hasty enthusiasms which lead doctors into writing or voicing commendation before time has truly tested the results. Then, like the ghost in Hamlet, their testimonials come back in after years to haunt them.

Association News

THE ATLANTIC CITY SESSION

Eighty-Eighth Annual Session to Be Held in June

The American Medical Association will hold its Eighty-Eighth Annual Session in Atlantic City, N. J., June 7 to 11, 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ARKANSAS

District Meetings—The Ninth Councilor District Medical Society was addressed in Eureka Springs, June 2, by Drs. Charles T. Chamberlain, Fort Smith, on "Mechanism of Heart Beat and Electrocardiography", Francis T. H. Doubler, Springfield, Mo., "Minutiae of Thyroid Signs and Symptoms", George B. Fletcher, Hot Springs, "Medicine Forty Years Ago and Now", Guy D. Callaway, Springfield, "Cardiac and Renal Complications of Pregnancy", Fred R. Brooksher, Fort Smith, "The Treatment of Certain Complications of". Dr. Brooksher also addressed the Eighth Councilor District Medical Society, May 28. Other speakers were Drs. Robert Caldwell, "Sinusitis in Children", Allie C. Kolb, "Problem of Caring for the Mentally Abnormal", and Augustus C. Shupp, "Surgical Treatment of Tuberculosis". All are of Little Rock.

CALIFORNIA

Hospital News—A symposium on the use of analgesics, hypnotics and sedatives was presented at the meeting of the staff of the Peralta Hospital, Oakland, June 25. Speakers included Drs. Olin H. Garrison, Frank H. Bowles, Charles C. Hall, Leonard B. Barnard, Thomas I. Buckley, Lester B. Lawrence and Burton W. Adams. The staff of Mary's Help Hospital, San Francisco, gave a banquet, June 27, in honor of five members of the house staff who are leaving. The guests of honor were Drs. Charles A. Rethers, Dwight A. Mater, John J. McDevitt, Alexander Rogozen and John B. Thielen.

COLORADO

Society News—Dr. Harold L. Hickey was chosen president of the Colorado Otolaryngological Society at its annual meeting in Denver, May 2. Dr. Herman I. Laff, secretary, and Dr. Harry L. Whitaker, treasurer, all of Denver. At a meeting of the Medical Society of the City and County of Denver, May 16, Dr. William J. Kerr, San Francisco, discussed "The Anxiety State in Practice," and Dr. William F. Rienhoff Jr., Baltimore, "Diagnosis and Treatment of Carcinoma of the Lung."

Fellowships in Psychiatry—The Commonwealth Fund has renewed its appropriation to provide fellowships for graduate training in psychiatry at the University of Colorado Psychopathic Hospital, Denver. Four fellowships of three years' duration have been made available, two beginning in the fall of 1936 and two in 1937. Dr. Marion B. Durfee, who graduated from the University of Colorado School of Medicine, Denver, in 1934 and completed an internship at Ancker Hospital, St. Paul, and Dr. Julius M. Wallner, who graduated from the University of Pennsylvania in 1935 and who has completed an internship at the Colorado General Hospital, Denver, have been appointed to begin their fellowships in September.

CONNECTICUT

Cancer Survey Under Way—To assist in a state survey of cancer prevention, Dr. Matthew H. Griswold, Kensington, health officer of the town of Berlin, has been appointed public health physician in the state department of health to specialize in cancer work, a newly created position. The state survey was made possible with funds granted to the state health department by the 1935 legislature under a bill sponsored by the Connecticut State Medical Society. A statistical study of cancer cases now under way by Mr. Herbert F. Hirsche was the

first step in the survey. Dr. Griswold, who is resigning as health officer and relinquishing his private practice, will cooperate with the tumor committee of the state medical society in its cancer program. About sixteen clinics are now operating in general hospitals in the state as a result of the society's program, and others are planned.

GEORGIA

Society News—Dr. Gerry R. Holden, Jacksonville, Fla., discussed "Treatment of Uterine Hemorrhage" before the Fulton County Medical Society in Atlanta, June 18. At a meeting of the Atlanta Clinical Society, May 27, Drs. James N. Brawner Jr. read a paper on "Clinical Aspects of Certain Ovarian Tumors", James Mason Baird, "Ophthalmologic Findings in Common Medical Conditions," and John D. Martin Jr. presented a case report on "Congenital Absence of Dorsal Fixation of the Mesentery of the Small Intestine."

ILLINOIS

Two Cases of Rocky Mountain Spotted Fever—The state health department reported that two cases of Rocky Mountain spotted fever had recently been recognized in Illinois. One of the patients, a cattle raiser's wife, living on a farm near Canton, told of finding a tick on her head nine days prior to the onset of her illness. Shortly before she had been working with sick steers recently purchased through the Peoria stockyards, where they had been shipped from the West. Apparently the tick had transmitted the disease to this patient, it was said. The other patient, a filling station attendant at Clinton, had no recollection of a tick or other insect bite, presumably an infected insect had been brought along by an automobile party, the department reported.

Chicago

Society News—Dr. Richard M. Davison was chosen president of the Chicago Tuberculosis Society at its annual meeting recently. Dr. George de Tarnowsky was chosen president-elect of the Chicago Gynecological Society at its annual meeting, June 12, and Dr. Harold O. Jones was installed as president.

University News—The cornerstone of a new medical and dental laboratory building of the University of Illinois College of Medicine was laid June 4. Wilbur R. Tweedy, Ph.D., has been appointed professor and head of the department of physiologic chemistry at Loyola University School of Medicine, succeeding the late William C. Austin, Ph.D. He has been associated with the medical school since 1925.

Five "Voice of Safety" Cars—The police bureau of accident prevention has equipped five automobiles with loud speakers to spread a message of traffic safety, according to the *Chicago Tribune*. Each car, manned by two specially trained policemen, will tour the city, particularly in the vicinity of schools, announcing the "do's" and "don'ts" of safe driving and safe walking. Motorists and pedestrians committing minor infractions will be warned politely through the loud speakers.

INDIANA

Personal—Dr. Argal E. Hubbard, formerly superintendent of the Peoria Municipal Tuberculosis Sanitarium, Peoria, Ill., has been named to a similar position at the Marion County Tuberculosis Hospital, Indianapolis, to succeed Dr. William McQueen, who resigned June 1 on account of ill health. Dr. Orlando W. Brownback, Pendleton, recently observed his ninetieth birthday.

Society News—Dr. Paul D. Crimm, Evansville, addressed the Gibson County Medical Society at Princeton, June 8, on "Surgical Treatment of Pulmonary Tuberculosis." At a meeting of the Dearborn-Ohio County Medical Society in Lawrenceburg, May 28, Dr. William M. Doughty, Cincinnati, discussed "X-Rays and the General Practitioner." The Marshall County Medical Society was addressed in Plymouth, June 10, by Dr. George S. Bond on "Heart Sounds with Their Interpretation." At a meeting of the Indiana State Pediatric Society, June 8, Dr. Philip C. Jeans, Iowa City, discussed nutrition, and Dr. Irvine McQuarrie, Minneapolis, edema.

IOWA

Personal—Dr. James F. Edwards has retired as head of student health service and the department of hygiene, Iowa State College, Ames, on account of age, and has been succeeded by Dr. John G. Grant, his assistant for several years. Dr. John M. Hayek, Cedar Rapids, has been named pediatrician for the division of child health and health education for the state department of health, this is a newly created position.

financed with funds appropriated under the Social Security Act — Dr Louis J. Leech, West Branch, has been made an honorary life member of the Iowa State Medical Society.

County Society Exhibit at Centennial—A medical and historical exhibit was opened to the public, June 26 by the Scott County Medical Society as a part of the centennial of the incorporation of Davenport as a town. The exhibit, which takes up the lobby and mezzanine floors of the Union Bank Building, will run three weeks, although the centennial celebration of the community is expected to continue into January, it is reported. At the opening, Dr William W. Bruer, director, Bureau of Health and Public Instruction, American Medical Association, Chicago, gave an address entitled "Popular Beliefs That Are Not So," and a sound motion picture, showing animal experimentation in the conquest of disease was displayed. During the run of the exhibit a member of the Scott County Medical Society is to give a public address each evening. The display depicts the growth of the county medical society since its founding in 1856 and shows contrasting photographs of the hospitals of Davenport when they were first established and as they are today, including all historical data on their growth. Famous figures of medical history such as Pasteur, Ehrlich and Lister are represented in historical material and photographs. Another interesting feature is a reproduction of the operating room of a modern hospital with life-sized artificial models performing the duties of hospital personnel.

LOUISIANA

Society News—The Ouachita Parish Medical Society was host to the Rapides Parish Medical Society at a banquet May 7. Speakers were Drs Albert L. Culpepper on "Treatment of Acute Empyema", Ford A. Thomas "Treatment of Lobar Pneumonia with Specific Serum," and Ralph Lambert "all from Alexandria, Treatment of Varicose Veins."—The Orleans Parish Medical Society held a meeting at the U. S. Marine Hospital, June 22, speakers were Drs William L. Smith on "Helium and Oxygen Therapy," Richey L. Wraugh, "Fractures of Long Bones and Methods of Treatment," Automo Mayoral "The Shrunken Lung," John A. Trautman, "Wilms Tumor with Report of Two Cases," and Waldemar R. Metz "Plephthiasis of Scrotum Following Bilateral Inguinal Glandular Tuberculosis." Dr Edward H. Rynearson Rochester Minn. addressed the society, June 8, on "Clinical Syndromes Resulting from Dysfunction of the Endocrine Glands."—Dr Philip J. Carter was elected president of the New Orleans Gynecological and Obstetrical Society, May 21.

MAINE

Society News—At a meeting of the Kennebec County Medical Association in Gardiner, May 22, speakers included Elmer W. Campbell, Augusta, who discussed "The New Cosmetic Law", Dr Herbert R. Kobes, Augusta "Social Security Act," and Dr Shields Warren, Boston, "The Pathology of Malignant Disease with Relation to Treatment."—Dr Stanwood E. Fisher addressed the Portland Medical Club recently on "Inflammation of the Nasal Sinuses." Dr DeForest Weeks also addressed a recent meeting of the club on chronic arthritis and sciatica.—The York County Medical Society was recently addressed in York by Dr Allan L. Davis, Boston, among others, on fractures.

MARYLAND

Dr Uhlenhuth Awarded Van Meter Prize—Eduard Uhlenhuth, Ph.D., professor of anatomy, University of Maryland School of Medicine, Baltimore, was awarded the Van Meter Prize of the American Association for the Study of Goiter at its annual session, June 9, for his thesis on "Isolation of the Thyreo-Activator Hormone from the Anterior Lobe of the Bovine Pituitary Gland." Dr Uhlenhuth received his degree of doctor of philosophy at the University of Vienna in 1909. He became associated with the University of Maryland in 1925.

MASSACHUSETTS

Portrait of Dr Leary—The class of 1906 at Tufts College Medical School recently presented to the school a portrait of Dr Timothy Leary, medical examiner for the southern district of Boston. Dr George S. Foster, Manchester, N. H., president of the class, made the presentation. John A. Cousens, LL.D., president accepted it on behalf of the college and turned it over to Dr Albert Warren Stearns, dean of the medical school. Speakers included Drs Louis E. Phaneuf, Frank H. Dunbar and

Francis P. McCarthy, all of Boston. Dr Leary was assistant professor of pathology and bacteriology at Tufts from 1897 to 1900 and professor from 1900 to 1929, when he became emeritus professor.

Personal—Dr Benjamin Sachs, assistant professor of ophthalmology, has been appointed professor of ophthalmology at Tufts College Medical School, Boston.—Dr William O. Faxon, Stoughton, was guest of honor at a dinner, May 1, in celebration of his completion of sixty years in the practice of medicine, he has been medical examiner of Norfolk County for forty-two years. A silver platter, bearing the engraved names of those who participated in the celebration, was presented to Dr Faxon.—Philip Drinker, Ch. E., has been promoted from associate professor to professor of industrial hygiene at Harvard University School of Public Health, Boston.—Dr John H. White, clinical professor of ophthalmology, Harvard University Medical School, Boston, was awarded the honorary degree of doctor of science by Bucknell College at its eighty-sixth commencement at Lewisburg, Pa., recently.

MICHIGAN

Rabies—The Detroit Department of Health has requested the police to enforce the ordinance requiring that all dogs be kept on a suitable leash in an effort to prevent the spread of rabies in the city. The department urges the vaccination of all dogs in the area bounded on the north by Eight Mile Road, on the east by Dexter Boulevard, on the south by Fenkell Avenue and on the west by Wyoming Avenue. Two rabid dogs were reported during April six during May and three up to June 13.

Portrait of Dr LeFevre—A life-sized oil portrait of Dr George I. LeFevre was one of three unveiled at a ceremony in Mercy Hospital, Muskegon, June 1, in appreciation of his many years interest in the development of the institution. Dr LeFevre has been identified with Mercy Hospital since its founding in 1903, serving as its president, chief of staff and chairman of the advisory committee. He has been president of the Muskegon County Medical Society and for several years was counselor of the eleventh district. For many years a member of the Michigan State Board of Registration in Medicine he served as chairman for sixteen consecutive years. He was president of the Michigan State Medical Society in 1933.

MINNESOTA

State Medical Election—Dr Alfred W. Adson, Rochester, was elected president of the Minnesota State Medical Association at its annual meeting in May. Other officers include Drs Henry W. Goehrs, St. Cloud, and Douglas P. Head, Minneapolis, vice presidents, Edward A. Meyerding, St. Paul, secretary, and William H. Condit, Minneapolis, treasurer. The next annual session will be held in St. Paul. A revised constitution was provisionally adopted. One of the major changes proposed in the new constitution is the election of a speaker for the house of delegates. In anticipation of the permanent establishment of this office, Dr Oscar E. Locken Crookston, was elected temporary speaker. Dr Robert G. Green, professor of bacteriology and immunology, University of Minnesota School of Medicine, Minneapolis, received the medal presented annually by the Southern Minnesota Medical Association for the best scientific exhibit. His subject was tularemia and certain filtrable viruses. Sir Henry Wellcome, who founded the Wellcome Research Institution, London, was present at the meeting.

Retiring Faculty Members Honored—A testimonial dinner was held, June 10, in honor of the following members of the faculty of the University of Minnesota School of Medicine, who are retiring on account of age:

Dr James T. Christison, associate professor of pediatrics
Dr Charles H. Mayo, professor of surgery
Dr Charles A. Erdmann, associate professor of anatomy
Dr James S. Giffillan, associate professor of medicine
Dr Thomas B. Hartzell, lecturer in medicine
Dr John T. Rogers, associate professor of surgery
Dr John L. Rothrock, professor of obstetrics and gynecology
Dr Franklin R. Wright, associate professor of urology

The retirement of Dr Elias P. Lyon as dean of the medical school was announced some time ago. At the dinner, a portrait of Dr Lyon, the gift of heads of the department and divisions of the medical school, was presented to the medical school by Dr Harold S. Diehl, his successor as dean. Dr William J. Mayo accepted it on behalf of the board of regents. The establishment of the Elias Potter Lyon Lectureship was announced on this occasion, Dr Adam M. Smith making the announcement for the Medical Alumni Association. President Lotus D. Coffman presided and Dr Jennings C. Litzberg was toastmaster.

MISSOURI

Dr Marriott to Be Dean at California—Dr Williams McKim Marriott, since 1923 dean of Washington University School of Medicine, St. Louis, has resigned to become dean and professor of research medicine at the University of California Medical School San Francisco. Until a new dean has been appointed at Washington, the affairs of the medical school will be administered by a committee of three faculty members. Dr David P. Barr, head of the department of internal medicine, Philip A. Shaffer, Ph.D., head of the department of biologic chemistry and Dr Curtis A. Graham, head of the department of surgery. Dr Marriott will be succeeded as professor of pediatrics and physician in chief of the St. Louis Children's Hospital by Dr Alexis F. Hartmann, associate professor of pediatrics at Washington. Dr Marriott, who is 51 years of age, graduated from Cornell University Medical School in 1910. He began his teaching career as assistant in chemistry at the University of North Carolina. Subsequently, until he became professor of pediatrics at Washington University School of Medicine he taught at Cornell, Washington University and Johns Hopkins. He served on the Council on Pharmacy and Chemistry of the American Medical Association from 1926 to 1930. He is the author of "Recent Advances in Chemistry in Relation to Medical Practice" and "Infant Nutrition." Dr Langley Porter, who has been dean of the University of California Medical School since 1927, reached the retirement age in 1935, but the board of regents extended his term for one year.

NEW JERSEY

Society News—Drs Milton Helpert and Chas Ray Murray, New York, addressed the Bergen County Medical Society, Hackensack, June 9, on "Sudden Death" and "Low Back Pains" respectively.—The newly organized New Jersey chapter of the Association of Military Surgeons of the United States held its first formal meeting at Atlantic City, June 2, during the meeting of the Medical Society of New Jersey. Speakers included Gen Harry L. Gilchrist, who discussed medical problems of gas warfare, Dr William Seaman Bainbridge, New York, progress in military medicine and surgery, and Col Jay W. Grissinger, U. S. Army, war-time medical experiences and improvements evolved from them.—A symposium on ophthalmologic subjects was presented at a meeting of the Passaic County Medical Society, Paterson, May 14, by Drs Earle C. Reynolds and Thomas M. Glasgow, Passaic, and Thomas A. Sanfacion and Manasseh Benjamin Park, Paterson.

NEW MEXICO

State Medical Election—Dr George W. Jones Clovis, was chosen president-elect of the New Mexico Medical Society at the annual session, May 7, in Carlsbad. Dr Mallory B. Culpepper, Carlsbad, was installed as president and Dr Leo B. Cohenour, Albuquerque, reelected secretary. The 1937 meeting will be in Clovis.

NEW YORK

State Society Prize Awards—At the annual session of the Medical Society of the State of New York in New York in April, Dr Karl Fischel, Saranac Lake, received the Merritt H. Cash Prize awarded by the society for an essay on "The Problem of Tuberculosis." Dr Arthur J. Bedell, Albany, received the Lucien Howe Prize for an essay on "Choroideremia."

Society News—The Dutchess County Medical Society held its May meeting at the Veterans' Administration Facility Castle Point, with the following speakers: Drs Joseph F. Wallace, on "Hospitalization in Veterans' Administration Facilities," Hubert Ivey, "Collapse Therapy in Pulmonary Tuberculosis," Guy P. Asper, "Treatment of Complications in Tuberculosis," and Samuel A. Beddall, "Pneumoconiosis from an X-Ray Standpoint."—Dr Philip L. Forster, Albany, addressed the Medical Society of the County of Albany, June 24, on "The General Practitioner and His Orthopedic Problems."

Instruction in Care of Crippled Children—The New York State Department of Health is cooperating with New York University in offering two courses to prepare persons for work with the physically handicapped. The courses are intended for public health nurses and others selected by state authorities to carry out the program of the Social Security Act as it relates to crippled children. They are to be given at the New York State Reconstruction Home at West Haverstraw, the first session from July 6 to August 14, the second

from August 17 to October 17. Information concerning appointments may be obtained from the agency in charge of administration of the Social Security Act in each state, information about the courses from Dr George G. Deaver, New York University, Washington Square New York, N. Y.

New York City

Personal—Dr Simon Flexner, member emeritus of the Rockefeller Institute for Medical Research, was elected an honorary fellow of the Royal Society of Medicine in London, May 19.—Dr John N. Evans has succeeded Dr Henry Mitchell Smith as head of the department of ophthalmology at Long Island College of Medicine. Dr Smith is professor emeritus.

Three New Health Centers—Cornerstones have been laid recently for three new health center buildings as part of a program that will eventually include thirty district centers. WPA grants and loans amounting to \$1,900,963 have made possible the construction of eight buildings immediately. Those for which cornerstones have been placed recently are in East Harlem, Chelsea Park and the Williamsburgh-Greenpoint district of Brooklyn. Construction has been begun on others in Central Harlem and the Red Hook-Gowanus section of Brooklyn, it is reported.

Eight Hour Day for City Hospital Employees—The board of aldermen voted June 17 to grant the eight hour day to employees in city hospitals. The change will add about \$1,000,000 annually to the budget of the department, it was said, but in the opinion of those supporting the bill the expense is justified because of better service to patients and reduced turnover in the hospitals. The bill's provisions may be suspended in times of emergency, it is provided. It does not affect administrative officials, medical and lay superintendents, physicians, interns, pathologists, roentgenologists, superintendents of nurses and ambulance drivers. Alderman James A. Burke, who sponsored the city law, introduced into the legislature last year a similar law affecting state hospitals, which went into effect July 1.

Dr Ewing Awarded Medal—The Philadelphia Board of City Trusts recently bestowed the John Scott Award on Dr James Ewing, professor of oncology, Cornell University Medical School, for his research in classifying tumors. The Scott award, consisting of a bronze medal and \$1,000, was given to the city of Philadelphia under the will of John Scott, a Scottish chemist who died in 1916, to reward those whose work "adds to the comfort, welfare and happiness of mankind." The original bequest was only \$4,000 and the award \$20, but by 1919 the trust had increased to more than \$100,000 and courts granted the increase in the award. Winners of the award in recent years are Philip Drinker, Ch. E. and Louis Agassiz Shaw, A. B., Boston, inventors of the artificial respirator, and Dr George R. Minot, Boston, for his introduction of the liver treatment for pernicious anemia.

NORTH CAROLINA

Personal—Dr John S. Anderson, New Bern has been appointed health officer of Craven County.—Dr William Blair Hunter, Gastonia, has been appointed health officer of Harnett County.—Dr Harold D. Brewster, clinical director of the Veterans' Administration Facility at Oteen for nine years has been transferred to the facility at Legion, Texas, and will be succeeded by Dr Carroll L. Moore, clinical director at the Legion facility.

Public Health Meeting—Dr Roderick M. Buie, Greensboro, was elected president of the North Carolina Public Health Association at the annual meeting in Asheville May 4. Among speakers were Drs James A. Hayne, Columbia, state health officer of South Carolina, on "Maternal and Child Health," Mark V. Ziegler of the U. S. Public Health Service, "Determining Community Health Needs," and Alexander C. Bulla, Raleigh, "Polymyositis and the Public."

Society News—A symposium on renal calculi was presented before the Mecklenburg County Medical Society, Charlotte, June 2, by Drs Claude B. Squires and Robert W. McKay, Charlotte, and William M. Coppridge, Durham.—Dr Staige D. Blackford, Charlottesville, Va., addressed the Guilford County Medical Society, Greensboro, June 4, on "Chronic Duodenal Ileus."—Dr Le Grand Guerry, Columbia, S. C., addressed the Buncombe County Medical Society, Asheville, May 18, on "Management of Late Cases of Suppurative Appendicitis."

OHIO

Society News—Dr Henry Wagener, Rochester, Minn., addressed the Columbus Academy of Medicine May 4, on "Vascular Lesions of the Retina," at a joint meeting with the Columbus Ophthalmological and Otolaryngological Society—Dr Oscar V. Batson, Philadelphia, addressed the Summit County Medical Society, Akron, May 5, on "Veins of the Head and Neck as Related to the Problems of Otolaryngology"—The Akron Academy of Ophthalmology and Otolaryngology was formed in April with Drs Louis E. Brown as president, Elmer L. Mather, vice president, and Chas. R. Andersen, secretary—Drs Bruce H. Douglas and David S. Braehman, Detroit, addressed the Toledo Academy of Medicine, June 5, on "Childhood Tuberculosis" and "Tuberculosis in the High Schools of Detroit" respectively—Dr Elias Potter Lyon of the University of Minnesota Medical School Minneapolis, gave the annual Alpha Omega Alpha address of the Academy of Medicine of Cincinnati, May 19—Dr Theodore T. Zuck, Cleveland, addressed the Tuscarawas County Medical Society Uhrichsville, May 14, on "Clinical Application of Recent Endocrine Studies of Human Development"—Dr Charles R. Hoskins, Athens, presented a paper on "Recent Advances in the Surgical Treatment of Facial Paralysis" at a meeting of the Athens County Medical Society, Nelsonville May 4

PENNSYLVANIA

County Society Clinic—The Westmoreland County Medical Society held its annual clinic at the Latrobe Hospital Latrobe June 3. At the morning session guest speakers were Drs John I. Wiseman, Torrance on "Symptoms of Incipient Dementia Praecox," Harold M. Griffith, Johnstown Ophthalmology for the General Practitioner, Leo H. Crip, Pittsburgh "Management of the Allergic Patient," Zoe A. Johnston, Pittsburgh, "Radium and X-Ray Therapy in the Treatment of Malignant Diseases," Elliott B. Lide, Uniontown "The Eye in Medical Diagnosis," and Bernard J. McCloskey, Johnstown, "Noninflammatory Diseases of the Appendix." Dr Louis Hamman, Baltimore, conducted a medical clinic and Dr John C. Hirst, Philadelphia a surgical clinic in the afternoon. At a dinner meeting at the Latrobe Country Club Dr Hamman and Dr Hirst gave addresses.

Philadelphia

Personal—Dr Frederick D. Weidman was recently made a corresponding member of the Austrian Dermatologic Society—Dr Joseph McFarland, professor of pathology in the University of Pennsylvania School of Medicine retired June 30 having reached the age limit. He remains as professor of pathology in the Evans Dental Institute and the Veterinary Medical School of the University.

Promotions at Jefferson College—The following promotions in the faculty of Jefferson Medical College have been made during the year just passed:

Dr John B. Flick to be associate professor of surgery
Dr Henry K. Mohler associate professor of therapeutics
Dr Lewis C. Scheffey associate professor of gynecology
Dr Henry K. Seelaus assistant professor of surgery
Dr Harold L. Stewart assistant professor of pathology
Dr David R. Morgan assistant professor of pathology
Dr Adolph A. Watling assistant professor of surgery
Dr William H. Schmidt, assistant professor of physical therapy in the department of neurology

Dr David M. Davis, formerly of Phoenix, Ariz., was appointed professor of genito-urinary surgery during the year.

Pittsburgh

University News—The University of Pittsburgh School of Medicine conducted its annual clinic for the graduating class alumni and members of the medical profession, May 23. The guest speaker was Dr John N. Hayes, Saranac Lake, on "Some Recent Tendencies in the Treatment of Tuberculosis." Dr Irvin D. Metzger, chairman of the state board of medical education and licensure, received the honorary degree of doctor of science at the commencement exercises, June 10. Dr Rutherford T. Johnstone has recently resigned as assistant professor of medicine, having removed to Los Angeles to live.

RHODE ISLAND

State Medical Election—Dr Walter C. Rocheleau, Woonsocket, was named president-elect of the Rhode Island Medical Society at the annual meeting, June 3, and Dr Guy W. Wells, Providence, secretary. Dr John E. Donley, Providence, was installed as president. The next meeting of the society will be in Providence.

TENNESSEE

Institute on Malaria Control—The Tennessee Department of Health sponsored an institute on malaria control at Jackson, May 26. Among the speakers were Drs Eugene L. Bishop, Knoxville, director of health for the Tennessee Valley Authority, who discussed "The Malaria Problem in Tennessee and the Surrounding Area," Henry E. Meleney, Nashville, "Medical Preventive Measures," Robert B. Watson, Wilson Dam, Ala., "Epidemiology of Malaria," Robert C. Derivaux, Nashville "Medical Curative Measures."

Tennessee Valley Meeting—Dr Edward A. Guynes, Knoxville was chosen president-elect of the Tennessee Valley Medical Association at the second annual meeting in Knoxville, June 10-12, and Dr Tom R. Barry, Knoxville was installed as president. Speakers on the scientific program included:

Dr James S. McEster, Birmingham, Common Forms of Nutritive Failure
Dr Raymond A. Vonderlehr, U. S. Public Health Service, Washington, D. C., Public Health Aspects of Syphilis
Dr Chauncey C. Maher, Chicago, Hypertensive Vascular Disease
Dr Leon Herman, Philadelphia, Obstructive Lesions of the Upper Urinary Tract
Dr Hayes E. Martin, New York, Curability of Intra-Oral Cancer by Modern Therapeutic Methods
Dr Walter C. Alvarez, Rochester, Minn., Helpful Hints in Diagnosing Gastrointestinal Disease
Dr Austin A. Hayden, Chicago, The Problem of the Hard of Hearing Patient

Dr Morris Fishbein, Chicago, editor of THE JOURNAL, gave an address at the banquet Thursday evening, June 11.

TEXAS

State Medical Election—Dr Calvin R. Hannali, Dallas was chosen president-elect of the State Medical Association of Texas at the annual session in Houston May 27, and Dr Howard R. Dudgeon, Waco, was installed as president. Vice presidents elected were Drs Wilburn C. Williams, San Marcos, Samuel D. Whitten, Greenville, and R. Spencer Wood, Waco. The next session will be held in Fort Worth.

Health at El Paso—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million indicate that for the week ended June 20 the highest mortality rate (206) appears for El Paso, the rate for the group of cities as a whole being 108. The rate for El Paso for the corresponding period last year was 139 and for the group of cities 109. The annual rate for eighty-six cities was 13 for the twenty-five weeks of 1936 as against a rate of 12.3 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

GENERAL

Diploma Stolen—Dr Jerome Matthew Brosnan, Chicago reports that his diploma from Loyola University School of Medicine disappeared from his room in the Little Company of Mary Hospital the day following graduation, June 11.

Winners in Rural Health Contest—Winning counties in the second annual interchapter rural health conservation contest conducted by the United States Chamber of Commerce and the American Public Health Association, were Westchester County, N. Y. northern division; Davidson County, Tenn., eastern division; Shawnee County, Kan., north central division; El Paso County, Texas, south central division; Glynn County, Ga., southeastern division; and Santa Barbara County, Calif., western division. The contest was limited to counties and districts having full time health services, of which 160 enrolled. Expenses of the contest were borne by the W. K. Kellogg Foundation, Battle Creek, Mich.

Conference on College Hygiene—Announcement is made of the Second National Conference on College Hygiene, to be held at the Wardman Park Hotel, Washington, D. C., December 28-31, under the joint sponsorship of the American Student Health Association, the National Health Council and the Presidents' Committee of Fifty on College Hygiene. The first conference, called by the same sponsors, was held at Syracuse University, Syracuse, N. Y., in 1931. There will be no formal program with prepared addresses. The work will be divided into five sections: health service, health teaching, organization and correlation, special problems and relationship of college hygiene to teacher training and secondary education. Dr Livingston Farrand, president of Cornell University, Ithaca, N. Y., is chairman of the conference and Dr William F. Snow, New York, is chairman of the organizing committee. Dr Hugh S.

Cumming, former surgeon general of the U S Public Health Service, is chairman of the Washington committee on arrangements. The executive office is at Room 828, 50 West Fiftyeth Street, New York, with Miss Louise Strachan as secretary.

Pacific Northwest Medical Association—The fifteenth annual meeting of the Pacific Northwest Medical Association will be held in Portland, Ore., July 8-11. Guest speakers will be

Dr. Lewis J. Pollock, Chicago, Epilepsy, Differential Nervous System Diseases.

Dr. Chevalier Jackson, Philadelphia, Cancer of the Larynx, Bronchospasm in Diagnosis and Treatment of Diseases of the Lung.

Dr. Ray M. Balyeat, Oklahoma City, Gastro-intestinal Allergy, Allergic Problems in General Practice, Intractable Asthma.

Dr. Carl Henry Davis, Milwaukee, Prophylactic Treatment of Thyroid Disease, Diseases of the Cervix Uteri.

Dr. David J. Davis, Chicago, Streptococcus Infections, Principles and Pathogenesis of Diseases of the Respiratory Tract, Pulmonary Abscess and Gangrene.

Dr. Paul J. Hanzlik, San Francisco, Vasomotor Tissue Extracts in Circulatory Disease, Diuretic and Antiedemic Drugs, Bismuth in the Treatment of Syphilis.

Walter J. Meek, Ph.D., Madison, Wis., Physiologic Background of Heart Diseases, Traumatic Shock, Beginning of American Physiology.

Dr. Alexis F. Hartmann, St. Louis, Vomiting in the New Born, Acidosis and Alkalosis, Otitis Media and Complications.

Dr. Russell L. Cecil, New York, Pneumonia, Arthritis, Influenza and the Common Cold.

Dr. Cyrus C. Sturgis, Ann Arbor, Mich., Physiology of Blood in Relation to the Anemias, Diseases Associated with Abnormalities of White Blood Cells, Periodic Loss of Consciousness.

Dr. Roy D. McClure, Detroit, Artificial Fever Therapy, Goiter and Iodized Salt Burns—Tannic Acid Treatment.

Dr. Harry E. Mock, Chicago, Surgical Conditions of the Alimentary Tract, Reconstructive Surgery, Craniocerebral Injuries.

American Association of History of Medicine—

Dr. Henry L. Sigerist, Baltimore, was chosen president of the American Association of the History of Medicine at its annual meeting in Atlantic City, May 4. Dr. Esmond R. Long, Philadelphia, vice president, and Dr. Edward J. G. Beardsley, Philadelphia, speakers included the following physicians:

Dr. Joseph H. Pratt, Boston, John Warren, the Father of the Harvard Medical School.

Dr. Edwin Robert Wiese, Philadelphia, The Status and Practice of Medicine in Imperial Rome.

Dr. Long, Concepts of Cardiac Pathology Before Morgagni.

Dr. Sanford V. Larkey, Baltimore, Children and Witches.

Dr. Michael L. Ravitch, New York, Dr. Pirogoff, the Russian John Hunter.

Dr. John R. Oliver, Baltimore, Spontaneous Combustion, a Literary Curiosity.

Dr. Louis H. Clerf, Philadelphia, Historical Notes on Foreign Bodies in the Food and Air Passages.

Ludwig Edelstein, Ph.D., Baltimore, Greek Medicine in Its Relation to Religion.

Dr. Robert H. Halsey, New York, The Correspondence Between President Jefferson and Dr. Waterhouse and Its Bearing on the Introduction of Smallpox Vaccination.

Dr. Owsei Temkin, Baltimore, Haller's Scientific Controversies.

The dinner session was addressed by Dr. Edward B. Krumpholtz, Philadelphia, on "Notes and Impressions of the Tenth International Congress held in Madrid in September 1935", Dr. Sigerist, "The Social History of Medicine," and Dr. Howard Dittrick, Cleveland, "Some Old Hospitals in Spain," illustrated.

FOREIGN

Society News—The sixth session of the "International Office of Documentation of Military Medicine" will be held in Geneva, Switzerland, October 12-14. All officers of the military medical services are invited. Those who wish to attend are requested to notify Dr. Voncken, director of the organization, Liege, Belgium, before September 1.—The annual meeting of the International Society of Medical Hydrology will be held in Austria, October 10-16, opening at Innsbruck. The party will proceed to Badgastein and from there to Salzburg. The subjects for discussion are "Spa Treatment of Disorders of Old Age" and "Radioactivity in Medicinal Waters." Full details may be obtained from the General Secretary, International Society of Medical Hydrology, 109 Kingsway, London, W C 2.

Society to Promote Electrotherapy—The Duchenne Society was recently organized in England to promote the ethical and rational use of electrotherapy. Members are Prof. Walter J. Turrell, Oxford, Sir Morton W. Smart, Drs. Elkan P. Cumberbatch, C. A. Robinson, Francis Howard Humphris and Philippe Bauwens. Lord Horder was elected medical consultant, Prof. Jean d'Arsonval, Paris, and Dr. Norman E. Titus, New York, foreign honorary consultants for France and the United States, respectively.

Congress of Otorhinolaryngology—The third International Otorhinolaryngological Congress will be held in Berlin August 17-22. Subjects to be discussed are radiotherapy of malignant tumors of the nose and throat, electro-auditory apparatus for aids to hearing and for examination of the hear-

ing, and influence of constitution on disorders of the ear, nose and throat. Those wishing to participate are requested to send their registration by August 1. The secretary general of the congress is Dr. Klaus Vogel, Berlin NW 7, Luisenstrasse 11-13.

Government Services

Changes in Public Health Service

Dr. Robert Olesen, medical director, U S Public Health Service, has been detailed as assistant surgeon general in charge of the division of sanitary reports and statistics, effective June 1. He succeeds Dr. Ralph C. Williams, who has been relieved as assistant surgeon general and assigned to duty as medical director of the rural resettlement administration with headquarters in Washington, D. C. Dr. Roscoe R. Spencer, senior surgeon, has been directed to report for duty in the division of sanitary reports and statistics. Surg. Calvin C. Applewhite has been relieved from duty as regional consultant for the New England district and directed to Chicago to assume charge as regional consultant for district number 3, succeeding Dr. Knox E. Miller. Dr. Carroll E. Palmer has been appointed and commissioned as passed assistant surgeon in the regular corps of the public health service.

Second Year Internships Available in Public Health Service

The U S Public Health Service announces that applications for second year internships will be received from physicians not over 30 years old who have graduated from class A medical colleges and who will have completed one year's internship at an approved hospital following graduation. It is especially desired to receive applications from candidates interested in the service as a career. No written examination is required. Candidates appointed for duty at Marine Hospitals and U S Narcotic Farms will receive a gross pay of \$1,800 a year from which a deduction of \$690 a year will be made if quarters, subsistence and laundry are furnished. Those assigned to the federal penal and correctional institutions will receive \$1,620 a year, from which \$240 will be deducted if quarters, subsistence and laundry are furnished. When quarters are furnished they cannot be shared by the interns dependents. Appointments will be made with the understanding that those appointed will have opportunity to take the next examination for appointment as assistant surgeon in the regular corps. Persons desiring to make application should communicate at once with the Surgeon General, U S Public Health Service, Washington, D. C., stating definitely that they are interested in a second year internship.

March a Record Month for Food and Drug Administration

Foods damaged by floods in the Eastern states brought a problem to federal and local officials during March, the Food and Drug Administration reports. Much of the damaged food was destroyed on the spot. Foods in transit or shipped in a damaged condition immediately after the floods were followed up by federal agents. Local officials in twenty-two cities report the destruction of 390 tons of fresh fruits and vegetables, coffee, tea, candy, cereals, flour, beans, dessert preparations, meats, shortenings, butter, dried fruits and nuts, spices and drugs. This does not include hundreds of small lots, in Pittsburgh, where damage was enormous, no estimate of condemned foodstuffs was attempted. Actions under the federal law to date have included seizures of 580,900 pounds of sacked feeds, 25 tons of corn, 200 bags of unroasted coffee, 11,410 pounds of coffee and one shipment of candy. Aside from the flood emergency, the administration reports the largest seizure month on record. Most important of the seizures was the result of a campaign to stop adulteration of olive oil, most of which was done in Massachusetts and New York. Nearly 49,000 containers holding a total of 11,255 gallons of olive oil adulterated with tea seed oil, most of it to the extent of 70 per cent, were seized. Second on the list in point of quantity seized were preserves deficient in fruit, of which 10,000 jars were confiscated. Mislabelled foods, grossly contaminated canned foods and shortweight packages made up the rest of the month's seizures. Dangerous drugs seized included a substandard pituitary solution, rubbing alcohol made up with isopropyl alcohol and an iodine compound. Numerous preparations labeled with cure-all claims were also included.

Foreign Letters

LONDON

(From Our Regular Correspondent)

MAY 16 1936

The International Congress of Physical Medicine

The sixth International Congress of Physical Medicine has been held in London. The honorary president, Lord Horder, was unable to attend owing to his previous acceptance of the invitation of the American Medical Association to attend the Kansas City session. Sir Robert Stanton Woods presided. In his presidential address, read by the honorary secretary Lord Horder said that it was the glory of medicine, like Bacon that it took all knowledge for its province. It was the child of all the sciences, and the best doctor was he who attached himself to no system and no sect but made use of every available piece of knowledge in the patient's interest. He welcomed the inclusion of a section of physical medicine in the medical schools. For many years he had urged its claims and he was gratified that its progress, which he predicted more than ten years ago had been amply fulfilled. The practice of physical medicine should be kept under scientific control, which could be achieved only by a close liaison between the physical therapist and the physician. The physical therapist should constantly realize that his approach must primarily be a clinical one. In proportion as he tended to isolate himself he lessened the benefits he could confer, for it was the patient and his reactions that constituted the official arbiter of results whether in diagnosis or in treatment, and it was the clinician who could best judge these.

PHYSICAL EDUCATION

Lord Dawson said that it was remarkable that the teaching of the golden age of Greece, with its ideal of equal training of body and of mind, should for centuries have disappeared. Denmark was the first modern country to make physical education an essential part of the curriculum of its schools. Ling whose system influenced physical education throughout the world soon followed. Great Britain had been the home of games and sports while continental countries were formulating their systems of gymnastics. Not until 1909 was physical education established in the elementary schools. He did not think that games could replace physical education. Proficiency in them was compatible with defects of frame or function, which might not make themselves felt until manhood, when they became a progressive handicap. Some games unless correlated with physical education, were liable to overstrain their votaries and impair health later in life. Equally physical education could not replace sport and games, for rivalry and the team spirit could not be derived from the former. Physical education was an increasing necessity in modern life. Formerly, when there were no organized social services to protect weak and damaged stocks, natural selection operated more effectively. Today they were preserved and it was the more necessary, therefore, to build them up. The physician, with his knowledge of the structure and functions of the body, should be associated with physical education. Early divergencies from normal development would thus be corrected at school.

THE HYGIENE OF SPORT

Sir Leonard Hill said that, in the well trained 20 or 30 per cent of the energy used in exercise was spent as work and the rest as heat, but any defect, such as sore feet or an ill balanced pack in the marching of a soldier or the crouching position of the miner, wastefully increased the energy output. Training brought about an enriched blood stream, a greater capacity for deep breathing, a building up of muscle, with loss of superfluous fat. Up to 18,000 feet Everest climbers improved, beyond that

oxygen want came into play and degeneration began. But with an oxygen breathing apparatus the climber could be made as efficient at 29,000 feet as at sea level. By breathing oxygen at the start of a race athletes had run the half or quarter mile within a second or two of their record runs. Breathing oxygen afterward prevented all leg stiffness and made them ready to run again. Sir Leonard Hill held that skilled movement was the basis of mental equipment. Yet 70 per cent of our youth between the ages of 14 and 18 did not participate adequately in physical training. At the universities, boys were promoted without due consideration of their physique.

The Prevention of Blindness

The Standing Committee on the Prevention of Blindness of the Union of Counties Associations for the Blind has presented an important report. The committee consists of ophthalmologists, health officers and others interested in the problem of the blind. They state that there is at the present day much blindness which might have been prevented if suitable precautions had been taken in time. There is also a definite number of cases in which some degree of useful sight can be restored by proper measures. These two factors led to the formation of the committee. In England the movement for prevention of blindness began about 1879. The London Society for the Prevention of Blindness was formed of which Dr. Roth was the honorary secretary. In a paper read at a conference in 1883 he enumerated four forms of ignorance as among the more important causes of blindness: (1) ignorance regarding ocular hygiene of mothers and nurses and all those to whom the care of children is entrusted; (2) ignorance of schoolmasters and school mistresses in matters of health and physical education; (3) ignorance and neglect of the working classes regarding influences affecting their general health and causing diseases of the eyes; (4) ignorance of many physicians with regard to eye diseases. This society did not survive long but it was the first organized movement for the prevention of blindness in this country.

In 1889 the Royal Commission on the Blind recommended that the intermarriage of the blind should be discouraged, that information on the treatment of purulent ophthalmia should be circulated by sanitary authorities or through the post office that school children with defective sight should be periodically examined and glasses ordered and that greater attention to ophthalmology should be encouraged among physicians. In 1909 the notification of ophthalmia neonatorum was made compulsory. In 1923 the General Medical Council made the instruction in ophthalmology of every medical student compulsory. But the standing committee holds that the present arrangements do not secure that in general the physician has the requisite knowledge of ophthalmology and it considers that the matter should continue to receive the close attention of the curriculum committee of the General Medical Council.

The standing committees make a number of recommendations. It is essential that squint and amblyopia associated with it should be treated as early as possible. Improvement in children's surroundings and early treatment, particularly in open air schools would markedly reduce the ravages of phlyctenular disease. Sympathetic ophthalmia must still be reckoned with as a serious danger, especially when a foreign body has perforated the eye and is retained within the globe or when it is known that the ciliary region has been affected. The outlook is always serious and it still seems necessary to emphasize the importance of removing immediately an eye so seriously injured that there is no possibility of useful sight. Glaucoma proceeds so insidiously that it may pass unnoticed for years unless the eyes are properly examined. The patient may think it is only a matter of buying stronger glasses and may so obtain temporary improvement in sight yet the field of vision may be

slowly contracting with less hope from subsequent operation. A comprehensive and adequate system of interpartum supervision is important as a means of safeguarding the sight of both mother and child. A hospital should be maintained with the centers for the treatment of venereal disease. Ophthalmia neonatorum requires such constant attention and such skilled nursing that it is best treated in a hospital. For prophylaxis the use of 1 per cent silver nitrate should be included in the training of every midwife. The visual conditions of children should be examined as soon as possible after entry into school. As myopia may seriously progress in adolescence supervision by the ophthalmologist after leaving school may diminish the risk of subsequent blindness. The greatest risk of occupational blindness occurs in metal working, from splashing in chemical processes and in stone dressing. The eyes should be protected by goggles or a screen fixed to the machine. The risk to the eye is particularly heavy in coal mines and in quarries raising igneous rock. Proper medical attention should be sought immediately after all eye injuries, as those which may seem trivial may turn out to be serious.

Gift for Research to the Cavendish Laboratory

Sir Herbert Austin, the automobile manufacturer, has made the munificent gift of \$1,250,000 to the famous Cavendish laboratory at Cambridge University. In acknowledging it the director Lord Rutherford, says that it will give an opportunity of building a modern research laboratory and will also be of great value in helping to defray the large expenditure required for modern research in physics. The first use of the money will be to build a laboratory for the utilization of very high voltages, in order to carry out experiments on the transmutation of matter by high speed particles and by radiation.

The laboratory perpetuates the name of one of the greatest experimenters, Henry Cavendish who discovered the composition of water. The successive directors bear names too great for any praise—Clerk Maxwell, Lord Rayleigh, Sir J. J. Thomson, Lord Rutherford. Among the advances made in the laboratory was the discovery of the electron in 1897 and of the neutron in 1932. Of remarkable apparatus in use there may be mentioned Prof. C. T. R. Wilson's cloud chamber, in which the tracks of atomic particles have been photographed, and Dr. F. W. Aston's mass spectrograph, by which individual atoms can be weighed.

Medical Refugees in England

In the house of commons it was officially stated in reply to a question that since March 1935 refugees who have applied for permission to reside in this country for the purpose of medical study have been informed that permission can be granted only on the understanding that after qualifying they will not establish themselves in practice in the United Kingdom but will leave the country. However, among the refugee physicians who came before that date 148 have been granted permission to practice after they have obtained a British medical qualification. This permission has been granted on various special grounds. In some cases of eminent physicians having special attainments their colleagues in this country have asked that they be allowed to practice here.

Karl Pearson

By the death of Prof. Karl Pearson in his eightieth year is removed a man who was not a physician but who rendered unique service to medicine by placing its statistical methods on a scientific basis. A mathematician with a distinguished university career, he was appointed to the chair of applied mathematics at University College, London. He was early attracted by the work of another great pioneer, Francis Galton, a cousin of Charles Darwin and the founder of the science of

human heredity. His books on "Hereditary Genius" and "Noteworthy Families" are well known. His investigations brought him up against the fundamental principles of statistics, for which his mathematical knowledge was insufficient. Pearson supplied the deficiency. Galton originated the science of eugenics, to which he gave that name. He founded the chair of eugenics at University College by the munificent endowment of \$225,000 and, according to his wish, Pearson became the first professor. He was also director of the Galton Laboratory of Eugenics at the same college. With the approval and support of Galton he founded the journal *Biometrika*. He was editor of the *Annals of Eugenics*. He gathered round him a number of pupils who became distinguished later. Among these may be mentioned L. N. G. Filon, F.R.S., recently vice-chancellor of the University of London, Prof. Major Greenwood, F.R.S., a well known authority on vital statistics, and Prof. Raymond Pearl of Johns Hopkins University. It was Pearson who taught medical writers how to use statistics scientifically. At first his criticisms of their methods aroused much opposition, but he prevailed in the end. The extent of his activities was enormous, they ranged over pure mathematics, mathematical statistics, philosophy, history, anthropology and eugenics.

PARIS

(From Our Regular Correspondent)

May 15 1936

Complication Following Treatment with Gold Salts

A warning about the treatment of pulmonary tuberculosis with gold salts was sounded by E. Bernard and M. Morin at the Société médicale des hôpitaux of Paris, March 20. A woman, aged 27, had been ill since May 1935. Radiography in July of that year revealed a tuberculous cavity in the left upper lobe, and tubercle bacilli were found in the sputum. A pneumothorax treatment having been unsuccessful, a phrenicectomy was performed July 20, and administration of gold salts begun. The total dose given up to October 4, a period of ten weeks, was 4.05 Gm. Signs of stomatitis then appeared. The neurologic symptoms appeared October 10 in the form of almost intolerable pains of a lancinating character in the right arm and leg, accompanied by bilateral muscular fibrillation. Psychic disturbances took the form of restlessness, insomnia and the desire to commit suicide, at the end of the series of injections, and were due to the gold salts alone, because all other causes of toxemia could be excluded. The total dose given could not be considered toxic, but in the case of gold salts, as in the administration of the salts of arsenic, the complications do not appear after a single or several injections but at the end of the treatment. It would appear as if the metal had a special affinity for certain tissues. Similar cases have been reported by a number of authors, in which all four extremities (Gernez), both legs (Beyerholm, Alajouanine, Berthier), both arms (Lambea) or only one limb (Jzanck) was involved.

Stomatitis Due to Administration of Gold Salts

At the March 27 meeting of the Société médicale des hôpitaux of Paris, Charles Flandin and his associates reported two cases of severe stomatitis following the use of gold salts. As a rule, the stomatitis develops rapidly and is relatively benign, recovery taking place after a short interval. Even when ulceration occurs, it is exceptional for healing to require more than a month. In addition to this acute form, the stomatitis may develop slowly, as in the two cases observed by Flandin and associates. In one of these, 18 Gm. of a gold salt was given over a period of seven weeks for an acute pulmonary congestion in a man aged 49, the examination of whose expectoration had revealed, twelve years previously, the presence of tubercle bacilli. The gold salt therapy had been followed by a lichen-like cuta-

neous eruption and a subacute stomatitis, which was of seven months' duration when the patient was first seen by Flandin. In the second case, a psoriasis which had resisted all treatment was treated by 7 cc of a suspension in oil of a gold salt. This was followed by the appearance of an acute colitis and ulcerative stomatitis, which became subacute four months after the onset. The colitis persisted for more than a year. The stomatitis in the form of recurrent superficial erosions persisted for two years. Clinically this chronic type resembles closely the more benign acute form, but the former differs from the latter in being resistant to all local and general treatment as long as the gold salt treatment is continued.

Flandin stated that this stomatitis, when considered in conjunction with others previously reported, should lead one to be cautious in using gold salts, especially in view of the fact that the efficacy of the treatment in pulmonary tuberculosis is questionable.

Relation of Gastric and Duodenal Ulcers to Appendicitis

At the March 20 meeting of the Société médicale des hôpitaux of Paris Charles Flandin reported a case in which persistent gastric symptoms had been present during the preceding two years. A diagnosis had been made of chronic appendicitis with accompanying gastric symptoms. The clinical picture was that of an acute appendicitis but the possibility of the perforation of a gastric ulcer was kept in mind because the pain at the onset had been in the gastric region. An emergency operation performed three hours after the onset revealed a large appendix, nonperforated but filled with yellowish pus and a fecalith. When the peritoneal cavity over the appendix region was opened, a brownish mucoid fluid escaped, hence in the absence of a perforated appendix an exploration of the stomach and duodenum was indicated. This revealed the perforation of a gastric ulcer in the prepyloric area. Recovery was uneventful. Flandin was of the opinion that the removal of the appendix should have been done when the diagnosis of chronic appendicitis was made two years previously to avoid gastric complications.

In the second paper, Brodin and Tedesco stated that the frequency with which appendicitis and ulcer of the stomach or duodenum has been observed indicates that a causal relation exists between the two conditions. Either they have a common etiology or the presence of one favors the development of the other. The authors believed that the focus in the appendix was the primary one and that the infection reaches the gastroduodenal region by way of the lymphatics of the ileocecal angle. The lymphatics from the appendix cross the third portion of the duodenum with the mesenteric vessels as Braithwaite, Basset and Beule have shown. An inflammation of these lymphatics gives rise to a spasm of this third portion of the duodenum with resultant proximal stasis and alteration of the chemical constituents of the duodenal contents.

A case illustrating a correlation of an appendicitis and duodenal ulcer was cited by Brodin and Tedesco. A man, aged 33, had recurrent attacks of appendicitis over a period of eighteen months. About three years after an appendectomy, three attacks of pain over the gastric region accompanied by vomiting occurred during the following three years. Radiography revealed a dilated duodenum. At operation, in addition to this condition, adhesions were found at the duodenojejunal junction. About thirteen months later, several severe hemorrhages occurred, which had their origin in a duodenal ulcer, as shown at a second operation. The authors are of the opinion that, if evidence of duodenal retention due to spasm in its third portion is found in a patient with appendicitis, early operation is indicated to avoid gastric or duodenal ulcer.

Acute Dilatation of Stomach Following Artificial Pneumothorax

Although this condition is well known as a postoperative complication, and following severe abdominal injuries (not operated on), its occurrence as an accompaniment of certain nonsurgical lesions is not yet well known.

Jacob and Dupuy reported a case at the March 13 meeting of the Société médicale des hôpitaux of Paris of acute gastric dilatation after thoracentesis to relieve pressure symptoms after an artificial pneumothorax. A woman, aged 30, had been given nine insufflations of air into the pleural cavity as part of the treatment of a right-sided pulmonary tuberculosis. The last treatment was given May 6, 1935. Four days later, symptoms of a severe pleural reaction appeared with displacement, by exudate and air of the mediastinum toward the left side of the thorax. Decompression was done May 22 by aspiration of 325 cc of air from the right pleural cavity. On the same day and for several days following this procedure, the patient vomited large quantities of bile stained fluid without effort, a symptom often seen in acute gastric dilatation. After repeated gastric lavage supplemented by the administration of large amounts of saline solutions, the vomiting ceased. The sudden onset of the symptoms of acute gastric dilatation after the thoracentesis was due to reflex inhibition of the musculature of the stomach, in the opinion of Jacob and Dupuy. They cited a similar case of Papouk, following internal urethrotomy for stricture. The acute gastric dilatation symptoms appeared half an hour after the intervention.

BERLIN

(From Our Regular Correspondent)

May 6, 1936.

News of the Student Bodies

Since the last report on the faculties and student bodies of German universities (*THE JOURNAL*, Dec. 7, 1935, p. 1926), several changes have taken place. The maximal numbers of students allocated to the various universities have again under gone slight reduction for most of the institutions, and (what is illuminating and characteristic) this has been done "in consideration of the anticipated decline in the student population."

Rumors, all officially denied, have had it that several universities or departments of universities were to be suspended. It was first reported that Frankfurt-on-the-Main was the school in question, later, similar rumors were circulated with regard to the Universities of Halle, Giessen and Cologne.

The number of preferred categories of candidates for admission has been augmented to include persons belonging to such National Socialist organizations as the SA [Sturm Abteilung] and the SS [Schutzstaffel] (both well known older party groups), the Hitler Youth and the League of German Girls (that is the two young people's organizations) and the Nazi Motor Corps. Also considered eligible for admission are students who have completed two semesters' study in a nonquota (a less important) university and who intend to return later to their original institutions. On the other hand the rector of a university may investigate the status of those students who have studied for longer than three semesters in a quota university.

The National Socialist studentenbund has recently pledged itself to bring the entire student body of the German universities within the membership of one or the other of the foregoing party organizations. All members or prospective members of the studentenbund have until May 1 to apply for membership in one of the foregoing Nazi organizations. Studentenbund members are in addition divided into "kameradschaften" of some thirty men each, and further there are the "stamm-mannschaften" (nuclear groups) of from thirty to sixty men each, according to the size of the university. The latter

must be politically tried and true students "who have already proved their National Socialist zeal for cooperative activity" Beginning with the next winter semester, the studentenbund will endeavor "to bring the developmental influence of the kameradschaft to all first to third semester students" Thus the National Socialist studentenbund is in a fair way to achieve complete and forceful subjection of entire student bodies to the Nazi program of indoctrination

Two years ago a similar but unsuccessful attempt was made by the studentenbund to assume control of the club houses belonging to the old corps and other student societies and convert them into "kameradschaft houses" This offensive has now been renewed but with greater force Admission to the studentenbund too has now been made more difficult New members can be taken in only by special selection Formerly the bund sought the largest possible membership but its recruiting activities gathered in only a mediocre harvest (it is estimated that today about one third of the entire student body are bund members) So now the bund has reversed itself and adopted a policy of exclusiveness Only a limited number of students may be full members" of the bund, while, on the other hand, its program of 'complete indoctrination' includes the entire student body The sturmtrupp forms a sort of hierarchy which is expected to produce leaders

By this latest offensive the last vestiges of individual freedom of action among the present generation of students has been swept away In addition, it serves further to break the hold of the church on Roman Catholic students, since within the past year the Catholic student organizations have been disbanded

Only recently reichsminister of public instruction Rust complained that the universities still failed to present a picture of complete integration within the National Socialist movement 'The nearer we approach the center of the old forces" said Rust, 'the tougher appears the stuff of which they are made So many difficulties beset the path to a complete intellectual transformation because so many men in the sphere of science and research are absolutely incapable of changing their ideology" Much that lives on in the academic realm is of yesterday and before yesterday And the tragic part of it is that these forces of reaction are not yet opposed by a student body united in purpose. This fact (and here is a noteworthy utterance) must not be attributed to a lack of essential weltanschauung on the part of the students but rather to a certain sluggish reluctance to participate in cooperative action The fight to be carried on in the universities is the struggle of the party

Thus harsh words are rained on the universities from the highest governmental quarters The National Socialist studentenbund, as its leader recently explained, wishes to end this procrastination once and for all No more compromises" is the group's new slogan The complete suppression of the old student corporations or corps has not yet been effected despite all the previous efforts of a bund openly backed by the national government The Kösener SC and other federations of the old fraternities were hastily disbanded last autumn, but on the other hand the individual corps in the various university towns have refused to disband in the face of repeated exhortations and appeals Each corps has been existing on its own without any organized liaison

A further development was the recent prohibition of simultaneous membership in a corporation and the National Socialist studentenbund, the latter group thus taking the simplest and most expeditious way out of the impasse The burschenschaften have gone over to the bund in larger numbers, notably at Bonn and at Marburg, where the student fraternities were formerly extremely prominent Only one burschenschaft remains, which still conducts its activities in the old manner

The proceedings of a district convention of the studentenbund held in February at Cologne give a good idea of what the new type of German student will be like Before this gathering the national führer of the studentenbund, Derichsweiler, dedicated a number of flags while a speaking chorus recited "May the banners of victory wave and may foul things vanish before them" In the front rank of the foul or decayed things referred to are the student corps

The Nazi education of the student has yet another mission "It must teach him sternly to oppose much that is expounded from the professorial chair—not that we intend to set up a supplementary body of learning—but that which is taught should have its roots in National Socialist doctrine And we (students of the bund) will not hesitate to stamp on the floor and whistle in the lecture room should the instruction fall short of this standard" Such were the words of the official leader of the National Socialist studentenbund

The state examinations offer a candidate the best opportunity for demonstrating his learning Now, however, emphasis is being placed on personal deportment rather than on scholarship The basic evaluations made of a student by all the Nazi organizations with which he comes in contact may well be of far-reaching effect Under this system youthful peccadillos may be scored up against the individual for the rest of his life and a record of his misdeeds hover over him like a modern sword of Damocles The concluding remarks of the führer of students may be quoted as characteristic "The responsibility that we bear is enormous It rests with each one of you whether or not in future any educator from the rector of a university to the village schoolmaster shall be a reactionary The responsibility is now ours Our organization of young men has gotten its stride. Those of us who attended the bund's decennial celebration at Munich were filled with enthusiasm but at the same time with fierce anger against those men who believe that their heyday will come again and that they like phoenix, shall arise from the ashes For the time dear to those who live in their yesterdays shall never return"

Selection of Healthy Students

As early as March of last year the minister of education issued regulations to govern admission to the gymnasiums It was stipulated that youths having permanent disabilities serious enough to impair their vital powers as well as those deemed to be carriers of hereditary disease should be excluded from the secondary schools, further, that a young person who exhibits a habitual aversion to bodily cleanliness and who shows no disposition to overcome this fault shall be subject to expulsion from the secondary schools Similarly, continued failure in physical education, above all if accompanied by an unwillingness to harden one's body and to participate in gymnastic and athletic activities, leads to expulsion unless the school physician and the instructor in physical education concur in a recommendation that the pupil be allowed to remain

Recently, supplementary regulations have been issued on the part of the reichsminister of the interior The medical officers who make the official examinations are to be guided by the following considerations All youths presenting physical and mental defects which preclude the successful preparation for and practice of a profession must be classed as unconditionally unfit for admission to the secondary schools Among such disqualifying defects are cardiac dysfunction with bad decompensation, severe asthma with persisting organic alterations, serious chronic kidney complaints, visual disturbances in which capacity is less than one third of normal or in which deterioration is to be anticipated, deaf-mutism, deafness and disorders of hearing equivalent to deafness, speech defects due to cleft palate, serious organic nervous and cerebral diseases, and dis-

cases of the endocrine system which are deemed incurable and which are accompanied by alterations of the intelligence and personality or tend to become progressive. In the latter category belong secondary encephalitic conditions, multiple sclerosis, Thomsen's disease, Friedrich's ataxia, syringomyelia, progressive muscular atrophy, myxedema and severe traumatic epilepsy. Further may be mentioned psychic disturbances as well as medically established feeble-mindedness of low grade. Moral defects are especially to be noted among the feeble-minded. Admission may be refused in cases of epilepsy marked by severe and frequent fits or accompanied by loss of intelligence and modifications of personality, manic depressive insanity in severer forms, serious psychopathic states especially constitutional instability, sexual degeneracy, drug addictions, and severe manifestations of hysteria.

Classed as temporarily unfit are youths with infectious diseases, disturbances such as chorea minor which lend themselves readily to imitation, petit mal, psychoses of toxic or infectious origin, and so on.

Hygienic and Political Considerations in Selecting Students

The reichsminister of education has just issued regulations with regard to hygienic and political considerations in the selection of university students. Selection is to be based on the results of official examinations which are to be carried out during the first and fifth semesters in cooperation with the Bureau of Public Health of the National Socialist Party.

"Unconditionally unfit" corresponds somewhat to the same term as applied to candidates for admission to the secondary schools. Carriers of hereditary disease are here similarly refused admission and expulsion for reluctance to acquire physical hardihood by participation in physical exercise is also provided for. As conditionally unfit are classed those students whose physical and mental powers are so seriously impaired that the completion of a professional course and later successful pursuit of a career are problematic. Such candidates may be excluded from study.

This health service is financed by the obligatory contributions of the students and it is able to offer as detailed recommendations as any specializing clinic. An appeal may be taken from the decisions of the rector or the resident commission to the minister of education.

Prognosis in Tuberculosis of the Larynx

Dr Arold discussed before the Giessen Medical Society the investigations conducted a few years ago by the newly erected Seltersberg Sanatorium. In the first two years of the sanatorium's existence it was possible to observe 157 patients with pulmonary and laryngeal tuberculosis. Of these 157 cases, forty-five ended fatally at the sanatorium. The 112 survivors were classified according to condition at time of discharge as follows: clinically healed larynx, thirty-six, considerable improvement, twenty-seven, indications of some improvement, fifteen, larynx condition deteriorated or unchanged, thirty-four. Four years subsequent to discharge from the sanatorium, fifty of these patients were ascertained to be living; thirteen could not be located and the remainder had died of severe progressive pulmonary tuberculosis. Follow-up examination of the fifty disclosed that in forty-eight the laryngeal disease had remained cured. Pulmonary examination of the latter number gave negative results in only twenty-five while in the other twenty-three the pulmonary disease had advanced since discharge from Seltersberg. Records also showed that in several of the group who had died of pulmonary tuberculosis in the interim the larynx had remained free from the disease to the end. Permanent cure of the laryngeal condition took place both in cases involving limited laryngeal processes and those in which

the area of involvement was more extensive. All these data evidence that prognosis in tuberculosis of the larynx depends not only on a tendency of the pulmonary processes to spread or on extension of the local process but also on the efficient carrying out of proper therapeutic measures.

Death of Prof. Hugo Sellheim

Dr Hugo Sellheim of Leipzig, professor of obstetrics and gynecology, died suddenly not long after his retirement from active service. He had reached the age of 65. One of the most illustrious pupils of Hegar, Sellheim, while still young, was appointed ordinarius at Tübingen. Thence he went to Halle and since 1926 had occupied the Leipzig post. Sellheim did effective work in virtually every sphere of his specialty. His principal contributions, however, had to do with the mechanism of labor and the protection of the mother.

RIO DE JANEIRO

(From Our Regular Correspondent)

April 15, 1936

Phrenicectomy in Pulmonary Tuberculosis

Dr B. Fleury de Oliveira, in the meeting of phthisiologists at the Associação Paulista de Medicina, January 23, read a preliminary report on the mechanism of action of phrenicectomy in pulmonary tuberculosis with lesions either at the apex or at the base. The speaker, based on the modern conceptions on the mechanics of respiration, especially those of Monaldi and Pirodi, says that phrenicectomy acts probably by the production of collapse if the lesions are located at the apex and by immobilization if they are located at the base of the lung. If these hypotheses were true different circulatory conditions would exist in the apex and in the base after performance of phrenicectomy, regardless of the cure of the lesions located either at the apex or at the base. According to the speaker, certain failures of phrenicectomy in lesions of the base of the lung could be explained by these theories. He believes that one of the conditions for the success of phrenicectomy in the presence of lesions of the base is the cutting of pleural adhesions.

Pan-American Congress of Tuberculosis

The Union Latino Americana das Sociedades de Tisiologia is composed of the antituberculous societies of Argentina, Brazil, Chile and Uruguay, each of which is represented by three advisers who are concerned with the organization of antituberculosis congresses. Advisers from Brazil are Drs. Antonio Cardoso Fontes and Ary Miranda of Rio de Janeiro and Clemente Ferreira of São Paulo. A congress of tuberculosis of the union has been recently organized, which will take place in the very near future. The medicosocial topic selected is "Organization of Crusades Against Tuberculosis in South America." Brazilian speakers on this topic are Drs. Marcos Antonio Nogueira Cardoso of São Paulo and Genesio Pitanga of Rio de Janeiro. The official topic for Brazil is "Diagnosis of Activity and Evolution of Pulmonary Tuberculosis." Speakers are Drs. Raphael Paula Souza, Antonio Tisi Netto and Fleury de Oliveira of São Paulo. Co-speakers are all members of the antituberculosis society of Rio de Janeiro.

Visceral Leishmaniasis

Dr Evandro Chagas recently reported a case of visceral leishmaniasis. A white boy, aged 16, a resident of Aracaju, Sergipe, became ill during a visit to Santa Maria, Rio Grande do Sul, a year and a half previously, simultaneously with his mother and sister, who died a few months later. In the necropsy of the sister it was found that the liver was heavily infested with *Leishmania*. The patient suffered from chills, fever, either intermittent or irregular, weakness, air hunger, nasal hemor-

ringes, diarrhea, progressive emaciation and darkening of the skin and dehydration of the tissues. At present the fever is irregular, oscillating from 98 to 100.4 F. Emaciation is extreme and the abdomen is of enormous size because of the presence of hepatomegaly and splenomegaly. Diarrhea appears in frequent crises but there is no blood in the feces. There are no nervous, circulatory, respiratory or urogenital disturbances. The physical development is retarded, while the mentality is normal. Leishmaniasis in large numbers, morphologically similar to *Leishmania Donovanii*, could be seen on the slides prepared with the blood of the patient's spleen taken by a puncture. Some of the parasites were free in the blood but the greater number of them were contained in macrophages. The peripheral blood picture is as follows: hemoglobin 44 per cent, erythrocytes 2,919,000, hematocrits 19, reticulocytes 4 per cent, white cells 2600. The percentage of monocytes was 34, lymphocytes 31, neutrophils 33, eosinophils 0 and basophils 0. *Phlebotomus Longipalpis* in great numbers was found at the city in which infestation of the patient occurred. This is the first clinical autochthonous case of kala-azar found in Brazil.

ITALY

(From Our Regular Correspondent)

April 22, 1936

Congress of Psychologists

The eighth National Congress of Italian Psychologists was recently held at Rome under the chairmanship of Prof. Cesare Colucci. Fourteen articles were presented, followed by illuminating discussions. Professor Colucci emphasized that the didactic material already compiled suffices to carry on investigations for evaluation of the mental capacity. His statement is based on results of personal investigations performed in industrial and municipal schools. All psychologists admit that the unitary conception of personality and the collaboration of experience prevails also in psychology.

Professor Della Valle said that the influence of psychology should be felt in the schools as well as in individual and collective relationships. Professor Bonaventura said that psychology is a science essential to childhood and that the orientations of mental hygiene should be applied to child life as early as during the nursing period, at which time many psychic reactions develop. The evaluation of the psychic reactions of infants constitutes a branch of science called nepiology.

Professor Puca emphasized that the actual separation of insane asylums and neurologic clinics has resulted in advancement of the study of psychology. The maintenance of close bonds between experimental psychology and pathology is advisable also for the interest of normal psychology.

Professor Gemelli, dean of the Università Cattolica of Milan, spoke on the task of psychology in the study of delinquency. Psychologists should be especially concerned with investigations of this nature. The president of the congress, based on his experience in reviewing records of criminals and of young delinquents in houses of correction of Naples, said that tendencies to crime can be inhibited or moderated by education.

Colonel Sarfatti, based on his war experience, spoke on the psychology of the order to attack. Professor Della Valle discussed this type of psychology from the point of view of the influence of suggestion by the commander and of the complicated mental processes concerned in the narrowing of consciousness to the single aim of those who advance to the attack with complete self sacrifice.

Professor Colucci emphasized the several experimental and scientific fields that are open to psychologists, in the interpretation of children's drawings, of manuscripts of recluses and the examination of artistic documents. The next congress of psychology will take place in Naples.

Society Reunion

The Società Piemontese di Chirurgia held a reunion during which Professors Chiarolanza and Segre spoke on calcaneal fractures. Professor Chiarolanza's experience covers more than eighty-five cases. More than 104 roentgenograms showing varieties of calcaneal fractures form the collection of the speaker. Fractures of the inferior aspect of the calcaneum and isolated fractures of the plantar tuberosity are rare. As a rule the fracture starts at the upper aspect of the calcaneum and as the fracture advances into the bone, one or more fractures are produced. At the operation many fractures are seen that were not seen in the roentgenograms. In more than 5,000 fractures treated in the Ospedale dei Pellegrini of Naples only thirteen were calcaneal fractures. The enlargement of the calcaneum, the lowering of the malleoli, the fall of the plantar vault and the presence of pericalcaneal extravasation are important diagnostic symptoms. The speaker treated his cases first by immobilization and then by physical therapy.

Meeting of Accademia dei Fisiocritici

The Accademia dei fisiocritici met recently in Siena, under the chairmanship of Professor Spirito. Professor Martinetti reported the results of his experiments on the action of intravenous injections of hypertonic dextrose solution on intracranial pressure as well as on retinal pressure. The injection is followed by transient increase of the intracranial pressure and then by a progressive lowering of it, which lasts from twelve to fourteen hours. The lowering of the retinal pressure following the injection is a valuable index for determining the vasodilatation of the cerebral arteries. The speaker believes that the results of his experiments point out the advisability of using hypertonic solutions for therapeutic purposes.

Professors D'Antona and Valensin spoke on the immunizing value of diphtheritic anatoxin. They concluded that anatoxin when prepared with nonfiltered toxins, containing therefore diphtheritic bacteria in suspension, has a higher immunizing power than that of ordinary anatoxin. The action of suspended bacteria in the anatoxin is identical with that of other non-specific substances which stimulate immunity by means of the production of local reactions.

Takata Test

Professor Dogliotti, in a lecture recently delivered before the members of the Accademia Medico-fisica of Florence, reported his results with the Takata test with the blood serum of more than 200 patients suffering from various diseases, especially liver diseases. The test gives intense positive results in cirrhosis of the liver. In other diseases (nephritis, hepatitis, pneumonia and cachexia) the test gives either negative or partially positive results.

Deaths

Prof. Cesare Biondi, professor of legal and industrial medicine at the University of Siena, recently died at Siena. Dr. Biondi had been a professor at the University of Sardinia and medicolegal adviser of the army during the war. At the time of his death he was a member of the permanent committee for the study of industrial diseases and accidents. He wrote important articles and books on self-inflicted injuries, evaluation of invalidism, and other industrial and social topics.

Professor Livierato, ordinarius at the Genoa University, recently died. He was the founder and provider of the Istituto Genovese di patologia medica dimostrativa propedeutica.

Dr. Guglielmo Romiti, professor emeritus of anatomy of the University of Pisa, is dead. He wrote several books on anatomy. Many professors of anatomy now teaching in Italian universities were his pupils. Romiti's teachings on anatomy have prevailed in Italy for the last half century.

Marriages

GORDON FREDERICK JACKSON, Toronto, Ont., Canada to Miss Kathryn Phillips of East Orange, N. J., in Lincolndale, N. Y., May 4

RALPH MILTON DE PASQUALE, Pelham Manor, N. Y. to Miss Lauretta Gertrude McCormick of Rochelle Park in May

MORTON MORRIS PINCKNEY, Richmond, Va., to Miss Louise Lippitt Sinnickson of Bryn Mawr, Pa., May 16

JAMES P. PREGNALL JR. Asbury Park, N. J., to Miss Marian Elizabeth Thompson of Allenhurst, May 12

JOHN CRAWFORD HOLMAN JR. Franklin, Texas, to Miss Margaret McKinzie of New Orleans, June 20

JOSEPH A. GILMARTIN, Pittsburgh, to Miss Genevieve D. Heyl of Elizabeth City, N. C., April 17

JOSEPH BERNARD BRAIN, Isabella, Pa., to Miss Mildred Marie Peters of Masontown, June 16

ABRAHAM I. RAMENOFKY, La Salle, Ill., to Miss Elizabeth Lantin of Los Angeles, June 7

LELAND COFFEY BROWN, Stuart's Draft, Va., to Miss Marjorie Mower of Staunton, April 18

HARRY M. MORGAN, Winlock, Wash., to Miss Ruth Reed of Nehalem, Ore., May 30

Deaths

Alfred James Ostheimer, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1898, served during the World War, formerly connected with the U. S. Public Health Service and the Veterans' Bureau, at one time medical director of the mental hygiene division of the Public Charities Association of Pennsylvania, aged 61, died, March 23, in the Veterans Administration Facility, Coatesville of coronary thrombosis

George Franklin Bauch, Lansing, Mich., Western Reserve University Medical Department, Cleveland 1892, University of Pennsylvania Department of Medicine, Philadelphia, 1894, member of the Michigan State Medical Society, past president of the Ingham County Medical Society, on the staff of the Edward W. Sparrow Hospital, aged 65, died April 5, of cerebral arteriosclerosis

Jesse Lee Paine & Olympia, Wash., Eclectic Medical College, Cincinnati, 1916, past president and secretary of the Thurston-Mason Counties Medical Society, formerly on the staff of St. Peter's Hospital, aged 48, died March 18, of an infection of the brain following a scratch on the nose inflicted by a prisoner

Vincent Alan Farrell & Mason City, Iowa, Northwestern University Medical School, Chicago, 1901, formerly on the staffs of St. Joseph's Mercy Hospital and the Story Hospital, aged 59, died suddenly, April 6, of embolism following an injury to the hip due to a fall

Thomas Edward McEvoy, Worcester, Mass., Yale University School of Medicine, New Haven, 1892, member of the Massachusetts Medical Society, aged 76, for many years on the staff of St. Vincent Hospital, where he died, March 28, of septicemia and diabetes mellitus

Virgil Harrison Danford & Wallum Lake, R. I. Ohio State University College of Medicine, Columbus, 1915 served during the World War, medical superintendent of the State Sanatorium, aged 47, died, April 21, in the University Hospital, Columbus, of coronary occlusion

Francis George Curtis & Ashfield, Mass., College of Physicians and Surgeons, Medical Department of Columbia College, New York 1883, for many years chairman of the board of health of Newton and on the staff of the Newton (Mass.) Hospital, aged 78, died April 7

Francis Scrimzeous Furman, Shreveport, La., Tulane University of Louisiana Medical Department, New Orleans, 1891, served during the World War, at one time member of the city board of health, aged 66, died, April 12, in a local sanatorium, of pneumonia

Fred Lee Bates, Lima, Ohio, Cincinnati College of Medicine and Surgery, 1889, for many years member and president of the board of education on the staffs of the Lima Memorial Hospital and St. Rita's Hospital, aged 69, died April 30, of cardiac decompensation

Robert Alexander McIlhenny, Conway Springs, Kan., Rush Medical College, Chicago, 1891, member of the Kansas Medical Society, past president of the Sumner County Medical Society, bank president, aged 69, died, March 3, of cerebral hemorrhage

Frank Elliot Bateman & Somerville, Mass. Harvard University Medical School, Boston, 1894, veteran of the Spanish American War for many years city physician on the courtesy staff of the Somerville Hospital, aged 70, died, April 5, of heart disease

Joseph Cyrus Bradfield & Lima, Ohio, Ohio State University College of Medicine, Columbus, 1911, served during the World War, aged 47, on the staffs of the Lima Memorial Hospital and St. Rita's Hospital, where he died April 14, of pneumonia

James A. Moore & Marshall, Texas, Vanderbilt University School of Medicine, Nashville, Tenn. 1899, past president of the Harrison County Medical Society, chief surgeon of the Texas and Pacific Railway Employees Hospital, aged 62, died, March 12

Zert Huff Fodrea, Westfield, Ind., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1888, member of the Indiana State Medical Association, past president of the Hamilton County Medical Society, aged 79, died, April 21

Runyan Lee Butler & Clovis, N. M. University of Arkansas School of Medicine, Little Rock, 1928, secretary and past president of the Curry County Medical Society, aged 31, died April 1, in a hospital at Little Rock, Ark. of pneumonia.

Thomas Craig Detwiler, Lancaster, Pa. University of Pennsylvania Department of Medicine, Philadelphia 1881, formerly on the staff of the Lancaster General Hospital, aged 76, died April 15, in St. Joseph Hospital, of diabetes mellitus

Ernest A. de Bordenave, Franklin, Va. Medical College of Virginia, Richmond, 1899, member of the Medical Society of Virginia for many years postmaster, aged 61, died, April 6, in the Radford Hospital of cerebral hemorrhage

Ernest Linwood Hayford, Chicago, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1890, aged 71, died April 16, in the Washington Boulevard Hospital of carcinoma of the thyroid

William Henry Bahl, Chicago, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1904, aged 63, died, April 23, in the Illinois Masonic Home, Sullivan of mitral insufficiency

Mabel Harvey Falk Bancroft, Philadelphia, Woman's Medical College of Pennsylvania, Philadelphia 1903, served in France during the World War, aged 54, died April 28, in the Woman's Hospital, of heart disease

William Harrison Mallory & Joplin, Mo. Medico-Chirurgical College of Kansas City 1905, aged 57, on the staffs of St. John's Hospital and the Freeman Hospital where he died March 15, of agranulocytosis

Robert L. Miller, Waynesboro, Ga. University of Georgia Medical Department, Augusta, 1891, member of the Medical Association of Georgia, aged 65, died, March 31, of hypertension and nephritis

Irvin Isadore Davis, New York, University of Oregon Medical School, Portland 1935, intern at the Mount Sinai Hospital, aged 23, died April 6, in Portland, Ore., of carcinoma of the pancreas

Sidney Adair Brevard & Deeson, Miss., College of Physicians and Surgeons, Memphis, Tenn., 1907, served during the World War, aged 50, died April 19, in the Baptist Hospital, Jackson, of uremia

Alexander Rae Evans, Ardmore, Pa., Medico-Chirurgical College of Philadelphia, 1905, for many years a member of the Lower Merion Board of Health, aged 69, died, April 20, of cerebral thrombosis

Mary Taylor Bissell, Brooklyn, Woman's Medical College of the New York Infirmary for Women and Children, New York 1881, aged 82, died, April 1, of uremia, chronic nephritis and Paget's disease.

William H. Peters, Cincinnati, Miami Medical College, Cincinnati 1909, for many years city health officer, aged 54, died March 13, in the Good Samaritan Hospital, of coronary arteriosclerosis.

Lundy Nathan Barnard, Muskogee, Okla., Memphis (Tenn.) Hospital Medical College, 1911, on the staff of the Veterans Administration Facility, aged 58, died, April 29, of angina pectoris

Alexander David Berow, Brooklyn, University of the City of New York Medical Department, 1893, aged 66, died, April 22, in the Israel Zion Hospital, of injuries received in an automobile accident

James L. Henderson, Osceola Mills, Pa., Medical College of Ohio Cincinnati, 1882, member of the Medical Society of the State of Pennsylvania, aged 83, died April 20, of cerebral hemorrhage

Helen Simonds Childs, Simsbury Conn., Boston University School of Medicine, 1890, aged 84, died, April 8, of toxemia following acute obstruction of the common bile duct due to stone.

Adelbert Ghadden Bush, Grand Rapids, Mich., University of Buffalo School of Medicine, 1881, Civil War veteran, aged 87, died April 12, of cerebral arteriosclerosis and chronic myocarditis

Frances S. Konrad Filipiak, Cleveland, Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1898, aged 60, died, April 22, in the Woman's Hospital

John W. Bradfield, Austin Texas, University of Texas School of Medicine, Galveston 1903, medical superintendent of the Austin State School, aged 58, died, April 23, of coronary occlusion

J. Edwin Allen, St. Louis Missouri Medical College, St. Louis, 1896, aged 69, died April 23, in the Bethesda General Hospital, of carcinoma of the prostate with metastasis to the liver

Beatrice Victoria Burg, Oakland, Calif., University of Texas School of Medicine Galveston 1922, member of the California Medical Association, aged 43, died April 4, of heart disease

Everett Joshua Peek, White Hall, Ill., Chicago College of Medicine and Surgery, 1907, aged 57, died, March 21, in Houston, Texas, of coronary occlusion and chronic hypertension

Charles Curtis Page, Richmond, Va., University of Virginia Department of Medicine, Charlottesville, 1886, aged 72, died March 8, of uremia, chronic nephritis and hypertension

James Braxton McKee, Glade Springs, Va., Vanderbilt University School of Medicine, Nashville, Tenn., 1891, member of the Medical Society of Virginia, aged 76, died, March 17

Daniel Edward Cripe, Hillisburg Ind., American Medical College Indianapolis, 1895, aged 85, died, April 8, in the Clinton County Hospital, Frankfort, of cerebral hemorrhage

Nasib Daud Barbari, Niagara Falls N. Y., American University of Beirut School of Medicine, 1892, aged 62, died suddenly, April 16, in the Memorial Hospital, of myocarditis

E. Stella Perrigo, Pipestone, Minn., Hahnemann Medical College and Hospital, Chicago, 1886, aged 83, died, March 25, at Mound, of hemorrhage due to carcinoma of the uterus

John Andrew Doerner, Cumberland, Md., University of Maryland School of Medicine, Baltimore, 1877, aged 79, died, April 7, of bronchopneumonia and cardiac dilatation

E. H. Wyman, Estill S. C., University of Georgia Medical Department, Augusta, 1889, aged 66, died, March 25, in the Columbia (S. C.) Hospital, of coronary thrombosis

John A. McHugh, Chicago, Harvey Medical College, Chicago, 1901, aged 62, died March 28, in the Garfield Park Community Hospital, of hypertensive heart disease

Ransom W. Edden, Janesville, Wis., Bennett College of Eclectic Medicine and Surgery, Chicago, 1891, aged 67, died April 15, of cerebral hemorrhage and hemiplegia

David Robert Bussdicker & Dayton, Ohio, Miami Medical College, Cincinnati, 1908, aged 64, died, April 17, in the Miami Valley Hospital, of cardiorenal vascular disease

Oliver Sloan Haines, Philadelphia, Hahnemann Medical College of Philadelphia 1882, professor emeritus of materia medica at his alma mater, aged 75, died, May 1

Gordon Van Buren Fletcher, Chicago, Meharry Medical College Nashville, 1930, aged 38, on the staff of the Provident Hospital, where he died April 11, of nephritis

George N. Cox, Mount Sterling Ky., University of Louisville School of Medicine 1885, aged 74, died, April 15, in the Mary Chiles Hospital, of intestinal obstruction

Charles Stockton Stafford, Tampa, Fla., Hahnemann Medical College and Hospital of Philadelphia, 1889, aged 70, died, March 24, of carcinoma of the bladder

Donald Herman Hesse Till, Charleston, S. C., Medical College of the State of South Carolina Charleston 1931, aged 32, died, March 22, in Williamsport, Pa.

H. H. Bainter, Coshocton, Ohio, Baltimore Medical College, 1893, aged 78, died, April 23, in the City Hospital, of pneumonia, following fracture of his hip

William H. Doak, Martinsville, Ill., University of Wooster Medical Department, Cleveland, 1874, aged 93, died, April 23, of arteriosclerosis and chronic nephritis

Edward Payson Cooper, Maplewood, N. J., University of the City of New York Medical Department, 1871, aged 88, died, April 10, of cerebral hemorrhage

Gordon Stanton, Hastings, Fla., George Washington University School of Medicine, Washington, D. C., 1905, aged 66, died, March 31, of chronic myocarditis

Emma E. Olson Cummings, Milwaukee, Hahnemann Medical College and Hospital, Chicago 1899, aged 66, was found dead, April 11, of chronic myocarditis

James McColgan, Grass Lake, Mich., Jefferson Medical College of Philadelphia, 1889, aged 72, died, March 30, of diabetes mellitus and arteriosclerosis

Roy Ray Lang, Denver, St. Louis College of Physicians and Surgeons, 1922, member of the Colorado State Medical Society, aged 39, died, March 29

William H. Pickering, Collins, Miss., University of Alabama Medical Department, University, 1899, aged 74, died in March of carcinoma of the face.

John W. Dixon, Franklin, Ind., Medical College of Evansville Ind., 1881, formerly mayor of Franklin, aged 91, died April 22, of arteriosclerosis

James D. Watts, Dumas Ark., Chattanooga (Tenn.) Medical College, 1904, member of the Arkansas Medical Society, aged 60, died, March 29

Clark E. Farabee, Indianapolis, Medical College of Indiana Indianapolis 1880, formerly health officer of Hendricks County, aged 83, died, April 14

William Edward Black, Columbia Tenn., University of Nashville Medical Department, 1906, aged 54, died, April 17, of cerebral hemorrhage

Louis Neumann, Oxford, N. J., Bellevue Hospital Medical College New York 1898, aged 66, died March 23, of cardiovascular renal disease

Mattylee Curl Barnett & St. Louis Woman's Medical College Kansas City 1902, aged 57, was found dead April 19, of chronic myocarditis

George C. Barnett, Wichita, Kan., St. Louis College of Physicians and Surgeons, 1892, aged 77, died April 23, of bronchopneumonia

William J. Bryson, Hays, Pa., Medico-Chirurgical College of Philadelphia 1903, aged 75, died, April 5, of hypostatic pneumonia

Homer C. Brigham, Montpelier, Vt., New York Homeopathic Medical College 1872, aged 84, died, April 29, of chronic myocarditis

Frank Jewell Nooe, Harrodsburg Ky., Hospital College of Medicine, Louisville 1905, aged 60, died, March 24, of pneumonia.

Carl R. Krause, Lakewood, Ohio, Western Reserve University Medical Department, Cleveland, 1884, aged 73, died in March

Archibald McDermid, Severn Bridge, Ont., Canada, Trinity Medical College, Toronto 1898, aged 76, died, March 17

Rosario Lessard, Montreal, Que., Canada, School of Medicine and Surgery of Montreal, 1914, aged 45, died March 9

George W. Deem, Columbus Ohio, Eclectic Medical Institute Cincinnati, 1890, aged 75, died April 18, of angina pectoris

Dogan Pemberton, Houston, Texas, Meharry Medical College, Nashville, Tenn., 1927, aged 33, was shot and killed March 2

Robert Edward Lee Morton, Long Beach, Calif., Marion Sims College of Medicine, St. Louis, 1897, aged 66, died March 7

Harry James Lynch & Brooklyn, University and Bellevue Hospital Medical College 1910, aged 49, died, March 28

Michael Henry Egan, Chicago, Minneapolis College of Physicians and Surgeons, 1891, aged 70, died in April

Charles J. Bain, Camden, Tenn. (licensed in Tennessee in 1909), aged 58, died in March

Correspondence

BLOOD IN ARTHRITIS

To the Editor—In the interesting report on the "Blood in Arthritis" by Dr Hartung and his co workers (*THE JOURNAL*, April 25, p 1448) there seems to be an inconsistency which I should like to have explained. On page 1449 the authors state that "the elevated nonfilament count in slightly over half of the patients with osteo-arthritis is worthy of comment. These abnormal conditions in osteo-arthritis may be due to associated rheumatoid disease or focal infection." In the summary of their paper on page 1452 the writers assert that "the finding of a normal nonfilament percentage in many cases of osteo arthritis certainly suggests that infection plays no role in this condition." Clearly the writers are impaled on the horns of a dilemma. They must either admit that the presence of an elevated nonfilament count is not an indication of infection, which is contrary to their opinion as stated in *THE JOURNAL*, March 4, 1933, or they must admit that in at least half of their cases of osteo arthritis some infectious factor plays an active role. If evidence such as Dr Hartung and his co workers have cited points to a possible infectious factor in a fairly high percentage of cases of osteo arthritis, it seems wise to follow that lead. It appears particularly important to me when it is correlated with the clinical fact that in a group of osteo arthritis cases analyzed recently, approximately 40 per cent of the patients had demonstrable foci of infection. It would be interesting to know whether Dr Hartung has made any correlation between the blood picture and the presence of focal infection in the cases of osteo arthritis which he has studied.

There seems to be a general reluctance, today, to admit that infection may play a part in the etiology of any case of osteo arthritis. Indeed, there are some who state dogmatically that rheumatoid arthritis is an infectious disease and that osteo arthritis is a degenerative process and therefore noninfectious. These authors seem to forget that many degenerative pathologic conditions are infectious in origin. While it may be justifiable to attempt to make a differential diagnosis between rheumatoid arthritis and osteo-arthritis, clinically, surely we are not as yet prepared in the present stage of our knowledge to make any sharp etiologic distinctions between these two types.

BENJAMIN H. ARCHER, M.D., New York

NOTE.—This letter was referred to Dr Hartung who sends the following reply:

To the Editor—It has been pointed out by investigators that a rise in the immature leukocytes is the result of stimulation of the blood-forming organs by the absorbed products of infection. We found the nonfilament count elevated in 96 per cent of our patients with rheumatoid arthritis, in many of whom no focus of infection was demonstrable other than active joint involvement. In our group of patients with osteo arthritis presenting clinical symptoms in every case, 47 per cent showed a normal blood count. In those osteo arthritic patients with an elevated nonfilament count a number were found to have mixed arthritis, while the rest of the group presented a variety of focal infections. Focal sepsis alone gives an elevated nonfilament count (Pepper, O. H. P., and Farley, D. L. *Practical Hematological Diagnosis*, Philadelphia, W. B. Saunders Company, 1934). Our results suggest then, that in osteo arthritis an increased nonfilament count is indicative of an added factor to the intrinsic arthritic process. The doctor's figures on the incidence of focal infection in osteo-arthritis approximate our own observations. It must be remembered that a similar frequency of focal infection has been reported in routine examinations of presumably healthy adults (Sydenstricker, Edgar and Britten R. H. *Am J Hyg* 11:73 [Jan] 1930). To avoid

the fallacy of nonsequitur it must be realized, therefore, that the mere presence of an infectious focus does not necessarily endow it with an etiologic relationship to the long standing osteo arthritis it accompanies.

Our correspondent's concern for the classification of osteo arthritis as an essentially degenerative disease is not supported by the trend of published work and thought on the subject. Further evidence must be awaited than now exists before the complicating factor of focal infection in a part of the disease group can be accepted as the etiologic agent in the disease as a whole.

EDWARD F. HARTUNG, M.D.

OTTO STEINBUCKER, M.D.

New York

COMMITTEE ON CONTRACEPTIVE PRACTICES

To the Editor—The report of the American Medical Association's Committee on Contraceptive Practices contains a quotation from a book written by Mr Leon F. Whitney and myself. This quotation gives the impression that we do not believe in birth control. This is directly contrary to the facts. We certainly believe that birth control has brought with it great dangers. As every one recognizes it has reduced the birth rate among the more intelligent portions of the community to a dangerous degree. The remedy, however, does not lie in a futile attempt to prevent the restriction of births. Contraception is here in full force and is bound to stay.

The case is exactly like that of the mechanization of industry. It has, indeed, brought great dangers but it is useless to talk of getting rid of it. If the birth rate of a century or more ago prevailed together with the modern death rate, the children who are now in school would see in this country a population much greater than that of China. That would mean almost immeasurable poverty, misery, disease and war.

Because of this both Mr Whitney and myself believe that more birth control rather than less is the remedy for the present undesirable situation. What is needed is more birth control among the less intelligent, less efficient and more self-indulgent parts of our population; this presumably will go far toward raising the birth rate among the more intelligent, efficient and self-controlled portions. There is a small but growing body of evidence that in groups in which birth control is almost universal the differential in the birth rate is in the right direction. That is the homes where children are well trained and presumably receive a good biologic inheritance contain larger families than do homes of the opposite type. This is true not only of limited groups such as college graduates but of whole cities such as Stockholm. The cure for the evils of partial birth control such as we now have in America, appears to be complete birth control among all classes.

There are other points in which the report of the American Medical Association's committee shows lack of care. For example there is a direct contradiction which suggests an unsatisfactory compromise between two opposed factions. We read for example, that when a physician for "other than medical reasons considers it improper to aid his patient to practice contraception" he "should not be criticized," although he lets these other reasons guide his actions. This, be it noted, is said to be the case even when from a medical standpoint pregnancy is contraindicated. A later sentence says "When a medical reason for avoiding pregnancy exists it is the duty of the attending physician, regardless of his personal beliefs [italics mine] to inform the patient of her physical condition and the hazard of pregnancy." Such an attempt to sit on both sides of the fence is not worthy of the medical profession. I do not believe that either this attitude or the unduly conservative way in which the vital task of perfecting the

methods of contraception has been tabled by the American Medical Association represents the real opinion of American physicians

The chief trouble with the report is that it treats contraception as if it were a purely medical matter. This is no more true than that sanitation is purely an engineering problem. The technical skill, to be sure, must be furnished in the one case by physicians and in the other by engineers. But both contraception and sanitation are great social problems and concern the whole people. The social aim of birth control is that plenty of births should take place in the right kind of families and few in those in which the children are likely to be poorly trained as well as poorly endowed by nature. The American Medical Association has ignored this aspect of birth control and has rejected the great task of teaching proper contraceptive methods to every level of society. By failing to recognize this the American Medical Association has done a great injustice to itself, to its members and to the public.

ELLSWORTH HUNTINGTON, New Haven, Conn.
President, American Eugenics Society

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CURE OF MALARIA

To the Editor—How can one tell whether a relapsed tertian malaria case originally developed in another country is cured when the parasites do not show in the blood any more? Is quinine contraindicated in presence of blood in the urine? Please omit name. M D New York

ANSWER—If repeated examinations of the blood by means of the thick film method are negative for the parasites, the chances are altogether in favor of the infection having been cured. The cultivation of the malaria plasmodia after the method of Bass and Johns may be used to determine the question of cure. This method has been in use in the Calcutta School of Tropical Medicine for some years, with the result that in some cases of malaria in which the blood is repeatedly negative on examination microscopically a positive result is obtained by the culture method.

With regard to the use of quinine in the presence of blood in the urine, the drug should be used with great caution. If the case is one of hemoglobinuric fever there is still some question as to whether quinine should be administered, but it is believed that the trend of opinion is in favor of the administration of the drug, owing to the serious character of the condition. However, it would probably be safer to use plasmochin or atabrine in such cases.

PASSIVE TRANSFER METHOD IN ALLERGY

To the Editor—In an article on allergy in a recent issue of the *Cleveland Clinic Quarterly* a writer referred to a passive transfer method of testing for allergy. Can you give me further information as to the indications, technique and results of this method? Please omit name.

M D New York

ANSWER—The phenomenon of passively sensitizing a normal skin with the serum of an allergic patient was described in 1921 by Prausnitz and Küstner. Elaborating on this work, Coca and Grove demonstrated that the sensitizing properties are present in the blood serum when the allergic individual exhibits a positive skin reaction to an antigen, that many antibodies or reagins, as they are frequently termed, may exist in the same serum, and that each reagin will react specifically only with its related antigen. The serum is obtained from the sensitive individual under sterile precautions. In the absence of a positive Wassermann reaction it may be used to sensitize the skin of a normal individual. It may be used undiluted or diluted with sterile physiologic solution of sodium chloride to 1:10 or more, depending on its reagin content. One-tenth cc is injected intracutaneously in a number of sites at least 2 inches apart, the forearm back or thigh of the normal indi-

vidual being used. These sites are marked with indelible ink or mercuriochrome. After twenty-four hours each of these places may be tested with a suspected antigen by either the scratch or the intradermal method. A modification of this method of testing the sensitized site was described by M. Walzer, who found that on the ingestion of a food to which the patient is sensitized, preferably on an empty stomach, a reaction will occur in the passively sensitized site after about twenty minutes. With this method of ingestion, however, all sensitized sites will react if the antigen is a cause of the allergy. The sites may be retested after twenty-four hours, a different antigen being used for each place.

It may be noted that this method of testing by passive transfer is much more complicated and requires greater experience than the method of testing the patient directly. Its clinical usefulness is limited to patients with extensive eczema in whom the skin is unfavorable for tests, to patients with marked dermatographism, and possibly to infants on whom tests cannot be made without too great a struggle. It does not replace but is merely supplementary to the ordinary methods of allergic examination.

STAMMERING

To the Editor—In the Dec. 14, 1935 issue of *THE JOURNAL* 10 Queries and Minor Notes there was a question on stammering. In the reply it was stated that Cleveland shows the best school statistics as it has practically eliminated adult stammering. Will you kindly let me know where these statistics have been obtained and where I can write to learn the method of treatment used by the Cleveland schools?

I W KARLIN M D Brooklyn

ANSWER—Statistics of speech correction in the Cleveland schools may be obtained by writing to the speech supervisor of the Cleveland schools. Statistics have been kept since the method was installed in 1918. These statistics were published in a 1930 report of the meeting of the American Society for the Study of Disorders of Speech, under the chairmanship of Dr. Elmer L. Kenyon of Chicago. In the same report are statistics of the Omaha schools which use the same method, but Cleveland has had the method over a longer period of years.

SENSITIVITIES IN RUBBER MANUFACTURING EMPLOYEES

To the Editor—Trouble we do not know just from what is occurring in the manufacture of rubber goods. We make rubber shoes the same as any other rubber manufacturer. Employees get a rash. What I am trying to do is find out if possible whether other companies are having similar trouble, the etiology and the treatment. We buy the raw rubber and go through the process until it is a complete shoe but where we have our trouble is in the making of rubbers, galoshes and rubber boots.

M D Illinois

ANSWER—Most companies that manufacture rubber goods experience some difficulty on account of skin diseases. In some instances the skin diseases are encountered along with systemic diseases such as from benzene (or its homologues) or from carbon tetrachloride or trichloroethylene. More often the dermatitis is the sole evidence of a harmful action of the chemicals utilized. At present the chief offending agents are the rubber accelerators, although on occasion rubber itself has been held responsible. Among other accelerators or antioxidants now or lately in use, the following have been found to be skin irritants: diortho-tolylguanidine, diphenyltolylguanidine, paraphenylenediamine, hexamethylenetetramine (methenamine), thiocarbonyl, ethyldecaniline, formaldehyde-aniline, methylenediamine, anhydroformaldehyde-aniline and anhydroformaldehyde-paratoluidine (Hamilton). Other substances that should be the recipient of concern are dichloroethylene, antimony sulfides, sulfur chloride, carbon bisulfide, naphtha, soapstone, boot varnishes and divers diamines. So rapidly are developments made in the rubber industry with respect to accelerators that always the rubber chemist is ahead of the toxicologist. It is believable that agents newer than those listed may be in some use.

It is suggested that patch tests be carried out on various workers, using as test materials rubber without any accelerator, rubber containing the individual accelerators, rubber before and after vulcanizing, and so on. The cause is likely to be found without difficulty in the accelerators—one or more. If the patch tests with such materials are consistently negative, tests should be extended to various solvents, varnishes, coloring agents and fillers. The cause having been found, the treatment is simple—eliminate the irritant. Nonirritating or less irritating accelerators usually are available. So soon as the causative agent is removed, the usual accelerator dermatitis speedily clears up with or without treatment.

The patch test mentioned may be carried out in various ways. The simplest is to apply small squares of the test material directly to the extensor surface of the forearm or

thigh, cover over gauze and a layer of dental drumming or cellophane held in place by adhesive plaster. The contact should remain not less than twenty-four hours in the absence of troublesome irritation. Seventy-two or ninety-six hours sometimes is preferable for substances of low irritating properties.

NO MUCUS FORMING FOODS

To the Editor—I am so frequently asked by patients about foods that cause mucus that I am referring the question to you as I can find no scientific authority that answers the question. Self-styled food experts tell them that milk, cheese and eggs all form mucus and should be eaten very sparingly and never if they have a cold or any other condition accompanied by mucus such as sinus disease or mucous colitis. My teaching has always been that there is no such proof of this contention except possibly in cases of food allergy in which any food eaten that the patient is sensitive to might cause a mucous colitis.

M D California

ANSWER—There seems to be no scientific authority for the assertion that any food forms mucus. Normally there is a thin coating of mucus over the gastric mucous membrane and careful studies of the various foods in the normal human stomach fail to reveal any increased mucus production on the part of the mucous membrane with practically all varieties of food. In most instances increased mucus is due to a condition of the mucosa rather than to the type of food that is introduced. Increased production of mucus therefore suggests irritability or inflammation of the mucous membrane whether it would be due to gastritis, enteritis or colitis. When such is the case the entrance of any irritating food may be followed by an increased production of mucus. There is absolutely no evidence that this effect is due to milk, cheese or eggs. On the contrary they usually form part of the bland diet which is most acceptable to these patients. Intragastric studies on milk, cheese and eggs in healthy subjects fail to show any increased production of mucus. In fact failure to handle these foods properly may result in increased intestinal putrefaction with the appearance of mucus in the bowel. This has been pointed out particularly regarding the influence of egg white in certain forms of intestinal putrefaction. Chronic inflammatory conditions of the mucosa frequently follow infections of the upper respiratory tract and are usually accompanied by an increase of mucus regardless of the type of food ingested. Furthermore, it is now generally known that much of this postural material as well as bronchial secretion may actually be swallowed and may accumulate in the stomach.

The correspondent is entirely right in assuming that there is no scientific proof of this contention and it is generally acknowledged that when food allergy exists the specific food in question may cause an allergic response in the mucosa in any part of the digestive tract.

DENICOTINIZED CIGARS AND CIGARETS

To the Editor—I meet patients who have been advised by physicians or friends to smoke so-called denicotinized cigarettes or cigars. They get some comfort from the belief that the nicotine has been removed but do they actually receive any benefit? Is the nicotine extracted? Are not carbon monoxide and the essential oils of tobacco even more harmful than nicotine? Does it make any difference whether the smoke is inhaled or not? Please omit name.

M D Massachusetts

ANSWER—Benefit from the use of so-called denicotinized cigarettes or cigars, instead of the ordinary brands depends on the relative amount of tobacco so consumed. The various brands of so-called denicotinized tobaccos so far examined have been found to contain from 0.5 to 1 per cent of nicotine by weight, as compared with an average of 0.8 per cent for West Indian cigarettes, 1.5 per cent for Oriental brands, 2 per cent for the common blends, which constitute the bulk of popular consumption, and 2.5 per cent for the straight domestic brands. It appears that the special processing to which such tobaccos have been subjected removes a considerable part of the nicotine originally present but that they are generally composed of high nicotine containing tobaccos to begin with, so that the residual nicotine present may still be much higher than that of certain brands of cigarettes not so treated.

The amount of nicotine actually absorbed depends not only on the nicotine content of the tobacco used but also on the amount of such tobacco consumed and the manner in which it is smoked. If the smoker relies on the advertised claims and increases either the number of cigarettes smoked, the length of cigarette consumed or the size of cigarette or cigar used, he may suffer from an actual increase in the amount of nicotine absorbed. Inhaling the smoke also appreciably increases the amount of absorption of smoke constituents. If the higher cost

of the specially treated cigarettes induces the smoker to economize in their use, he may indirectly benefit from the lessening in the actual amount of tobacco used.

Nicotine itself is held responsible for the production of extrasystoles and other cardiac arrhythmias, the development of "tobacco amblyopia" and the aggravation of thromboangiitis obliterans or other circulatory disturbances. Other constituents of the tobacco smoke must be responsible for the local irritation of the mucous membranes of the nasopharynx, the conjunctiva and the larynx, leukoplakias of the buccal mucosa and cancers of the lower lip as well as for the allergic manifestations that have been described. The carbon monoxide content of cigarette smoke is usually too low to produce clinical symptoms although occasionally it may play a part in the production of headaches.

References

- Schrumpf Pierson P. Tobacco and Physical Efficiency, New York, Paul H. Hoeber, Inc. 1927.
Hoson Emil. The Composition of Cigaretts and Cigaret Smoke. THE JOURNAL, Oct. 12, 1929, p. 1110.

IMPORTANCE OF HAND AND FOOT ANOMALIES

To the Editor—A friend has one extra toe being the great toe on each foot the first four toes including the extra one are webbed but other wise he is apparently normal. One brother, one sister and his mother have the same characteristic plus a peculiar articulation of the thumbs in which the joint between the proximal and the middle phalanx points convexly toward the index finger when the thumb is abducted. He has another brother with five toes with a webbing of the third and fourth toes on both feet and the webbing of the middle and ring fingers of the right hand. He also has one brother and two sisters normal so far as these characteristics are concerned. His father is also normal in this respect. Neither he nor any of his brothers or sisters is married so that there have been no children in the third generation. He does not know concerning his mother's parents and her brothers and sisters living as to these characteristics but he thinks they are normal. 1 What is the name given to this peculiarity? 2 If he marries a normal woman, what will be the likelihood of this characteristic appearing in his children and in his grandchildren? 3 If there is likelihood of this appearing in his children, what proportion of each sex will be likely to show this characteristic? 4 If his sisters and brothers each marry to a normal mate what would be the answer to questions 2 and 3 in each case. Please omit name.

M D Missouri

ANSWER—1 From the description it appears that the condition is one involving a doubling or twinning of the big toe associated with webbing of the other toes.

2 All, or nearly all, hand and foot anomalies are inherited as mendelian dominants. Since no intermarriage of close relatives has taken place, all individuals showing the anomalies are heterozygous (having both a dominant and a recessive gene). A heterozygous individual mating with a pure recessive (in this case a normal person) would be expected to produce affected and normal children in equal numbers.

3 Since these hand and foot characters are not sex linked, the two sexes would be equally affected.

4 The normal brothers or sisters of an affected person do not carry the gene for the anomaly and therefore would not pass it on to their children.

HAIR DYES

To the Editor—Is there any perfectly harmless method of gradually restoring a brown color to prematurely gray hair in a young man—a method that can be used at home? Please omit name.

M D, Nebraska

ANSWER—No, there is no perfectly harmless hair dye. The least harmful according to Alfred Perutz (*Handbuch der Haut u. Geschlechtskr.* 1934) are those made of combinations of henna, the powdered leaves of Lawsonia inermis, and rengé, the powdered leaves of the indigo plant, indigofera argentea. Varying amounts in the mixtures of the two dyes give colors varying from blond to black.

More dangerous is silver, which, carelessly used, has been known to produce generalized argyria. Dyes containing lead have been popular in the past and are still advertised as "gradually restoring the natural color." Lead does act gradually, combining with the sulfur in the hair, but there is danger of resulting plumbism. Silver and lead dyes are the only ones that will give anything like a satisfactory color when used at home. Of course there is much more danger of poisoning from them under these circumstances than if used by an expert. If the patient insists on dyeing his hair, let him go to the best hairdresser available to get an expert job, braving the danger of resultant dermatitis, which is, after all, not a frequent occurrence, or hair dyes would not long survive. The other alternative much the wiser, is to accept gracefully the distinction nature is bestowing on one.

SYPHILITIC AORTITIS

To the Editor—A man, aged 42 5 feet 8 inches (173 cm) tall 170 pounds (77 Kg) in weight has had anginous pains (with mostly minor attacks) and with a distribution to both jaws radiating to the back and also subinternally, increasing in frequency in the last six months. A recent Wassermann and Kahn test has shown a 4 plus reaction. On percussion the ascending aorta seems to be much dilated. My prognosis is syphilitic aortitis. A recent electrocardiogram does not reveal any myocardial involvement. The heart sounds seem to be normal and the heart does not appear to be enlarged. The blood pressure is 114 systolic 75 70 diastolic. Considering that this is a vascular type of syphilis am I justified in withholding arsenicals? I am giving the patient a saturated potassium iodide solution in ascending doses also 2 cc. of a 2.5 per cent bismuth subtartrate solution intramuscularly twice weekly. Is a soluble bismuth preparation reliable? When in your opinion should treatment with arsenicals start? What is the prognosis of such cases? Would you advise more radical treatment than mentioned? Kindly omit name

M D, New Jersey

ANSWER—The clinical diagnosis of syphilitic aortitis with possibly a beginning aneurysm is justified in this case. Cardiovascular syphilis in general should be treated more cautiously and less intensively than other forms of syphilis. There are at present two schools of thought relative to the treatment of cardiovascular syphilis, the one favoring the milder and slower acting remedies such as mercury, bismuth and the iodides, the other advocating more energetic treatment with arsenicals plus mercury and iodides. Bismuth, on account of its low toxicity, is a particularly desirable drug to use and can often be employed with excellent results to the exclusion of the arsenicals. A soluble bismuth preparation has no advantages over an insoluble one, such as the salicylate. In view of the different opinions expressed by various authorities, a conservative opinion would favor intermittent treatment with bismuth compounds and iodides over a long period of time before resorting to the arsenicals. The latter if used at all should be given cautiously and in small doses. The prognosis in cardiovascular syphilis must be guarded, as the outlook in general is grave. The value of rest, the avoidance of physical and nervous strain, and general measures should be emphasized in the management of these cases.

WASSERMANN FAST SYPHILIS

To the Editor—I have under my care a married woman aged 23 who was recently delivered of a male infant. On routine study fourteen months ago it was discovered that her blood was positive for syphilis. She was then started on intensive antisiphilitic treatment which has consisted in the main of alternating courses of a bismuth compound and neoarsphenamine each course consisting of ten weekly injections. The dose of the neoarsphenamine was from 0.45 to 0.6 Gm. that of the bismuth compound 1 cc. Serologic tests done from time to time have remained consistently positive. The last reading was as follows: Wassermann, 4 plus Kolmer strongly positive modified Hinton, positive, Kahn 3 plus. While the period of treatment is slightly more than a year should not one expect some changes in these tests? Incidentally the patient is a responsible person and denies any knowledge of the infection. Is it not quite likely that I may be dealing with syphilis of congenital origin which I have been taught, is much more refractory to treatment than the acquired form. Would a spinal fluid Wassermann test be indicated at this time?

M D Massachusetts

ANSWER—The serologic response of syphilis even when intensively treated with adequate courses of bismuth preparations and neoarsphenamine shows considerable variation. Before the case is classified as Wassermann fast at least another year of treatment should be administered. Unless there should be found some characteristic sign the disorder should be considered as acquired rather than congenital. A spinal fluid Wassermann test should be made at this time to rule out the presence of asymptomatic neurosyphilis.

UMBILICAL HERNIA

To the Editor—What would you suggest for an umbilicus that protrudes about half an inch in an infant 2 months old?

SAMUEL C. KARLAN M D Danmora N Y

ANSWER—A protrusion of the umbilicus may result from (1) the persistence of remnants of the vitello-intestinal duct and urachus or (2) the presence of a sac of peritoneum in the umbilical ring where the fetal vessels have passed, that is, a hernia. The question as stated does not give sufficient information for identification. It is therefore difficult to tell which treatment to recommend.

In general it may be said that, if the protrusion is solid and the result of persistence of the rudimentary structures, treatment consists in excision. The umbilicus with its protrusion or tumor, as the case may be, is excised by an elliptic incision. This should be done carefully, as there may be a communication with a rudimentary Meckel's diverticulum.

An umbilical hernia, on the other hand, in a child so young frequently gets well without operation. The essence of treatment is to bring the recti together. Broad strips of adhesive tape are applied from one side of the abdomen to the other in such a way that the lateral tension is reduced. A felt pad may be placed over but not into the hernia. The strapping may be renewed as often as necessary, approximately once every week or two. This treatment hardly ever fails up to the age of 3. In a child over that age, operative treatment is usually necessary.

MENOPAUSAL DISTURBANCES

To the Editor—For the last nineteen years, following a panhysterectomy, a friend has had symptoms of persistent menopause. These symptoms consist of nervousness, hot flashes and headaches. At present she is 42 years of age. She has taken ovarian extract without relief. Is there any other preparation that could be of aid? Please omit name and town.

M D Kentucky

ANSWER—The prolonged period of distressing menopausal symptoms may be attributed to the fact that the patient had the panhysterectomy at the early age of 23. However, there must undoubtedly be a strong psychic factor in this patient. Many women can be relieved of their menopausal disturbances by the repeated hypodermic administration of estrogenic substance. The two preparations most commonly used in this country are amniotin (E. R. Squibb & Sons) and Theelin (Parke, Davis & Co.). It is well to give about 500 rat units hypodermically every second day. In addition, the patient should take either one amniotin capsule or one theelin capsule by mouth every day. If this dosage does not give relief, more frequent injections or larger amounts will have to be given. As soon as the patient feels distinctly better, the dosage may gradually be diminished. This treatment will have to be carried out over a long period. It is advisable also to prescribe a mild sedative, such as the bromides, or small doses of one of the barbiturates.

MEASURING CARDIAC LOAD

To the Editor—Please tell me how to figure heart load and mean pressure. I know that systolic 120 diastolic 80 pulse pressure 40, mitral efficiency three times 40 = 120. Keeping within the range of the systolic is normal. I know that systolic 160 diastolic 100 pulse pressure 60 mitral efficiency three times 60 = 180 shows the myocardium under undue strain. Now how do I find the heart load which I believe normally is around 50 and how do I find mean pressure which is around 72?

HENRY V. BROESER M D Hoboken N J

ANSWER—From the way the question is stated it is difficult to understand what the author has in mind. The cardiac load cannot be calculated from such simple measurements as blood pressure. The most important factors that maintain blood pressure are the force and rate of the heart, the volume and viscosity of the blood, the elasticity of the blood vessels, and the peripheral resistance. It is obvious that with all the complex factors influencing the blood pressure one can hardly compute the heart load from blood pressure measurements. In general, physiologic processes are very complex and their measurement, such as cardiac load, does not reduce itself to simple mathematical formulas, as implied in the question.

DIPHTHERIA AND SCHICK TESTS

To the Editor—1 Is it advisable to do a Schick test on all infants before giving diphtheria toxoid? Does the same apply to older children? 2 If toxoid has been given and a negative Schick test obtained when should the Schick test be repeated? 3 In the event a case of diphtheria occurs in a family should other children in the family previously found Schick negative be given the preventive antitoxin? 4 If a child has been given toxoid and then is exposed to diphtheria before the end of from six to eight weeks and no Schick test has been done, should antitoxin be given? 5 In children who have never had toxoid but are found Schick negative when should the Schick test be repeated? Please omit name.

M D Tennessee

ANSWER—1 It is not necessary to do a Schick test on infants before giving diphtheria toxoid. It is advisable to do a Schick test on older children before immunization.

2 It is desirable to repeat the Schick test one year after immunization.

3 If a case of diphtheria occurs in a family, preventive antitoxin should not be given to children who previously showed a negative Schick test.

4 It is not advisable to give preventive antitoxin to a child exposed to diphtheria from six to eight weeks after administration of diphtheria toxoid. It is best to do a Schick test first.

5 It is not necessary to repeat the Schick test in children who are spontaneously negative.

NONSPECIFIC PROTEIN THERAPY

To the Editor—What foreign proteins besides milk and typhoid vaccine would you suggest for supplementary protein therapy in my practice? What would you suggest as supplemental measures in rheumatism and acute and chronic arthritis and would streptococcus bacteriophage be satisfactory in those conditions? I have read Cecil's recent article but he mentions only milk typhoid vaccine and diphtheria. Is the milk put up in vials by some of the pharmaceutical laboratories potent enough or is freshly boiled milk the best?

M D Appleton Wis

ANSWER—One of the simplest and cheapest of foreign proteins is sterile normal horse serum, given in doses of from 2 to 5 cc intramuscularly. In rheumatism and arthritis the foreign protein that has been used most extensively is some form of *Streptococcus haemolyticus* vaccine administered in small doses either intramuscularly or intravenously. There is some difference of opinion as to the value of *Streptococcus haemolyticus* vaccine in the treatment of rheumatic conditions but it still has many strong advocates. The value of streptococcus bacteriophage would probably be proportional to the amount of reaction set up in the patient by the injection. On the whole, streptococcus bacteriophages have been disappointing in the treatment of streptococcal infections. Freshly boiled skimmed milk is usually preferable to the refined products put up by pharmaceutical laboratories, as the former is more likely to excite a febrile reaction.

DIFFERENTIAL DIAGNOSIS OF CATARACT DUE TO DINITROPHENOL

To the Editor—How can one differentiate between senile cataract from one due to dinitrophenol poisoning in a person 55 years of age? Please do not publish name.

M D New York

ANSWER—A cataract due to dinitrophenol is always bilateral although the condition in one eye may be more advanced than in the other. It appears from six to twenty months after the ingestion of the drug. The onset is rather slow requiring from three to six months before vision is seriously interfered with but afterward the progress is very rapid. The opacity is rather uniform and lies in the anterior and posterior cortex leaving the nucleus fairly clear until the terminal stage. There is apt to be more swelling of the lens than in the senile form. Immediately underneath the anterior as well as the posterior capsule there is most frequently a narrow zone of clear cortex that is practically the last part of the lens to become opaque. In many respects a cataract due to dinitrophenol resembles closely a true diabetic cataract.

TREATMENT OF FILARIASIS

To the Editor—I have a patient suffering from filariasis. The filariae have been seen in the blood. The only symptoms she complains of are weakness and milky white urine due to chyle. The patient has had many kinds of treatment during the last three or four years but they do not seem to have improved the disease at all. Sometimes the urine is normal for a period of months but at other times it is just the same as before. Kindly send me information concerning the latest accepted treatment of such cases.

GEORGE R HOPKINS M D Curaçao Netherlands West Indies

ANSWER—At present, experimental work suggests that the best hope of improvement in cases of filariasis and especially chyluria is to be derived by high voltage roentgen therapy. The technic is described by Golden, Ross, and O'Connor. *F W The Roentgen Treatment of Filariasis, Tr Roy Soc Trop Med & Hyg* 27 385 (Jan 31) 1934.

URTICARIA AFTER SAUER VACCINE

To the Editor—One week after the administration of 2 cc of Sauer pertussis vaccine (first dose), a child experienced a severe urticaria. How should I proceed in this case with regard to further doses? How serious a hypersensitivity may I have grounds to fear? Please omit name.

M D New York

ANSWER—It seems quite unlikely that authorized pertussis bacillus vaccine, injected into a nonimmune child would precipitate urticaria a week later.

Both laboratories authorized to make this vaccine for immunization grow the Bordet bacillus on Bordet medium enriched with human blood. Vaccine, so prepared, containing no trace of animal protein, should not sensitize or elicit anaphylactic reactions.

If the correspondent is certain that the child has not had whooping cough, and if one of the two authorized commercial vaccines is used the bilateral injections should be continued at

weekly intervals until a total of 8 cc has been injected. If the child is more than 3 years of age, a total dosage of 10 cc may be given. Immunization ought to be complete within several months after the last injection.

EFFECTS OF LOW HYDROCHLORIC ACID

To the Editor—In men past 50 what is the incidence of low hydrochloric acid? In alcoholic addicts is the tendency toward high or low hydrochloric acid? Please use initial only.

M D Alabama

ANSWER—In men past 50 the incidence of low or absent hydrochloric acid is at least 33 per cent, according to most authors. Seidlin and also Menlengracht found achylia to be present in 40 per cent of healthy elderly persons. Lipschutz observed an achylia in 33 per cent of a group of healthy individuals between the ages of 50 and 75. On the other hand, Schütz obtained an absence of free hydrochloric acid in only 15 per cent of elderly individuals he examined.

In alcoholic addicts the tendency is toward low hydrochloric acid although high and normal values are frequent. In cases of long-standing alcoholism particularly the degree of acidity is likely to be low, whereas in the early cases hyperacidity is not rare.

PREPARATIONS USED INTRAVENOUSLY

To the Editor—I have an Epitome of the U S Pharmacopeia and National Formulary also a 1935 copy of New and Nonofficial Remedies, and have subscribed for the 1936 edition but these books do not solve my prescribing problems. Little is mentioned in the Epitome about intravenous or intramuscular or even subcutaneous medication yet drug houses are putting out ampules and such for this medication. Sodium chloride intravenously is used as normal salt solution so is sodium iodide sodium salicylate colchicine and various other drugs as examples of what I mean. Is it possible that you have a book which simply tells of the U S P drugs and N F drugs that are used intravenously intramuscularly or subcutaneously? If so please send me the names of the book or books so that I can solve the problem.

M D Ohio

ANSWER—Dutton's book on "Intravenous Therapy" (Philadelphia F A Davis Company, 1925) is the most extensive book on the subject at present available. The various other injection methods are discussed in Fantus's "Technic of Medication" (Chicago American Medical Association 1930).

BLINDNESS IN NEPHRITIC PATIENT

To the Editor—What are the tests for blindness in case of a delirious nephritic patient? This is a case in which an insurance company requires evidence of blindness to prove the attending physician's diagnosis. Please omit name.

M D Pennsylvania

ANSWER—In an instance of this sort in which subjective responses are out of the question objective tests have to be relied on. If the pupillomotor apparatus is in order, the contraction of the pupil by direct light stimulation is proof positive that the retina and the optic nerve at least as far as the corpora quadrigemina, are functioning. Direct and consensual contraction of each pupil will give positive information regarding the light perceiving function of each eye but does not permit of a measure of visual acuity. On the other hand, if the pupillomotor apparatus is not functioning, by reason either of disease or of drugs, there is no objective test that will allow of a diagnosis of absolute blindness.

SODIUM AMYTAL WITH THYMOPHYSIN

To the Editor—I have been trying to find out whether any one has had any experience in obstetrics with sodium amytal followed with thymophysin. It seems to be poisonous to the baby. I shall appreciate it if you will let me know if there is an incompatibility.

H C PAGEOTT M D Roanoke Va.

ANSWER—There are no special reports on the combined use of sodium amytal and thymophysin but there appears to be no reason why a baby should be subject to more danger following the use of these drugs than would result from a simple summation of their potential dangers. Sodium amytal does not often affect a baby in utero. Thymophysin, however, frequently causes disturbances in babies, as evidenced by the increased and irregular fetal heart rate and tumultuous temporary activity that frequently occur after the administration of thymophysin. This is claimed to be a preparation of thymus and posterior pituitary. The Council on Pharmacy and Chemistry declared thymophysin unacceptable for inclusion in New and Nonofficial Remedies (*THE JOURNAL* March 14, 1931, p 860) because "it is an unscientific preparation marketed under false claims as to its essential action as to its strength, and as to its safety for mother and child."

TREATMENT OF DIPHTHERIA CARRIERS

To the Editor—What can be done for a persistent diphtheria carrier?
Please omit name M D, Minnesota

ANSWER—Any abnormal local condition should be corrected. Particular attention should be paid to the tonsils, because frequently removal of enlarged or diseased tonsils in diphtheria carriers has resulted in the disappearance of diphtheria bacilli from the throat. At the same time the general health and personal hygiene of the patient should receive special attention.

DIPSOMANIA AND NYMPHOMANIA

To the Editor—What treatment do you advise for a woman aged 43 and physically well who is a dipsomaniac and also inclined to nymphomania? Would sterilization with irradiation be advisable? Please omit name M D, California.

ANSWER—Sterilization with irradiation or any form of physical treatment directed toward this patient would be a serious error. She apparently needs adequate psychiatric care, for both her symptoms are obviously in the realm of psychopathology.

THROMBOANGITIS OBLITERANS

To the Editor—Your answer to M D, Kansas, April 18, page 1413 is incomplete. It is evident from the letter that the patient does not suffer from rest pains. If he is suffering from intermittent claudication, surely this can be controlled with the use of tissue extract and 5 per cent hypertonic saline solution intravenously. If there is a painless ulceration, rest in bed, wet dressings and 5 per cent saline solution intravenously will also take care of it. If the ulceration is painful, peripheral nerve section will convert the ulcer into a painless one and the wound will usually heal without any untoward complications. In this instance also, saline solution intravenously, beginning with 150 cc. for the first dose and using 300 cc. for subsequent doses is a valuable adjunct. In the presence of gangrene of the toe, rest in bed, wet dressings and 5 per cent saline solution intravenously will check the spread and delimit the gangrenous areas. No ill effects have been shown following such prolonged use of saline solution. The contraindications to the intravenous administration of saline solution are myocarditis, nephritis and hypertension.

Typhoid vaccine injected intravenously has given good results in the opinion of many clinicians but the danger of administering typhoid vaccine intravenously is a thrombosis of the blood vessel. The contraindications to its use are myocarditis, nephritis, hypertension and arterio sclerosis.

Sympathetic ganglionectomy as you advised is not a simple procedure and subjects the patient to a major operation. It would be of no value if the occlusion in the blood vessel is organic in nature. Finally let me emphasize that the treatment of thrombo-angitis obliterans tends more to conservatism than to amputation.

THEODORE KAPLAN M D, New York

TREATMENT OF SYPHILIS

To the Editor—On page 1333 of the April 11 issue of THE JOURNAL Dr. George E. Knappenberger of Macomb, Ill. poses a question with reference to the fever treatment of a particular patient with neurosyphilis. The answer to this question advises against fever therapy in this individual patient. Whether or not this advice is sound could not be determined without much more information about the patient in question, including details as to his age, general physical status and amount and character of previous treatment. I take particular exception however to the last sentence of the answer which reads: "Fever treatment is indicated only in dementia paralytica."

Fever treatment is indicated in many types of neurosyphilis other than dementia paralytica among which may be specifically mentioned:

- (1) Preparetic asymptomatic neurosyphilis
- (2) Neurosyphilitic patients whose spinal fluid remains unimproved after large amounts of chemotherapeutic treatment
- (3) Primary optic atrophy
- (4) Selected patients with tabes particularly those with intractable lightning pains or gastric crises

In addition, fever therapy is also indicated in drug resistant syphilitic infection whether or not the nervous system is involved.

J. E. Moore M D, Baltimore

FREEMARTINS

To the Editor—Under Queries and Minor Notes in THE JOURNAL, April 11, page 1333 I saw an inquiry as to freemartins. Being interested in the breeding of high class cattle I was interested very much. I have found that twins when they have separate placentas always breed. This observation is substantiated in the work of Leon F. Whitney, who explains this phenomenon by stating that when a freemartin does not breed it is due to the fact that there was one placenta for both twins the blood of each flowing through the two and in the process it is assumed that the testicles of the male secrete a hormone which is carried by the blood to the female where it acts on her ovaries thus retarding their development. When twins are born from separate placentas the female is not likely to be sterile.

WALTER R. GRIESS M D Cincinnati

Council on Medical Education
and HospitalsAPTITUDE TESTS FOR MEDICAL
STUDENTS

CHARLES RUTHVEN FLACK
CHICAGO

'Then said they unto him, Say now Shibboleth', and he said, 'Sibboleth' then they laid hold on him, and slew him" Judges 12:6

Writers interested in the historical aspects of tests and testing are continually seeking the origins and antecedents of their subject, but no sooner does one discover that the Chinese made extensive use of tests and measurements before the year 1000 than another comes forward with an earlier example, and so on ad infinitum. Such historical delving is no doubt interesting and perhaps instructive but not extremely useful, and for most purposes a glance into the past, near or far, is most helpful when it brings to light the origins of movements or tendencies relating to specific testing problems, and most particularly when it traces the causes and developments that led to the production of specific tests.

In studying aptitude tests for prospective medical students, therefore, it might be well to look into the events leading up to their devising and early application, for the magnitude of the task of making up and administering these tests on such a wholesale basis was so great that it is very evident that they were undertaken to fulfil a definite purpose and were not merely academic exercises to enable students and scholars to display their ingenuity in psychologic gymnastics.

One finds two chief factors which were mainly responsible in turning the attention of the officers of medical schools toward the possibilities of aptitude tests in solving their problems. Perhaps the first factor, in time rather than importance, was the dissatisfaction of medical men in general and the faculties of medical schools in particular with the large number of failures among students admitted to the various schools.¹ This feeling of discontent was without doubt greatly intensified by the study of the scores of medical men on the Army Alpha tests reported by Yerkes² in 1921, but more or less public even in 1917 while the tests were being administered to the members of the draft army. Adverse public criticism was directed toward the state of affairs, and the faculties and officers of administration of the medical schools were thus brought to a vivid realization that the M D stamp was not necessarily a badge of great merit, intelligence and efficiency. Something had to be done or else the medical profession in general would suffer from the severe criticism because of the poor showing of many of the marginal individuals who had filtered into the ranks.

The methods of selecting applicants for admission to medical schools at that time were fairly rigidly prescribed in the by-laws of the Association of American Medical Colleges,³ but the requirements were quantitative rather than qualitative: sixty semester hours in an approved institution, and certain credits in premedical subjects, such as chemistry, biology and botany.

In addition to the dissatisfaction with regard to the finished product of the medical school there was a feeling, already mentioned, that the mortality in the medical courses (scholastic mortality, of course) was quite too high, for failures ran as great as 20 per cent in some institutions.

¹ Capen S. P. Premedical Education Bull. A. Am. M. Coll. 1:5 1926.

² Yerkes R. M. Memoirs of the National Academy of Sciences 1921 pp. 22-26.

³ Association of American Medical College By-Laws Minimum Entrance Requirements Bull. A. Am. M. Coll. 1:5 1926.

That this dissatisfaction was widespread is evidenced by the number of references and complaints found in the writings and utterances of the officials of the medical schools and members of the profession.⁴ No one, however, came forth with any constructive suggestions.

MULTIPLE APPLICATIONS

The second and more important factor that influenced the evolution of the medical aptitude tests was the ever growing number of applicants and applications for admission to medical schools. In the first two decades of the twentieth century the expansion of the medical schools seems to have kept pace with the increase in the number of students aspiring to become doctors, but by the fall of 1919 the schools began to note such increases in the number of students seeking admission that a large number of really eligible students had to be denied entrance each term even although many of them more than met the minimum requirements of the association. Then too, multiple applications began to be very common for the prospective student, fearing lest his application for admission to one school be refused, entered his request in another at the same time, or even a considerable number.

As might have been expected, the pressure for admission was greatest in the more thickly populated part of the country, in other words the so called effete East and accordingly it was here that one finds the first studies being made of the situation, although other sections soon followed suit. It is possible that the long experience with the selective processes on the part of the private schools and colleges in the East was largely responsible for the movement starting there. Cattell for example, had been making use of tests in a number of ways, and for various purposes including selection at Columbia since 1894.⁵

In 1926 Dr. Burton D. Myers was asked to make a report to the Association of American Medical Colleges on the problem of applicants and duplicate applications. This report⁶ delivered before the association at the thirty-sixth annual meeting, so impressed the members that Dr. Myers was authorized to continue his study and submit the results the following year. From that time on the report on applications became an annual event of greater or less importance at each conference of the association.

The first report by Myers noted that there were 20,093 applications submitted by 8,500 individuals seeking admission to medical schools in the fall of 1926 but that only 6,420 were accepted.⁷ Duplication of applications ran as high as twenty. During the discussion of the paper which followed the question was raised by Dr. A. S. Begg of the Boston University School of Medicine as to the methods used by the various schools in rejecting applications, and it was brought out very clearly that there was absolutely no uniformity of procedure in refusing admittance to students who fulfilled the minimum requirements of the association. Thus a man might be denied his permit to enter by ten institutions yet be granted one by the next.

In this manner the problem was brought more forcibly to the attention of all the members of the association and a number began to experiment with methods of selection beyond the minimum mentioned in the by-laws. Some, however, as previously suggested, had already begun to do something about it.

Thus Dr. John Wyckoff of the New York University College of Medicine reported at the thirty-seventh annual meeting

of the association on efforts to cope with the problem.⁸ According to his statements, beginning with the fall of 1919 New York University College of Medicine had received more applications from eligible students than could be admitted. By 1921 the excess was "so large that a definite plan for selection became necessary" (p. 1).

RECOGNITION OF NEED FOR SELECTIVE CRITERIA

A combination of scholarship and personality ratings was put into operation. Students with A and B averages in their collegiate work were admitted without further question provided of course, that their recommendations were satisfactory and that there was no definite reason for their being barred from entrance. Students with B— and C averages, however, were rated as to the desirability of their personalities, and the ones scoring highest on the scale used, which was a simple five point one, were admitted to fill any places not taken by the A and B men. After a year of trial it was felt that the personality ratings were too subjective and thereafter admissions were awarded entirely on a basis of scholarship in the premedical subjects. It was noted that the percentages of failures fell considerably almost at once.

The University of Nebraska was also experimenting with selective devices as was reported by Dr. Franklin D. Barker.⁹ The 'Nebraska plan' was to appoint advisers from the members of the liberal arts faculty to watch over the premedical students in order to note special medical aptitude and to encourage or discourage them as they saw fit. The report was rather vague as to methods of identifying aptitude and it seems that no general technique was followed. No special training was given to the advisers, and the dangers of proselytizing does not appear to have been considered. It is rather amusing to note that one of the results produced was an increase from 25 per cent to 70 per cent in the number of our own premedical students pursuing the medical course in our own college of medicine' (p. 18).

In the same issue of the *Bulletin* there appeared a report by Dr. Arthur C. Curtis¹⁰ of the University of Michigan Medical School on women students of medicine, in which he dealt with the qualifications of women medical students and their scholastic records. No comparison was made which indicated that they were better or worse than students of the opposite sex.

The presentation of these studies and their accompanying statistics aroused the association to still more activity, and the following year at the thirty-eighth annual meeting a report was made to the members by Dr. A. S. Begg,¹¹ chairman of the committee on medical education and pedagogics, in which he suggested, among other things, 'the creation of some sort of central agency' (p. 66) to handle the growing problem of applications for admission to the medical schools. However no action was taken, apparently, by the association at that meeting.

Dr. Myers¹² made another report covering the applications for admission to medical schools for 1927-1928 at the same meeting. It showed rather emphatically that the rush to break into the ranks of the medical men had not abated one whit, for there were now 23,590 applications from 11,282 individuals increases of 17 per cent and 32 per cent respectively, while the number of acceptances had increased only a trifle over 1 per cent to 6,495. It was noted that one individual, in a desperate

⁸ Wyckoff, John. Relation of Collegiate to Medical Student Scholarship. *Bull. A. Am. M. Coll.* 2: 112 discussion pp. 12-16 (Jan.) 1927.

⁹ Barker, F. D. Determining the Fitness of the Premedical Student. *Bull. A. Am. M. Coll.* 2: 16-19 discussion pp. 19-20 (Jan.) 1927.

¹⁰ Curtis, A. C. The Woman as a Student of Medicine. *Bull. A. Am. M. Coll.* 2: 140-148 1928.

¹¹ Begg, A. S. Report of the Committee on Medical Education and Pedagogics. *Bull. A. Am. M. Coll.* 3: 63-66 1928.

¹² Myers, B. D. Report on Applications for Matriculation in Schools of Medicine for 1927-1928. *Bull. A. Am. M. Coll.* 3: 193-198 1928.

⁴ *Bull. A. Am. M. Coll.* volume 1.

⁵ Hull, C. L. *Aptitude Testing*. Yonkers, N. Y. World Book Company 1928, p. 9.

⁶ Myers, B. D. Disposition of Applications for Admission to Schools of Medicine for 1926-1927. *Bull. A. Am. M. Coll.* 1: 97-102 discussion pp. 102-104 (April) 1927.

⁷ The actual enrolment in the fall of 1926 was 5,019.

effort to gain admittance, had applied to thirty-seven schools,¹³ while two others sent in applications to twenty-seven institutions in order to make sure of being accepted. The report ended with an appeal for a more careful method of selecting medical students but omitted this point (p. 198). "But do we know how to select superior men? Psychologists tell us that psychological tests furnish only contributory, not conclusive, evidence of ability. Recommendations are one criterion and does get. The personal interview, though very important, is again only a factor in the selection. The transcript of record shows only what the student has done under a certain environment and stimulus." One might almost believe that the man who wrote those words was a psychic and seer, so well do they indicate the development of the future.

Reports made at subsequent meetings of the association by Dr. Myers on the applications received by medical schools indicated a continued growth in the number both of applications and of applicants. No further mention of these reports will be necessary, for enough of them has been cited to show that the association was alive to the crying need for some selective criteria on which schools could base their admissions and rejections. All of the eighty-five schools comprising the association membership were well aware of the gravity of the situation.

At the thirty-ninth annual meeting of the association, held in Indianapolis Oct. 29-31, 1928, Dean Waldo Shumway of the College of Liberal Arts and Sciences of the University of Illinois delivered an address¹⁴ in which he suggested a liberal arts education as a premedical requirement—an education containing, of course, the prerequisites in science demanded by the medical schools. He did not, however, offer any study of the success of students possessed of such an education after they had entered the medical school, although many such were doing so, and no doubt records were available had he taken the trouble to look into them.

With the fourth volume of the bulletin the name was changed to the *Journal of the Association of American Medical Colleges*, but it continued to give a number of articles or reports dealing with the situation and its possible solution just as previously. Thus is found an interesting report by Dr. Begg¹⁵ reviewing conditions and making full use of much of the material and information in the Myers reports and also reports of the Council on Medical Education and Hospitals of the American Medical Association. Begg was chiefly interested in the scholastic mortality of medical students and presents tabulations showing this mortality in percentages as well as in absolute numbers, covering the period from 1907-1908 to 1925-1926. Percentages were fairly constant during that time, running around 18 to 20.

The associate dean of Columbia University College of Physicians and Surgeons also presented a study in this volume,¹⁶ a comparison of premedical and medical grades, in which he found that "the average grade of all the subjects studied at college was a rather better indication of the character of the work a student would do in the medical school than the average grade of the premedical required subjects alone" (p. 199). This was contrary to the experience of other investigators. The facts mentioned in the report, however, were not tabulated, nor were statistical measures given in a clear enough manner to make plain the exact comparisons implied in the title.¹⁷

Considerable interest was aroused over the phenomenon of multiple applications, particularly since the earlier report con-

cerning the student who had submitted thirty-seven applications and had been refused admission by the thirty-seven institutions.¹⁸ It was suspected in some schools and by not a few medical men that the number of applications might be an inverse indication of the student's ability. This suspicion was relieved, however, by reports at the fortieth annual meeting of the association, held in New York City on Nov. 7-9, 1929, presented by Adam M. Miller,¹⁹ dean of Long Island College of Medicine, A. S. Begg,²⁰ and Father Alphonse M. Schwitalla,²¹ dean of the St. Louis University School of Medicine. Although the number of cases covered by each investigator was somewhat too small to ensure a great deal of validity, nevertheless the evidence was pretty conclusive that the number of applications a prospective student submitted was no indication whatever of his ability to do satisfactory work in the medical school.

Feb. 18, 1929, Dr. David A. Robertson,²² assistant director of the American Council on Education, read a paper before the Annual Congress on Medical Education, Licensure and Hospitals at Chicago in which he ably reviewed the advance of scientific testing in various fields and then gave a detailed account of the beginnings of medical aptitude testing undertaken at George Washington University.

BEGINNINGS OF MEDICAL APTITUDE TESTING

He described the tests used as follows (p. 1404).

During the first ten minutes the student studies a diagram and a paragraph about the heart and great vessels, during the next five minutes the student studies a passage such as may be found in medical literature. Then for the remainder of an hour the student, working as rapidly as possible, takes six tests: (1) a scientific vocabulary test of forty items, (2) a test of premedical information (100 items), (3) a visual memory test of twenty items based on the diagram first studied, (4) a memory content test based on the paragraph first studied (twenty items), (5) a comprehension and retention test (twenty items) based on the passage in "Speech Defects," and finally (6) a test of the understanding of printed material" (fifteen items).

Dr. Robertson also touched on what is usually considered a sacred subject—personality—as well as taking a rap at subjective ratings. He indicated that even such imponderables as personality traits might one day be measured objectively and scientifically, which was most likely considered as rank heresy even eight years ago.

At the next (the forty-first) annual meeting of the Association of American Medical Colleges, Dr. F. A. Moss of George Washington University read a paper similar to that presented to the American Medical Association by Dr. Robertson, and thus for the first time the members of the association glimpsed a path out of the labyrinth in which they had been wandering for so many years. The length of the report²² and the animated discussion that followed it gave an excellent indication of the importance of the subject and the interest with which it was received. As Dr. Moss had been largely instrumental in devising the tests, his report was of much greater importance than that of Dr. Robertson. His interest was chiefly centered in the results of the testing program and he referred his listeners to the Robertson article in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* for the details of the actual tests.

The program had been put into operation in the fall of 1927 by applying the tests to the freshman class at George Wash-

¹³ Incidentally he was refused by all!

¹⁴ Shumway, Waldo. Premedical Education from the Standpoint of the Liberal Arts College. *J. A. Am. M. Coll.* 4: 111-115 (April) 1929.

¹⁵ Begg, A. S. Methods of Selection of Medical Students. *J. A. Am. M. Coll.* 4: 193-197 discussion pp. 197-198 (July) 1929.

¹⁶ van Beuren, F. T. Correlation of Grades in Medical and Premedical Work with Personality. *J. A. Am. M. Coll.* 4: 199-201 discussion pp. 201-204 (July) 1929.

¹⁷ Throughout these articles one is almost always struck with the lack of statistical technique which would greatly clarify them.

¹⁸ Miller, A. M. Academic Achievements of Multiple Applicants. *J. A. Am. M. Coll.* 5: 9-12 (Jan.) 1930.

¹⁹ Begg, A. S. The Scholastic Achievements of Multiapplicants. *J. A. Am. M. Coll.* 5: 13-15 (Jan.) 1930.

²⁰ Schwitalla, A. M. The Scholastic Achievements of Multiple Applicants. *J. A. Am. M. Coll.* 5: 16-23 discussion pp. 23-26 (Jan.) 1930.

²¹ Robertson, D. A. Educational Relations of the Professions. *J. A. M. A.* 82: 1402-1406 (April 27) 1929.

²² Moss, F. A. Scholastic Aptitude Tests for Medical Students. *J. A. Am. M. Coll.* 5: 90-101 discussion pp. 101-110 (March) 1930.

ington University School of Medicine and then comparing results with the scholastic achievements at the end of the first year. Results were so generally indicative of the value of the tests that it was decided to administer them to entering students in other medical schools in the fall of 1928. Twenty-two colleges, widely separated geographically, were prevailed on to cooperate. The tests were accordingly given to the freshmen and at the end of the year the grades made by this sampling of medical students were tabulated and compared with the test scores. Even a cursory examination of the results of this comparison made it very evident that, although far from perfect, an instrument had been devised which would give a far better prediction of the ability of a prospective medical student to achieve grades of a satisfactory quality in medical school than anything previously tried out. The correlation between test scores and medical school grades for the whole group was 0.59, while in two institutions it ran up to 0.72, and in only two cases did it fall as low as 0.45.

Following this initial correlation, the test scores were then compared with various other factors and criteria in order to discover, if possible, some multiple correlation relationships that might give more reliable results. For example, the number of semester hours offered by the student for entrance to the medical school was correlated with the grades made in medical school at the end of his freshman year. This produced a coefficient of but 0.09. Grades in premedical subjects gave a correlation with freshman medical school grades of 0.50. Thus the aptitude test scores gave a superior predictive criterion for success in medical school than either of the most used criteria evolved previously.

When the aptitude test scores and premedical grades were intercorrelated with the freshman grades, a coefficient of 0.65 was the result.²³

A rather disturbing factor disclosed by the study of the test scores and grades was the wide range in the quality of the students as represented in the twenty-two institutions. Although the distribution of the grades made by the freshmen in the individual schools was practically normal, nevertheless the median scores on the tests for the men in each school ranged from a low of 94 in one to a high in another of 194, a condition which indicated, granting that the aptitude tests had a high degree of validity, that there was something lacking in the methods of choosing medical students in some of the schools.

After considerable discussion, both pro and con, of the results of this preliminary testing as outlined by Dr. Moss, the executive body of the association was authorized by the members to appoint a committee²⁴ to "direct an experimental study of aptitude tests for admission to medical studies."²⁵

Although it was fairly evident that the aptitude test was to provide the medical schools with an instrument adequate to sift the able students from the undesirables, nevertheless studies continued to be made as to other means of attaining this end, and in the July issue of the *Journal* there appeared an article by the editor²⁶ on the credentials presented by freshmen for entrance to the member institutions of the association in the preceding fall, showing the tendency of students to offer more and more academic qualifications. The author found but little correlation between the number of semester hours offered and subsequent performance in the schools, just as had been shown by the Moss report but contrary to the observations of van Beuren.¹⁰

PROGRESS OF THE PROGRAM

At the forty-first annual meeting of the association, held in Denver Oct. 14-16, 1930, Dr. Moss reported on the progress of the testing program carried on by the committee, of which he had been appointed secretary. This report²⁷ covered the testing done on the freshmen of 1929, the grades made by them at the end of their first year in medical school and also a study of the group tested in the preliminary program the previous year. Some seventy medical schools cooperated and the 1929 students were about four times as numerous as those of 1928.

Again the value of the aptitude tests was demonstrated in an unmistakable way. Grouping the students as a whole according to their aptitude test scores, it was found that there were absolutely no failures in medical school among the highest decile students in either the 1929 or the 1928 classes, while 56 per cent of the students falling in the lowest decile failed. Scholarship records in the medical school correlated with the test scores as high as 0.73 in the sophomore group in one institution, and the average for the sophomores was 0.54. This coefficient was not corrected for the improvement in the group brought about by the elimination of the failing students of the first year, and therefore the real correlation, had it been calculated, would have been much higher.

Not only were the failures ranked inversely with the decile standing of the students, but the averages of the grades of those passing their two years of medical studies were arranged in the same order as the deciles. The average of those in the highest decile was 86 per cent, while those in the lowest decile made but 75 per cent. There were of course some exceptions, but many of these were fully accounted for by some unusual individual situation. For example, low grades were noted among students working their way through college while trying to carry a full load of courses, even when they had made very high aptitude test scores. Then, too, the tests did not appear to be valid in the case of foreign speaking students.

Comparing medical school grades with premedical grades showed some positive correlation, but not as great as demonstrated by the aptitude tests.²⁸ Correlation of grades with interview ratings or personality traits was still less reliable but also was slightly positive, as was that between the number of semester hours offered by the students for admission to medical school when compared with the total grade averages.²⁹

Various combinations of criteria were again tried out, although not described at length such as premedical grades, aptitude test scores and personal interview ratings, and it was found that the combination of premedical grades and the aptitude test scores gave a predictive ratio of 73 per cent.

In passing I might note that at the same meeting a paper was presented by Robert C. Lewis of the University of Colorado School of Medicine, in which the author³⁰ went into considerable detail in explaining the scheme for admitting students to his college. It turned out to be the somewhat familiar premedical grades character-personality stuff, which had been tried and found wanting by so many other institutions. The investigator admitted that scholastic mortality among medical school students at Colorado was from 20 to 25 per cent, which did not seem to imply a high reliability for the criteria employed.

In the general discussion that followed the reading of both these papers there was much adverse criticism of the aptitude tests and much emphasis on the impossibility of choosing a doctor by means of new-fangled tests cooked up by psychologists. Also there were some remarks on the imponderability of

²³ Interpolated graphically since the figure was not given by Dr. Moss.

²⁴ Personnel of the committee: Torald Sollmann, chairman; F. A. Moss, William Darrach, Ben Wood, H. G. Weiskotten.

²⁵ Moss, footnote 22, page 110.

²⁶ Zapffe, F. C. Analysis of Entrance Credentials Presented by Freshmen Admitted in 1929. *J. A. M. A. Coll. G.* 231-234 (July) 1930.

²⁷ Moss, R. A. Scholastic Aptitude Tests for Medical Students. *J. A. M. A. Coll. G.* 116 (Jan.) 1931.

²⁸ Correlation values not given.

²⁹ Lewis, R. C. Methods of Admitting Medical Students. *J. A. M. A. Coll. G.* 17-25 discussion (on this and the Moss paper) pp. 25-35 (Jan.) 1931.

personality—indeed, most of the old stock objections to the scientific measurement of human nature were trotted out, but Dr Moss's impressive figures convinced almost every one, and it was apparent from the trend of the discussion that the aptitude tests had so demonstrated their value as predictive instruments that they had come to stay. Later on in the same convention the association adopted a resolution endorsing the use of the tests as an additional criterion for the selection of medical students and suggested that the member institutions make the test a normal requirement for admission,³⁰ although there is no mention of the new criteria in the official requirements for admission in the extracts from the by-laws of the association reprinted in the *Journal* at that time.³¹

The tests for 1931-1932 were carefully revised and new forms made up.³² As given in the fall of 1931 they consisted of six parts: (1) scientific vocabulary, (2) visual memory for anatomic drawings, (3) memory for descriptive material, (4) premedical information, (5) learning and retention of material and (6) understanding of difficult printed material. The whole test was to require one and one-half hours of the student's time to finish. For the first time the tests were given in colleges and universities offering premedical instruction but not having medical schools of their own—these in addition, of course, to those institutions maintaining departments of medicine. In all, 547 colleges and universities cooperated. Tests were administered to all prospective medical students, and the testing took place at the same hour³³ and on the same day, and, with the fine disregard of the scientist for common superstition, that day fell on Friday the thirteenth of February 1931.

The preliminary report covers test results of 9,220 students, a very considerable increase over previous years but considerably less than the usual number of applications received by the medical schools. As heretofore, New York and Pennsylvania lead by a wide margin all other states in the number of students seeking admission.

In the next issue of the *Journal* appeared an article by Dr W. D. Reid,³⁴ who had been one of the opponents of the aptitude testing program, in which he tacitly acknowledged the status quo by saying that selection of medical students was based on "(1) scholarship, (2) personality and (3) the aptitude test. The latter," he noted (p. 352), "is a recent method which gives promise of being very helpful."

Meanwhile, at the University of Michigan Dr C. S. Yoakum of Army Alpha fame, was experimenting with tests independently of the work of the committee of the association, and he evolved a vocabulary test and a reading test in an endeavor to predict the success of students in later medical studies. The results of this attempt were reported to the association by Miss Doris F. Twitchell.³⁵ Grades in the University of Michigan Medical School were correlated with a number of factors, such as place of residence, sex, age, institution previously attended, hours of premedical work, and premedical grades. Coefficients of correlation were not given in each case, so it is almost impossible to rank the various factors in order of their predictive value, but a study of the grade averages in

relation to the criteria would indicate that the best one discovered was the premedical grades. Even here, however, the correlation was but 0.37, which, compared with that of the medical aptitude tests devised by Dr Moss, was very low indeed. The study at Michigan was continued even though the results were so inferior.

The final report of the aptitude test committee for 1931 was made by the secretary,³⁶ Dr Moss, at the forty-second annual meeting of the association in New Orleans, Nov. 30 to Dec. 2, 1931. It was considerably longer and more detailed than any previously given on the testing program but added little except elaboration to the preliminary report published in the *Journal* at the beginning of the year.³⁷ Correlation of the test scores and premedical grades with medical school grades ran as high as 0.81 in one institution—Stanford University School of Medicine.³⁷

At the close of the report Dr Moss announced that the fourth form of the aptitude test was to be administered Dec. 11, 1931, and that there would be some changes in it from previous forms.

SEARCH FOR OTHER CRITERIA

In spite of the considerable success of the tests, a number of medical schools continued to push forward with independent studies to discover a criterion that might be more valid and reliable in predicting the success of their students. These studies were reported on from time to time, either as papers read before the members of the association in its annual meetings or in the form of articles in the *Journal*. Thus, Walter H. Moursund³⁸ read a report before the same meeting on the experiments carried on at Baylor University College of Medicine. Again it was noted that of the factors studied premedical scholarship was the best criterion on which to base prediction of achievement in medical school. He stated, however, that, although general scholarship and other factors were used by his institution as criteria of admission, nevertheless "none of these factors seemingly had a constant relation from year to year" (p. 149). Throughout the paper the absence of correlation figures makes comparisons difficult if not impossible.

Chicago, too, was carrying on experiments with selective criteria on which to base their choice of students for the medical schools of the university, and W. F. Cramer, statistician in the office of the registrar, wrote a report³⁹ on the results. A study of the students enrolled in 1918, 1919 and 1920 was made, which included 294 cases, and various factors which might affect scholarship in the medical school were carefully weighed and correlated with one another. For example: 1. The relation of success in the medical schools to the age of the student at the time of entering. It was found that while there was some indication that the more mature student would achieve better success, nevertheless the correlation with age was so small as to be practically negligible. 2. The relation of scholarship in premedical courses to success in the medical schools. Here appeared the best correlation obtained, 0.53 between medical grades and the total premedical program and 0.38 between grades and the natural sciences taken as premedical subjects. Correlations for students taking both medical and premedical work in the university ranged from 0.76 to 0.56 when calculated for the relationships previously mentioned. 3. No significant relation was found between the type of institution previously attended and success in medical school, except for those taking all their work at Chicago. 4. The amount of

36 Moss, F. A. Report of the Committee on Aptitude Tests for Medical Students, *J. A. Am. M. Coll.* 7: 129-141 (discussion pp. 141-148) (May) 1932.

37 The correlation of the other extreme is not given.

38 Moursund, W. H. Premedical Qualifications in Relation to Achievement in Medical School, *J. A. Am. M. Coll.* 7: 149-157 (May) 1932.

39 Cramer, W. F. Study of the Selective Admission of Students in the Medical Schools of the University of Chicago, *J. A. Am. M. Coll.* 8: 347-357 (Nov.) 1933.

30 Endorsement of Aptitude Tests, *J. A. Am. M. Coll.* 6: 47 (Jan.) 1931.

31 Requirements for Admission to Medical Colleges. Extracted from the By-Laws, *J. A. Am. M. Coll.* 6: 107 (March) 1931.

32 Moss, F. A. Medical Aptitude Tests for 1931-1932. Preliminary Report, *J. A. Am. M. Coll.* 6: 304-308 (Sept.) 1931.

33 It is not stated whether the hour was solar or standard time, but since the schools were spread over a wide area from Maine to Hawaii with a standard time difference of six or seven hours it is quite probable that it was standard time. Hence the insistence on having the students take the tests at the same hour seems to have little real sense behind it.

34 Reid, W. D. Premedical Education, *J. A. Am. M. Coll.* 6: 345-356 (Nov.) 1931.

35 Twitchell, Doris F. Report of Data Pertinent to the Problem of Selection of Medical Students, *J. A. Am. M. Coll.* 6: 357-361 (Nov.) 1931.

academic preparation also proved to have but little relation to medical school success. In other words, the only criterion discovered that was worth anything was scholarship in premedical courses, and this alone did not produce particularly high correlation coefficients, with the exception of those students who did not transfer from one institution to another.

It seems to be rather significant that from this time on less and less is to be heard of the aptitude tests for medical students. True, Dr. Moss⁴⁰ continued to give his report to the association year by year but the high correlation with the tests and success in medical school compared with the much lower correlation with other criteria and tests, and the still greater correlation produced in conjunction with the premedical grades, eventually seems to have convinced practically all members of the association of their sound worth and opposition to them dwindled at a steady rate.

Since the 1932 tests were to be administered in December 1931, several months earlier in the year than previously they were altered to compensate for the lesser amount of knowledge of premedical matters possessed by the student. Another change was the addition of another part—ability to follow directions. Changes introduced from form to form were slight and in general merely followed new developments in psychology and educational testing techniques. For example the alternative choice type of question was considerably reduced in number in favor of matching forms of questions. The pre-

*Proportion of Applications to Applicants**

| 1026/27 | 1027/28 | 1028/29 | 1029/30 | 1930 |
|---------|---------|---------|---------|------|
| 20 | 21 | 2.33 | 2.33 | 2.4 |

* Calculated from data on page 66 of the second report.

medical information part was dropped since it had been decided that a combination of the aptitude test and premedical grades gave the best criterion of success in medical school, and the premedical information part was merely a test of the same factor. In its place was substituted a medical vocabulary test that seemed to have a high selective value.

A mild revolt against the tests took place at the 1932 meeting of the association led, strange to say by Dr. E. B. McKinley, dean of George Washington University School of Medicine the institution that might be termed the birthplace of the whole testing program. The uprising was very feeble and ill sustained and seems to have been based on the theory that correlations of from 0.50 to 0.65 were practically useless for predicting success in medical schools and it quite ignored the fact that there was nothing better available and that a selective criteria was in greater need than ever, for Dr. Zapffe's reports showed that, while the number of applicants and applications for admission to medical schools showed a slight decrease, which was due no doubt to the depression, the number of credits offered for admission, that is, the qualifications of prospective students, was steadily rising, and the number of multiple applicants in proportion to the number of applicants was also continually increasing.⁴¹

The fruits of the aptitude testing program had already begun to be apparent in 1932, as was shown in a report by Dr. Zapffe, in which he noted a distinct decrease in the scholastic mortality of freshmen in both 1930 and 1931,⁴² although, strange

to say, he does not appear to see the causal relation, for he asks oratorically: "Can this be charged to better preparation for the study of medicine?"⁴³ Mortality for 1932 was once what higher than in 1931 but still considerably below the average of preceding years (p. 160).

In 1934 a special committee was appointed by the association to study the tests and to deliver a report at the next meeting, the forty-sixth, held in Toronto Oct. 28-30, 1935. The report⁴⁴ was presented by the chairman, Alan M. Chester, and covered tests administered to 6,000 students in various schools all over the United States, as well as an intensive study of a random sampling of 800 students. Special investigations of several individual institutions were also made.

The report went into the broader aspects of the testing program and dealt very fully with the difficulties and shortcomings of such an ambitious undertaking concerning as it does a large number of students scattered over a wide geographic area and varying greatly in ability, education, background and motivation. It was found that some schools in the more thickly populated parts of the country were able to choose their students from among those in the higher brackets of the aptitude test scores while others were more or less forced to admit students from a much wider range of scores. This difference tended to produce a lower correlation since there is always a very strong tendency for grades in any subject to be grouped according to the normal curve. Thus in one school all failures might occur in the 50-75 percentiles there being no students admitted below the fiftieth while in another institution those students in the 50-75 percentiles might conceivably be rated A if there were few or none coming from the upper quartile of the test scores. In this way the tests would be blamed for a fault that was not inherent in them but in their application by the various schools.

The committee decided that the value of the tests depended on the way in which they were used. In good hands the results were distinctly beneficial.

CONCLUSION

Though has been written perhaps to prove that the aptitude tests have gone a long way toward solving the problem of selecting applicants to medical schools. Each school, at present is of course a free agent in choosing the students to fill the limited numbers of its student body, but it would appear that a better method would be to restrict admission to any school to students scoring above the median, and to promote these superior individuals to the various colleges of medicine. However such a regimentation would raise a tremendous protest from the rugged individuals, both on faculties of medicine in the profession, and in the ranks of the students themselves. Meanwhile, the public will have to suffer when the incompetent medical student finally emerges from his internship and begins to practice in more than one sense of the word.

Two problems suggest themselves from this survey of aptitude tests applied to a particular field. First, the possibility or even certainty that correlations of a fairly scientific instrument such as the medical aptitude test with the more or less haphazard and almost wholly subjective grades given out by the average college and university instructor, are much lower in many cases than they would be were medical grades based on subject tests standardized for the whole country. This would probably do away with the complaints of high aptitude test students being given low grades in one school and the

40 Moss, F. A. Scholastic Aptitude Tests for Medical Students Report for 1932 J. A. Am. M. Coll. 8:114 (discussion pp. 15-27) (Jan.) 1933.

41 Zapffe, F. C. Analysis of Entrance Credentials of the Freshman Class, 1931-1932, J. A. Am. M. Coll. 8:40-45 (Jan.) 1933. Report on Applications for Matriculation in Seventy-Eight Schools of Medicine of the U. S. for the Freshman Class of 1932 ibid. 8:65-78 (March) 1933.

42 Zapffe, F. C. Study of Student Accomplishment Freshman Class of 1931 J. A. Am. M. Coll. 8:159-180 (May) 1933.

43 Zapffe, F. C. Study of Student Accomplishment in Seventy-Nine Medical Schools of the U. S. Freshman Class of 1932 J. A. Am. M. Coll. 8:331-346 (Nov.) 1933.

44 Evaluation of the Medical Aptitude Test. Report of the Special Committee on the Evaluation of Aptitude Tests for Medical Students Report J. A. Am. M. Coll. 11:15-32 (Jan.) 1936.

opposite state of affairs in another. Thus the development of standardized tests in medical subjects should be promoted.

Perhaps the more serious problem is the second one suggested, that is, the relation of test scores and medical school grades to the excellence of the finished product of the medical school. It does not necessarily follow that the 98 percentile, A student from a class A school will become a successful practitioner, and so far no one seems to have any instrument of predictive value adequate for this task. The profession and the public wait for some one to evolve a measuring stick which will, when laid on the stream of consciousness, to paraphrase William James, say 'Here is another Hippocrates, Harvey, Osler, or even perhaps Mayo.' We also await the millennium 1035 East Sixtieth Street

Medical Examinations and Licensure

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West Virginia March Report

Dr Arthur C McClue, State Health Commissioner, reports the oral and written examination held in Charleston, March 16-18, 1936. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Eleven candidates were examined, all of whom passed. Ten physicians were licensed by reciprocity and 3 physicians were licensed by endorsement. The following schools were represented:

| School | PASSED | Year Grad | Per Cent |
|--|--------|-----------|----------|
| Georgetown University School of Medicine | (1934) | 88.4 | |
| Rush Medical College | (1935) | 87.5 | 88 |
| Washington University School of Medicine | (1934) | 89.1 | |
| Cornell University Medical College | (1934) | 90.2 | 91.4 |
| New York University University and Bellevue Hospital Medical College | (1934) | 89.9 | |
| University of Pennsylvania School of Medicine | (1931) | 89.7 | |
| Medical College of Virginia | (1932) | 85.4 | 87.7 |
| University of Western Ontario Medical School | (1929) | 87.3 | |

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--|-------------------------|-----------|--------------------|
| Indiana University School of Medicine | (1929) | 89.9 | Iodiana |
| University of Louisville School of Medicine | (1930) | 89.9 | Kentucky |
| University of Maryland School of Medicine and College of Physicians and Surgeons | (1933) | 89.9 | Maryland |
| Washington University School of Medicine | (1927) | 89.9 | Missouri Tennessee |
| University of Buffalo School of Medicine | (1933) | 89.9 | Penna |
| University of Pittsburgh School of Medicine | (1930) | 89.9 | Penna |
| Medical College of Virginia | (1930) | 89.9 | Pennsylvania |

| School | LICENSED BY ENDORSEMENT | Year Grad | Endorsement of |
|--|-------------------------|-----------|----------------|
| Harvard University Medical School | (1933) | 89.9 | N B M Ex |
| Duke University School of Medicine | (1933) | 89.9 | N B M Ex |
| University of Cincinnati College of Medicine | (1923) | 89.9 | N B M Ex |

Book Notices

Your Hay Fever By Oren C Durham Chief Botanist Abbott Laboratories North Chicago Illinois With an Introduction by Morris Fishbein and a chapter on Treatment by Samuel M Feinberg M.D. F.A.C.P. Cloth Price \$2 Pp 264 with 19 illustrations Indianapolis & New York Bobbs Merrill Company 1936

While this book is written primarily for the layman, and especially for the two million or more in this country who are affected by hay fever, its wealth of material should likewise appeal to the general practitioner. The author, a botanist, has been associated for the past twenty years in the research work of some of the pioneers in allergy. His chief contribution in recent years has been the organization of a national pollen survey with numerous stations for daily atmospheric studies throughout the country. The style with which the material is presented is narrative with subtle humor, which adds to the zest and helps maintain the interest. The first hundred pages is devoted to a historical outline of the research that led to our present conception of hay fever, with special emphasis on the discovery of the relationship of air-borne pollens to the symptoms. Blackley's research work is presented in detail. The development of our present method of hyposensitization by pollen injections is treated much too briefly. The arrival at our present understanding of anaphylaxis is hardly mentioned. The work of Richet and Portier, of Theobald Smith and Pirquet is omitted, probably to avoid confusion in a work written for the layman and limited to pollinosis. In the second hundred pages the author gives the history of pollen surveys, the methods used, the results of such studies, and the relationship of tree, grass and weed pollens to symptoms. Present methods of treatment are discussed in the last fifty pages. Dr Feinberg devotes about half of this space to an excellent discussion of hay fever resorts. His table showing the atmospheric pollen studies in these is of value as an index of the degree of relief to be expected in each. The book gives a clear, intelligent presentation of the history, research and treatment of hay fever. Written primarily for the layman, its wealth of material makes it valuable also for the general practitioner.

The Treasury of Human Inheritance Edited by R. A. Fisher F.R.S. Galton Laboratory University of London. Volume IV. Nervous Diseases and Muscular Dystrophies. Part II. On the Peroneal Type of Progressive Muscular Atrophy. By Julia Bell M.A. M.R.C.P. Paper Price 12s. 6d. Pp. 140 with illustrations. London: Cambridge University Press, 1935.

A valuable service both to medical men and to those interested in genetics has been performed by the Galton Laboratory of the University of London in compiling the series of publications known collectively as the 'Treasury of Human Inheritance'. The study on the inheritance of peroneal atrophy brings together a large amount of material and crystallizes knowledge concerning the heredity of this interesting malady. The age of onset was found by Bell to vary widely each affected family providing a study in itself and tending to have its individual characteristics from the point of view of clinical symptoms resulting disability and age of onset. It is interesting to note that individuals of the same sibship tend to be affected at about the same period, often in the same year of life. Attention is called to the fact that in some cases the first symptoms may be noted in the hands or even in all four extremities at the same time, although in the majority of cases the lower extremities are involved first. The signs and symptoms of the disease are adequately described and illustrated by photographs of patients, and there is an interesting chapter on the association of peroneal atrophy with other inherited defects. A brief chapter on the pathology of the condition adequately sums up all that is at present known of this subject. Bell states that consideration of a number of family studies indicates that peroneal atrophy is definitely inherited in different families as a dominant, a sex-linked recessive, and possibly also as a simple recessive, although some of the pedigrees are admittedly difficult of interpretation. Statistical data and various correlations are well presented in tabular form and a number of interesting pedigree plates of affected families gathered from the literature and from personal observation are appended to the monograph together with a satisfactory description of each family. An interesting point brought out in this study is the apparent linkage of peroneal atrophy with inability to taste phenylthiocarbamide in one family. Unfortunately, no definite conclusion could be reached but further investigation along similar lines is desirable, since clear demonstration of the linkage of a disease of this sort, which is not present at birth, with some congenital anomaly, may supply a valuable aid to prediction concerning the liability to manifest the inherent hereditary defect.

Out of the Night: A Biologist's View of the Future By H. J. Muller. Professor of Zoology University of Texas. Cloth. Price \$1.50. Pp. 127. New York: Vanguard Press, 1935.

The author of this small but potent book is one of the world's leading geneticists. He has been on leave of absence from the University of Texas for several years and has been senior geneticist at the Institute of Genetics, Moscow. The title of the book carries the implication that humanity is emerging from the darkness of ignorance as to the mechanics of human evolution and is now in a position to direct the course of its own future evolution. Muller attempts to predict the future of man under a managed program of progressive eugenics. He regards mere negative eugenics (the segregation or sterilization of the unfit) as unlikely of itself, to advance the status of the race. The only real advance in human evolution is one that would result from breeding extensively from the best human types. There is no good reason why a very exceptional male could not furnish enough male gametes to fertilize thousands of human ova. There is also no technical difficulty about artificially inseminating ova. In reply to the criticism that it would be difficult to decide which are the most superior men while they are still young and sexually active, it is advised that the seed be kept alive for twenty-five years while the evaluation of a man's genetic worth is being made. Selection should be based apart from physical vigor and well being, on two essential qualities: social sense (comradeliness) and intelligence. Certain secondary difficulties with this proposal suggest themselves. What about love and marriage? Muller would separate sexual love from reproduction by the practice of birth control methods. He also regards his plan totally unfeasible in a democracy such as the United States for the popular judgment as to the eugenically superior men would doubtless favor a race of Billy Sundays, Babe Ruths, Valen-

tinus, Jack Dempseys, or even Al Capones. Only in a fully integrated socialistic country could progressive eugenics be practiced for, where environmental conditions are the same for all genetic differences would reveal themselves for what they really are. Muller's ideas as to the possibilities of progressive eugenics in so short a time as a paltry century or two is given in his own words: "It would be possible for the majority of the population to become of the innate quality of such men as Lenin, Newton, Leonardo, Pasteur, Beethoven, Omar Khayyam, Pushkin, Sun Yat Sen, Marx, or even to possess their varied faculties combined." "How many women, he says in another connection, 'in an enlightened community devoid of superstition, taboos and sex slavery would be eager and proud to bear and rear a child of Lenin or of Darwin!' This book is extremely well written. It is the vision of a geneticist convinced that what has been found true for the fruit fly is surely applicable to man. In other words the book is an excellent exposition of the extreme hereditarian doctrine as held by most modern geneticists.

Histochimie animale. Méthodes et problèmes. Par L. Lison, assistant à l'Université de Bruxelles. Avec une préface de M. Pol Gerard. Collection des actualités biologiques sous la direction de M. Robert Lévy. Paper. Price 70 francs. Pp. 320. Paris: Cautliet Villars, 1936.

This is a critical and lucid exposition of the chemistry of tissues as studied in microscopic sections. The first part takes up the general methods and limitations. In general substances in solution in cells cannot be localized because they diffuse during analysis and substances not in solution may be extracted by preliminary treatment. Therefore the most general method is freezing the tissue. After it is once frozen there are two main methods of treatment. It may be dried without thawing. If paraffin soluble substances are not to be analyzed it may be impregnated with paraffin in the dry state and cut into sections and mounted on slides and if only inorganic substances are to be studied the slide may be heated in a muffle furnace so as to ash the section and then the ash analyzed by various methods. Another method is to cut frozen sections and place them on slides before they thaw. Except when the tissue is dried, some form of fixation is often necessary but fixation has to be adapted to the later process. In general the use of aniline dyes cannot be considered chemistry and heavy metals give reactions that are specific only under exact conditions. The sensitivity is usually one hundred million million times that of ordinary chemical sensitivity and limitations are given in fractions of a microgram. (Results are qualitative not quantitative.) The chemical analysis of sections includes: 1. Solubility, but it should be remembered that mixtures may have solubilities different than the pure substances. 2. Microspectroscopy and this may be done on the native substance with either visible or ultraviolet rays or by means of a high frequency unpolarized spark spectrum immediately above the section. In this case the limitation of area is relatively large but less than 1 mm. in diameter. 3. Microfluoroscopes. (Substances emit light of a longer wavelength than the incident light. The usual incident wavelength is 3660 angstroms.) 4. Polarized light for the study of crystals. The second part of the book enumerates the special analytic procedures for different substances, with sections on minerals, proteins, lipids, glucides, pigments, ferments and vitamins. The image of the ash of a section is called the spodiogram, but iron is the only colored element that is of great enough concentration to be detected by the microscope without reagents. All other elements must be studied by means of microreactions and the use of microscopic drops of reagents. Elements can be localized in cells only when combined with the protein skeleton and then are in a condition called 'masked' and must be liberated by micro incineration or other methods. The proteins are mostly localized, and color reactions for amino acids can be used in the microscope. Also they may be digested. There are ways of distinguishing scleroproteins. Substances with a benzene ring are especially studied and the chromaffin reaction for epinephrine is explained. The argentaffin reaction is shown to be of histologic importance but not always of chemical specificity. As it is used to diagnose rickets, it is not chemically specific. Nucleoproteins may be studied with the murexide and other reactions. Fats may often be fixed with heavy metal oxides, and a table of analysis of lipids is given. Fixed lipids are considered lipoprotein compounds.

Glucides include glycogen, and the chromotrope reaction for the scleroproteins containing sulfuric acid. Pigments may be studied by their own color, and the derivatives of hemoglobin are studied with chemical reactions, the porphyrins being studied by fluorescence. Of the ferments the peroxidases and phenolases (oxidases) are detected but their biologic significance is doubted. Melanin formation is considered as due to the tyrosinase and dopa oxidase. Of the vitamins, only vitamin C is studied. It reduces silver nitrate instantly, whereas epinephrine does so only slowly.

DeLafield and Prudden's Text Book of Pathology. Revised by Francis Carter Wood M.D. Director of the Pathological Department St. Luke's Hospital New York. Sixteenth edition. Fabrikoid. Price \$10. Pp. 1406 with 881 illustrations. Baltimore: William Wood & Company 1936.

This book was first published in 1885 and at that time it was the first important textbook of pathology in America. The fact that the book has passed through sixteen editions shows the popularity of the work during half a century. The present edition is handsomely bound and contains a wealth of pathologic material useful to pathologists, medical students and physicians. Criticism of such a book is difficult; certain suggestions appear indicated however, despite the glories of the past. Dr. Wood says in the preface: "Many requests have been received by the editor to render the book more modern but unfortunately modernity is largely only a changing of the labels on the specimen bottles." This attitude allows no place for the existence of ideas, and pathology and its concepts have developed considerably since 1885. As a matter of fact, the best chapter in the book is the one by Deery on the nervous system, and it is good because it is modern. The editor remarks that "the book has already reached the limit for comfortable handling in attempting to cover incompletely the subject with which it deals and any increase in size is therefore prohibited." Why not eliminate a lot of the obsolete historical material and allow space for more important pathologic material? Why carry the pictures of cell division on pages 82-85 in this day of sound biologic training of medical students? Why retain the old "side-chain" pictures of Ehrlich and the old pictures of bacteria with the obsolete bacteriologic descriptions accompanying? Modern students must be annoyed by such antiquated material as, for example, figure 107 showing a sterilized cotton swab in a sterilized culture tube. Why discuss the incidence of cases of peptic ulcer with a reference of 1885? Many pages could be saved by elimination of this obsolete material. Furthermore, many old labels should be changed. The discussion on yellow fever refers to *Leptospira icteroides* as the cause and makes no mention of the enormous amount of work on the virus relationship. The use of congo red in association with amyloid disease is not mentioned. Many other objections might be cited, but perhaps enough has been said to indicate that the book needs real revision rather than rebinding. There is too much looking backward with the retention of material which really belongs in a history of pathology. Ideas still remain the important features of pathology.

Le diabète sucré. Questions controversées de clinique et de pathogénie. Par P. Mauriac et al. Leçons professées à l'Hôpital Saint André de Bordeaux (Service du Professeur P. Mauriac). Paper. Price 32 francs. Pp. 213. Paris: Masson & Cie 1935.

This is an interesting volume by several authors dealing chiefly with the controversial problems in the field of diabetes. The hepatomegalies of infancy and the metabolism of carbohydrates are taken up in the first chapter together with the differential diagnosis from the von Gierke disease in its primary disturbance of carbohydrate metabolism. In these there is an enlargement of the liver without splenic enlargement which liver enlargement the authors consider one of pluriglandular type, chronic in nature and allowing a long survival. Diabetic comas without acetonuria are taken up next. These are seen exceptionally. The considerations in this group are largely of a theoretical nature. The reaction toward insulin in the juvenile group of patients with diabetes is taken up next: the insulin resistant and the insulin sensitive. These two groups are thought to be radically different basically. It is possible that there are two mechanisms at play. In the insulin sensitive cases the author considers that it is not merely the insulinogenic function alone but rather a difficulty of a pluriglandular nature,

the equilibrium between the glycoregulatory mechanisms being disturbed. This could be caused by a disturbance of the vagus, which affects the secretion of insulin, or of the splanchnic, which affects the secretion of epinephrine or by dysfunction of the pituitary, which has to do with the regulation of the blood sugar. The intermittent type of diabetes is taken up next, which the authors consider chiefly as of endocrine, pluriglandular type. Nervous complications of diabetes are illustrated by case histories. The authors consider these as expressing the duality of diabetes and being due to many other factors. The eye complications, according to the author's view, come not from the diabetes itself the underlying factor being nephritic. The treatment of this condition as well as diabetes is in order. The chapter on examination treatment during illness and the follow up of the cases is discussed along general lines. The individualization is emphasized. The chapter on insulin by Professor Aubertin is discussed at great length historically and physiologically. The question of blood sugar and its behavior in various types of individuals is considered in the last chapter. The authors show the basic differences in the pyknotic, the athletic and the leptosomic types. In the pyknotic the curve rises considerably, lasts for a time and descends gradually, in the athletic type the fall of the curve is quicker, in the leptosomic type the curve is less elevated than in the preceding and its descent is more rapid. On the whole this volume covers the less known and usually considered phases of the diabetic problem as dealt with in ordinary publications on diabetes and will be a great help to students. It emphasizes the pluriglandular factors.

The True Physician. The Modern 'Doctor of the Old School.' By Wingate M. Johnson M.D. Cloth. Price \$1.75. P. 157. New York: Macmillan Company 1936.

Dr. Wingate M. Johnson is one of the most popular writers in our profession. He has the fortunate faculty of being able to interpret the problems of medicine to the physician and to the layman as well. He has had a long and successful experience in practice and with this background he writes this book for young physicians and undertakes to give them "some fatherly advice on what their conduct should be during the early days of practice." The book is comprehensive. Its advice and suggestions cover the subject in minute detail, from office equipment, dress and manners and social habits to habits of work and study, marriage and religion. He does not hesitate to offer suggestions about the banalities of professional life which are so important and which are likely to be thought beneath consideration. His topic is really the practical factors of medical success and the advice which he gives is good. It is given from the standpoint of worldly wisdom, but it is genuine and frank and stimulating. Dr. Johnson has that unusual sort of personality which combines practical common sense with idealism, and these qualities show through the book. It has many useful suggestions for young physicians and not a few for the older ones.

Clinical Diagnosis of Diseases of the Mouth. A Guide for Students and Practitioners of Dentistry and Medicine. By Louis V. Hayes A.B. DDS. Associate Professor of Oral Surgery and Lecturer on Diseases of the Mouth New York University College of Dentistry. With an Introduction by Leo Winter DDS M.D. Sc.D. Professor of Oral Surgery New York University College of Dentistry. Cloth. Price \$7.50. Pp. 481 with 365 illustrations. Brooklyn: Dental Items of Interest Publishing Company Inc. London: Henry Kimpton's Medical Publishing House 1935.

This book is designed "to serve students and practitioners of dentistry and medicine as a practical aid in their special and common endeavors respectively to prevent and cure diseases of the mouth through the development of skill in oral diagnosis." In the introductory chapters there is appropriate emphasis of the close relation between oral and general pathologic changes which dictates a very careful appraisal of both local and general systemic observations. Significant items for consideration and record in examination are carefully outlined. These chapters are followed by discussion of a comprehensive list of diseases that contribute oral lesions. Objective subjective and laboratory elements in diagnosis are considered, with frequent illustration of gross and microscopic tissue changes. Each entity is discussed under the headings of definition, etiology, symptomatology and treatment. There is perhaps some weakness with respect to differential diagnosis. Comment under the

sections devoted to treatment is terse and practical, which adds to the clinical value of the book but should be considered as a suggestion or preface to further investigation by the student or practitioner rather than as a basis for therapy. This is undoubtedly why the author did not include the subject in his title. The arrangement of material is explained in the final chapter, where it is stated that the grouping of lesions and diseases of the mouth was planned particularly for teaching purposes, beginning with the more common conditions and progressing to those presenting greater difficulty in diagnosis. This has resulted in some confusion, as neither purely topical nor strictly pathologic criteria are maintained. It offers certain advantages as a textbook, provided the course of study is planned with the grouping in mind. Where the topical arrangement is followed the practitioner will find that it facilitates reference, as for example in the chapters 'Cheek Lesions' and 'Lesions of the Palate'. There are inconsistencies however as exemplified by placing hemiatrophy of the face under 'swelling of the face,' osteomyelitis under 'oral fractures' and supernumerary, impacted and fused teeth under 'cysts of the jaws'. There are seventy-nine pages of bibliography grouped with respect to the chapter titles and subdivided with regard to book and periodical literature. In this respect as well as in the listing of a summary of the significant features in the disease entities discussed, the text should be of practical value.

A Guide to Human Parasitology for Medical Practitioners. By H. H. Blacklock, M.D., D.P.H., D.T.M., Professor of Tropical Hygiene, Liverpool School of Tropical Medicine, The University of Liverpool and T. Smithwell, D.Sc., Ph.D., A.R.C.S., Walter Myers, Lecturer in Parasitology, School of Tropical Medicine, The University of Liverpool. Second edition. Cloth. Price \$4. Pp. 259 with 124 illustrations. Baltimore: William Wood & Company, 1933.

The second edition of this primer is in itself an index of the success of the original volume which appeared in 1931. The guide is a brief but comprehensive outline covering the general field of medical parasitology: the spirochetes, the human protozoa and helminths and the problem of myiasis. In addition there are short chapters on the microscope, the technique for diagnosis, a list of necessary reagents and apparatus and a list (entirely too short) of the more important comprehensive textbooks and manuals on the subject. Likewise there are tables listing the geographic distribution of the human helminths, the sources of infection for several of the parasites, intermediate stages and hosts of the organisms and a summary diagnostic table. One page contains a pictorial representation of the eggs of helminths and sixteen pages are devoted to diagrammatic representations of the life cycles of the more important animal parasites. For each important infection the geographic distribution, habitat in the human body, morphology and life cycle of the etiologic agent, pathogenicity and diagnosis are briefly outlined. Symptomatology, treatment and prevention are unfortunately not considered and this constitutes the only major criticism of this concise volume. In a future edition less space might well be given to tables, the chapter on the microscope omitted, and some space provided for the applied aspects of the subject, which are all important for 'medical practitioners'. The terminology is modern except for *Dibothriocephalus latus*, which is used instead of the approved designation *Diphyllobothrium latum*. The information included has been brought down to the date of publication. The illustrations, including two colored plates, are clean cut and well chosen, and the technical and typographic errors are very few. The volume is splendidly printed.

El dinitrofenol 1,2,4 estimulante del metabolismo y sus aplicaciones clinicas. Tesis de Efrén Carlos del Pozo. Universidad Nacional de México. Facultad de medicina. Paper. Pp. 203. México D. F. A. Vilares y Hno. Impresores. 1935.

This doctorate thesis contains the most complete and critical survey of the voluminous literature on dinitrophenol that has yet appeared. The author reviews the history of the industrial use of the compound and related dyes, and its toxicologic importance during the war. Then he describes the pharmacologic studies of it in the United States and France and from these develops the ideas of the possible clinical uses of the drug. The indications, contraindications and methods of administration are treated in detail, summarizing the entire published work in these topics. He gives his personal results in thirty-

two cases of obesity, of which thirty were satisfactorily treated with this drug. An average loss of weight of 458 Gm a week was secured on doses of from one to four capsules of 0.1 Gm daily. The only side actions observed were two cases of pruritus, there being no leukopenia, cataracts or other serious sequelae in this series. The author reviews the cases of poisoning reported in the literature and points out that in practically every such case either the dosage taken was excessive or it was increased too rapidly, or there were other contributory conditions more important probably than the dinitrophenol. His critical evaluation of the published reports and his own experiences permit him to conclude that, in agreement with Trautner and his colleagues, he believes dinitrophenol to be a powerful and effective remedy for use against various forms of obesity, and especially those cases in which simple, less drastic measures are ineffective.

The Cranial Muscles of Vertebrates. By F. H. Edgeworth, M.D., M.A., D.Sc. (1911). Price \$30. £5 5s. 1p. 493 with 811 illustrations. New York: Macmillan Company, London: Cambridge University Press, 1934.

This book is a painstaking scholarly and exhaustive study of one phase of animal evolution. It presents the work done by the author over a period of many years and it includes the similar work of the last two centuries on cranial muscles and the lower neurons that innervate them. It covers all the vertebrate phyla and deals with both the structure of the adult and the developmental history. It throws light on the real character of these structures and on their phylogenetic history. It is necessarily a large book. The illustrations cover 193 pages and are systematically arranged from the lowest vertebrates to man. It is a scholarly work covering a difficult field. The infinite mass of material representing the tentative experiments of nature contains the story of the evolutionary origin of head muscles. But to read that story is so difficult that few have tried. Few could see the homologies of the muscles and nerves concerned and few could have had the insight and patience to select from the myriad names those which express true homologies. All this has been done but it is not surprising that the author has found a table of synonyms necessary to enable readers to profit from the order which he has introduced into the chaotic mass of names. Some of the conclusions are interesting. In some unknown way the growing organism appears to foresee future needs and sets to work with such material as it has to develop the necessary structures along the lines followed by its ancestors. Animals are psychological units characterized by memory and purpose, striving after ends in view—this psychological factor is of great importance from the very first. This immaterial, non-spatial teleological factor, the mind can initiate and inhibit physico-chemical processes. Life development and evolution are primarily due to this power. Whether biologists agree with these views or not, they will be a unit in their gratitude to Dr. Edgeworth for setting in order and permitting some understanding of an intricate mass of biologic facts.

An Outline for Students on Diseases of Nose, Throat and Ear. By Hugh Gibson Beatty, Ph.D., M.D., Professor and Chairman, Department of Oto-Laryngology, College of Medicine, The Ohio State University. Lectures on Bronchoscopy and Esophagoscopy, Harelip and Cleft Palate and Postoperative Care of Surgical Cases. Bards. Price \$3. Pp. 91 with illustrations. Columbus: The Ohio State University, 1936.

This outline is what it claims to be: a guide for students. In brief form with short sentences and phrases, it is an excellent aid to the individual taking the required courses in ear, nose and throat. There are a number of good illustrations of the anatomy of the various regions discussed. Within its limitations, this work can be highly recommended.

Neurologie. Par R. Monier-Vinard, medecin de l'Hôpital Ambroise-Paré. Collection des Initiations médicales publiée sous la direction de Dr. A. Sézary. Paper. Price 22 francs. Pp. 222. Paris: Masson & Cie, 1935.

This is one of a series of short volumes, 'Collections des Initiations médicales' published under the direction of Dr. Sézary. It is an excellent introduction to clinical neurology, giving directions for the examination of patients, description and explanation of symptoms and signs, and description of the chief syndromes. Individual diseases are not taken up. It is written in a delightfully clear, concise and logical French style.

Miscellany

STEPHEN J MAHER OF CONNECTICUT

A Record of Enthusiasm Beyond Judgment in the Treatment of Tuberculosis and Asthma

In November 1933, newspaper headlines again shrieked a new discovery for killing tubercle bacilli in vitro. Dr Stephen J Maher, in an address before a group of Connecticut physicians at the Laurel Heights Sanatorium, had been the source of these reports. Thus the New York *Herald Tribune* headlined its item "New Path to Tuberculosis Cure Is Announced by World Expert", the New York *Times* said "Tubercular Germ Killed by Bacterin Bred by Dr Maher", the Chicago *Tribune* "Finds a Serum That Destroys Phthisis Germ" the Milwaukee *News* "Tuberculosis Cure Believed Found". Many other similar reports appeared, some expressing doubt as to the conclusions drawn from the work reported. Then the furor and the tumult died until May 1935, when a new batch of newspaper articles appeared. This time it was a cure for asthma developed by Dr Maher. In the New York *Times* the headlines read "Physician Reports Cure for Asthma. Dr S J Maher Asserts Dead Progeny of Avian Tubercle Bacillus Has Stopped Disease—Offers It to Any Doctor—Tells Norwich Parley It Aided Epilepsy Cases—Academy Awaits His Proof". The *Drug Trade News* for May 27, 1935, stated that representatives of two large New York drug houses had offered Dr Stephen J Maher of New Haven, chairman of the Connecticut Tuberculosis Commission, \$50,000 if he would patent and sell to them his process for making the bacterin obtained from the dead "progeny of the avian tubercle bacillus" with which Dr Maher stated that he had cured hundreds of cases of asthma. He replied, according to the report,

I could use advantageously \$50,000 in my laboratory work but I have decided that the wiser way will be to tell the world what I now tell you about the composition of the bacterin the method of preparing it and the results of using it.

In March 1935 an article was published under Dr Maher's name in the *American Review of Tuberculosis* entitled "The Progeny of the Tubercle Bacillus". In brief, this article stated that he had been 100 per cent successful in transmuting six strains of tubercle bacilli into cocci and diplococci which in many ways resembled the pneumococcus. The resultant cocci and diplococci multiplied rapidly and produced an acid which was harmless to themselves but usually destructive to the remaining tubercle bacilli. "The treasured secrets" of his work were communicated to three physicians, who, according to newspaper reports, also succeeded in breaking down strains of tubercle bacilli into cocci and diplococci. He stated at the end of his communication that he had not yet secured any convincing evidence from animal experiments that these cocci and diplococci had any preventive or curative effect on tuberculosis in guinea-pigs or rabbits. There was abundant evidence, he stated, that these cocci and diplococci, whether derived from avian, bovine or very pathogenic human tubercle bacilli, produce no harmful effect when injected into guinea-pigs or rabbits.

Up to this time, no report has appeared in a scientific journal from Dr Maher embodying the work leading up to the asthma cure. The only available literature on this subject is a mimeographed report of a paper presented before a state tuberculosis conference at the Sanatorium Uncas-on-Thames, Norwich Conn., May 16, 1935. This was entitled "The Scientific and Clinical Importance of the Progeny of the Tubercle Bacillus".

The treatment for asthma apparently originated as follows. A flask of glycerin broth culture of a non-acid-fast avian tubercle bacillus was put aside at room temperature for a week. When examined at the end of this period the non-acid-fast bacilli had disappeared and had been replaced by small yeastoid masses of acid-fast coccoids and short bacilli in fields of non-acid-fast cocci and diplococci. For the sake of brevity, he says "I named the content of this flask A.Y. indicating Avian Yeastoids". All the subcultures from this flask had the same microscopic appearance, and none were found harmful when injected either alive or heat killed into guinea-pigs or rabbits.

He prepared a "bacterin" from a glycerin broth culture of this A.Y. for use in some of his "sickest private tuberculosis patients". Most of the patients were little affected, but a small proportion improved in every way. The most striking improvements, he believed, occurred in those patients whose tuberculosis was complicated with symptoms of bronchial asthma. He has therefore in recent years used A.Y. in the treatment of asthma only. "For asthma of all kinds it is the most efficient treatment of which I have knowledge. It has cured where all kinds of injections have failed. It has cured in a few days scores of cases of asthma of twenty years duration. It has cured in *one day* [italics ours] cases of asthma in children which the most famous asthma specialists in Boston and New York had pronounced incurable. It cures promptly asthma caused by hay fever, so called 'horse asthma', 'cat asthma', 'dust asthma'. He has never administered A.Y. by hypodermic or intravenous injection. There follow in the mimeographed report referred to a considerable number of case reports. He states that he has also used A.Y. successfully in the treatment of epilepsy, chorea and dementia praecox.

The public announcements already described produced a tremendous number of inquiries to medical societies and apparently to Dr Maher direct. The reply made to the inquiries to him by patients was as follows:

Dr Maher makes no claim that the bacterin he uses in his own practice will cure every case of tuberculosis. However if the physician under whose care you now are will write to Dr Maher describing briefly your case and indicating a desire to use the bacterin agreeing to keep Dr Maher informed as to your progress Dr Maher will forward to your physician a small amount of the bacterin for your use.

SECRETARY TO DR MAHER.

This apparently agrees with the experience of one patient who wrote directly to Dr Maher in response to the newspaper publicity of the fall of 1933. This patient was unable to convince her physician that she should have the oral bacterin, but she was able to persuade a retired physician to write to Dr Maher, asking for the preparation. His reply to this patient was:

I was very much pleased today to receive a letter from Dr _____ asking me to send the bacterin to you and promising to supervise its administration and to keep me informed as to your progress. Therefore I am sending four bottles of the bacterin by today's mail. I enclose herewith the directions for taking the medicine. Keep the little brown bottles in a dark place, a bureau drawer for instance. I expect that your gentle persistence and your faith will be rewarded by a prompt cure. Kindly notify Dr _____ when the little box arrives.

This patient reported that she did not pay for the medicine. According to her report, she had her first chest roentgenogram about four months after she had started taking the medicine, which showed, she stated, a normal right lung but cavities in the left lung. She stated that her sputum had never been examined and that she coughed a great deal and had a midday rise in temperature. She was apparently not being examined by a physician and stated that her only contact with a physician was in asking him to notify Dr Maher when her supply of medicine was exhausted.

The treatment of asthma with A.Y. also resulted in a large number of inquiries by laymen and physicians apparently both direct to Dr Maher and to medical societies. In one available response to the direct inquiry of a patient the following was sent: Dr Maher will send the medicine to your physician, provided that he writes to Dr Maher, asking for the medicine, and giving the history of your case and promising to keep Dr Maher informed as to the progress of your case. Dr Maher's fee for sufficient medicine for four weeks supply is ten dollars, signed by the Secretary to Dr Maher. It is evident therefore, that while apparently no fee was charged for the material used in tuberculosis a fee was charged at least part of the time when the remedy was employed in asthma.

Dr Stephen John Maher was born in New Haven Conn., in 1860 and was graduated by Yale University School of Medicine in 1887. He has been for many years a Fellow of the American Medical Association specializing in tuberculosis and he holds membership in the Society of American Bacteriologists. Since 1911 he has been a member of the State Tuberculosis Commission in Connecticut, and, since 1913 its chairman. In 1915 he was president of the New England Conference on

Tuberculosis and during the same year president of the Connecticut State Medical Association. He has also received the Laetare medal of the University of Notre Dame. Obviously the work of an individual of such standing is bound to attract national attention and, for this reason he carries a responsibility far beyond that carried by the average man. The Journal feels, therefore, somewhat reluctant about calling attention to the fact that the remedies now being sold by Dr. Maher directly to patients, according to the evidence available have not been standardized, the remedies are sold to patients largely by correspondence, without any indication of careful medical supervision, and at least one patient has been told that the medicine is likely to bring about prompt cure notwithstanding the fact that such evidence as is available concerning its virtue is to say the least highly doubtful. Physicians who specialize in tuberculosis know, of course that there is nothing new in the observation of degenerative or mutation forms of this organism. There have been innumerable previous descriptions of microscopic forms which in no way resembled the original strain. Thus the enthusiasm with which newspapers greeted the announcements by Dr. Maher are hardly justified by the value of the observations.

Tuberculosis and asthma are both conditions of great seriousness in which the evaluation of new remedies has always been difficult. Certainly a scientific physician is not justified in marketing directly to patients a preparation of uncertain standing, without even any indication from the physician of the patient as to the nature of the disease or the willingness of the physician to have the remedy administered.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Health Insurance Corporate Practice of Medicine— The insurance commissioner of California refused to permit the Pacific Employers Insurance Company to write 'A Medical Service Policy,' by which it proposed to pay not exceeding a specified amount per annum, for necessary medical surgical dental and hospital treatment in event an assured became sick or injured. Under the terms of the proposed policy however, all services were to be rendered by physicians, dentists and hospitals designated by the insurance company. The company instituted mandamus proceedings to compel the commissioner to approve the policy and the trial court directed a writ of mandate to issue. The commissioner then appealed to the district court of appeal, first district, division 2, California.

Neither a corporation said the district court of appeal nor any other unlicensed person or entity may engage, directly or indirectly, in the practice of law, medicine or dentistry. These professions are not open to commercial exploitation. It is against public policy to permit a "middleman" to interfere for profit, in establishing the professional relationships between the members of the professions and the members of the public. Taking the policy by its four corners said the court, and considering all of its provisions the conclusion is inescapable that it is basically and primarily an agreement by the insurance company, in consideration of the premium paid by the assured, to furnish the designated professional services through its appointed staff consisting of its medical director, its designated physicians and its designated specialists. It necessarily follows that issuance of such a policy would result in the insurance company's engaging in the unlawful practice of at least two of the professions, medicine and dentistry. The policy does not constitute a contract of indemnity between the insurer and the assured. It is more than a mere contract of indemnity. The company's own designation of the policy as a 'Medical Service Policy' continued the court more nearly describes the true nature of the agreement. Essentially, it is an agreement by the company to furnish medical services and other professional services through its own appointed staff of professional men rather than an agreement to indemnify the assured against indebtedness incurred for

services rendered by professional men of his own choosing. An examination of the various provisions of the policy, in the opinion of the court, fully sustained these conclusions. Throughout the 'Medical Service Policy' it is specified that the assured is entitled to various professional services, including medical and dental services under the terms and conditions set forth. One of the main headings of the policy reads 'Physicians and Surgeons, Hospital and Other Services Provided'. It is provided that the company will appoint a medical director, designated physicians and designated specialists "to render services in accordance with the provisions of the policy, and that 'The Insured is entitled to the Medical Service herein specified only when under the exclusive care and supervision of the Medical Director and/or designated physician and/or designated specialist. It is provided that if 'The Insured places himself under the care of any person' other than those appointed by the company, the rights of all further benefits under this policy shall forthwith terminate. These and other provisions of the policy convinced the court that the agreement was one by the company to furnish all the services mentioned through its own appointees.

It is a matter of common knowledge, said the court, that the general subject of health insurance has provoked much discussion in recent years. The court, however, felt disinclined to discuss this question, pointing out that if the established rules are to be changed or modified such change or modification must be made by the legislature rather than the courts.

The judgment of the trial court directing the insurance commissioner to approve the policy, was therefore reversed.—*Pacific Employers Insurance Company v. Carpenter (Calif.)* 52 P (2d) 692.

Compensation of Physicians Liability of Employer for Medical Services Rendered Employee—The manager of a branch store operated by the defendant corporation became seriously ill. He was without funds to obtain medical aid and the vice-president and general manager of the corporation requested Dr. Solomon Cameron to render the necessary treatment and assured him that the corporation would pay the bill. When the physician's statement was rendered however, the corporation denied liability and the physician brought suit. The judgment of the circuit court for the physician was affirmed by the St. Louis court of appeals and the corporation sought a reversal of that judgment in the Supreme Court of Missouri.

The corporation contended that its vice-president and general manager had no authority to obligate it to pay for the services rendered by the physician. The Supreme Court however, disagreed with this contention, and in holding that the vice-president and general manager had implied authority to act, expressed itself in agreement with the reasoning of the court of appeals, as follows:

We think the circumstances shown in the instant case afford ample grounds for presuming that Dorland as general manager of defendant, had authority to charge defendant with the employment of a physician to treat the manager of its St. Louis branch who was suddenly stricken and became desperately ill among strangers without adequate funds for the employment of necessary medical attention. Callahan [the manager of the St. Louis branch] held a responsible position of no little importance in the conduct and operation of defendant's business. Presumably he was specially trained for this position and was possessed of a knowledge of defendant's business in St. Louis not possessed by any other employee. So that defendant had a direct pecuniary interest in his speedy recovery and his early return to his work.

The Supreme Court, therefore, in effect, affirmed the judgment for the physician.—*State ex rel. Electric Household Stores, Inc. v. Hostetter (Mo.)*, 89 S. W. 2d 28.

Society Proceedings

COMING MEETINGS

Montana Medical Association of Billings July 8-9 Dr. F. G. Balsam
208 1/2 North Broadway Billings Secretary
National Medical Association Philadelphia Aug. 16-22 Dr. W. Harry
Barnes 1315 North 15th St. Philadelphia Acting Secretary
Pacific Northwest Medical Association Portland Ore. July 8-11 Dr. C.
W. Countyman 407 Riverside Avenue Spokane Wash. Executive
Secretary
Wyoming State Medical Society Cody Aug. 24-25 Dr. Earl Whedon
50 North Main Street Sheridan Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, New York

26 321-454 (April) 1936

- District Health Administration in Large Cities J L Rice and Margaret W Barnard New York—p 321
- Health Security T Parran Jr Albany N Y—p 329
- Authoritative Standards and Association Policy W H Frost Baltimore—p 336
- Optimal Temperature of Incubation for Standard Methods of Milk Analysis as Influenced by the Medium M W Yale and C S Pederson Geneva N Y—p 344
- Further Studies of Composition of Mediums for Bacteriologic Analysis of Milk C S Bowers and G J Hueker Geneva N Y—p 350
- Evaluation of Certain Mediums for Detection of Colon Organisms in Milk C A Stark and L R Curtis Ithaca N Y—p 354
- Prevention of Venereal Diseases in Sweden E Rietz Stockholm Sweden—p 357
- Shellfish Report from Standpoint of the Sanitary Engineer L M Fisher Washington D C—p 364
- Federal Control of Spray Residues on Fruits and Vegetables W S Frisbie Washington D C—p 369
- State Control of Spray Residues W C Geagley Lansing Mich—p 374
- Pharmacology of Small Quantities of Lead and Arsenic A J Carlson Chicago—p 377
- Spray Residues From the Point of View of the State Health Officer W F Cogswell and J W Forbes Helena Mont—p 379
- Poisonous Substances in Food Particularly Spray Residue on Fruits and Vegetables From the Point of View of the City Health Officer J C Geiger G H Becker and A B Crowley San Francisco—p 382
- Practical Application of an Industrial Health Appraisal Form L D Bristol New York—p 390
- *Typhoid Carriers Study of Their Disease Producing Potentials Over a Series of Years as Indicated by Study of Cases. G W Anderson Angeline D Hamblen and Helen M Smith Boston—p 396
- Escherichia Coli as an Indicator of Fecal Pollution in Oysters and Oyster Waters C A Perry and M Bayliss Baltimore—p 406
- Laboratory Control of Water Purification Plants H E Jordan Indianapolis—p 412

Typhoid Carriers—Anderson and his associates calculated the typhoid morbidity in Massachusetts as a constant function of the death rate. It has been assumed that throughout the period under study (1875 to 1934) typhoid has consistently had a 10 per cent case fatality rate, so that the number of cases in any year has been ten times the number of deaths. That such an assumption is justified is shown by the unchanged case fatality rates in the larger hospitals coupled with the commonly accepted fact that aside from the dietary regimen, there has been no noteworthy advance in typhoid therapy for several generations. The use of death figures has eliminated any error due to variations in adequacy of case reporting, the death returns in Massachusetts having been reasonably complete throughout the period in question. Using this method for calculating morbidity it can then be assumed that the number of survivors from typhoid in any year was nine times the number of reported deaths. It was further assumed that 2 per cent of those who recovered from typhoid continued as carriers the duration of their lives. Consequently the number of carriers produced in any single year has been calculated as 2 per cent of the survivors in that year. It is thus possible to estimate theoretically the number of carriers produced in any period of time. An approximate figure of the number of carriers in a given population at a given time is obtained by determining the average age of typhoid patients over a period of years and knowing the average expectation of life at any age and the carrier production rate. From this the authors

conclude that the number of cases of residual (carrier-borne) typhoid (exclusive of localized outbreaks) that occur in any community in any given year is not a constant function of the number of carriers in that community but is rather a function of the carriers produced in the preceding period of approximately five years. That such a deduction is correct is illustrated by a logarithmic scale showing the decline in typhoid mortality during the last sixty years. The hypothesis suggested—that the current incidence of typhoid is a function not of the total number of carriers but rather of those recently produced—means that carriers are not all of equal importance as sources of infection and that on a community basis carriers produce fewer and fewer cases as years elapse. A carrier if undiscovered will in a period of years either infect or immunize the normal immediate environment, and subsequent infections are conditioned by the introduction of susceptible new material into the carriers' environment or sphere of influence. This is then the apparent explanation for the shift in the ratio between the number of cases in any year and the number of carriers produced in the preceding periods of years. This offers a reasonable explanation for the fact that the number of cases in any year was not a constant function of the number of carriers present in the community but rather of the number of carriers produced during the preceding period of five to ten years.

Am J Roentgenol & Rad. Therapy, Springfield, Ill

35 429-576 (April) 1936

- The Place of Radiation in Treatment of Cerebellar Medulloblastomas Report of Twenty Cases E C Cutler M C Sosman and W W Vaughan Boston—p 429
- *Chronic Pneumonia Associated with Nutritional Disturbances in Infants. H M Greenwald L Nathanson and M Steiner Brooklyn—p 454
- Concerning Some Pathophysiologic Peculiarities of Function of Vertebral Column Mechanism of Fractures of Transverse Processes of Lumbar Vertebrae J M Koudienko Leningrad U S S R—p 468
- Soft Tissue Roentgenography Anatomie Technique and Pathologic Considerations J R Carty New York—p 474
- *Direct Venography in Obstructive Lesions of Veins A W Barker and J D Camp Rochester Minn—p 485
- *Tuberculosis of Tuberosity of Ischium Case Report. M Kaplan New York—p 490
- Osteopetrosis Report of Four Cases F B Nather Fort Harrison Mont—p 495
- The Five Gram Radium Pack I I Kaplan New York—p 498
- Advantages and Disadvantages of Radium Element Pack. J J Duffy New York—p 508
- Advantages and Disadvantages of Radium Packs B T Simpson and M C Reinhard Buffalo—p 513
- Embital in Treatment of Radiation Sickness G E Richards and M V Peters Toronto—p 522
- Survey of Chest Roentgenographic Technique C Weyl S R Warren Jr and D B O'Neill Philadelphia—p 526
- Choice of Certain Technic Factors for Chest Roentgenography C Weyl S R Warren Jr and D B O'Neill Philadelphia—p 534
- Epiphysis for Lesser Trochanter H Flecker Cairns North Queensland Australia—p 540
- Epiphysis for Symphysis Pubis Does Such Exist? H Flecker Cairns North Queensland Australia—p 541

Chronic Pneumonia and Nutritional Disturbances in Infants—Greenwald and his associates call attention to the fact that there occurs in infants a chronic, nontuberculous type of pulmonary infiltration which is accompanied by nutritional disturbances and emphasize the importance and necessity of routine roentgenologic or roentgenoscopic examinations of malnourished infants whose nutritional requirements are adequately fulfilled, both quantitatively and qualitatively. During the last seven years they have observed in private practice nine infants from 3 weeks to 17 months of age who had marked anorexia and did not gain in weight yet every infant had a chronic nontuberculous pulmonary lesion. These children were observed for from three months to seven years. Roentgenologic studies showed involvement of the right upper lobe in every instance; in some infants the lower lobes and the left side also were involved. Physical signs were not always present and, when present in some of the infants there were few signs or symptoms referable to the respiratory tract. Roentgenologic changes and clinical signs and symptoms were present for periods varying from a few months to several years. The course was benign in every instance; no deaths occurred. The etiology is

obscure Whether the infiltration in the lungs in some of these children was the result of aspiration of fatty or oily substances producing lipid pneumonia, it is impossible to say. Lipoid pneumonia is sometimes the cause of chronic nontuberculous lung infiltrations, but unfortunately there is no known clinical method of determining the presence of fat in the lungs. Repeated sputum examinations for the presence of fat were consistently negative in Goodwin's patients. Lung puncture might be tried, but whether consistent and sufficient information could be obtained to justify its use is questionable.

Direct Venography in Obstructive Lesions—In using direct venography in thirty-seven cases, Barker and Camp employed diodrast as their injection medium. Injection was made in the long saphenous vein or one of its tributaries in the lower part of the leg when visualization of the upper long saphenous, upper femoral or iliac veins was desired, in a superficial vein of the outer side of the foot or posterior part of the calf when visualization of the short saphenous, popliteal or lower femoral veins was desired and in the median basilic vein at the elbow when visualization of the axillary and subclavian veins was desired. A tourniquet or manual pressure was used to distend the vein and direct venipuncture was made with a number 21 needle attached to a Luer syringe. The tourniquet was removed before injection was begun. In veins of the lower extremity, 20 cc of diodrast was injected and 10 cc in veins of the upper extremity. Injection was made steadily and rapidly, from fifteen to eighteen seconds being taken for 20 cc. The roentgenogram was made just as injection was completed. For visualization of the saphenous, femoral and iliac veins 90 kilovolts (peak), 60 milliamperes, 30 inch tube film distance and one and a half seconds for exposure were used. The tube was at an angle of 5 degrees cephalad. For examination of the axillary and subclavian veins the following factors were used: 70 kilovolts (peak), 60 milliamperes, 40 inch tube-film distance and one second exposure. It was found that, even with rapid changing of films, diodrast passed out of the veins too rapidly to secure visualization in more than one film. Of the thirty-seven cases successful venograms were made in nineteen cases of veins in the lower extremity, seventeen of veins in the upper extremity and one of the external jugular vein. Pain was not felt in the veins during or following injection, nor did thrombosis occur after injection. Nausea developed in three cases and two of these patients vomited within two minutes after injection was completed, several others complained of "light-headedness." These reactions were transient and probably due to the rapidity of injection. Nausea and vomiting occurred only in cases in which 20 cc of diodrast was injected and in cases of extensive venous obstruction in which there was marked slowing of the venous blood flow. Mild urticaria developed in a patient within fifteen minutes after injection, the patient later said that this had occurred previously when she had taken iodides. Normal venograms can be described as follows. In the upper extremity the median basilic vein after its injection and the axillary and subclavian veins are clearly visualized to a point at which the subclavian passes the lower margin of the clavicle and in the lower extremity, the long saphenous vein after its injection is well visualized to its juncture with the femoral vein and from this point the femoral and iliac veins are more faintly seen to the beginning of the inferior vena cava. Direct venography aids in evaluation of disturbances in the rate of the venous flow of blood and in localizing and determining the extent of an obstructive lesion, and is of diagnostic aid in obscure cases. Contraindications to its use are idiosyncrasy to iodides and recent (within two weeks) acute thrombophlebitis.

Tuberculosis of Tuberosity of Ischium—Kaplan adds a case of tuberculosis of the tuberosity of the ischium to the seven reported in the literature during the last thirty-five years. Tuberculosis of the ischium in the young is relatively easy to cure. In an adult visceral complications are less often present. Early and radical treatment will produce a rapid and early cure. When simple curettage fails to produce cicatrization, it may be necessary to do a partial resection subperiosteally. Rest in bed and immobilization are necessary to complete the cure.

Archives of Dermatology and Syphilology, Chicago

73 783 950 (May) 1936

- Origin of Syphilis: Evidence from Diseased Bones. Supplementary Report. H. U. Williams. Buffalo.—p. 783.
 *Virus of Pemphigus and Dermatitis Herpetiformis. F. Urbach and S. Wolfram. Vienna, Austria. Translated by F. R. Schmidt. Chicago.—p. 788.
 Unusual Case of Keratoma Senile. Keratosis Praecancerosa. M. Rauter, Deyenier. Netherlands.—p. 807.
 *Pyoderma Gangraenosum: Deficiency Disease Complex. M. H. Cohen, New York.—p. 813.
 Nature and Distribution According to Age of Cutaneous Manifestations of Vitamin A Deficiency: Study of Two Hundred and Seven Cases. C. N. Frazier and C. K. Hu. Peking, China.—p. 825.
 Lymphogranuloma Inguinale. II. Cultivation of Virus in Mice and Its Use in Preparation of Frei Antigen. A. W. Grace and Florence H. Suskind. New York.—p. 833.
 Transformation of Trichophyton Gypseum into Mosaic Fungus. Eleanor Silver Dowling and H. Orr, Edmonton, Alta.—p. 865.
 *Fatality Following Bismarsen Therapy. J. H. Swartz, M. M. Tolman and H. Levine. Boston.—p. 874.
 Dermatitis Papillaris Capillaris and Synechia Vulgaris with Hypoparathyroidism. Report of Case. T. B. Hall. Kansas City, Mo.—p. 880.

Virus of Pemphigus and Dermatitis Herpetiformis—Urbach and Wolfram obtained material from thirty-four patients with pemphigus and dermatitis herpetiformis in an attempt to prove the identity of these dermatoses with the group of diseases caused by an invisible virus. Animals (288) inoculated subcutaneously with blister fluid exhibited signs of the disease in 91.8 per cent of cases of pemphigus, 100 per cent of cases of localized pemphigus and 70 per cent of cases of dermatitis herpetiformis. The histologic changes registered in the brain substance of the experimentally infected rabbits were always those of meningo-encephalomyelitis. Animals inoculated with virus from patients with pemphigus showed the same symptoms as those into which material from patients with dermatitis herpetiformis had been introduced. Just as the course of dermatitis herpetiformis is milder in human beings, so in animals it is characterized by lesser morbidity and mortality. The symptoms point unreservedly to one and the same pathogenic agent as responsible for both pemphigus and dermatitis herpetiformis. The symptoms and histologic changes observed in passage animals correspond exactly to those occurring in animals infected directly with human virus. Since microscopic and cultural studies gave invariably negative results, it must be assumed that we are dealing with an invisible virus, necessarily filterable, because the transfer of the infection from the human being to animals and its further passage through animals was successful with filtered material. The involvement of the central nervous system was marked in all animals infected with material obtained from patients with pemphigus in the florid stage. The picture composed by the symptoms and the histologic changes in the central nervous system closely resembles that produced in animals by the virus of herpes. Attempts to secure crossed immunity between pemphigus and herpes failed, while animals which recovered from an attack of pemphigus usually displayed an immunity to reinfection with pemphigus. The supposition that pemphigus is caused by a virus is further strengthened by the results of inoculations of animals with material obtained from the two patients at necropsy. Passage through animals was successful in both cases; the material used consisted of filtrates of normal and diseased skin, spleen and lymph nodes. By serologic tests they were able to demonstrate that the disease manifested by their animals was the same as pemphigus in human beings.

Pyoderma Gangraenosum—Cohen feels that in his case of pyoderma gangraenosum the marked ulcerations of the skin and the intestine, the smooth, atrophic tongue, the hypochromic anemia, the long intermittent course and the lack of any evidence of contagiousness suggest a deficiency disorder. He ascribes the fact that the patient was not cured by vitamin therapy to the destruction of the absorptive mechanism in her intestinal tract and to the complexity of the involved vitamins. He believes that cases of pyoderma gangraenosum are more common than the literature would lead one to believe, that particular attention should be given to the skin of any patient suffering from long continued diarrhea and that it is essential that a high vitamin diet, liver extract, iron and calcium be given early in the course of such a condition. The final word on the etiology of pyoderma gangraenosum and ulcerative colitis remains for the future to supply, but it is his opinion

that this condition is not of an infectious nature but is due to the lack of some protective substance or vitamin in the skin and intestinal tract

Fatality Following Bismuth Arspenamine Sulfonate Therapy—Swartz and his associates cite a fatal case of fat embolism following the use of bismuth arspenamine sulfonate in antisyphilitic therapy. At necropsy the fatty changes in the liver were not pronounced, there being only periportal lymphocytic infiltration and relatively insignificant infiltration of the liver cells of the central portion of the lobule. It was difficult to believe that these changes brought about the abrupt and severe grade of jaundice which developed. Although stones were found in the gallbladder, there was no intrinsic or extrinsic obstruction of the biliary tract. The myocardial scar seemed unlikely to account for the patient's death. The fat embolism of the lungs, on the other hand, was so widespread that it alone may be considered as adequate to explain the fatal outcome. By effectively plugging the pulmonary capillaries, the fat emboli produced what Warthin referred to as the respiratory symptom and pathologic complex of fat embolism. With general reference to the category of toxic causes of fat embolism and with special reference to the present case, there are two recently reported fatalities from fat embolism following arsenic therapy for syphilis reported by Burns and Bromberg and Brittingham and Plunizy. It has been demonstrated that it is the arspenamine radical common to bismuth arspenamine sulfonate and to the other arsenic compounds which is responsible for the untoward reactions occurring during treatment. The authors therefore believe that the present case is of the same type as those reported by the foregoing investigators.

Archives of Internal Medicine, Chicago

57: 649-836 (April) 1936

- *Study of Lower Lobe of Lung. Explanation of Roentgenologic Shadows. J. Levitin and H. Brunn. San Francisco—p. 649.
- *Factors Responsible for Jaundice in Syphilis with Special Reference to Role of Arspenamides. R. V. Sager. New York—p. 666.
- Infantilism and Diabetes Mellitus. Report of Eight Cases. R. B. Gibson and W. M. Fowler. Iowa City—p. 695.
- Bence Jones Proteinuria. L. Meyler. Groningen, Netherlands—p. 708.
- Modifying Effect of Various Inorganic Salts on Diuretic Action of Salyrgan. C. B. Ethridge, D. W. Myers and M. N. Fulton. Boston—p. 714.
- Nonspecific Role of Pressor Substances in Plasma of Hypertensive Patients. L. Leiter. Chicago—p. 729.
- *Relative Values of Caffeine and Hypertonic Dextrose and Saline Solutions in Reducing Cerebrospinal Fluid Pressure. A. Blau. New York—p. 749.
- Lymphoblastoma Cutis. Report of Case with Autopsy. A. S. Rosenfeld and J. V. Straumfjord. Portland, Ore.—p. 758.
- *Arrhenoblastoma. Special Type of Teratoma. Report of Case. J. B. McLester. Birmingham, Ala.—p. 773.
- Proliferative Endophlebitis (Phlebosclerosis). Report of Case. P. M. Levin and P. C. Bucy. Chicago—p. 787.
- Diseases of the Heart. Review of Some Contributions Made During 1935. A. Graybiel and P. D. White. Boston—p. 791.

Study of Lower Lobe of Lung—Levitin and Brunn state that the lower lobes of the right and left lungs are divided into two distinct parts: (1) a small triangular superior division and (2) a larger inferior division. This anatomic fact has been insufficiently emphasized in the past. Each portion of the lobe has its own bronchial distribution. Embryologically, each develops from a separate anlage. A fissure separating the two parts may be observed in the developed lung. The pleural reflection in the fissure may be observed in the roentgenogram and has often been misinterpreted as a pleural adhesion. This definite anatomic structure accounts for numerous limited disease processes the localization of which has previously not been understood. In the roentgenogram the involved superior division appears to lie high in the chest or low behind the diaphragm, depending on the position of the diaphragm when the roentgenogram is made. Failure to recognize the importance of the position of the diaphragm has often led to misinterpretations. When the process appears high in the roentgenogram it is often diagnosed as central pneumonia. When it appears low, it may be mistaken for encapsulated fluid.

Jaundice in Syphilis—Sager declares that slight transient jaundice may be encountered in cases of syphilitic cirrhosis but that neither this condition nor gumma of the liver gives the familiar picture of benign or fatal jaundice. In his records of thirty-one cases there were twelve cases of gumma of the

liver, syphilitic cirrhosis or hepar lobatum, in only one instance was jaundice present, and in that case it was faint and transient. A careful search of the records of cases of tertiary syphilis of the liver with postmortem observations reported by various observers, both before and after the introduction of arspenamine, failed to reveal in a single case a condition that will fit into the picture of acute yellow atrophy. Nor are the clinical pictures of the two diseases alike. On the other hand, lesions in cases of fatal paratherapeutic icterus are always those of acute or subacute yellow atrophy or coarse nodular cirrhosis; the familiar lesions of hepatic syphilis are uniformly absent and spirochetes are never found as pointed out by Ravaut and Fischer. Even if gumma or syphilitic cirrhosis should be found in association with acute yellow atrophy, the etiologic relation of the two would not thereby be proved. But the author is not aware of any case in which this association was present.

Caffeine and Dextrose for Reducing Cerebrospinal Fluid Pressure—Blau compared the effects on the cerebrospinal fluid pressure of the intravenous administration of hypertonic dextrose (50 per cent) and sodium chloride (15 per cent) solution and a solution of caffeine with sodium benzoate (5 grains or 0.3 Gm.) in fifty-one observations on normal persons and on patients with increased intracranial pressure. The injection of dextrose solutions was effective in reducing the cerebrospinal fluid pressure in but relatively few cases. In a few cases the injection of a dextrose solution caused an immediate prolonged rise in the pressure. The effect of caffeine was greater and was consistent but with both the latter and the dextrose the results were transient. The injection of hypertonic sodium chloride solution, however, resulted uniformly in a definite and more persistent reduction in the cerebrospinal fluid pressure. Hypertonic solutions of sodium chloride should replace the solutions of dextrose in clinical administration for the reduction of intracranial pressure.

Arrhenoblastoma—McLester cites a case of an ovarian tumor that falls into the group of twenty-nine previously reported cases of arrhenomastoma. The secondary sexual characteristics of the woman, originally feminine, changed materially in the course of three years to definitely masculine. After removal of the tumor the feminine characteristics returned to a partial degree, and after one year there has been no recurrence of the tumor or return of the male characteristics. The mass was ovarian in origin. The return of feminine characteristics and particularly the continued normal menstruation after the operation are indicative of a normal function of the remaining gonadal tissue. The tumor consisted, probably, of testicular tissue. There was cord formation but no attempt at the construction of tubules or acini, nor was there any spermatogenesis. The chief cells were of two types. One was suggestive of endocrine structures in general. The second type of cell was fusiform, suggestive of embryonic fibrous tissue, with some evidence of change into the former type. Columnar, mucus-producing epithelium with typical goblet cells was found in the walls of a cyst of the tumor. The tissue was entirely quiescent and was taking no part in the active proliferation shown by the actual tumor cells. This structure, since it is foreign to ovary or testis, puts the tumor into the group of teratomas. The tumor may prove to be benign. Nothing was noted to indicate the cell type from which the tumor arose. It is not unlikely that a group of fetal cells in the ovary, growing in response to an unknown stimulus, might well have been the source of the patient's tumor. Clinically the growth was identical with the arrhenoblastomas; pathologically it was highly suggestive at least of the more undifferentiated types as they have been described. This suggests that the previously reported arrhenoblastomas may have been a special type of teratoma.

Arch of Physical Therapy, X-Ray, Radium, Chicago

17: 193-256 (April) 1936

- Effect of Carbon Arc Radiation on Blood Pressure and Cardiac Output. H. Laurens. New Orleans—p. 199.
- Fever Therapy. A. U. Desjardins. Rochester, Minn.—p. 206.
- Newer Aspects of Ionization Therapy in Nasal Allergic Disorders. A. R. Hollender. Chicago—p. 216.
- Constipation as Physical Therapeutic Problem. W. S. Horn. Fort Worth, Texas—p. 225.
- Ultrashort Wave Therapy. W. H. Schmidt. Philadelphia—p. 231.
- Council on Physical Therapy. Tenth Anniversary. H. A. Carter. Chicago—p. 235.

Arkansas Medical Society Journal, Fort Smith

32 181 192 (May) 1936

- Indications for Spinal Puncture W A Jones Fayetteville—p 181
Hysteria in General Practice F P Hardy Searcy—p 183

Colorado Medicine, Denver

33 307 376 (May) 1936

- Subacromial Bursitis So Called R M Lee Fort Collins—p 316
*The Painful Shoulder X-Ray Interpretation G A Unfug Pueblo—p 318
*Newer Concepts in Treatment of Furunculosis D Prey and J M Foster Jr Denver—p 325
Granulopenia (Agranulocytosis) Report of Case D A Vanderhoof Colorado Springs—p 328
Report on Scarlet Fever Immunization Portia M Lubelencio Haxton—p 333
Torsion of Spermatic Cord I G Booth Sheridan—p 342
Correlation of the Record Department with Other Departments of the Hospital Margaret Neal Denver—p 346

Roentgen Interpretation of the Painful Shoulder—Unfug states that painful shoulders may be due to cervical rib arthritis of the shoulder, arthritis of the cervical spine calcified cervical glands acromioclavicular separation and arthritis of the acromioclavicular articulation. Cervical ribs may vary in size from an elongated transverse process of one of the lower cervical vertebrae to a separate rib several inches in length. Only 5 per cent of cervical ribs give a brachial plexus effect. The shoulder pain from arthritis of the cervical spine is difficult to explain. Some of it however, is due to involvement of the brachial plexus. The bony exostoses with or without narrowing of the joint space and bone destruction visualized on the roentgenogram are well known. In shoulder pain due to calcified cervical glands the pain is believed to be due to a mechanical or inflammatory irritation of the brachial plexus. Acromioclavicular separation is not uncommon. Clinically, one is often misled by a false crepitus or grating sensation which may be encountered in almost any normal acromioclavicular articulation. Roentgenographically, one can be misled if only the usual view of the shoulder is taken. Frequently it is necessary to make roentgenograms with the arm in two positions, abduction and adduction and it has been found that plates made with the patient standing will frequently reveal a separation when all other methods fail. Arthritis of the acromioclavicular articulation is evidenced on the roentgenogram by mixed hypertrophic and atrophic changes and by a narrowing of the joint space. Its chief importance from the roentgen point of view, lies in the fact that a true arthritis of the joint must be differentiated from simple hypertrophic excrescences of the acromion, which are occasionally secondary to an old injury of the supraspinatus tendon. Whenever only hypertrophic changes are visualized about this joint a careful study should be made to exclude previous supraspinatus tendon injury. The roentgen observations most frequently encountered are (1) calcified deposits in the supraspinatus tendon, near its insertion, (2) excrescences on or roughening of the greater tuberosity of the humerus, (3) area of increased density in the greater tuberosity at the insertion of the supraspinatus tendon (eburnation), (4) roughening of the outer edge of the greater tuberosity below the insertion of the supraspinatus tendon (bursal osteitis), (5) areas of bone absorption beneath the greater tuberosity (cavities), (6) recession of tuberosity—disuse (7) trabecular atrophy in the greater tuberosity beneath the base of the bursa, and (8) hypertrophic changes at the edge of the acromion process.

Treatment of Furunculosis—Prey and Foster have found an ideal method of treating furunculosis by combining the local application of contractile collodion to the furuncle and the intravenous injection of colloidal animal charcoal. The charcoal preparation that they have used comes in 3 and 5 cc ampules. In the milder infections 3 cc. has been ample. The injection may be repeated in forty-eight hours, with perfect safety, if deemed necessary. The local application of contractile collodion is carried out as suggested by Robbins. This form of local therapy relieves the pain instantly, protects the surrounding skin, permits the application of a small dry dressing and is not incompatible with other methods of treatment. The collodion must be of the contractile quality not the flexible, and is applied by means of a saturated swab. From ten to twenty strokes are made around and on the boil a small opening being left

at the center, where the boil seems to be pointing. The collodion should be applied thickly and should extend well beyond the edge of the furuncle. As the collodion dries, the pain is relieved within thirty seconds and wrinkles will appear, extending on to the surrounding skin, demonstrating its contractility.

Delaware State Medical Journal, Wilmington

8: 55 72 (April) 1936

- Conservative versus Radical Treatment of Fractures H R Owen, Philadelphia—p 55
Some Uncommon Bone Lesions B M Allen Wilmington—p 60

Endocrinology, Los Angeles

20: 307 460 (May) 1936

- Progesterin Content of Blood P W Bloch Rochester N Y—p 307
Studies of Nature of Antigonadotropic Substances G H Trowley New York—p 311
Estrogen Deprivation Theory of Menstruation C F Fluhmann, San Francisco—p 318
Study of Ovaries After Administration of Gonadotropic Principle of Anterior Pituitary E C Hamblen Durham, N C—p 321
Effect of Estrogenic Substance on Blood Volume Mae Friedlander Laskey and S Silber New York—p 329
*Migraine and Ovarian Deficiency S J Glass Los Angeles—p 331
Effect of Injection of Residual Ovarian Extracts H W Markow Manhattan Kan—p 339
Biologic Effects of Thymectomy Accruing Retardation in Growth in Succeeding Generations N H Finkhorn and I G Rowntree, Philadelphia—p 342
Biologic Effects of Pineal Extract (Hanson) Accruing Retardation in Growth and Accruing Acceleration in Development in Successive Generations of Rats Under Continuous Treatment with Pineal Extract I C Rowntree J H Clark A Steinberg Philadelphia and A M Hanson Larchmont Minn—p 348
Iodine Tolerance Test for Investigation of Thyroid Function E M Watson with technical assistance of A S Barber London Ont—p 358
Presence of Excess of Male (Comb Growth and Prostate-Stimulating) Hormone in Virilism and Pseudomale Prostate S L Simpson London England P de Jremery Oss Netherlands and A Macbeth London England—p 363
Arrhenoblastoma Case Report L G Hildwin and J A Gafford Jr Los Angeles—p 371
Atrophy of Adrenals and Addison's Disease W Susman Manchester England—p 383
Prostatic Atrophy Following Testicular Feeding H B Myers B Vidloff G H Sebade and W C Hunter, Portland Ore—p 389

Migraine and Ovarian Deficiency—Glass made quantitative hormone assays before and after endocrine therapy in ten migrainous women. Quantitative assays of estrogenic substance and of the follicle stimulating factor in the blood and urine were made during one menstrual cycle before, and repeated once or twice after, endocrine therapy. The symptomatic management before endocrine therapy was instituted gave little or no permanent relief to the majority of these women. The nature of the menstrual disorders varied but usually some degree of menorrhagia oligomenorrhea or dysmenorrhea was present. Headaches occurred most frequently in relation to the actual menstrual flow, but most often in the premenstrual period. Sterility appeared prominently in the histories of six cases. Eight women responded readily to estrogenic therapy and by hormone assays after treatment, it was determined that the follicle stimulating factor output was actually being suppressed. It may be concluded that its excess can be controlled by adequate estrogenization in the human being as well as the animal. Not only was there striking relief and control of the headaches but menstrual function was more or less normalized and general well being remarkably improved. This definite association of ovarian dysfunction with migraine may promote the investigation of many migrainous subjects. Relief has been maintained for periods varying from six to thirty-six months. However, relapses do frequently follow cessation of treatment and omission of treatment in three cases was followed by a return of the original hormone imbalance as well as the migrainous state. Estrogenic substance was used in doses (from 8,000 to 32,000 international units) adequately potent for the suppression of the gonad stimulating factor called 'prolan'. Relapse or failure to control the migraine seemed to be directly due to inadequate or infrequent estrogenization.

Iodine Tolerance Test of Thyroid Function—Watson determined the relative rate of the disappearance from the blood of intravenously injected iodine in thirty cases by the following method. With the patient in the fasting state in the morning,

an amount of compound solution of iodine containing 250 micrograms of iodine per kilogram of body weight, after being diluted with 15 cc of 0.85 per cent solution of sodium chloride, is injected intravenously. Samples of venous blood of about 12 cc each are obtained immediately before the injection and five minutes, two, four and six hours afterward. These samples are received in tubes containing a small amount of potassium oxalate. Food is withheld from the patient during the test period. The concentration of iodine in each sample of whole blood is estimated by means of a method described by Perkin. In this procedure 10 cc of blood is placed in a nickel crucible together with 2 Gm of potassium carbonate and combusted on a hot plate and in a muffle furnace for four and one half hours. The charred mass is extracted with alcohol and filtered and the filtrate is evaporated to dryness. The residue is dissolved in water and, when the solution is made slightly acid with sulfuric acid and a drop of freshly prepared bromine solution is added, the iodine is oxidized to iodate. The addition of potassium iodide frees the iodine, which is estimated by titration with 0.001 normal sodium thiosulfate solution with starch serving as an indicator. The iodine content of the blood specimen secured five minutes after the injection of the iodine solution minus that of the preliminary control sample is regarded as representing the maximal increment caused by the injected iodine and is consequently recorded as 100 per cent. With this value as a basis, the observations for the other samples are expressed accordingly. While the results so obtained represent the relative rather than the absolute iodine concentrations, they do provide an indication of the rate of disappearance from the circulating blood of the injected iodine in a specified time. In thirteen of sixteen individuals with clinically normal thyroids, from 9 to 23 per cent of the injected iodine remained in the blood stream six hours after its injection. In six of ten patients with thyrotoxicosis, none of the injected iodine remained in the blood stream after six hours and in none of these cases was more than 5 per cent of the injected iodine found to be present at this time. In four cases of hypothyroidism the average quantity of iodine in the blood six hours after its injection was greater than normal. The iodine tolerance test may be of diagnostic importance in cases of doubtful thyroid disease.

Florida Medical Association Journal, Jacksonville

22 449-496 (April) 1936

- Important Considerations in the Handling of Diabetic Patients T Z Cason Jacksonville—p 459
Remarks on Surgery in the Mentally Ill J H Pound Chattahoochee—p 463
Where the Field of the Oculist Meets That of the Practitioner B F Hodsdon Miami—p 467

Journal of Bacteriology, Baltimore

31 323-440 (April) 1936

- Studies of Streptococci I Qualitative Differences in Resistance to Various Agents G H Chapman and W B Rawls New York—p 323
Id. II Quantitative Differences in Resistance to Sodium Bicarbonate and Hexylresorcinol G H Chapman and Lillian Curcio New York—p 333
Id. III Preliminary Attempts to Correlate Resistance to Chemicals etc with Pathogenic Effects G H Chapman C Berens and Edith L Nilson New York—p 339
*Purification and Concentration of Diphtheria Toxin I Evaluation of Previous Methods Description of New Procedure M D Eaton New Haven Conn—p 347
*Id. II Observations on Nature of Toxin M D Eaton New Haven Conn—p 367
Micrococcus Tetragenus Infection II Description of Variant Forms H A Reimann Minneapolis—p 385
Id. III Immunologic Studies of Variant Forms and Discussion H A Reimann Minneapolis—p 407
Studies on Hemolytic Streptococci I Methods of Classification Alice C Evans Washington D C—p 423

Purification of Diphtheria Toxin.—Eaton endeavored to isolate diphtheria toxin in a pure state. The purification procedure is as follows. 1 To the crude toxic filtrate 18 cc. of 20 per cent calcium chloride solution per liter of toxin is added allowed to stand for fifteen minutes and filtered through folded paper. 2 To the filtrate 233 Gm of ammonium sulfate per liter is added, kept at p_H 7 by the addition of a few cubic centimeters of tenth normal sodium hydroxide allowed to stand one hour in the refrigerator and the precipitate filtered off on

folded paper. 3 To the cooled filtrate 70 cc. of 10 per cent aluminum ammonium sulfate per liter is added and well shaken. The p_H should be about 6. This is stoppered and kept in the refrigerator overnight. The heavy precipitate is filtered off in a Buchner funnel. 4 The precipitate is ground with water in a mortar and suspended in a volume of water one third the volume of the original crude toxin, kept in the refrigerator for several hours and filtered on a Buchner funnel. 5 The precipitate is dissolved in a 2 to 4 per cent solution of sodium citrate using one twentieth the volume of the crude toxin and the Lf value is determined. (An Lf unit is the volume of toxin flocculating with one unit of antitoxin.) 6 The citrate solution of the alum-precipitated toxin is diluted so that it contains from 100 to 120 Lf units per cubic centimeter. The citrate concentration is adjusted to optimum for cadmium precipitation by adding a 5 per cent solution of cadmium chloride until a moderately heavy precipitate forms and the p_H is about 6. From one-half to one volume of cadmium chloride is required, depending on the citrate concentration, kept in the refrigerator for two hours and the cadmium toxin precipitate centrifuged down. 7 The precipitate is washed with a volume of water equal to the toxin solution before cadmium chloride precipitation and then filtered on a Buchner funnel. The precipitate is treated with from one fourth to one half its volume of a 2 per cent solution of sodium phosphate U S P or a 1 per cent solution of sodium bicarbonate and allowed to stand for several hours or overnight in the refrigerator with occasional mixing. 8 The insoluble cadmium phosphate or carbonate is centrifuged down at high speed and the resultant red or red brown supernatant contains the concentrated and purified toxin. Purified toxins containing 0.0005 mg of nitrogen per Lf unit and 0.00002 mg of nitrogen per minimal lethal dose have been obtained.

Observations on Nature of Diphtheria Toxin.—The additional experiments of Eaton with the progressive purification of diphtheria toxin show that the ratio of nitrogen to Lf units in the toxin preparations appears to approach a constant value near 0.0005 mg of nitrogen per Lf unit. None of the several purification processes so far used have yielded toxins with a lower N/Lf ratio. The highly purified toxins consist mainly of a protein which is not easily precipitated with acid at any p_H and contains no cysteine sulfur and very little or no tryptophan. Traces of proteoses from the culture medium, and of other proteins probably derived from the bacterial cells, are also present. The chemical, immunologic and physiologic properties of diphtheria toxin observed in the course of this work indicate that it is a single protein-like substance.

Journal of Biological Chemistry, Baltimore

113: 599-810 (April) 1936 Partial Index

- Effect of Tissue Extracts on Esterification of Cholesterol in Blood Serum W M Sperry New York—p 599
Chemistry of Lipids of Tubercle Bacilli XIII Composition of Leprosin R J Anderson J A Crowder M S Newman and F H Stodola New Haven Conn—p 637
Helium Solubility in Blood at Increased Pressures J A Hawkins and C W Shilling Washington D C—p 649
Study of Estimation of Sodium in Blood Serum E G Ball and J F Sadusk Jr Baltimore—p 661
Copper Selenate as Catalyst in Kjeldahl Nitrogen Determination E J Schwoeigler B J Bahler and L C Hurd Madison Wis—p 749
Synthesis of Conjugated Bile Acids II Glycodesoxycholic Acid F Cortese and L Bauman New York—p 779
Lactoflavine Possible Contaminant of Vitamin Free Diets G C Supplee G E Flanagan Zaida M Hanford and S Ansbacher Bainbridge N Y—p 787

Journal of Comparative Neurology, Philadelphia

63: 369-550 (April 15) 1936

- Efferent Fibers of Frontal Lobe of Monkey Macaca Mulatta P M Levin, Chicago—p 369
Occurrence of Sensory Neurons Below the Ganglion Nodosum of the Vagus Margaret E Brown New York—p 421
Neurofibrillar Development in Central Nervous System of Chick Embryos up to Five Days Incubation W F Windle and M F Austin Chicago—p 431
Reconstitution in Nervous System Following Unilateral Reversal of Dorsocentral Axis in Part of Spinal Cord of Amblystoma Punctatum C Hutchinson New Haven Conn—p 465
Size of Largest Nerve Cells in Fourth and Fifth Lumbar Ganglions of Albino Rat According to Sex J Chornyak Philadelphia—p 489
Tractus Tectospinalis in Cat. A T Rasmussen Minneapolis—p 501
Fiber Connections of Posterior Parts of Cerebellum in Rat and Cat. R S Dow Portland Ore—p 527

Journal of Immunology, Baltimore

20 275 344 (April) 1936

- *Observations on Poison Ivy Hypersensitiveness in Guinea Pigs F A Simon Louisville Ky—p 275
- Agglutinogens M and N of the Amino T Kihbo Sapporo Japan—p 287
- Antigenic Properties of Brain Tumors A Weil and F Luchert Chicago—p 291
- Antileukocytic Serum W B Chew D J Stephens and J S Lawrence Rochester N Y—p 301
- Further Observations on Nature of Active Substance (Anaphylatoxin) in Canine Anaphylactic Shock C A Dragstedt and F B Mead Chicago—p 319
- Variation in Susceptibility of Guinea Pigs to Reversed Passive Anaphylaxis H Zinsler and J F Enders Boston—p 327
- Nonidentity of Antigenic and Antitoxic Groups in Diphtheria Antitoxin H Eagle, Philadelphia—p 339

Poison Ivy Hypersensitiveness—Simon investigated the influence that the state of health and nutrition of guinea pigs had on the development of hypersensitivity to poison ivy. He found that a dietary deficiency in vitamin C inhibited the development of hypersensitiveness to poison ivy. A well developed hypersensitiveness was demonstrated seven days after the first application of the extract. Injection of the extract intramuscularly, intraperitoneally and intravenously did not result in hypersensitiveness or did so to only a slight degree whereas application to the surface of the skin resulted in a definite hypersensitiveness. Excision of the area of skin to which a sensitizing application had been made was ineffective in preventing the development of hypersensitiveness if excised from eighteen to twenty-four hours or longer after application. Excision of the site before this time prevented the development of sensitization. The method of spread could not be determined. Histologic study of the lesions revealed evidence of an acute inflammatory reaction in both the epidermis and the papillary layer of the corium, with considerable necrosis of epidermal cells. This reaction was observed in both a sensitized and a nonsensitized guinea-pig but was definitely more marked in the former. Attempts to sensitize the rat rabbit and cat to poison ivy were unsuccessful.

Journal of Pediatrics, St. Louis

8: 403 532 (April) 1936

- Factors Possibly Influencing Retention of Calcium Phosphorus and Nitrogen by Infants Given Whole Milk Feedings I Curding Agent P C Jeans Genevieve Stearns J B McKinley Eva A Goff and Dorothy Stinger Iowa City—p 403
- Retentions of Nitrogen Calcium and Phosphorus of Infants Fed Sweetened Condensed Milk H E Harrison New Haven Conn—p 415
- *Respiratory Failure in Acute Epidemic Poliomyelitis: Late Results and Complications M B Brahdly Mount Vernon N Y and M Lenarsky New York—p 420
- Bacillus Acid Lactici Meningitis in a New Born Infant J D Craig and L L Mackenzie New York—p 434
- Interpretation of Routine Blood Cultures in Young Infants R W Huntington Jr St. Louis—p 438
- *Edema in Infancy and Childhood as an Expression of Chronic Dietary Insufficiency Katharine Dodd and A S Minot with assistance of Margaret Keller Nashville Tenn—p 442
- *Occurrence of Moderately Reduced Serum Albumin in Five Hundred Children in a Southern Clinic Katharine Dodd and A S Minot with assistance of Margaret Keller Nashville Tenn—p 452
- Seasonal Variation of Birth Weight of the New Born T A Li Shanghai China—p 459
- Prophylaxis of Allergic Disease J Glaser and D B Landau Rochester N Y—p 470
- Studies on Mode of Action and Metabolism of Vitamin D W Heymann Cleveland—p 480
- Dehydration and Acidosis with Calcification at Renal Tubules A M Butler J L Wilson and S Farber Boston—p 489

Respiratory Failure in Acute Epidemic Poliomyelitis—Brahdly and Lenarsky found the Drinker respirator useful only in patients with paralysis of the respiratory muscles due to lesions in the spinal cord. The patients with injury of the respiratory center who were treated in the respirator all died. Such patients, as well as those with obstruction of the upper air passages due to inability to swallow saliva, mucus or vomitus, do better when treated by other methods. Patients with lesions of the spinal cord that cause paralysis of the diaphragm or thoracic muscles and who have definite signs of respiratory difficulty should receive treatment in a respirator. On the other hand, patients with slight evidence of respiratory embarrassment without dyspnea or cyanosis should not be placed in a respirator. When a patient has any involvement of the

respiratory muscles or evidence of an ascending paralysis he should be near a respirator, as there is no way of telling whether the condition will become worse. Follow-up data were obtained in the twenty-seven of the sixty-three patients who were discharged from the hospital. Some recovered use of their paralyzed muscles and are normally active children, others are handicapped but are able to get about and several are bedridden. After leaving the hospital twelve patients died from some pulmonary condition but in only two of these were roentgenograms taken. These were the only two fatal cases in which a diagnosis of massive atelectasis was made. Clinically atelectasis is frequently mistaken for pneumonia and in some of the nine patients in whom a diagnosis of pneumonia or pulmonary edema was made the history strongly suggested the possibility of atelectasis. Massive atelectasis developed but was not fatal in five patients. Thus massive atelectasis developed in seven of the twenty-seven patients who survived their original respiratory paralysis.

Edema and Chronic Dietary Insufficiency—Over a period of nine years Dodd and Minot collected reports of forty-one cases of edema in which a thorough study of the patient revealed no evidence of cardiac or renal involvement. Some times the edema was confined to the feet and legs but there were several instances of generalized anasarca. The condition was observed in children from 4 months to 9 years of age. Five children of the group had no demonstrable disease other than generalized edema, nine either had or were convalescent from bacillary dysentery, ten had diarrhea with stools not typical of dysentery, three had pneumonia, two were diagnosed as having celiac disease and three showed evidence of scurvy. There was one case each in which edema complicated pellagra, typhoid, tuberculous enteritis, diabetes and a common cold. Four children had histories of repeated infections. The previous diet was known to be good in three cases. In most of the other instances the diet offered was grossly deficient or there had been a long period when the appetite was poor. Breast feeding had been continued long after the supply of milk was sufficient and supplementary foods had not been offered. The older children ate only potatoes, corn bread, turnip greens and beans. In twenty-six of the forty-one cases, various fractions of serum protein were made. The majority were children who were poorly developed and undernourished but not critically ill in whom a mild acute or chronic diarrhea apparently brought out a latent edema. The levels of hemoglobin observed give further evidence of their poor nutritional state. The levels of total protein and serum albumin were lower than any generally accepted range of normals. The most marked reduction is in the albumin fraction. Occasionally the globulin is reduced but in a majority of instances is normal or increased above the average. In most instances treatment of the primary disease together with a high protein diet and transfusions of blood when necessary, brought about a prompt reduction of edema followed by a gain in real weight and recovery. Determinations of serum proteins during the recovery period showed a gradual increase to normal levels. In cases in which the edema was associated with the nonspecific type of diarrhea the serum proteins were raised to a more normal level, the edema disappeared and the diarrhea subsided. This observation throws some doubt on which is primary and which secondary when nonspecific diarrhea and nutritional edema occur together in infants and children.

Occurrence of Moderately Reduced Serum Albumin—Dodd and Minot noticed that many children who entered the hospital with acute diseases tended to develop edema very easily when moderate amounts of parenteral fluids were given. It seemed possible that many of the children might have milder degrees of the same nutritional deficiency which had led to outspoken edema, and in this event the nutritional disturbance would be analogous to subclinical vitamin deficiency. Therefore the serum protein levels of 500 children who came to the clinic were determined. For comparison with these results a smaller group of well children of various ages, who were known to be on adequate diets were similarly studied. The results of the studies confirm the observations of others that the serum proteins of infants are low and increase gradually to approximately the adult level at 2 years of age. The general level of serum albumin of the authors' clinic group, even in

the absence of acute or chronic illness, is somewhat below that of the normal group. The serum albumin in children with acute or chronic infection rarely reaches the normal average except in the presence of dehydration. The work indicates that a chronic low grade deficiency in serum proteins is common among the poorer children in the community. The diet, which is low in total calories and in protein, is probably the cause of the deficiency. Such children are predisposed toward the development of edema, especially in the presence of infection.

Laryngoscope, St. Louis

40: 245-320 (April) 1936

- Present Status of Otitic Meningitis J G Dwyer, New York.—p 245
Fracture of Base of Skull and Otosclerosis G Kelemen, Budapest Hungary.—p 252
Galvanic Ionization Therapy in Allergic Rhinitis as Employed at the Manhattan Eye Ear and Throat Hospital H A Barrett New York.—p 262
Surgical Approach to Nasal Accessory Sinuses W Mithoefer Cincinnati.—p 266
The Ophthalmologic Relationship to Nasal Accessory Sinuses E B Spaeth Philadelphia.—p 275
Refinements in Tonsillectomy Radical Tonsillectomy and Adenoidectomy F E Stone and M D Berger Brooklyn.—p 287
Considerations in Use of Barbiturates in Otolaryngology W M Fitzhugh Jr Philadelphia.—p 292
Benzedrine Vaporizer for Shrinking Mucous Membrane of the Nose and Eustachian Tube S Israel Houston Texas.—p 305

New England Journal of Medicine, Boston

214: 815-866 (April 23) 1936

- Nonunion in Shaft Fractures of Humerus with Particular Emphasis on Preoperative Care Report of Treatment by Use of Massive Onlay Graft with Metal Screw Fixation G E Haggart Boston and M Peelen, Kalamazoo Mich.—p 815
The Heart in Chronic Glomerular Nephritis A B Richter Flora Ind and J P O'Hare Boston.—p 824
Enormous Benign Gastric Ulceration Caused by Multiple Foreign Bodies P H Wheeler Brattleboro Vt.—p 830
Orthostatic Albuminuria in Homologous Twins H J Bakst W Wetherbee Jr and J A Foley Boston.—p 832
Anorexia in Children M B Low Boston.—p 834
Chemistry in Relation to the Practice of Medicine C F Whitney Burlington Vt.—p 837

214: 867-912 (April 30) 1936

- Metastatic Abscess of Prostate C J E. Kickham and N A. Welch Boston.—p 867
Warning About Acidification Therapy in Cases of Renal Infection Due to Proteus Bacillus R Chute Boston.—p 869
Treatment of Hypospadias in Theory and Practice H Cabot Rochester Minn.—p 871
Lymphoblastoma (Hodgkins and Sarcoma Type) of Bone Report of Three Cases Simulating Primary Malignant Tumor of Bone J Spencer and R Dresser Boston.—p 877
*Two Unusual Transfusion Reactions P A Young Boston.—p 879

Unusual Transfusion Reactions—Young states that, of his two transfusion accidents, one happened as the result of using a dangerous technic of matching blood. This faulty technic consists of placing a drop of the patient's serum on a glass slide, adding a drop of a saline suspension of the donor's cells and dropping a cover slip on the mixture. If the two drops are large there is enough space between the slide and the cover slip for the red blood cells to move about freely. If small drops are used, the liquid spreads out in a thin film and the red blood cells are fixed between the two glass surfaces. In this particular case the "cross matching" was observed for half an hour and checked by another intern. Immediately after the transfusion accident the matching was repeated by the same technic, with the original serum and suspension of cells. Again there was no sign of agglutination in an hour, but with the hanging drop technic agglutination occurred within five minutes. The patient's blood was found to be a group IV (Moss) and the donor's a group II. In the other instance both the patient and the selected donor had been grouped and doubly cross matched, i. e., the patient's cells in the donor's serum and the donor's cells in the patient's serum. Both the grouping and the cross matching were done by the hanging drop method. The patient and the donor were in group II (Moss) and no agglutination occurred in either of the cross match' tests within half an hour. However, immediately after the transfusion accident all the tests were carefully repeated, with the finding that the donor's cells began to hemolyze in the patient's serum after forty minutes and were completely hemolyzed

within sixty minutes. In the first case citrated blood was pumped into the vein under pressure, about five minutes being taken to introduce 300 cc. The symptoms commenced in less than a minute after the transfusion was completed, or in about six minutes after the start. In the second case whole blood by the new B-D grooved syringe method was introduced at the rate of about 15 cc per minute. Symptoms developed after 90 cc of blood had been given—about six minutes after the start. Transfusion was repeated in both cases a few days after the accidents and no symptoms of any type were observed.

New York State Journal of Medicine, New York

36 681-756 (May 1) 1936

- Intracranial Hemorrhage Its Anatomic Forms and Some of Their Clinical Features J H Globus New York.—p 681
Diabetes in General Practice J R Scott New York.—p 694
Simple Mastectomy with X Rays in Treatment of Cancer of Breast E J Grace and W Moutier Jr Brooklyn.—p 701
Analgesia in Labor H A Peck Albany.—p 705
Illuminated Suction G W McAuliffe New York.—p 710
Complications of Gastric and Duodenal Ulcers D P MacGuire New York.—p 711
Roentgen Ray and Radium Therapy in Diseases of the Genito-Urinary Tract G G Smith Boston.—p 717
Fever Therapy in Some Generalized Dermatoses L Tulpan and W Director New York.—p 722
Aspirating Syringe with Side-Cock Adapter For Aspiration of Knee Joint M S Burman New York.—p 723
Erosive Ulcer of Bladder with Especial Reference to Its Treatment with Phenol N P Sears Syracuse.—p 724
Complete Hornification of Mucosa of Renal Pelvis Associated with Unusually Large Calculus Case Report M M Melicow New York.—p 728
*Peptic Ulcer in Childhood Case Report F J Williams Albany.—p 730
Between Mental Health and Mental Disease B Liber New York.—p 732

Peptic Ulcer in Childhood—Williams reports the occurrence of peptic ulcer in a boy, 5 years of age, who had always been in average good health and whose past history was negative except for minor disorders. He was seen in January 1932 with the complaint of recurrent pain in the abdomen. The onset of the disturbance dated back several weeks and, although the diet had been carefully restricted, there had been no improvement. At certain periods of the day he showed definite evidence of considerable distress in the abdomen. The pain awakened him at night, usually in the early hours of the morning. The physical examination was negative and it was impossible objectively to discover the reason for his apparent distress. There had been no elevation of temperature at any time. There was no abdominal rigidity, no tenderness to pressure and no distention. There had been no vomiting and no intestinal disturbance. Occult blood was not found in the stools. The absence of physical signs and the character of the pain suggested the possibility of ulcer. This diagnosis was verified by roentgen examination, which revealed a niche in the cap of the duodenum. The child was placed on a modified Sippy diet consisting of milk and bland foods given at frequent intervals, with the addition of alkalis. Improvement was noted almost at once and complete healing was accomplished after its continuance for several weeks.

Public Health Reports, Washington, D C

51 493-534 (April 24) 1936

- *Occupational Dermatitis Due to Heat Decomposition of Dyes L Schwartz and C D Hocker.—p 493
*Early Appearance and Rather Rapid Disappearance of Epithelial Cell Inclusion in Trachoma C E Rice.—p 510
Occurrence and Host Relationships of the Tick Ornithodoros Talaje in Arizona Notes G M Kohls and R A Cooley.—p 512

Dermatitis Due to Heat Decomposition of Dyes—Schwartz and Hocker investigated the cause of a dermatitis occasionally contracted by certain susceptible telephone cable splicers. The chief method used in the investigation was careful observance of rash-susceptible workmen occupationally engaged in planned cable-splicing tests. Patch tests and chemical studies were used as supplemental methods of investigation. Paper pulp cable conductor insulation, suspected as a possible cause of the rash, was not found to be the cause of the dermatitis. Splicing oil, a refined white mineral oil, was not a primary cause of the dermatitis. Mixtures of this oil and paraffin heated to nearly 400 F are used to "boil out" (dry and impreg-

nate) cables while opened for splicing. The dermatitis was found to be produced by some irritant evolved during boiling-out operations. The rash occurred only while cables were being spliced in which the conductor insulation was colored with green and blue dyes. A red dye also normally used did not cause the dermatitis. Contact with the dyes themselves was shown not to be the chief cause of the rash, although a substantial quantity of the green dye applied in a patch test would cause skin reactions. The rash was not produced in cable-splicing tests in which the green and blue dyes were present if liquid petrolatum containing no splicing oil was used for boiling out. Apparently the oil is necessary as a fume carrier or as an agent present on a man's skin to facilitate the action of the volatilized irritants. The volatilized irritants were not certain suspected decomposition products of the dyes. While the irritants were not identified by experiment their nature was fairly definitely surmised from chemical considerations. Splicing experiments with rash-susceptible men showed that the new dyes selected for experiments did not produce a rash even when splicing oil was present in the boiling out compound. The seven splicers who had dermatitis and who were used in these experiments also had fungous infections on various portions of their bodies. This may be of significance as to their hypersensitivity to the decomposition products of the dyes.

Inclusion Bodies in Trachoma.—From March 15, 1935 to Feb. 1, 1936, Rice observed ninety-six individuals with varying degrees of lid activity in an effort to determine whether the epithelial cell inclusion might be associated with a certain period of the disease. Forty-nine of 184 actively infected eyes or 27 per cent showed the presence of epithelial inclusions. Of fifty-one cases under two years duration, nineteen showed inclusions. Of forty-five cases with duration of the disease of two years or longer there were eight cases showing inclusions. The study seems to indicate that the epithelial cell inclusion seen frequently in this disease is much more likely to be found during the first six months of the disease than it is later. The oftener the examination can be done during the first eight weeks of the disease, the higher will be the percentage of cases showing the presence of the inclusion bodies.

Surgery, Gynecology and Obstetrics, Chicago

62 781 908 (May) 1936

- *Intravenous Use of Hypertonic Glucose in Obstetrics and Gynecology. Experimental and Clinical Study. H. B. Matthews and A. P. Mazzola. Brooklyn —p. 781
- Control of Morbidity and Mortality Following Pelvic Surgery. Review of Second Series of One Thousand Consecutive Personal Cases. W. T. Dannreuther. New York —p. 791
- Röntgen Pelvimetry and Fetal Cephalometry. R. P. Ball. Chittanooga, Tenn. —p. 798
- Effects of Removal of Functioning Gallbladder. C. S. Bergh, P. Sandblom and A. C. Ivy. Chicago —p. 811
- *Paget's Disease (Osteitis Deformans) and Osteoporosis. Similarity of Two Conditions as Shown by Familial Background and Glucose Tolerance Studies. R. C. Moehlig. Detroit —p. 815
- *Longitudinal Overgrowth of Long Bones with Especial Reference to Fractures. J. D. Bisgard. Omaha —p. 823
- Movements of the Soft Palate with Especial Reference to Function of Tensor Palati Muscle. W. E. M. Wardill and J. Whillis. Newcastle upon Tyne, England —p. 836
- Treatment of Carcinoma of Esophagus. P. P. Vinson. Rochester, Minn. —p. 840
- Ectopic Vaginal Ureter. C. L. Deming. New Haven, Conn. —p. 843
- The Clinical Management of Injuries to the Heart and Pericardium. Report of Seven Cases. J. M. Mayer. Louisville, Ky. —p. 852
- Ambulatory Method of Treating Fractures of Shaft of Femur. R. Anderson. Seattle —p. 865
- Twenty Year Cures of Carcinoma of Colon. C. F. Dixon and P. F. Olson. Rochester, Minn. —p. 874
- Obstructive Cholecystitis with Particular Reference to Acute Obstructive Cholecystitis and Its Sequels. S. H. Mentzer. San Francisco —p. 879
- Pregnancy Following Cesarean Section. Katherine Kuder. New York —p. 887
- Amputation of the Fingers. J. D. Willems. Chicago —p. 892

Intravenous Use of Hypertonic Dextrose in Obstetrics.—Matthews and Mazzola observed a group of ten cats in which shock with low blood pressure was artificially produced by hemorrhage and ten cats in which it was produced by trauma without hemorrhage. They found that the injection of a 50 per cent solution of dextrose into cats with artificially reduced blood pressure produced a rise in blood pressure, an increase or a return to the original pulse pressure and a slowing or a return

to the original pulse rate. The first group of cats received dextrose previous to bleeding and they reacted to hemorrhage much better. The results indicate that the diminished blood pressure, the rapid pulse and the fall in pulse pressure subsequent to hemorrhage in the experimental animal can be combated. In the second group injections of the solution produced a rise in blood pressure, an increase or a return to the original pulse pressure and a slowing or a return to the original pulse rate. The results showed that the low blood pressure and the rapid pulse subsequent to trauma can be temporarily, at least, successfully combated by the intravenous injection of the 50 per cent solution of dextrose. Furthermore, if a fortifying dose is given the cat before trauma is performed, the subsequent fall in blood pressure and acceleration of the pulse are finally maintained more near the normal or above it than when no previous dextrose is given. Clinically in cases of hypotension, intravenous 50 per cent solution of dextrose with routine preoperative rest gives the patient a wider margin of safety for operation. Cases of acute hemorrhage with diminished blood pressure have shown increase in blood pressure by the intravenous injection of 100 cc of the solution. It tides these patients over until blood transfusion can be started. In primary shock or collapse it increases systolic blood pressure and greatly aids in bringing the circulation back. Preoperative dextrose makes reduction of blood pressure from hemorrhage or prolonged surgery more difficult. After operation it aids in overcoming acidosis and dehydration. By its action on the circulation physiologic solution of sodium chloride administered by hypodermoclysis is more readily absorbed. It also aids in supplying carbohydrates when the oral route is contraindicated. In shock with or without hemorrhage the dextrose solution is to be commended. Active treatment must be instituted before there is complete circulatory collapse. The patient who receives prompt treatment is the one who recovers. When blood is not available or when time is pressing, concentrated dextrose solution makes an excellent substitute. Concentrated dextrose preoperatively maintains pulse pressure, causes a slight rise in systolic blood pressure and if repeated, prevents a fall. It diminishes postoperative vomiting and has considerable value as a food in the presence of peritoneal infection. Little or no damage is done the vein by its injection, provided the intima of the vessel is not excessively traumatized.

Paget's Disease and Osteoporosis.—Moehlig shows that Paget's disease and osteoporosis may occur in the same family. Data were gathered in ten cases of osteoporosis which showed that there was a diabetic family history in 40 per cent, 60 per cent had one or more members of the family who were 72 or more inches tall and 90 per cent gave a history of heavy set individuals in the immediate family. This corresponds with the data obtained in Paget's disease. In ten cases each of Paget's disease and osteoporosis the dextrose tolerance curves showed a diabetic type of curve. All patients with Paget's disease had an elevated plasma phosphatase. The plasma phosphatase was about normal in the patients with osteoporosis. The ages of the patients with Paget's disease ranged from 34 to 60 years, average 48 years. There were six male and four female patients. In the osteoporotic group the ages ranged from 46 to 57 years, average 52 years. There were two male and eight female patients. The pathologic condition at one stage is the same in the two diseases, i. e., osteoporosis, in Paget's disease the process goes on to the hypertrophic state with hypertrophic osteoid formation. The pituitary gland may be responsible for the two diseases, since it is concerned with skeletal development and carbohydrate metabolism. Furthermore osteoporosis of the spine is present in acromegaly and the pituitary basophilia of Cushing. Hyperglycemia is frequently present in the two diseases and it is reasonable to assume that the disturbed pituitary function is related to the disturbed carbohydrate metabolism and the osteoporosis. Definite subjective improvement is noted in Paget's disease by giving a measured diet with insulin. One patient receiving this form of treatment for more than four months shows progression of the process in the skull although subjective improvement continues.

Longitudinal Overgrowth of Long Bones.—Bisgard investigated the problem whether the shortening in long bones is overcome by lengthening at the fracture site or by accelera-

tion of the rate of normal growth at the epiphyseal line. To this end he experimented on twenty-five kid goats. He summarizes the results of his investigation as follows: 1 Lengthening in excess of normal occurs in growing bones following fracture. The greatest gain in length takes place in the second month but continues at a much slower rate for at least seven months. 2 The excess length is gained at the ends of the shaft through an acceleration in the rate of osteogenesis, or, in other words, an increase in the activity of the processes responsible for normal growth. 3 Excessive growth occurs irrespective of the length of the bone or of the necessity of equalizing the length of extremities. If no shortening exists, actual overgrowth results (the fractured extremity becoming longer than the normal one). 4 Since excessive growth is localized to one extremity and usually confined to the fractured bone, it is believed that the stimulus responsible for it is likewise local. 5 Shortening alone, in the absence of a fracture, did not cause an acceleration of growth. Thus it is apparent that if there is a compensatory mechanism within the body which is capable of regulating growth in an effort to maintain equality in the length of extremities, shortening alone does not excite this mechanism. It must be conceded, therefore, that the fracture and the reparative processes supply the stimulus, and it is suggested by the results of the experiments that this stimulus is merely incidental to the prolonged abnormal status of the circulation of the part caused by the fracture and its subsequent repair. This contention is also supported by reported clinical data.

Tennessee State Medical Assn. Journal, Nashville

29 127 166 (April) 1936

- Sympathectomy in Treatment of Thrombo-Angitis Obliterans P. E. Parker Johnson City—p 127
Rate of Growth Before Birth E. F. Buchner Jr. Chattanooga—p 131
Relief of Pain in Obstetrics with Pernoxon J. P. Long Jr. Memphis—p 135
*Physical Reactions to Functional Disorders L. C. Sanders Memphis—p 139
Abdominal Surgery in Children R. A. Barr Nashville—p 143
Medical Economics and the Small Town Doctor M. D. Arnold Cleveland—p 147

Physical Reactions to Functional Disorders—Sanders believes that, when it is realized that there is a nervous counterpart for every organic disease and that no form of physical damage exists which is not imitated and reproduced by sensations practically identical with those accompanying organic disease, it is easy to understand the enormous variety of nervous symptoms and the unlimited manifestations of nervous discomfort. Physically, the individual with a neurosis is usually underbuilt, is only fairly well nourished, has cold, moist palms, rapid pulse, anxious mien, spastic colon and exaggerated peripheral reflexes and is hypersensitive to pain. With a patient presenting such an emotional and physical background, the physician may well be cautious in condemning certain organs for removal or in prescribing drugs and diets. Too often such a patient grows worse, because what he needs is not surgery or diet or drugs but a readjustment of ideas and rest. The present day physician must realize that more than half of his work is directed to the overcoming of functional not organic, diseases. After the nervous balance has been restored and physical strength renewed, surgical procedures for chronic conditions may be safely done without fear of further damaging the nervous system. When the physical reactions of deranged organs or systems are known to be due to functional disorders from whatever cause, surgical procedures merely add insult to injury and further damage the already breaking nervous system. The only sound and abiding basis for the cure of functional disorders, on a psychic or nervous basis, is rational reeducation.

West Virginia Medical Journal, Charleston

32 197 244 (May) 1936

- Carcinoma of the Stomach J. E. Cannaday Charleston—p 197
Our Medical Profession D. A. MacGregor Wheeling—p 202
Psychoses with Somatic Disease E. F. Reaser Huntington—p 206
Mild Hypothyroidism G. H. Barksdale Charleston—p 216
Some Surgical Aspects of Diabetes H. G. Thompson Charleston—p 218
Diaphragmatic Hernia Report of Three Cases of Paresophageal Hernia V. L. Peterson Charleston—p 223

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

53:174 (Spring) 1936

- Photography and Medicine A. E. Hles—p 3
Ultramicroscopic Examination of Blood Serum in Disease B. A. Peters—p 17

British Journal of Experimental Pathology, London

17 87 158 (April) 1936

- Reticulocytosis in Guinea Pigs in Relation to Standardization of Liver Extracts G. Ågren and T. Caspersen—p 87
*Mechanism of Immunity in Rift Valley Fever G. M. Findlay—p 89
Parathormone Tolerance in Dogs N. B. Taylor, C. B. Weld and J. F. Sykes—p 104
Observations Bearing on Antigenic Composition of Paittacosis Virus S. P. Hedson—p 109
Dacry and Biltris Transplantable Sarcoma of Guinea Pig A. F. Watson—p 122
Chemical Reducing Capacity and Vitamin C Content of Transplantable Tumors of Rat and Guinea Pig A. F. Watson—p 124
Experiments on Filtration of Climatic Bubo (Lymphogranuloma Inguinale) Virus Through Gradocol Membranes J. C. Broom and G. M. Findlay—p 135
Coli Tryptophan Indole Reaction II. Nonproduction of Tryptophanase in Mediums Containing Glucose F. C. Happold and L. Hoyle—p 136
Agglutinogens M and N in Allergic Conditions D. Harley—p 143
False Agglutination Reaction Observed with Anti M and Anti N Serums D. Harley—p 145
Effects of Exhaust Gases from Internal Combustion Engines and of Tobacco Smoke on Mice with Especial Reference to Incidence of Tumors of Lung J. A. Campbell—p 146

Mechanism of Immunity in Rift Valley Fever—Findlay states that, as the result of acquired active immunity, Rift Valley fever immune bodies can be demonstrated in the serum of human beings from four to five years after infection. Certain mixtures of Rift Valley fever virus and immune serum, apparently neutral when injected intraperitoneally, can be reactivated or dissociated by simple dilution with saline solution. This phenomenon is quantitative, for, if falling dilutions of virus are added to equal amounts of undiluted immune serum, a point is reached at which the mixture can no longer be reactivated or dissociated by simple dilution. Mixtures, separately prepared before incubation at 37 C, and containing dilutions of virus and immune serum equivalent to those derived, after incubation, by decimal dilution of a nondissociable mixture of undiluted immune serum and virus, were active when inoculated intraperitoneally. Certain mixtures of Rift Valley fever virus and immune serum, apparently neutral when injected intraperitoneally, can be reactivated by intranasal instillation. This phenomenon is also quantitative and can be demonstrated only with those serum-virus mixtures that can be reactivated by simple dilution. Certain mixtures of Rift Valley fever virus and immune serum, apparently neutral when injected intraperitoneally in doses of 0.4 cc are found to be active when injected intraperitoneally in doses of 0.03 cc. This phenomenon is also quantitative and can be demonstrated only with those serum-virus mixtures that can be reactivated by simple dilution. The reactivation of an apparently neutral mixture by intranasal instillation is probably due not so much to the route of inoculation as to the small quantity of the inoculum. Evidence is brought forward to show that mice which have survived an injection of virus and immune serum are immunized only when the amount of virus in the mixture injected exceeds a certain minimum. The author gives the following hypothesis in explanation of the foregoing facts. When a large inoculum of immune serum and virus is injected, a certain number of cells are immediately invaded by the virus, which proceeds to grow in these cells. Virus will be liberated from these cells, and at the same time immune bodies will be produced from the tissues. Virus so liberated meets with the immune bodies present in the serum and, provided the proportion of immune bodies and virus is correct, there forms a nondissociable mixture. The immune bodies are provided both by the foreign serum originally injected and the immune bodies formed from the animal's own tissues. As the passively injected immune bodies are excreted, the actively produced immune bodies take their place, and thus a balance is struck between the amount of virus and the amount of immune bodies. Death does not

take place. When a small quantity of virus and immune body is inoculated, the same process occurs as before but now the small amount of passively injected immune bodies disappears more rapidly from the circulation, while the small amount of virus produces in the same time a comparatively small amount of immune body. A point is thus reached at which there is no longer any passive immune body left and the amount of active immune body is small. Virus is therefore present in an active condition, and death can occur.

British Journal of Ophthalmology, London

20: 193 256 (April) 1936

- *Atypical Indirect Incomplete Rupture of Sclera A Tillema—p 193
Vascularization of Iris and Cornea in Diabetes R D Lawrence and A H Levy—p 198
Trachoma: Investigation into Question of Presence of Bacterium Granulosis (Noguchi) in Cases of Trachoma in Glasgow S S Meighan and Mary Urquhart—p 201
Water Binding of Optic Nerve and of Its Sheaths J A van Heuven and P F Fischer—p 204
Scientific and Practical Value of Ionization in Ophthalmology Recent Advances and Researches G Erlanger—p 211
Sclerectomy with Iridencleisis Modified Glaucoma Operation W A Wille—p 229

Incomplete Rupture of Sclera—Tillema cites two cases of incomplete rupture of the sclera in which the pathologic changes observed in the inner layers of the sclera may have arisen through the raised intra-ocular pressure causing a staphyloma of the sclera, and through a partial rupture of the sclera. The microscopic observations are based on partial rupture of the sclera. Two different types of rupture were found: a typical rupture near the corneal limbus in the first case and an equatorial (i. e., atypical) rupture in both cases. Only the cases of von Szily, Fuchs and Burk are described in sufficient detail to warrant a sure diagnosis. All three cases constitute typical, incomplete ruptures of the sclera. To this small number of incomplete, typical ruptures the author adds the anterior rupture in his first case bringing the total up to four. As atypical, incomplete ruptures have not yet been recorded, his two instances of incomplete, equatorial rupture are new. In both cases mainly the inner layers of the sclera were affected. This agrees with what is known of ruptures in general. Although the literature yields no other cases of this type, he believes that it is not so rare as this would suggest. Garner (1891) gives a detailed description of traumatic glaucoma in a young boy whose eye had to be removed two weeks after the accident. Within this short period a staphyloma had developed superiorly and medially at the equator. If glaucoma had been the cause of distention of the sclera, one would expect the sclera to distend generally, as in cases of buphthalmos. As in Garner's case a staphyloma developed within two weeks after a blow, it is reasonable to suspect a traumatic lesion to the sclera. Moreover, the staphyloma developed superiorly and medially, and in the present cases pathologic changes were most marked in the same region. The majority of scleral ruptures occur upward and inward.

British Medical Journal, London

1: 679 736 (April 4) 1936

- Crusade Against Acute Rheumatism W T Ritchie—p 679
*Thoracoplasty in Treatment of Pulmonary Tuberculosis F H Young—p 683
Laryngeal Vertigo with Record of Case Note D K Adams—p 685
Disk Shaped External Semilunar Cartilage A G T Fisher—p 688
Treatment of Familial Achromic Jaundice S O Cowen—p 690
Test Meal Findings and Biliary Disease H Lawrie in collaboration with A Callam and J H Watson—p 692

Thoracoplasty in Treatment of Pulmonary Tuberculosis—In considering what type of cases are likely to be benefited by thoracoplasty, Young emphasizes the fundamental fact that thoracoplasty affects directly only a local area of the lung, whereas pulmonary tuberculosis affects the whole body. In every case of active pulmonary tuberculosis, in addition to the obvious diseased areas, tubercle bacilli are present in apparently healthy areas of the lung in mediastinal glands and intermittently in the blood stream. Thoracoplasty should be considered in all cases of pulmonary tuberculosis which have not achieved arrest of the disease by other means, but before recommending a thoracoplasty in any case the following conditions must be satisfied: 1. The lesion for which it is proposed must be the type that will heal if mechanical impediments

are removed, and the thoracoplasty must be likely to remove them. 2. If lesions are present in the other lung they must be "inactive." 3. Fresh "flares" in apparently healthy areas must be improbable. 4. The patient must be fit for the operation. 5. The patient must have reached the most favorable moment for the operation. 6. Technical conditions must be satisfactory. 7. The functional result is all that matters to the patient, so it must be clear that a good functional result will be obtained. The effects of a thoracoplasty are not the same as those of a complete artificial pneumothorax. A successful artificial pneumothorax is more efficient and less dangerous than a thoracoplasty and should always be tried before a thoracoplasty but should not be persisted with if inefficient. Thoracoplasty represents the last stage in the active treatment of any tuberculous lesion in the lung. An error made in the selection of the case or the stage in the disease when the operation is performed can never be repaired, but in no form of treatment will skilled collaboration between the physician and the surgeon be more amply repaid.

Journal of Laryngology and Otology, London

52: 213 280 (April) 1936

- Use of Hearing Aids in Treatment of Defects of Hearing in Children J R Ewing and A W G Ewing—p 213

Journal Obst. & Gynaec. of Brit. Empire, Manchester

43: 201 392 (April) 1936

- *Postabortal and Puerperal Gas Gangrene: Report of Thirty Cases A M Hill—p 201
Quadruplets Case J B Dawson—p 252
Eclampsia in Bombay C M Mehta—p 267
Rare Uterine Anomaly H de Sa—p 281
Axial Rotation of Cysts of Fallopian Tube Tumors A B Papikoff—p 286
*Exposure to Violet Ray as Prophylactic Agent to Nipples in Last Month of Pregnancy F K MacLellan—p 290

Postabortal and Puerperal Gas Gangrene—Hill observed thirty cases of postabortal and puerperal gas gangrene between April 1933 and February 1935. Of the thirty cases, twenty-two were associated with abortion (postabortal) and eight with labor at term or near term (puerperal). From twenty-two *Clostridium Welchii* and from two *Vibrio septique* were recovered from the tissues during life. The mortality was 63 per cent. The considerable frequency of this dread infection, which is protean in its manifestations and of recently increased incidence in Melbourne is indicated. The fundamental importance of early diagnosis is emphasized. The clinical features of the various types have been outlined systematized and, when this was thought to be of value, classified in an attempt to achieve clarity and assist early recognition. The principles underlying successful treatment are early diagnosis, early elimination of the primary focus and immediate and massive serologic and general therapy. The author suggests that during early pregnancy the uterine blood vessels have a relatively small caliber and that venous thrombosis as a result of endothelial damage by the *Clostridium Welchii* toxin is particularly likely. In the uterus engorged with blood clot the organisms find a rich and undisturbed pabulum in which growth and hemolysis proceed apace. In the later weeks of pregnancy, on the other hand, the uterine muscle is greatly hypertrophied and the caliber of its vessels is enormously increased. A more massive muscle infection and a greater rate of toxic and organismal absorption are now possible. But, in keeping with the increased blood supply and the diminished frictional resistance in the large venous channels, thrombosis, and with it hemolysis, are much less liable to occur. It is possible that in some cases of overwhelming infection thrombosis may be forestalled by death. In skeletal muscle infection, as Toombs suggested, the relatively poorer vascular and lymphatic supply apparently accounts for the comparative rarity of general hemolytic phenomena. Finally, to the *Clostridium Welchii* toxin as a whole may be attributed that state of collapse and peripheral circulatory failure which is the terminal feature of fatal cases and the result, as Topley and Wilson have pointed out, of the deleterious action of the toxin on the adrenals.

Ultraviolet Irradiation as Prophylactic for Cracked Nipples—For two or three years MacLellan treated cracked and painful nipples that occur in the last month of pregnancy

by exposure to air. A warm flannel cover for the breast with two small apertures to permit exposure was provided. There seemed to be a decided improvement. This suggested the use of the ultraviolet ray as a prophylactic agent. From six to eight treatments, depending on whether the patient is of the blond or brunette type, have been employed for the last two years. The treatment is started with one and a half minutes' exposure at 40 inches and given three times a week, working up to ten minutes' exposure per treatment. Only the nipple and areola are exposed. Since this treatment was started, in not one instance has there been even the slightest trouble, some fifty patients having been treated.

Lancet, London

1 701 758 (March 28) 1936

Certain Septicemias Due to Anaerobic Organisms. A. Lemierre—p 701

Medical Problems in Mineral Metabolism. R. A. McCance—p 704

*Some Observations on Excretion of Ascorbic Acid. H. E. Archer and G. Graham—p 710

Treatment of Carcinoma of Cervix Uteri by the Stockholm Technique at the London Hospital (1929 and 1930). A. Brews—p 713

Apical Thoracoplasty with Description of Recent Modifications in Technique. W. H. C. Romanis and T. H. Sellors—p 714

Stenosing Tendovaginitis at Radial Styloid Process. B. H. Burns and V. H. Ellis—p 717

Pemphigus Acutus. Case. F. L. Ker—p 718

Observations on Excretion of Cevitamic Acid—Observations after a single test dose undoubtedly show that a deficiency of cevitic acid exists, but they do not, in the opinion of Archer and Graham, give such full information as to the amount of cevitic acid which must be given before the percentage output rises above 75. In their case of scurvy the significant rise in the excretion occurred when 1700 mg. had been given in comparison with 600 mg. in Johnson and Zilva's case with 1,200 mg. in a test case and with 1,400 mg. in Harris and Rays case. This is a very small difference, and it would be difficult to know where to draw a line between scurvy and a potential case of scurvy and a case of vitamin C subnutrition. The percentage output in Johnson and Zilva's case rose to 56 per cent after 1,360 mg. and to 87 per cent after 1,480 mg. had been given, in Harris and Rays case it rose to 77 per cent after only 1,480 mg. had been given and in the authors test case, although it reached 48 per cent after 1,600 mg. had been ingested it did not reach 75 per cent until 3,200 mg. had been taken. The percentage output did not exceed 53 per cent even after 4,950 mg. had been ingested. The observation suggests that the percentage output is much more valuable evidence that a patient has scurvy than the amount of cevitic acid taken before the excretion increased, or the amount excreted after a test dose.

1 759-822 (April 4) 1936

Differential Diagnosis of Diseases of Colon. Dysentery and Colitis. P. Manson Bahr—p 759

Medical Problems in Mineral Metabolism. R. A. McCance—p 765

*Mandelic Acid and Ammonium Mandelate in Treatment of Urinary Infections. H. E. Holling and R. Platt—p 769

*X-Ray Appearances of Lungs of Electric Arc Welders. A. T. Doig and A. I. G. McLaughlin—p 771

Some Effects of Prolonged Administration of Estrin in Rats. C. S. McEuen, H. Selye and J. B. Collip—p 775

Tumor of Pituitary Induced with Follicular Hormone. B. Zondek—p 776

Treatment of Urinary Infections—Holling and Platt used mandelic acid in the treatment of twenty-nine patients suffering from urinary infections. Catheter specimens of urine were first examined to determine the nature of the infection, and pyelography (retrograde or intravenous) was performed, when necessary, to exclude pyonephrosis, calculus or tuberculosis. The first few patients were given mandelic acid, neutralized by sodium bicarbonate as described by Rosenheim. Later 3.2 Gm. of sodium mandelate, 4 Gm. of syrup of orange and enough water to make 30 cc. were prescribed in water four times a day. This was preceded by 2 Gm. of ammonium chloride and 1 cc. of liquid extract of liquorice in enough water to make 30 cc. given four times a day. During treatment daily fluid intake was restricted to 2 pints (1 liter) unless thirst was complained of, when more fluid was allowed. The acidity of the urine, which must attain a pH of 5.3 or less was tested by the addition of 5 drops of methyl red solution

to 2 cc. of urine. Specimens of urine were examined at intervals of two days when possible. When the deposit (examined as a wet film) showed only a few leukocytes and no bacilli, cultures were again made from catheter specimens. In every uncomplicated case of acute or chronic pyelonephritis the urine was rendered sterile by mandelic acid treatment in from two to twenty-one days. There were five failures, in cases that were really not suitable for mandelic acid treatment. During treatment a few casts and a trace of albumin occasionally occur in the urine. The treatment is obviously unsuitable in the presence of renal insufficiency because badly damaged kidneys cannot excrete a sufficiently acid urine or a sufficient concentration of mandelic acid. Nevertheless the presence of nephritis in an earlier stage does not appear to be a contraindication. The only disadvantage of mandelic acid treatment is the necessity of giving two somewhat unpleasant medicaments, one followed closely by the other, four times in the day. To obviate these disadvantages if possible, the authors tried the acidifying effect of elvir of ammonium mandelate on themselves and found that doses of 34 grains (2.2 Gm.) of ammonium mandelate four times daily produced a satisfactory urinary acidity (pH 5.3) within an hour or two but that this degree of acidity was not invariably maintained throughout the day. Therefore, they concluded that somewhat larger doses should be given. Four patients were treated with ammonium mandelate, and in all four a sterile urine was obtained in a week or less, though all had a chronic infection. On the basis of their experience, together with what is already known of mandelic acid treatment, they feel justified in saying that ammonium mandelate is a convenient means of administering mandelic acid and that in the majority of cases the use of ammonium chloride can thereby be obviated. The suitable dose of ammonium mandelate is probably the same as that of the sodium salt.

X-Ray Appearances of Lungs of Electric Arc Welders

—Doig and McLaughlin declare that chronic pulmonary lesions directly associated with the occupation have not been recorded up to the present time as occurring in electric arc welders. The results of a clinical and roentgen examination of the chests of sixteen electric arc welders are presented. They are apparently healthy men and are actively engaged at their occupation. Nearly all were apprenticed to electric welding at 14 years of age and have worked at no other trade. The roentgenograms of six show a generalized fine mottling over both lung fields, the remaining roentgenograms show less marked changes, but none could be considered a picture of a completely normal chest. The conditions that have to be considered in the differential diagnosis include miliary tuberculosis, asbestosis, silicosis and other pulmonary conditions caused by dust or fumes. The authors are not prepared to be dogmatic about the interpretation of the roentgenographic and clinical observations, especially because no opportunity for histologic examination of the lungs has arisen. Little doubt exists, however, that the changes in the lungs have been brought about in these men by the dust or fume which they have inhaled while working. During welding operations, dense white or grayish white fume rises up continuously from the spot that is being welded. The fume is made up of the volatilized constituents of the coverings of the rods together with fine particles of oxidized metal, usually in the form of iron oxides. In addition the fumes probably contain gases such as nitrogen peroxide and ozone, which are formed by the action of an electric spark on the air. The composition of the coverings of the electrodes is usually sodium silicate. The coverings of a certain type of electrode contain asbestos. The rods are sometimes dipped in a mixture containing powdered asbestos and sodium silicate, or asbestos yarn is wound round the rod and fixed by sodium silicate. In some cases the asbestos completely covers the rods, and in others it is merely a cord which is wound spirally about the rod. The roentgen appearances in the well marked cases differ from the usual picture of asbestosis. In none of the positive cases and in only one of the suggestive cases was there any blurring of the diaphragmatic shadow, and in no case was the heart outline blurred. The line of the interlobar septum was seen in only one positive case. The upper lung fields appear to be the earliest, and in established cases most markedly, affected. Before asbestosis can be eliminated from the differential diag-

nosis it must be remembered that the asbestos fibers are being subjected to intense heat and are not in the same physical state as the fibers which are inhaled by workers in an asbestos factory. It is possible that an atypical picture of asbestosis might be produced by the inhalation of altered asbestos. The roentgen appearances resembles those of a fine silicosis, but the clinical features show two important differences. 1 The electric welders examined are in good health and are fit to work. The only symptoms observed were slight cough and morning expectoration. None of the men suffer from dyspnea. 2 None of them have concomitant pulmonary tuberculosis. Military tuberculosis can be ruled out of the differential diagnosis for clinical reasons, and to some extent on the x-ray appearances.

Medical Journal of Australia, Sydney

1 385 416 (March 21) 1936

- *Treatment of Patients Infested with *Taenia Saginata* with Especial Reference to Certain Unusual Results. H. B. Penfold—p. 385
Surgical Treatment of Carcinoma of Thoracic Esophagus. E. S. J. King—p. 399

Treatment of Patients Infested with *Taenia Saginata*—Penfold declares that by the use of large but safe doses of liquid extract of male fern approximately 90 per cent of cases of *Taenia saginata* infestation can be cured by one treatment. The combined results of the treatment of both children and adults were seventy-seven cures in his eighty-six cases treated for the first time. Eight of the nine patients treated a second time were cured while the result in the remaining case is doubtful. There is no reason to suppose that when the drug fails on the first occasion it is because the worm is unduly resistant to it, for, if this were so, the percentage of successes on the second treatment would be much less than on the first treatment which has not been found to be the case. This suggests that changing the anthelmintic if the first treatment is not successful, is not warranted. The treatment is simple, but it must be carried out with care, since the effective therapeutic dose is not much less than the toxic dose. The main factors for successful treatment are adequate preparation of the patient and the administration of an adequate dose of an active extract of male fern in such a manner that the chance of vomiting is reduced to a minimum. To prevent the toxic effects of liquid extract of male fern, which may be fatal, an overdose should not be given and it should be made certain that the intestine is well evacuated for from four to five hours after administration of the anthelmintic. In almost all cases of infestation, whether single or multiple it can confidently be asserted that the major portions of all the worms present will be expelled, provided the recommended total dose, 10.7 cc. of an active male fern extract, has been administered and not vomited. After administration of liquid extract of male fern the worms harbored by some patients cannot be expelled by purgatives, although they cease to live and are apparently digested. Patients from whom the head of the worm has not been found should not be retreated unless segments reappear. The immediate treatment is not materially altered by the discovery of the head, and therefore, to save time, a search for it might be omitted.

Journal of Oriental Medicine, Dairen, South Manchuria

24 31 46 (March) 1936

- Smuggled *Pai Mien* Yao in Mukden and Vicinity. R. Ito—p. 31
Concentration of Diphtheria Antitoxins. A. Aihiko—p. 33
Treatment of Kala Azar. Mo Ten Sei—p. 33
Kaschin Beck's Disease in To-Hen Do of Manchukuo. M. Aiso—p. 34
Dermatomyces Especially Favus in Lehoshan Dakushan Tonrian and Supingai in Manchukuo. S. Nuzawa—p. 34
Studies on *Trichomonas Vaginalis* Donné. I. Distribution of *Trichomonas Vaginalis* Among Japanese Koreans and Manchurians in Dairen. K. Matsuda—p. 35
Id. II. Morphology of *Trichomonas Vaginalis*. K. Matsuda—p. 36
Statistical Study of Influence of Meteorological Conditions on Mortality from Various Diseases in Manchukuo. S. Kawabito—p. 37
Examinations on Innervation of Human Gums. Morphology of Nerve Endings in Normal and Pathologic Conditions. Animal Experimental Proofs. I. Innervation of Nerve Endings of Normal Human Gums. T. Hosaka—p. 41
Investigations on Biologic Characters of *Leishmania Donovanii*. Y. Saito—p. 43
Study on Method of Conserving Vegetables in the Winter. A. Abe and F. Eto—p. 44
Tumor Testis. S. Hasegawa—p. 45

Presse Medicale, Paris

111 561 584 (April 4) 1936

- Statistical Study of Aron's "Cancer Reaction". A. Stolz, M. Aron, A. G. Weiss and Kuntzmann—p. 561
*Cerebral Pseudotumors. T. de Martel, J. Guillaume and R. Thurel—p. 563

Cerebral Pseudotumors—According to de Martel and his collaborators, the partitions of the subarachnoid space and the ventricular cavities can produce syndromes analogous to those of cerebral tumors and by means of the same physiopathologic processes. They consider in some detail circumscribed serous leptomeningitis, which is unilateral and occupies the lesser convexity of the antero-cerebral fossa. These lesions produce the symptoms of tumor such as headache, frequent vomiting and epileptic attacks, central facial paralysis, brachio-plegia and hemiparesis, especially of the brachiofacial region, and aphasia and amnesia are commonly present. Diffuse intracranial hypertension is usually absent. The results of surgical intervention which consists in the simple evacuation of the serous collections demonstrate the site of compression in the production of pseudocortical lesions. Thanks to encephalography after injection of air by lumbar puncture or ventricular puncture localized lesions in the foramen of Monro can be recognized. The best therapeutic measure for this lesion consists in interrupting the septum lucidum, which allows emptying into the lateral ventricle and thus into the third ventricle. Pseudotumors of the posterior cerebral fossa are characterized by headache predominating in the occipital region, vomiting disorders of equilibrium and the usually increased cerebrospinal pressure. Usually the condition can also be relieved by operation. Finally the authors discuss arachnoiditis of the optic chiasm. In all the described conditions the symptoms closely resemble a tumor of the same region and frequently the preoperative differential diagnosis is difficult. Surgical treatment, as a rule, is highly successful.

44 585 600 (April 8) 1936

- Diagnosis of Cancer of Body of Uterus. L. Bérard and F. E. Teleret—p. 585
Hemiplegia of Cardiac Patients. J. A. Chavany—p. 587
*Success of New Treatment of Hemorrhagic Diathesis. J. R. Dreyfus—p. 589

Treatment of Hemorrhagic Diathesis—In the opinion of Dreyfus, hemorrhagic diatheses include all those diseases which show a syndrome with a tendency to cutaneous, mucosal or visceral hemorrhages. Hemophilia, fibrinopenia and purpura of infectious origin are not included. Examples of several cases of hemorrhagic diathesis are illustrated by case reports. The marked improvement that occurred in these patients as a result of parenteral administration of vitamin C was striking. The author speculates as to the mechanism of action of ascorbic acid and liver extract when administered parenterally and its favorable effect on the hemorrhagic diathesis. No conclusions can be drawn, but the author believes that there is no doubt concerning the practical efficacy of vitamin C administration, especially parenterally.

44 601 624 (April 11) 1936

- Nose and Asthma. A. Jacquelin and R. A. Chant—p. 601
*Importance of Auricular Sounds in Normal and Pathologic States. E. Braun Menendez and O. Orias—p. 603

Auricular Sounds in Normal and Pathologic Conditions—Braun Menendez and Orias studied graphically the appearance of the auricular sounds. They concluded that the auricular contraction produces this sound constantly. It seems to be composed of vibrations originating in the auricle during systole and of vibrations produced in the ventricle by the action of blood forced out by the auricular systole. The auricular vibrations form the initial oscillation of the first heart sound. The auricular sound considered an acoustic phenomenon independent of the first heart sound can be heard and constantly recorded by way of the esophagus. Over the precordium it can be frequently found in infants and in 20 per cent of the young adults. The auricular sound is the most common cause of sounds that are diagnosed by auscultation as reduplication of the first sound. Furthermore the auricular sound can be

intensified by auricular hypertrophy, by increase in the blood volume forced out by the auricle, or by diastolic ventricular hypotonia

44 649 672 (April 18) 1936

Iodine in Physiology and Pathology of Thyroid F de Quervain—p 649

Angiomas of Digestive Canal M Brule P Hillemand and J M Genestoux—p 652

*Acute Peritoneal Onset of Some Abscesses of Right Hepatic Lobe P Huard and J M May—p 654

So-Called Positive Wassermann Reactions in Cerebrospinal Fluid of Patients with Brain or Cord Tumors J Desneux—p 655

Acute Peritoneal Involvement in Liver Abscess—Huard and May report three cases in which symptoms of acute peritonitis occurred during the course of abscesses of the right hepatic lobe. The resultant syndrome is characterized by a sudden onset developing while the patient is in good health or after some vague digestive prodromal symptoms followed by an intense acute pain in the right hypochondrium accompanied by a contracture of the epigastrium. The clinical course varies. The pathogenesis is not well understood and the authors do not know to what degree the peritoneum is involved or whether the disorder is spread there by means of a lymphangitis. Further clarification of this clinical syndrome is desirable.

44 673 688 (April 22) 1936

Elimination of Pathogenic Microbes by Hepatic and Renal Glands E Chabrol L Duchon J Cottet and M Cachin—p 673

Gas Gangrene After Drug Injections A Touraine—p 674

*Some Effects of Intra Arterial Injections P Huet and D Bargeton—p 677

Intra-Arterial Injections—Huet and Bargeton believe that the general toxicity of a substance is less when it is introduced intra-arterially than intravenously. To determine more precisely the reactions to an intra-arterial injection the authors carried out investigations on dogs anesthetized by chloral hydrate. The injections were made in the peripheral end of the left femoral artery in the opposite femoral artery or in the axillary humeral artery. Observations on the general blood pressure and the blood pressure distal to the site of injection were recorded with the aid of a kymograph. Various solutions were used. The authors concluded that isotonic solutions did not affect the central pressure and had no effect or only an insignificant one on the recurrent pressure. Hypotonic solutions did not affect the central pressure but caused an initial hypertension followed by a considerable drop in pressure in the peripheral region. Hypertonic solutions caused general hypertension but a severe and lasting hypotension later in the peripheral circulation. The hydrogen ion concentration of the solutions also was of some significance. When the pH was less than 7, marked changes in the peripheral pressure were noted. These factors should be of importance in choosing substances for intra-arterial injection though much further work remains to be done.

44 689 712 (April 25) 1936 Partial Index

*Place of Lymphatic Vessels in Genesis of Tuberculous Infection of Lung F Arloing and E Berthet—p 689

Posterior Spinal Arachnoid Interlacing Fibers T Alajouanine, T Horner and R Andre—p 691

Roentgenologic Problem of Hydatid Cyst of Lung J Belot and G Peuteuil—p 696

Gas Encephalography by Lumbar Route T de Martel and J Guillaume—p 701

Prethoracic Esophagoplasties H Hilarowicz and E Michalowski—p 705

*Cure of Nontuberculous Pleural and Pulmonary Suppurations with Persistent Cavitation E Curtillet—p 707

Acute Hemorrhagic Adrenal Inflammation E Rutishauser and H Barbey—p 710

Lymphatic Vessels in Pulmonary Tuberculosis—Arloing and Berthet injected a culture of virulent tubercle bacilli diluted 1:10,000 into the right paratracheal ganglion or the conjunctival culdesac of guinea pigs. The animals were killed from several days to several weeks after the injection. In the animals examined several months after the inoculation a generalized infection of all the organs with multiple fibrocaseous nodular lesions was noted. In the animals killed between five and twenty days after the inoculation lesions of the stroma and peribronchitis characterized by infiltration of the interalveolar tissue with histiocytes were found. In cases in

which India ink had been added to the infectious material the particles of ink were found in the form of black granulations in the protoplasm of some histiocytes of the stroma. The fact that all the lesions were bilateral suggested that the dispersion of bacilli was generally both by the lymphatic and by the blood channels. The authors concluded that lesions of the stroma preceded those of the alveoli. It is certain that the route of penetration of bacilli plays a part in the determination of the anatomoclinical form of the tuberculosis but other factors enter equally, especially those of resistance and bacillary virulence.

Pleural and Pulmonary Suppurations with Persistent Cavitation—Curtillet stresses the importance of systematic examinations of the lungs with iodized poppy-seed oil after the apparent clinical cure of bronchiectasis or cavitation. In many instances these examinations will reveal the presence of a persisting cavity and furthermore aid in the determination of the method of disappearance of the cavity. Evidence points to the decrease in the size of the cavity and sometimes its eventual disappearance by epithelization. Since this is apparently the normal method of recovery, the author believes that demonstration of a persistent cavity may lead to rational intervention by means of closure of the persisting fistula. Since the result of this procedure is epithelization, it cannot be said to interfere with the normal method of healing.

Schweizerische medizinische Wochenschrift, Basel

66 413-452 (May 2) 1936 Partial Index

*Insulin Sensitivity F Rathery Froment and Bargeton—p 413

Dermatotherapy J Jadassohn—p 420

Sugar Honey and Wound Balsams in Their Action on Infected Wounds W von Gonzenbach and S Hoffmann—p 425

Therapeutic Progress in Sphere of Gastro-Intestinal Diseases A von Domarus—p 429

Treatment of Chronic Constipation G Modrakowski—p 431

Medical Treatment of Epileptic Conditions A Ulrich—p 444

*Bee Venom Therapy M Kosier—p 447

Insulin Sensitivity—Rathery and his associates emphasize that each person reacts in his own manner to insulin. For this reason it is impossible to base insulin dosage on the degree of reduction of glycemia produced by insulin in rabbits or on a fixed rate of utilization by insulin of a certain quantity of carbohydrates. The authors point out that there are some cases of diabetes which are resistant to insulin whereas others have a hypersensitivity to insulin. They differentiate between permanent and intermittent hypersensitivity to insulin. They show that their observations on hypersensitivity to insulin are of therapeutic importance in that they demonstrate the importance of constant control of diabetic patients undergoing insulin treatment.

Bee Venom Therapy—Kosier resorts to the injection of bee venom particularly in cases that do not respond to the usual medicinal and physical therapy. He uses it in all forms of arthritis particularly in the subacute and chronic forms also in arthritis deformans periarthritis myalgias, neuralgias and neuritides. However, he considers the treatment contraindicated in patients with high fever or tuberculosis, that is, in those in whom all forms of irritation therapy are to be avoided. He injects it intracutaneously into the dorsal sides of the extremities or the trunk or into the skin of the diseased joints. He advises against the injection into the volar side of the extremities, because the edema might assume large dimensions in case of severe local reaction. The neighborhood of the neck should likewise be avoided. The doses have to be adapted to the individual case but the first dose is usually 0.05 cc. In case of severe local reaction the same dose is repeated after three or four days and after that the doses are gradually increased by 0.05 cc. In patients who are less sensitive, 0.1 0.2 0.3 0.4 and up to a maximum of 0.5 cc are given at intervals of three or four days. In all the patient is given from five to eight injections. In order to avoid necrosis of the skin, not more than 0.1 or 0.15 cc should be deposited in one puncture. The local reaction may be slight or severe. General reactions are extremely rare. The author gives the clinical histories of some of the patients and a tabular report of the results he has obtained in sixty-six cases. He obtained the best results in arthritis deformans, humeroscapular periarthritis and various neuralgias and myalgias.

Annali Italiani di Chirurgia, Naples

14: 1077 1236 (Oct.) 1935

- Histologic Modifications of Ovary Following Hyperhormonization by Estrogenic Substance Experiments M. Proto—p. 1077
 Biologic Investigation of Functions of Cecal Appendix in Man and Animals C. Stefanelli—p. 1097
 Histopathologic Study of So-Called Cystic Chronic Mastitis G. Perazzo—p. 1119
 *Idiopathic Pure Pyloric Hypertrophy in Adults Cases G. S. Donati—p. 1145
 Mesenteric Cyst Causing Intestinal Occlusion Case F. Pagliani—p. 1175
 Glycemia in Traumatic Experimental Shock T. Virnicchi—p. 1191
 Acute Appendicitis in the Old O. Amorosi—p. 1211

Idiopathic Pyloric Hypertrophy in Adults—Donati reports two cases of pure pyloric hypertrophy in women aged 28 and 40, respectively. The author states that the disease is more frequent in women than in men. From early life the patients show recurrent gastric disturbances, which become intensified as the condition develops. The clinical diagnosis, especially of atypical benign forms is difficult. When the disease is already developed, the clinical symptoms and objective and roentgen signs are those of pyloric stenosis due to ulcer. The anatomic lesion involves the muscular layers of the pylorus without involving the layers of the gastric wall. Pure pyloric hypertrophy is entirely different from inflammatory and sclerous neoplastic and myomatous forms of pyloric hypertrophy. It is equivalent in adults to pyloric hypertrophy in infants. Certain zones around the pylorus are more intensely involved than others in the pure hypertrophic process. Both congenital and acquired factors, especially those related to the production of pyloric spasm, are involved in the pathogenesis. The treatment is surgical, especially in grave cases complicated by emaciation. The rather frequent finding of the condition at necropsy proves that the disease is not as rare as has been believed.

Prensa Medica Argentina, Buenos Aires

23: 909 966 (April 8) 1936

- *Roentgen Irradiations in Treatment of Hypertrichosis C. H. Niseggi and F. Vierheller—p. 909
 Apparatus for Traction in Fractures of Forearm and Wrist—L. A. Weber—p. 911
 Roentgenokymography A. Battro—p. 914
 Crisis of Diarrhea in Exophthalmic Goiter C. B. Però—p. 924
 *Pseudo-Ascites N. Vallejos Meana—p. 927
 Normal Somatology of Women V. Carro—p. 940
 Bismuth Treatment in Acute Tonsillitis J. M. Tato and V. E. R. Carro—p. 955

Roentgen Irradiations in Treatment of Hypertrichosis—Niseggi and Vierheller advise roentgen irradiations in the treatment of hypertrichosis. The irradiations are given with a relatively soft beam of rays of between 60 and 120 kilovolts through a 1 mm. aluminum filter. It is advisable to divide the irradiation area into small fields with a maximal space of 10 by 15 mm. per field. The irradiations are given once a month. The first irradiation is 70 per cent of the skin erythema dose, which is calculated at 800 roentgen units including diffuse rays. The following doses are 60 per cent of the erythema dose. As a rule, six irradiations complete the treatment which produces complete and permanent depilation. The treatment is harmless. In certain cases it causes temporary irritation of the skin or other local disturbances which disappear in about twenty-four or thirty-six hours. The patients treated by the author have been seen some time after completion of the treatment. In all cases the treatment left no marks and the growing of superfluous hair never returned.

Pseudo-Ascites—Vallejos Meana describes under the name of pseudo ascites a rare syndrome, which is similar to typical ascites but of different pathogenesis. The syndrome consists in an extraperitoneal abundant accumulation of pseudo-ascitic fluid, located between the fascia transversalis and the anterior layer of the parietal peritoneum, which is repelled inward together with the abdominal and pelvic organs enclosed by it. The fluid may be hematic, purulent, urinary or a mixture of these, according to the etiology. It forms and reproduces itself rapidly and in the florid period of the disease it occupies extraperitoneally about three fourths of the abdominal cavity from one to another of the parietocolic spaces and from the pelvis

to the epigastric region. The syndrome is the result of a tumoral renal process (adenocarcinoma in the case of the author), which produces alterations of the parenchyma, perinephric hemorrhage, ureteral obstruction, infiltration and contamination of the perirenal fat, rupture of the anterior layer of the renal fascia by intrapelvic pressure of a purulent fluid, formation of pseudo ascitic fluid between the fascia transversalis and the parietal peritoneum, and dissociation of the two structures. The syndrome follows an apparently benign evolution during the first and second periods, in which clinical diagnosis is difficult, although it can be made by the following signs and symptoms. In the early period, which corresponds to the onset of the renal intrapelvic and urinary disturbances, the patient complains of general malaise and intermittent slight renal pain. In the second period, which corresponds to the formation of the effusion, the symptoms increase although they are never intense. The renal tumor can be felt by palpation and the accumulation of the pseudo ascitic effusion is already noticeable at the iliac fossa of the side of the pathologic kidney. The third period is grave. The clinical picture is that of typical ascites. Pseudo-ascites can be differentiated from the several forms of ascites of liver cirrhosis by the asymmetry of the abdomen, which is more prominent on the side of the pathologic kidney, asymmetry of the area of dullness on percussion, late appearance of collateral circulation at the flanks, and especially by the nature of the pseudo ascitic fluid obtained at the first puncture. While the fluid in cirrhotic ascites is a transudate, the pseudo-ascitic fluid is not, and in a large number of cases it contains urinary constituents, such as urea, chlorides and sediment. The treatment consists in evacuation of the fluid and nephrectomy. One case is reported.

Progresos de la Clínica, Madrid

14: 257 340 (April) 1936

- Problem of Invalidism and Its Solutions Actual Conditions in Spain M. Bastos—p. 257
 Syphilis Reinfection and Superinfection Cases E. de Gregorio—p. 268
 Physiopathology of Digestive Apparatus J. A. Sánchez Martínez—p. 277
 Postoperative Progressive Cutaneous Gangrene Case J. Escobar Delmas—p. 293
 Importance of Lambliasis in Pathology of Digestive Apparatus L. Ibarrola Solano—p. 298
 Free Fibrin Body in Cavity of Artificial Pneumothorax Case E. Jubés—p. 315
 Nupercaine Spinal Anesthesia Results Obtained J. Marín Vivado—p. 318

Lambliasis—Ibarrola Solano states that in the majority of cases the lamblas live in the duodenum or first part of the jejunum, in exceptional cases they penetrate the gallbladder. Lamblias may exist in the intestine of normal persons without causing symptoms, but in other cases they produce intestinal gallbladder, hepatic, or gastric disturbances. The intensity of the disturbances is related to the number of infesting parasites. The most frequent symptoms are diarrhea, fever, headache, anorexia, allergic reactions and loss of weight due to the absorption of toxic metabolic products of the parasites. The toxemia is harmful to the bone marrow, as shown by blood changes. Lymphocytosis and eosinophilia are the most frequent changes. Intravenous or intraduodenal injections of arsenicals, associated with drainage of the gallbladder are the best treatment. The intravenous treatment consists of injections of arsphenamine in doses of from 0.03 to 0.06 Gm. per injection. The number of injections depends on the extermination of the parasites, which is proved by their absence in the duodenal and biliary secretions obtained by duodenal drainage after intraduodenal injection of a 33 per cent solution of magnesium sulfate. The total dose of arsphenamine during the entire treatment does not exceed 1 or 1.8 Gm. The intraduodenal treatment consists of two injections of arsphenamine in doses of 0.03 and 0.06 Gm. respectively, dissolved in 200 cc. of distilled water, given with an interval of five days between injections. The intravenous or intraduodenal treatment is associated with drainage of the gallbladder stimulated by the injection of a 33 per cent solution of magnesium sulfate through the duodenal catheter. Eleven cases are reported.

Beitrage zur Klinik der Tuberkulose, Berlin

87 647 740 (April 21) 1936 Partial Index

Respiration and Circulation in Artificial Pneumothorax H Reichel —p 647

*Local Differences in Allergy and Their Prognostic Significance Gusti Brings Waldstein —p 688

Estimation of Alveolar Oxygen Tension in Respiration of Oxygen Deficient Air Mixtures and in Decreased Air Pressure. A J Anthony —p 693

*Primary Tuberculous Focus at Vaginal Introitus Case K Hüseyin —p 708

Role of Tuberculosis in Marriage L Vajda —p 713

Local Differences in Allergy—Brings-Waldstein says that it has been known that the cutaneous allergy for tuberculin is not the same all over the body. She cites reports which corroborate this and also shows that the outcome of the cutaneous tests has considerable diagnostic significance. Her investigations aimed at determining whether there is a difference in the intensity of the cutaneous reactions on the two sides of the thorax in patients with unilateral pulmonary and glandular processes. In children with unilateral processes, Mantoux tests were made with various concentrations and on different sites. It was found that the allergy is extremely intense in children with tuberculous pulmonary and glandular processes without cavernous disintegration for it is possible to produce reactions with greatly diluted tuberculin solutions. In cases with tuberculosis of the hilus glands, secondary infiltration and pleurisy, there is no difference in the allergy of the "healthy" and the diseased side. In children with pulmonary and glandular processes that have a tendency to heal, the allergy is greater over the diseased than over the healthy organ, in processes without a healing tendency, the allergy is less intense over the diseased organ than over the healthy one, or it is the same over the two. This shows that the allergy test is helpful in determining the prognosis.

Primary Tuberculous Focus at Vaginal Introitus—Hüseyin reports the case of a woman, aged 25, with a negative anamnesis as regards tuberculosis, who developed the first symptoms (fatigue, chills) one month after marriage. Subsequently she developed leukorrhea, and swelling of the labia and of the inguinal glands. The ulceration of the vagina was repeatedly examined for spirochetes, but none could be found. The pus of suppurating lymph nodes was examined on Löwenstein's culture medium and by the animal test, and in both cases the results indicated tuberculosis. Roentgenoscopy of the lungs of the woman disclosed no signs of tuberculosis. Since the vaginal ulcer originated at the hymenal tear and since the regional lymph nodes became rapidly involved, the thought of a primary infection seems justified. Development of the process immediately after marriage suggested that the husband might be the source of the infection. His examination disclosed an open pulmonary process and bacilli in the sputum.

Beiträge zur klinischen Chirurgie, Berlin

163 337 512 (April 15) 1936 Partial Index

*Treatment of Perforation of Gastroduodenal Ulcer H Gatersleben and K. Zitzmann —p 337

Trauma as Factor in Genesis of Suprarenal Tumors G Jorns —p 354

Contribution to Gallstone Surgery E Melchior —p 365

Foreign Body Ileus After Appendectomy G Loewe —p 384

Nature and Treatment of Hemolytic Shock After Blood Transfusion in

Light of Experimental and Clinical Investigations E Hesse —p 390

*Maggot Treatment of Chronic Osteomyelitis H J Lang —p 406

Treatment of Perforation of Gastroduodenal Ulcer—Gatersleben and Zitzmann report for a period of eight years forty-two cases of perforation of gastroduodenal ulcer in which operation was performed. Their immediate mortality amounted to 23.8 per cent. The authors were able to follow up thirty patients. The best immediate as well as late results were obtained with partial gastric resection. This operation, however, could be applied only in a small number of carefully selected cases. The authors practiced a simple suture of the perforation in all cases not suited for the formidable operation of partial gastric resection. The results were quite satisfactory. Poorest results were obtained when a gastro-enterostomy was added to the suture of the perforation. The authors therefore feel that the latter should be entirely abandoned.

Maggot Treatment of Chronic Osteomyelitis—According to Lang, maggot therapy, as applied in the Third Surgical clinic of the University of Berlin in cases of chronic osteo-

myelitis, demonstrated beyond doubt the favorable influence of live maggots on necrotic tissues. The wounds rapidly take on a clean appearance and display fresh healthy granulations. Baer's "living antiseptics" proved to be effective in cases of chronic osteomyelitis which had resisted other therapeutic methods. The author doubts the possibility of successfully substituting an extract of maggots for the living maggots and their enzymes.

Deutsche medizinische Wochenschrift, Leipzig

62: 669 716 (April 24) 1936 Partial Index

Development of Methods of Irradiation of Cancer A Pickhan —p 669

Osteoporosis of Spinal Column as Disease Entity and Its Clinical Significance and Importance in Insurance Law W Imhauser —p 677

New Treatment of Acute Gastric Ulcer L Bayer —p 679

*Roentgen Irradiation as Method of Choice in Beginning Puerperal Mastitis W H Hanne —p 683

Roentgen Irradiation in Beginning Puerperal Mastitis—Observations in thirty cases convinced Hanne that roentgen irradiation is the method of choice in incipient puerperal mastitis. He always applied 20 per cent of the unit skin dose at a tension of 170 kilovolts, with a filter of 0.5 mm of copper and 0.5 mm of aluminum and a focus skin distance of 30 cm. Depending on the extent of the inflamed area the fields were 6 by 8 or 10 by 15 cm. This treatment was always successful and an incision was never necessary. The author rejects the use of 40 per cent of the unit skin dose because he found that 20 per cent of the dose produced the desired results and preserved the lactation capacity of the women, which is not possible if 40 per cent of the unit skin dose is given. To be sure, even the smaller dosage impairs the milk secretion somewhat for, although the milk secretion of the irradiated breast increases again after five or eight days, it does not reach the yield of the nonirradiated breast.

Klinische Wochenschrift, Berlin

15 505 544 (April 11) 1936 Partial Index

Experimental Glomerular Nephritis T Fahr —p 505

*Antithyroid Action of Adrenal Cortex C Oehme —p 512

Quantitative Studies on Elimination of Hormone of Anterior Hypophysis in Urine C Ehrhardt —p 514

Disturbances in Passage Through Esophagus Caused by Scleroderma and Progressive Muscular Dystrophy K Kuré K Yamagata S Tsukada and J Hiyoshi —p 516

Volume of Blood Flow from Heart in Erect and Reclining Position H Ude —p 520

*Demonstration and Significance of Tyrosine in Urine M Weiss —p 521

Clinical Significance of Duodenal Diverticula K Steuer —p 524

Antithyroid Action of Adrenal Cortex—Oehme investigated adrenal cortex extract for its inhibiting effect on the action of the thyroid or of thyroxine. He found that an adrenal cortex extract which was free from cevitic acid suppresses to some extent the chronic hyperthyroidism that is induced in guinea-pigs, the increase in the basal metabolic rate produced by the daily administration of thyroxine is slight or entirely absent if adrenal cortex extract is given at the same time. The author was able to corroborate that cevitic acid has practically the same effect. He concludes from these observations that the adrenal cortex contains two antithyroid substances, which are not identical with vitamin A or with tyrosine. The reduction of the action of thyroxine by means of tyrosine could likewise be corroborated. In studies on the newly discovered antithyroid principle of the adrenal cortex it was found that it is destroyed if it is exposed for from one to two hours to a stream of oxygen at a *pH* of 9.3 and a temperature of 38 C (100.4 F). It does not prevent the histologically demonstrable activation of the thyroid by the thyrotropic hormone of the anterior lobe of the hypophysis. The author discusses the role of the adrenal cortex in the pathogenesis and treatment of hyperthyroidism.

Significance of Tyrosine in Urine—Weiss points out that degenerative processes in the liver lead to the elimination of tyrosine in the urine. However, since the method of demonstration formerly in use was rather complicated, the occurrence of tyrosine in the urine did not attain the diagnostic and prognostic significance it deserves. The author describes a method which has the advantage of greater simplicity and sensitivity and of a nearly absolute specificity. The test is based on the fact that tyrosine (as well as the frequently accompanying

leucine) is precipitated by alcohol. The author mixes 20 cc of urine, either in its native acidity or following slight acidification with acetic acid, after simple filtration, with 60 cc of concentrated alcohol. After this mixture has been left standing for two hours, typical tyrosine crystals can be seen in the settled sediment of the urine of many patients with liver disease. After a little while the sediment is filtered off and washed once or twice with alcohol. The residue is dissolved in 3 cc of a 2 per cent lye solution and after slight acidification with two drops of glacial acetic acid Millon's test is made. If tyrosine is present slight warming or fifteen minutes of cold storage will produce a noticeable red coloration of the fluid. In cases with a considerable amount of protein sediment this may become red, however proof of a positive tyrosine reaction is the red coloration of the fluid standing above it, provided of course the presence of medicaments (salicylates) can be excluded. Millon's reaction is usually positive when tyrosine crystals are present. The microscopic demonstration of tyrosine is even better than the chemical test. The tyrosine crystals have a characteristic appearance. The author reproduces a photomicrograph of leucine spheres and tyrosine crystals. To be sure, in the presence of large amounts of other crystallizing substances, there is the possibility that the tyrosine crystals are covered up. For this reason it is advisable if there are strongly positive chloride and protein reactions to extract these substances first and to make a search for tyrosine crystals only in the second precipitate. The author found the examination of the urine for the presence of tyrosine (and leucine) by means of this method helpful in the estimation of the condition of the liver in various disorders. In the majority of the examined cases, tyrosine was an accompanying symptom of hepatic disorders. It was found not only in the severe forms but also frequently in the milder forms, and it was sometimes absent in the severe disorders (cirrhosis of the liver and catarrhal icterus). However, it is nearly always detectable during an acute attack in gallstone disease and in some pancreatic disorders, particularly those that are accompanied by gallstone disease. The author admits that tyrosine and leucine are never pathognomonic for a disease, nevertheless he regards his test as valuable in diseases of the liver.

Medizinische Klinik, Berlin

32 557 588 (April 24) 1936 Partial Index

- General Pathologic Aspects of Collapse Therapy of Pulmonary Tuberculosis T Wedekind—p 557
- Consumption of Alcohol in Relation to Race Occupation Age and Season R Bandel—p 559
- *Hypoglycemic Conditions in Patients with Gastric Diseases and Their Significance for Gastric Surgery T Straaten and M Hünemann—p 562
- Question of Cure of Endocarditis Lenka H Kraiss—p 566
- Treatment of Abdominal Typhoid with Continuous Administration of Small Doses of Aminopyrine F Bardachzi and H Herzum—p 567

32 589 620 (May 1) 1936 Partial Index

- Varices in Esophagus G Lotheissen—p 589
- Adaptability of Organism to Dextrose E Bauer—p 592
- *Hypoglycemic Conditions in Gastric Diseases in Their Significance for Gastric Surgery T Straaten and M Hünemann—p 594
- *Disturbances in Acid Secretion of Stomach in Hyperthyroidism A Sylla and Lotte Sylla—p 598
- *Dangers of Iodine Therapy in Lead Poisoning K Fellinger—p 600
- Course of Lobar Pneumonia During Childhood C Ewstatiew—p 601

Hypoglycemia in Patients with Gastric Diseases—Straaten and Hünemann point out that the postoperative disturbances represent a difficult problem in gastric surgery. Investigations in recent years disclosed that the blood sugar conditions play an important part. The disturbances in the blood sugar curve after oral sugar tolerance tests throw more light on the estimation of postoperative disturbances after gastric resection. The authors decided to investigate to what extent the changed carbohydrate metabolism and particularly hypoglycemic conditions are responsible for the postoperative difficulties after operations on the stomach. They describe their observations in the course of sugar tolerance tests on forty-eight patients. They found that the hypoglycemic reaction after sugar consumption is not a reaction that is specific for the stomach that has been operated on. It occurs in patients who have undergone gastric operations in patients with ulcer or gastritis who have not been subjected to surgery

and in other diseases, particularly during the period of convalescence. The authors discuss the causes of the alimentary hypoglycemia in patients with gastric diseases and in those having undergone surgical interventions on the stomach. They think that vagotomy, the condition during convalescence and especially the changed resorption mechanism are responsible. The mechanism of resorption may be altered in gastritis, duodenitis and jejunitis and because of changes in evacuation. They say that the individual hypoglycemic attack can be counteracted by the administration of dextrose. The predisposition to hypoglycemia is best influenced by frequent small meals and by not onesidedly preferring carbohydrates. The use of a special surgical technique to produce evacuation mechanisms that resemble the normal ones will prevent the hypoglycemic reaction in many cases. Von Haberer's technique of gastric resection largely fulfills these requirements.

Acid Secretion of Stomach in Hyperthyroidism—The Syllas call attention to the fact that gastro-intestinal disturbances are comparatively frequent in hyperthyroidism. They subjected seventy-four patients with exophthalmic goiter to fractional withdrawal of the gastric contents after a caffeine test drink and detected acidity in 50 per cent of these cases. They consider the inhibiting action of the overstimulated sympathetic the cause of the reduced gastric secretion. They reject a relationship to pernicious anemia. A connection between acidity and the diarrhea that occur in patients with exophthalmic goiter could be proved in only a few of the cases. The authors think that it is advisable to examine the gastric juice from time to time in patients with exophthalmic goiter.

Dangers of Iodine Therapy in Lead Poisoning—Fellinger points out that lead poisoning is often automatically treated with potassium iodide. The daily doses vary between 1 and 3 Gm. The author observed a number of patients with lead poisoning in whom more or less severe symptoms of hyperthyroidism developed. Nearly all were patients who for longer periods had been treated with potassium iodide. Symptoms such as profuse sweating emaciation nervousness and mild tremor were ascribed by the patients and also frequently by their physicians to the lead poisoning. However, since these symptoms were observed only in the cases of lead poisoning in which iodine therapy had been used and since in the early cases they had a tendency to disappear after the medication with potassium iodide was discontinued, it cannot be doubted that they were caused by the iodine. In this connection the author stresses the iodine sensitivity of the population of Vienna and of the Alpine regions in general. He describes the clinical histories of five patients and points out that younger persons seem to be in greater danger of developing iodine hyperthyroidism but that older persons also develop it occasionally after having tolerated it for a while. He shows that the potassium iodide therapy is best for the after-treatment of lead poisoning in the so-called state of latency for it aids in mobilizing and eliminating the lead deposits in the organism, whereas during the earlier stages it may even elicit colics, for it is now generally accepted that the lead which circulates in the blood and not the lead which is deposited in the body causes the symptoms. Moreover it is essential to keep the patient under strict supervision as long as he receives iodine therapy, and, as soon as tachycardia sweating or emaciation appears, it should be broken off.

Monatsschrift f Geburtshilfe u Gynäkologie, Berlin

102 1128 (April) 1936 Partial Index

- Complete and Incomplete Cycle True Menstruation and Pseudomenstruation L Seitz—p 1
- *Electrocardiographic Studies in Eclampsia and Preeclampsia H Eufinger and H Molz—p 17
- Diagnosis of Full Term or Almost Full Term Ectopic Pregnancy W A Wlassow—p 22
- Origin and Types of Abdominal Pregnancy G Duseberg—p 30
- Direct and Distant Results of Cesarean Section J A Polonsky—p 43

Electrocardiographic Studies in Eclampsia—Eufinger and Molz made electrocardiographic studies on seventeen women with severe preeclampsia and on six women with eclampsia. They never detected electrocardiographic evidence of a direct cardiac impairment by the eclampsia. In six cases, or 26 per cent, the electrocardiographic aspects indicated a predominance

of the left side of the heart. Electrocardiographic control tests on eighty pregnant women without eclampsia disclosed this picture in only two cases (2.5 per cent). The authors designate as a predominance of the left side of the heart that condition in which the chief wave of the initial complex is directed upward in the first lead and downward in the third lead. The authors conclude that as the result of the increase in the peripheral resistances in preeclamptic and eclamptic women the left ventricle has a tendency to hypertrophy in order to be able to meet the increased requirements. They emphasize once more that they never observed evidence of a direct impairment of the heart.

Zeitschrift f Geburtshilfe u. Gynäkologie, Stuttgart

112 273-431 (April 21) 1936 Partial Index

- *Behavior of Androgenic Substance (Testis Hormone) in Female Organism at End of Pregnancy. H. Goecke—p. 273
Sterilizing Hormone of Placenta. Meta Schnock—p. 291
Urobilinogen Content of Urine in Pregnancy and in Pregnancy Toxemia. H. Mittelstrass—p. 309
Action of Insulin on Uterine Musculature. E. Klasten—p. 318
Pathology and Clinical Aspects of Ten Cases of Primary Tubal Carcinoma. K. Schmidt—p. 339

Androgenic Substance in Female at End of Pregnancy

—Goecke reports investigations on the occurrence and behavior of androgenic substance ('testis hormone') in the female organism at the end of pregnancy. He detected androgen in 71 per cent of the placentas of female fetuses whereas its demonstration was never possible in placentas of male fetuses. These observations were corroborated by studies on the placentas of binovular twins of different sexes in that only the placentas of girls contained androgen. The absence of androgen from the placentas of boys is thought to be due to the fact that the hormone is utilized during the intra uterine life for the structure of the male fetus. It was impossible to demonstrate androgenic substance in the tissue of cystic mole but, since the urine of women with cystic mole contains large amounts of androgen, the assumption seems justified that there is no definite relationship between the quantity of androgen in the placenta and the amount that is excreted in the urine. The amniotic fluid contained only small traces of androgenic substance, regardless of whether the fetus was male or female. Androgen was found in the urine of women during the later stages of pregnancy when a boy was born later, not when a girl was born. Thus the elimination of androgen in the urine is the reverse of the androgenic content of the placenta. The author gives the following explanation. The placenta of a male fetus produces considerable amounts of androgenic substance but because of greater requirements of the male fetus it quickly passes into the blood stream, so that it is eliminated in the urine but cannot be detected at the site of production, the placenta of a female fetus, however, stores androgen so that it is demonstrable in the placenta but not in the urine. He suggests that the behavior of androgenic substance in the urine at the end of pregnancy permits, with some degree of reliability, a forecast of the sex of the fetus.

Wiener klinische Wochenschrift, Vienna

49 513-544 (April 24) 1936 Partial Index

- Influenzal Meningomyelitis. D. Laszlo and K. Nowotny—p. 518
Late Results of Gastro-Enterostomy in Gastroduodenal Ulcers. F. Starlinger—p. 521
*Clinical Utilization of Edelmann's Great Toe Phenomenon. E. Hammer Schlag—p. 523
Pathogenesis of Progressive Muscular Dystrophy. A. Rottmann—p. 529

Clinical Use of Great Toe Phenomenon—Hammerschlag

shows that cerebral edema may develop in the course of a generalized stasis of cardiac decompensation in severe anemias and cachexias, in vasoneurotic conditions in severe infections and intoxications, and in diseases of the brain such as hemorrhages, tumors and inflammations. The edema may not involve the entire brain but affect only some portions. The clinical manifestations of cerebral edema differ. In the severe cases the neurologic symptoms although varied, permit a diagnosis; in the milder cases the diagnosis is often difficult. However, Edelmann's great toe phenomenon is pathognomonic for cerebral edema. The author searched for it in a large number of patients with chiefly internal disorders, in most of whom neuro-

logic complications were not expected. He gives a summary report of his observations on 100 cases in which he found the symptom positive. He elicits the reflex as follows. The patient lies flat, the examiner holds down the knee with the left hand, grasps the calf with the right hand and then bends the leg at the hip joint. In case of a positive reflex, there is dorsal flexion of the great toe. Occasionally it appears at a bending of only 45 degrees, but sometimes the leg has to be bent back beyond the vertical position. Occasionally there results a crossed reflex (toe of the other foot). The author refutes the objection that Edelmann's great toe reflex is identical with Babinski's reflex (indicative of a lesion of the pyramidal tract) and shows that it actually indicates cerebral or meningeal edema and not pyramidal lesions. Of the 100 patients in whom the sign was positive, sixty-three had cardiovascular disorders, fifteen had infectious diseases (influenza, pneumonia and so on) or severe intoxications (carbon monoxide, pancreatitis and others), twelve had disorders of the nervous system, such as meningitis, encephalomyelitis, epilepsy, cerebral hemorrhage and cerebrospinal syphilis, four had hematopoietic disorders and six had a severe cachexia. The author concludes that the sign helps in the early recognition of cerebral edemas of various origins.

Klinicheskaya Meditsina, Moscow

14 163-306 (No. 2) 1936 Partial Index

- Basic Principles in Treatment of Schizophrenia. V. A. Gilyarovskiy—p. 163
Radium in Medicine. M. I. Karlin—p. 177
Madura Foot. M. A. Chlenov, T. P. Polyakov and V. A. Shtark—p. 183
*Symptomatology of Rheumatic Carditis. Ya. G. Ettinger and V. E. Nezhlin—p. 192
*Morbidity of Acute Rheumatism. M. D. Kuznetsov—p. 210

Rheumatic Carditis—Ettinger and Nezhlin state that clinical signs and electrocardiographic studies demonstrate the existence of myocardial lesions in the great majority of cases of acute rheumatism. Lesions of the endocardium are demonstrable by reconstruction of the history in cases in which definite symptoms of valvular lesions appear sometime after the attack. Diagnosis of endocarditis during the acute attack can be made only on the early appearance of a diastolic murmur at the base of the aorta. Cardiac alterations developing in the course of an acute attack of rheumatic fever are frequently of a reversible character, disappearing with the recovery from joint involvement. Rheumatic carditis uncomplicated by valvular lesions is frequently accompanied by a marked disturbance of the rhythm, without manifestations of cardiac insufficiency. Exacerbation of the rheumatic carditis with or without involvement of the joints is accompanied in many cases by signs of cardiac decompensation or by aggravation of the existing insufficiency. Acute exacerbation of the rheumatic carditis with signs of cardiac insufficiency is in many cases erroneously diagnosed in the absence of joint involvement as ordinary decompensation. Exacerbation of carditis may be observed in the course of the entire evolution of the rheumatic process up to the death of the patient from cardiac failure. Aschoff's nodes may be found in the myocardium of about one half of the patients dying from rheumatic cardiopathy. Exacerbations during the period of compensation of a rheumatic heart frequently present a polyarthritic syndrome. Manifestations of joint involvement appear less frequently with the later development of cardiac decompensation leading to a fatal issue.

Morbidity of Acute Rheumatism—The incidence of acute articular rheumatism, according to Kuznetsov, is 3.2 per cent of all internal diseases. The incidence is subject to seasonal variation, which attains its maximum during the winter and spring months and its minimum during the summer and autumn months. Among the grown up population the disease occurs with greatest frequency between the ages of 16 and 40. The history in cases of acute rheumatism reveals earlier infections, such as scarlet fever or pneumonia, in 69.2 per cent. According to the author they create conditions favorable to sensitization of the organism. Sore throats are the commonest recent ailments. A clinically demonstrable heart lesion is present in 43.2 per cent of the cases of rheumatic polyarthritis, with the most frequent localization of the process in the mitral valves. Cases of rheumatic polyarthritis can be separated into two

types those without signs of involvement of the heart and those with involvement of the heart. Recurrence of attacks takes place in 54.3 per cent of the cases, most frequently in those in which there is definite involvement of the heart.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

80 2103-2182 (May 16) 1936

Rickets in Full Grown Rats. M. De Bruin and J. Bouman—p. 2111
Rupture of Membranes of Interstitial Pregnancy. Case C. Van Gelderen—p. 2116

*Sensitivity Produced by Neoarsphenamine During Antisyphilitic Treatment. P. J. Van Putte—p. 2123

Sensitivity Produced by Neoarsphenamine.—Van Putte found that 10 per cent of the syphilitic patients treated at the Latavia Hospital during 1933 and 1934 suffered from sensitivity to neoarsphenamine and that the third injection offers the greatest possibilities for anaphylactic disturbances. The fatal accidents and the grave disorders have always occurred in cases in which 0.3 or 0.45 Gm. was given at the first injection and 0.6 Gm. at the second or third. By administering systematically 0.075 Gm., 0.15 Gm., 0.3 Gm. and 0.45 Gm. for the first four injections at four day intervals he has not had any fatalities among 3,000 patients, and the treatment from then on was continued with injections of 0.6 Gm. every five or six days until 5 Gm. of the drug was given. An injection of an oily suspension of bismuth hydroxide, containing 0.1 Gm. of metallic bismuth, was allowed regularly between neoarsphenamine injections. A treatment lasted seven or eight weeks. In serum negative primary syphilis he has given two of these treatments with an interval of rest of one month and in serum positive primary syphilis, in primary and secondary syphilis and in secondary syphilis three of the treatments with an interval of rest of six weeks between the second and third. All patients have been clinically cured and the Wassermann reaction of the blood and spinal fluid have remained negative. The author takes exception to Hoffmann's "maximal cure," in which from 7 to 8 Gm. of neoarsphenamine is given in six weeks, and points out how impossible it is, under the circumstances, to take Hoffmann's advice to proceed with prudent increase in dosage on account of lack of time.

Hospitaltidende, Copenhagen

79 397-424 (April 21) 1936

Substance Transport in Diffusion and Secretion in Organism. A. Krogh—p. 397

*Dry Pleurisy. E. Strandgaard—p. 407

Investigations as to Whether Blood Sedimentation Rate Measured by Westergren's Apparatus Is Dependent on Intake of Food. A. Eldahl—p. 419

Dry Pleurisy.—Twenty-eight cases are reported in which dry pleurisy was the main diagnosis. Tuberculous etiology seemed certain in seven cases and highly probable in nine. After-examination shows that fifteen patients have continued well for from two to nineteen years (ten for more than five years), tuberculosis has been established in more than 25 per cent of the material. Strandgaard says that the dominant feature in the disorder is the vague and indefinite nature of both subjective and objective symptoms. Roentgen examination often reveals latent changes in the lungs or small exudates and is called for in every case.

Norsk Magasin for Lægevidenskapen, Oslo

97 329-448 (April) 1936

*Mediastinal Tumors Treated Operatively. Four New Cases. P. Bull—p. 329

Medicine in Ancient Norway. I. Reichborn Kjennerud—p. 360

Influence of Feeding Algae on Iodine Content of Milk and Dairy Products. G. Lund and K. Closs—p. 377

Determination of Meridian in Regular Astigmatism with Kinescope S. Disk up to 1 Degree Sharp—Together with Shortened Subjective Kinescopy in Ametropias up to 0.12 D. Colorless Transparent Glass Rod Gives Dark Band Which Accordingly Is not Shadow. S. Holth—p. 397

Emile Javal Demonstrated First Radiating Figure for Subjective Astigmatism in 1865. W. Holth—p. 400

Rickets-Producing Factor in Cereals. Further Contribution to Understanding of Etiology of Rickets. O. Rygh—p. 401

Mediastinal Tumors Treated Surgically.—Bull previously reported two cases of dermoid cyst in the anterior mediastinum in 1929 and one of fibromyxanthoma in 1931 in

which operation was performed, the patients are living and well. In the first case now described, of microscopic diagnosis of myxosarcoma, there was sudden onset with violent pain in the left side of the chest and the left arm and hemithorax. On operation in 1932 a soft tumor, the size of an orange, was excised from the posterior mediastinum, the patient continues well. In the second case, of bronchogenic cyst there were sudden laryngospasms repeated almost daily for two months. Transpleural extirpation of the cyst was done. Death occurred from mediastinitis. In the third instance, a solid tumor microscopically diagnosed as a fibroblastic tumor of moderate malignancy was excised from the anterior mediastinum. Thoracoplasty was performed and complete healing resulted. Nine months later hemoptysis occurred and a cavity the size of a walnut appeared under the right clavicle, the operative intervention is believed to have revived an old disorder in the top of the lung. In the last case, atypical sarcoma in the anterior mediastinum, probably from a neurofibroma there had been paroxysmal coughing with vomiting sense of oppression and pain radiating to the neck. Roentgen examination showed a tumor the size of an egg in the upper left side of the chest four months later, in January 1935 the tumor had doubled in size. Preceded by artificial pneumothorax transpleural extirpation was easily accomplished. The tumor situated above the heart was solid and weighed 184 Gm. In December 1935 the patient was well and had been pregnant for five months. The author emphasizes that mediastinal tumors often set in suddenly and with rather unusual symptoms, as in five of his seven cases and that it may be difficult to determine before operation whether the tumor is malignant or benign. He says that roentgenography in several planes is necessary for localization of the tumor before operation. Artificial pneumothorax aids in making the roentgenogram clearer, and thoracoscopy is probably the best means for localizing the tumor and at the same time affording an idea of its nature. Rectal ether-oil narcosis may be advantageous in these interventions.

Uppsala Läkareförenings Förhandlingar, Uppsala

11: 393-515 (April 15) 1936

*Changes in Electrocardiogram in Orthostatic Circulatory Disturbances. S. Åkesson—p. 383

Orthopedic Prophylaxis Outside of Special Orthopedics. P. Haglund—p. 501

Electrocardiogram in Orthostatic Circulatory Disturbances.—Åkesson made anthropometric examinations of 200 healthy men, aged 21, in military service, and by means of the index $\frac{\text{chest width} \times \text{chest depth}}{\text{body length}^2}$, or $\frac{ab}{P}$, selected the forty of most asthenic and the forty of least asthenic bodily habit for closer examination of electrocardiograms and the blood pressure taken in the standing and in the reclining position. Electrocardiograms recorded in the standing position showed an inversion of T_1 or T_2 in twenty-four cases, or 31 per cent and of T_3 in three, or 4 per cent. Electrocardiographic examination of forty-five patients with clinical diagnosis of arterial anemia made in the standing position showed an inversion of T_2 or T_3 in thirty-one, or 69 per cent, and of T_1 in twenty, or 44 per cent. The author states that the more marked the degree of asthenia according to the index $\frac{ab}{P}$, the greater the decrease in the height of T_2 in the standing position, and also that there is a relation between another index of bodily habit, $\frac{\text{weight}}{\text{body length}^3}$, or $\frac{v}{P}$, and the decrease in the height of T_2 in the standing position. The greater the pulse frequency of the standing person the greater is the decrease in the height of T_2 , the greater the rise in his pulse frequency, the greater is the decrease in the height of T_2 , and the greater the fall of his systolic pressure and of his blood pressure the greater is probably the decrease in the height of T_2 . In two cases of arterial anemia examined in the pool, the electrocardiographic symptoms disappeared after the orthostatic pressure had been equalized by allowing the water to rise to the height of the heart. In three of the seven persons in the entire material who fainted during registration in the standing position, the deflections of the electrocardiogram corresponded to those described by other authors in cases of marked excitation of the vagus.

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THE PROBLEM OF CANCER OF THE PANCREAS

CHAIRMAN'S ADDRESS

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Recent surgical literature has contained an increasing number of contributions relating to the surgery of the noninflammatory lesions of the pancreas. The discovery that tumors of the islands of Langerhans could cause hyperinsulinism was followed by reports of the successful surgical removal of these small tumors from the pancreas by Roscoe Graham,¹ Judd² and Whipple and his associates,³ and subtotal pancreatectomy for hyperinsulinism has recently been reported by Evarts Graham⁴ and McCaughan.⁵ New interest has been directed to the radical surgery of the pancreas by reports of successful removal of malignant tumors involving the papilla of Vater by Judd⁶ Walters,⁷ Potter,⁸ Hunt,⁹ Whipple and his associates¹⁰ and by the occasional reports of the radical removal of malignant growths involving the body or tail of the pancreas, which likewise have appeared in the literature.¹⁰

It would appear most opportune at this time, therefore, to present to this section a brief review from the literature and from personal experience of the symptomatology, and especially the early symptomatology, of cancer of the pancreas, and to discuss the problems that are involved in the surgical attack on this lesion. I have not had the opportunity of carrying out the procedures to be considered save in the autopsy room. It

is hoped however that, by directing the attention of this group of surgeons to the problem of cancer of the pancreas, further progress in the management of this disease will be made.

INCIDENCE

Cancer of the pancreas is by no means a rare disease. Bigelow and Lombard¹¹ found that 4.8 per cent of the cancer deaths in Massachusetts hospitals in 1928 to 1930 were due to cancer of the pancreas. Hoffman,¹² in a statistical study of cancer of the pancreas, says it is safe to assume that 3 per cent of all cancer deaths arise from cancer of the pancreas and total 4,000 a year in the United States.

PATHOLOGY

The malignant process in the pancreas may originate in the parenchyma of the gland, in the pancreatic ducts, or rarely in the islands of Langerhans. The most frequent type of tumor is adenocarcinoma, although scirrhous forms are not infrequent. Most pancreatic cancers are primary in the pancreas, but a very few are primary in the biliary tract or duodenum and invade the pancreas secondarily.

The tumor is most frequently located in the head of the gland. In a series of 678 cases collected from the literature by Leven,¹⁴ 56.3 per cent were in the head of the gland and 30.7 per cent were diffusely spread through the pancreas. Only 6.6 per cent were limited to the tail of the pancreas and 6.3 per cent to the body, 8.7 per cent are in the head or are diffuse and so are least subject to surgical attack.

METASTASES

Pancreatic cancer may metastasize by (1) direct extension into contiguous organs, (2) growth through the lymphatics or (3) invasion through the adjacent blood vessels. To the surgeon the rapidity with which these tumors metastasize is most important, and in general it may be said that most pancreatic cancers form metastases within a few months after they are discovered. In one personal experience with a small tumor in the head of the pancreas extensive metastases to the liver were present five months after the original exploration had shown no evidence of any extension of the growth. All are familiar however, with other exceptional cases in which the appearance of metastases has been delayed for months or years. Thus in my experience, one man lived four and a half years after cholecystogastrostomy before evidence of metastasis was noted.

Read before the Section on Surgery General and Abdominal at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City Mo., May 14, 1936.

¹ Graham, Roscoe cited in Howland, Goldwin, Campbell, W. R., Malby, E. J., and Robinson, W. L. *Dysinsulinism, Convulsions, and Coma Due to Islet Cell Tumor of the Pancreas with Operation and Cure*. J. A. M. A. 93: 674-679 (Aug. 31) 1929; account of operation p. 677.

² Judd, E. S., Allan, F. N., and Rynearson, E. H. *Hyperinsulinism: Its Surgical Treatment*. J. A. M. A. 101: 99-102 (July 8) 1933.

³ Whipple, A. O., Parsons, W. B., and Mullins, C. R. *Treatment of Carcinoma of the Ampulla of Vater*. Ann. Surg. 102: 763-779 (Oct.) 1935.

⁴ Graham, E. A., and Womack, N. A. *The Application of Surgery to the Hypoglycemic State Due to Islet Tumors of the Pancreas and to Other Conditions*. Surg., Gynec. & Obst. 56: 728-742 (April) 1933.

⁵ McCaughan, J. M. *Subtotal Pancreatectomy for Hyperinsulinism: Operative Technique*. Ann. Surg. 101: 1336-1341 (June) 1935.

⁶ Judd, E. S., and Parker, B. R. *Biliary Intestinal Anastomosis for Obstructive Jaundice: Analysis of 137 Consecutive Cases*. Arch. Surg. 17: 117 (July) 1928.

⁷ Walters, W. L. *Successful Resection of the Ampulla of Vater Including a Portion of the Duodenum with Cholechooduodenostomy for Carcinoma of the Ampulla of Vater*. Surg., Gynec. & Obst. 55: 648-651 (Nov.) 1932.

⁸ Potter, E. B. *Successful Resection of the Common Biliary Duct for Carcinoma of the Ampulla of Vater*. Ann. Surg. 98: 369-373 (Sept.) 1933.

⁹ Hunt, V. C., and Budd, J. W. *Transduodenal Resection of the Ampulla of Vater for Carcinoma of the Distal End of the Common Duct*. Surg., Gynec. & Obst. 61: 651-661 (Nov.) 1935.

¹⁰ (a) Finney, J. M. T. *Resection of the Pancreas*. Ann. Surg. 51: 818-829 (1910). (b) Finney, J. M. T., and Finney, J. M. T. Jr. *Resection of the Pancreas*. Ann. Surg. 88: 584-592 (Sept.) 1928. (c) Gordon, Taylor, G. *The Radical Surgery of Cancer of the Pancreas*. Ann. Surg. 100: 206-214 (July) 1934.

¹¹ Bigelow, G. H., and Lombard, H. L. *Cancer and Other Chronic Diseases in Massachusetts*. Boston: Houghton Mifflin Company, 1933. p. 264.

¹² Marble, A. *Diabetes and Cancer*. New England J. Med. 211: 339-349 (Aug. 23) 1934.

¹³ Hoffman, F. L. *San Francisco Cancer Survey: Seventh Preliminary Report*. Newark, N. J.: Prudential Press, 1931. p. 218.

¹⁴ Leven, V. L. *Primary Carcinoma of the Pancreas*. Am. J. Cancer 18: 852-874 (Aug.) 1933.

Direct extension of the malignant process into contiguous viscera occurs in the later stages of the disease, and metastases have been noted in the duodenum, the stomach, the colon, the kidneys and ureters, the spleen, the adrenals and the general peritoneal cavity.

It is probable that most cancers of the pancreas first metastasize into the regional lymph nodes. As may be seen from the artist's drawing, innumerable lymph nodes lie in close proximity to the head of the gland and beneath the body and tail (figs 1 and 2). These are early and often involved in the malignant process.

Secondary growths are most frequently found in the liver, and it is probable that these arise as a result of invasion of the veins, emptying into the portal system. Metastases to the lungs and pleura have been frequently reported. Generalized metastases in pancreatic malignancy are rare.

PATHOLOGIC PHYSIOLOGY

As a tumor in the pancreas grows it may produce changes in physiologic function by obstructing the common bile duct, by obstructing the pancreatic ducts by influencing the activity of the islands of Langerhans, or by invading the adjacent viscera. Obstructive jaundice and interference with liver function are very common in cancer of the pancreas. This would be expected since 87 per cent of the tumors sooner or later involve the head of the gland and so can encroach on the common bile duct. Difficulties from a loss of pancreatic secretion are not common, owing, no doubt, to the ability of intestinal secretions to manage, in its

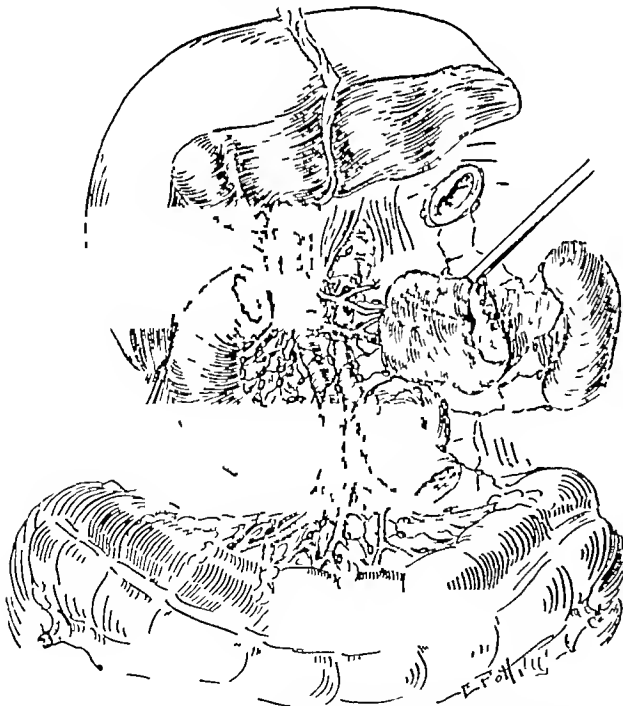


Fig 1—Head of the pancreas turned back to show the numerous lymph nodes to which metastases may spread. The relations of the superior mesenteric vessels, portal vein and common bile duct to the pancreas and duodenum are clearly revealed.

absence, a large part of the digestive functions of the pancreatic secretion. Hyperinsulinism from excess production of insulin by a tumor of an island of Langerhans is rare. Duodenal obstruction and gastrointestinal bleeding from invasion of the gastro-intestinal canal by pancreatic cancers is a frequent late occurrence in the course of malignant growths of the pancreas.

Diabetes mellitus is rare, since the islands of Langerhans often persist in spite of extensive pancreatic cancer.¹⁵ Eusterman¹⁶ found that glycosuria was conspicuous by its infrequency. Friedenwald¹⁷ found only one case of permanent glycosuria and five of transient glycosuria in thirty-seven cases. Hick and Mortimer,¹⁸ however, noted that eight of their fifty cases presented diabetes.

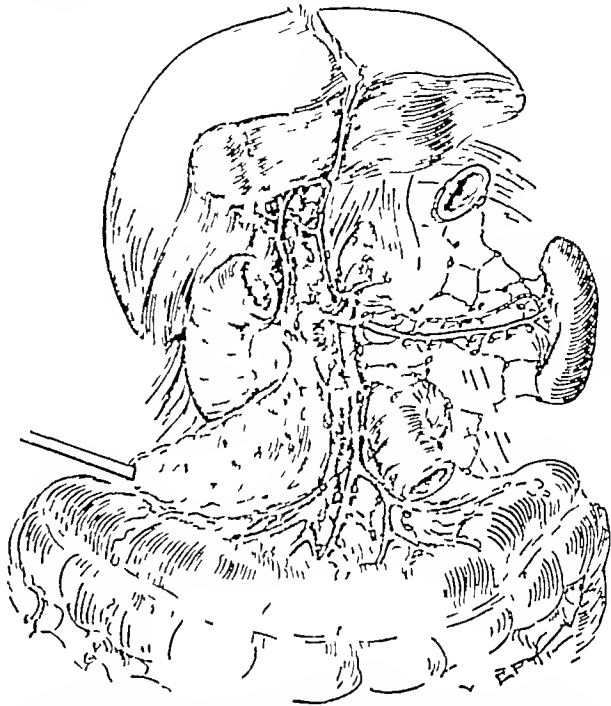


Fig 2—Tail of pancreas turned back. Note the pancreatic branches from the splenic artery and vein that have been ligated. The numerous lymphatic glands behind the pancreas are seen.

SYMPTOMS

Progress in the treatment of pancreatic cancer is largely dependent on the early diagnosis of this lesion before it has become extensive in its growth and before metastases have occurred. It is highly important, then, that the earliest symptoms which may point to pancreatic malignancy shall be listed and reviewed so that the goal of early diagnosis may be more frequently reached.

It is doubtless true that the first step in the early diagnosis of cancer of the pancreas is the recognition by physicians of the significance of rather vague digestive symptoms in male patients in middle life. It is probably true that sufficient data could readily be obtained in many of these cases which would at least justify a surgical exploration if the possibility of cancer of the pancreas was more often considered and investigated.

All physicians are familiar with those cases of cancer of the pancreas which show as their typical symptoms painless jaundice, distended gallbladder, cachexia and weight loss, as first described by Bard and Pic.¹⁹ One will rarely see a patient presenting these appearances, however, in whom there is not a history of several

15 Warren Shields. *The Pathology of Diabetes Mellitus*. Philadelphia: Lea & Febiger, 1930, pp. 65-70.

16 Eusterman C. B. and Wilbur D. I. Primary Malignant Neoplasm of the Pancreas. *A Clinical Study of Eighty Eight Verified Cases Without Jaundice*. *South M. J.* 26: 875-883 (Oct.) 1933.

17 Friedenwald J. and Cullen T. S. Carcinoma of the Pancreas. *Clinical Observations*. *Am. J. M. Sc.* 176: 31-41 (July) 1928.

18 Hick F. K. and Mortimer H. M. Carcinoma of the Pancreas. *J. Lab. & Clin. Med.* 19: 1058-1067 (July) 1934.

19 Bard L. and Pic A. Contribution à l'étude clinique et anatomopathologique du cancer primitif du pancréas. *Rev. de méd.* 8: 257-282, 363-405, 1888.

weeks of epigastric discomfort and distress, indigestion, flatulence and often pain preceding the jaundice. Twice I have had jaundice develop in patients while under hospital observation for ill defined digestive disturbances. In each instance cancer of the pancreas with a widely dilated common duct was found at operation a few days after the onset of the jaundice. It would appear that the typical picture described by Bard and Pic¹⁰ is the picture of late pancreatic cancer which has progressed sufficiently to obstruct the common bile duct.

The early symptoms suggestive of cancer in the pancreas are not distinctive and for this very reason the diagnosis of pancreatic cancer should be considered when careful examination fails to reveal a definite lesion in the stomach, duodenum, colon or gallbladder to account for the patient's new digestive trouble.

Most writers²⁰ agree that epigastric pain is the commonest early symptom of pancreatic cancer. This is usually dull, boring and penetrating in character. Occasionally the pain is colic-like and when this occurs may well be due to the association of gallbladder stones with the pancreatic cancer. Accompanying the pain very often are digestive distress and epigastric fulness, and in many instances abdominal distention.

A very large and usually a very rapid weight loss is the second most common early symptom of this disease. In many cases the loss of weight is more than 50 pounds (23 Kg) and it generally occurs in a very short time. Such large and rapid weight loss in a man at middle life should always be highly suggestive of pancreatic cancer, particularly if no other adequate cause can be found to account for it.

The length of time from the first evidences of pancreatic cancer to the appearance of jaundice varies, of course, with the location of the tumor in the pancreas and its relation to the common duct. Occasionally the first symptom that can be elicited from the patient is the appearance of jaundice. This is unusual and in many cases weeks or months of digestive trouble go by before jaundice is noted. The longer this interval, the more probable it is that the tumor did not arise in the head of the gland. In at least 10 per cent of cases no jaundice ever appears in the course of the disease.

When the tumor arises in the body or tail of the pancreas, jaundice either is long delayed or is never encountered. Here attacks of severe pain due to the pressure of the tumor on the vessels and nerves behind the pancreas are at times encountered. Chauffard²¹ refers to a "syndrome pancreatico-solaire" seen in these cases, to be distinguished from the "syndrome pancreatico-biliaire" of Bard and Pic¹⁰ which is present when the tumor lies in the head of the pancreas. The pain in cancer of the body or tail of the pancreas is usually referred to the back on either side and across the epigastrium. It is occasionally relieved if the patient leans forward and so removes the pressure of the tumor from the retroperitoneal structures.

PHYSICAL SIGNS

In many instances the very absence of physical signs on examination must be, in itself, suggestive of pancreatic cancer. In the advanced case, however, of cancer in the head of the gland, the jaundice is persistent with no remissions. The gallbladder is dilated

and can be felt in more than half of the cases. A sausage shaped epigastric tumor may at times be palpated when the lesion involves the body or tail of the gland. Eusterman¹⁰ recommends the intravenous administration of from 3 to 5 grains (0.2 to 0.3 Gm) of sodium amytal in patients suspected of pancreatic cancer. With the muscular relaxation thus obtained, a tumor may at times be palpated in the body or tail of the gland.

In every patient thorough gastro-intestinal x-ray study should be done to rule out lesions in the stomach, duodenum, gallbladder or colon. By these x-ray studies a wide sweep of the duodenum around the head of the pancreas may be noted, or the greater curvature of the stomach may be encroached on by an obviously extra-gastric lesion. Engel and Lysholm²² have attempted to obtain special films of the pancreatic area by first giving the patient an effervescent powder to fill his stomach with gas. They then take lateral and anteroposterior

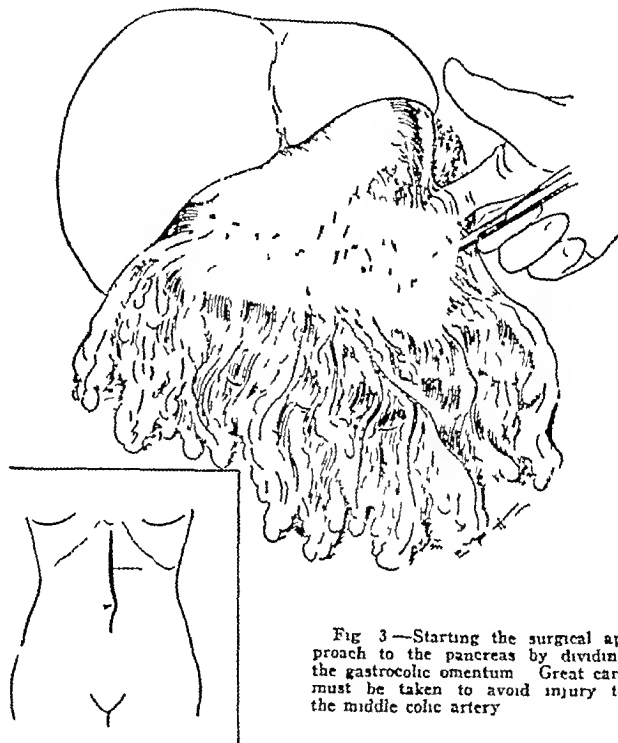


Fig 3—Starting the surgical approach to the pancreas by dividing the gastrocolic omentum. Great care must be taken to avoid injury to the middle colic artery.

plates and believe they can outline pancreatic tumors in certain cases. Further progress in x-ray technic will no doubt be made to aid in earlier diagnosis of these cases.

Duodenal tube drainage of the region of the ampulla will very often show an absence of bile and may show blood. Such changes are very suggestive of pancreatic cancer. If the tumor of the pancreas is in the body or tail, however, the duodenal tube may reveal little or nothing of diagnostic help. Blood may be persistently present in the stools in those cases in which the tumor has invaded the duodenum or stomach.

In a few cases traces of sugar will be found in the urine, but true diabetes in cancer of the pancreas is not as common as has been thought.

Tests of urine, stools and blood for evidences of faulty pancreatic function have not as yet proved of practical value in diagnosing pancreatic cancer, no doubt because of the ability of relatively small portions of the gland to carry on its functions.

20 Hick and Mortimer¹⁸ Eusterman and Wilbur¹⁹ Friedenwald¹⁷ Graves¹⁶ L. Diagnostic Criteria of Malignant Disease in the Upper Right Quadrant, J A M A 87 842-846 (Sept. 11) 1926. Fried B M. Some Clinical Aspects of Primary Carcinoma of the Pancreas Boston M & S J 196 640-644 (April 21) 1927.

21 Chauffard, A. Le cancer du corps du pancréas Bull Acad de méd 60 242-255 1908.

22 Engel A and Lysholm E. Contribution à l'étude de la symptomatologie du cancer pancréatique Acta med Scandinav 80 34-42 1933.

DIAGNOSIS

The diagnosis of the well advanced case of pancreatic cancer with weight loss, pain, progressive jaundice and a palpable mass in the right upper portion of the abdomen is readily made. Stones in the common duct, however, may give these identical symptoms and in certain cases cannot by any present methods be certainly differentiated from cancer of the pancreas. This fact cannot be overemphasized, since it is such a basic reason for urging the surgical exploration of patients who appear to have hopeless pancreatic cancer.

The diagnosis of early cases of pancreatic cancer, however, is dependent, first, on the clinician's recognizing the possibilities of the lesion and consciously attempting to prove or disprove its presence. I am convinced that measures to attack pancreatic cancer will be limited until either we think of its possibility more frequently or develop new diagnostic measures for its earlier detection.

The occurrence in a man at middle life of digestive disturbances, epigastric fullness and discomfort, pain and weight loss warrant a thorough study by all the means available. If no positive diagnosis is revealed



Fig. 4—Approach to the pancreas may be made by dividing the gastrohepatic omentum and displacing the stomach downward. Exposure of the tail of the gland is less complete by this method.

by examination and gastro-intestinal studies, the possibility of pancreatic cancer must be considered at once. Auscultation of the abdomen, palpation for a deep tumor, under anesthesia if need be, and repeated studies for the possibility of an increase in the bilirubin of the blood may reveal sufficient further evidence to warrant exploration of the upper part of the abdomen. In many instances all available data will be too indecisive to permit a positive diagnosis but will nevertheless be sufficiently suggestive to warrant exploration of the abdomen.

TREATMENT

In cancer of the pancreas, in common with cancer elsewhere in the body, there are three possible measures for treatment, which may be used singly or in combination. These are high voltage roentgen therapy, radium treatment and surgical excision.

High voltage roentgen therapy for cancer of the pancreas has received but little attention from the profession, and the literature contains few references to its use in this condition. Dr. G. E. Richards²³ of Toronto treated three cases in 1920 and published his results

in 1922. Two of his three patients showed marked improvement for a time, but all three eventually died. Dr. Richards has not continued the use of high voltage roentgen therapy in cancer of the pancreas. Dr. H. Flecker and Dr. Gordon Cameron²⁴ in Australia noted his work, however, and in 1925 reported several cases of pancreatic cancer treated in the course of some experimental work on the blood sugar after high voltage roentgen therapy of the pancreas. They reported marked improvement in some of their cases for a time, but their paper lacks detailed case reports. Von Redwitz²⁵ found no value in high voltage roentgen therapy for cancer of the pancreas. Leven²⁶ reported in 1933 the treatment of four cases by high voltage roentgen therapy. Each of his patients had had a cholecystenterostomy. All four died within a short time and no improvement was noted from roentgen therapy.

Fisher, Groot and Bachem²⁷ and also Ivy, McCarthy and Orndoff²⁸ have produced fibrosis, atrophy and even diabetes experimentally by intensive roentgen therapy over the pancreas. All reported the marked ability of the pancreas to regenerate following this treatment.

During my service in the Laker Clinic I had the opportunity of following five patients with apparent cancer of the pancreas who were given roentgen therapy at my suggestion. Three of these cases seemed to show some improvement following this therapy, and two were apparently not affected by it. Since equal improvement has been seen in other patients who had not had roentgen therapy, it is not possible to draw any deduction from this experience. Certainly high voltage roentgen therapy would appear to be the least valuable type of therapy available in cancer of the pancreas. On the other hand, further refinement in apparatus and technique may render it far more useful and x-rays should not be lost sight of as a possible therapeutic agent in malignant conditions of the pancreas.

Very little clinical work has been reported on the use of radium in malignant disease of the pancreas, yet it would seem that this might be a logical approach to the treatment of this lesion. Handley²⁹ of London has treated seven cases of pancreatic cancer, all in the head of the gland, with radium element. All seven patients had biliary intestinal anastomoses made at the time of the radium application, and four patients died postoperatively. One, however, lived fourteen years, one twenty-six months, and one was still alive ten months after the operation. Handley reports no biopsies in these cases, however, so that the certainty of the diagnosis is rather unsettled. Most important, however, is the fact that Handley demonstrates that radium may be safely applied to cancer of the pancreas in human patients.

From the experimental point of view, Leven³⁰ found that radon in gold seeds would produce a marked fibrosis and atrophy of the pancreas in dogs. He found that the gland regenerated rapidly after irradiation, and he believes that radon may be safely implanted in the

24 Flecker H and Cameron Gordon. A Note on Alteration in Blood Sugar Values After Intensive Deep Roentgen Irradiation. *M. J. Australia* 1: 478-480 (May 9) 1925.

25 von Redwitz E. Die Chirurgie der Bauchspeicheldrüse. *München med. Wehnschr.* 71: 1561-1567 (Nov. 7) 1924.

26 Leven N. L. (a) footnote 14. (b) An Experimental Study. The Effect of Radium Emanation on the Pancreas of Dogs. *Am. J. Cancer* 18: 899-904 (Aug.) 1933.

27 Fisher N. F., Groot J. T. and Bachem A. The Effects of X-Ray on the Pancreas. *Am. J. Physiol.* 76: 299-305 (April) 1926.

28 Ivy A. C., McCarthy J. E. and Orndoff B. H. Studies on the Effect of Roentgen Rays on Glandular Activity. *J. A. M. A.* 83: 197-1984 (Dec. 20) 1924.

29 Handley, W. S. Pancreatic Cancer and Its Treatment by Implanted Radium. *Ann. Surg.* 100: 215-223 (July) 1934.

23 Richards G. E. Possibilities of Roentgen Ray in Cancer of the Pancreas. *Am. J. Roentgenol.* 9: 150-152 (March) 1922.

human pancreas. In a later paper he states that he placed gold implants of radon in the substance of a small tumor in the head of the pancreas. The patient died of hemorrhage into the gastro-intestinal tract.

Very possibly a two-stage operation, in which a biliary intestinal anastomosis was done at the first stage and radium implanted at the second, would be desirable. Only a short interval of two or three weeks should intervene between stages. With this procedure, the jaundice could be overcome by the first operation and definite plans made for the amount of radium to be used at the second operation, in view of the location and size of the tumor. It would appear that the problem of radium therapy in cancer of the pancreas should receive further study.

SURGICAL TREATMENT

It is now becoming more generally accepted that the seriously jaundiced patient who apparently has cancer of the pancreas should have a surgical exploration for two purposes: (1) to make as certain as possible that the jaundice is due to cancer of the pancreas and not to common duct stones or pancreatitis, and (2) to consider anastomosis of the gallbladder or common duct to the stomach or intestine for the purpose of relieving the jaundice.

It must be recognized however, that simple exploration in cancer of the pancreas carries a definite mortality with it and that the average length of life after exploration is less than with no operative procedure. In my experience the average length of life in cancer of the pancreas unoperated on is 7.2 months after the first diagnosis is made, and after simple exploration it is but three months. Exploration, therefore, is not advisable in the far advanced cases and should not be done unless one has a reasonable certainty that at least a biliary intestinal anastomosis can safely be made.

Biliary intestinal anastomoses also carry a heavy immediate mortality, which varies in different clinics, doubtless because of a difference in the selection of cases. These patients, furthermore, are prone to develop later difficulties from infection of the biliary tract from the anastomosis. These factors, however, should not condemn the procedure. The postoperative improvement which these jaundiced patients obtain from a successful short circuiting operation is often remarkable, and the majority are at least temporarily relieved of their jaundice. There are occasional cases in every one's experience of patients who live several years after this procedure. The average duration of life after this operation is but seven months, however, even when the unusually long survivors are included.³⁰

In all these operative procedures for pancreatic cancer it is evident that the surgery is undertaken only at the terminal stage of the disease and is complicated by the presence of obstructive jaundice, which is usually of long duration. Can we not hope to develop diagnostic methods and clinical acumen sufficiently keen to permit us to approach malignant lesions of the pancreas at earlier stages, and with the plan of undertaking radical removal of the malignant process?

The literature of cancer of the pancreas is filled with statements to the effect that, because of its deep situation and the difficult approach, radical removal of the pancreas is either impossible or at least most unwise. Most studies of pancreatic malignancy have come from medical men and pathologists. Surgeons until recently

have but rarely discussed radical pancreatic operations save in the light of palliative measures for the relief of jaundice.

Finney^{10a} in 1910 successfully removed a tumor of the body of the pancreas and found reports of sixteen other cases of removal of pancreatic cancers in the literature with a 50 per cent mortality. In 1928^{10b} he reported the successful resection of part of the pancreas for hypoglycemia. At this time he stated his belief that in the eighteen years since his previous report radical surgery of the pancreas had advanced but little.

In 1907 Desjardins³¹ and in 1908 Sauve³² suggested very radical procedures for the removal of malignant tumors of the head of the pancreas. These operations included a biliary intestinal anastomosis, a resection of the head of the pancreas and the duodenum, a reuniting of intestinal continuity, and finally the insertion of the pancreas or its duct into the intestine. The division of these steps into two operations was proposed. These procedures were attempted only a few



Fig. 5.—The parietal peritoneum over the pancreas has been divided and the tail lifted with a double hook. Each branch of the splenic artery and vein is dissected and divided as the removal of the tissue continues.

times and were generally considered as far too radical to be undertaken by conscientious surgeons.

Recent reports of successful resections of the head of the pancreas have been made by Whipple, Parsons and Mullins,³ who followed these fundamental procedures proposed by Desjardins and Sauve with one notable change. They ligated the pancreatic ducts and made no attempt to provide for the escape of the external secretion of the pancreas. MacCallum³³ had done this with animals in 1909 in the laboratory and found that this resulted in some atrophy of the pancreas but was by no means incompatible with life. By this procedure the formidable procedures of Desjardins and Sauve were made more practical and were more readily applied. It would appear that the way is now clearly opened by this work of Whipple for wider study of the problem of resection of the head of the pancreas.

31 Desjardins, A. Technique de la pancréatectomie. *Rev. de chir.* 35: 945-973, 1907.

32 Sauve, L. Des pancréatectomies et spécialement de la pancréatectomie céphalique. *Rev. de chir.* 37: 335-385, 1908.

33 MacCallum, W. G. On the Relation of the Islands of Langerhans to Glycosuria. *Johns Hopkins Hosp. Bull.* 20: 265-268, 1909.

30 Judd and Parker, C. Coller, F. A. and Winfield, J. M. Evaluation of Palliative Operation for Cancer of the Pancreas. *Am. J. Surg.* 25: 64-69 (July) 1934.

Less complicated problems are involved in resections of the body or tail of the pancreas for cancer, since jaundice is absent and since neither biliary nor gastrointestinal anastomoses are necessary.

The incision in the abdominal wall to approach the body or tail of the pancreas has commonly been a longitudinal one in the left rectus (fig 3). This may

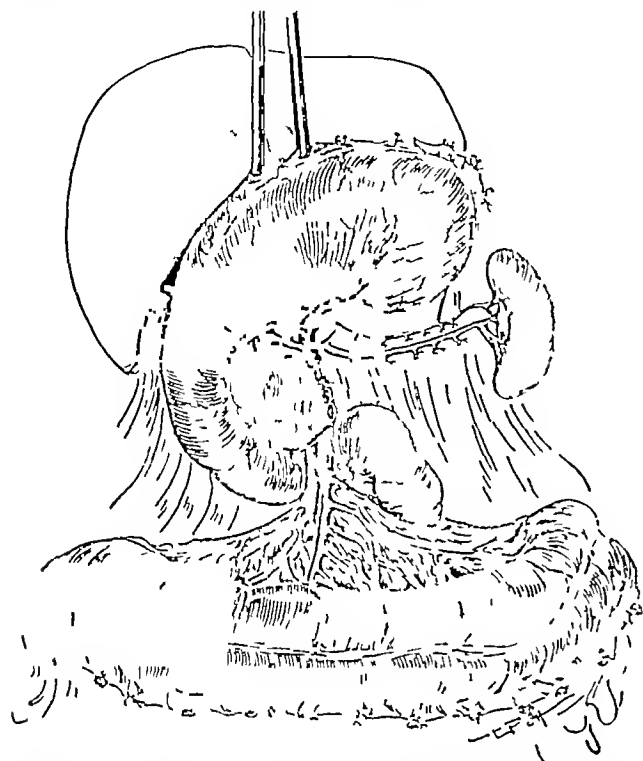


Fig 6—The dissection has been carried over to the superior mesenteric vessels. The cut end of the pancreas has been folded over with catgut sutures.

be enlarged by an additional transverse incision to the left, if need be. Whipple³⁴ finds that a transverse incision across both rectus muscles above the umbilicus gives the best exposure.

Tumors of the body or tail of the pancreas may be exposed surgically through the gastrohepatic omentum, the gastrocolic omentum or the transverse mesocolon. The latter route is probably of little value, and its practical use I have not found recorded in the literature. Finney,¹⁰ Judd⁶ and Gordon-Taylor¹⁰ all approached the pancreas through the gastrohepatic omentum (fig 4). Judd remarks that exposure may be increased if need be by going through the gastrocolic omentum. Most recent radical surgery on the pancreas, however, has been through the gastrocolic omentum. Thus Roscoe Graham,¹ Evarts Graham,⁴ Holman,³⁵ Cottalorda,³⁶ McCaughan⁵ and Whipple³⁴ have all found this the most satisfactory route for exposing the gland.

The vessels in the gastrocolic omentum are divided along the greater curvature of the stomach (fig 3). Care is taken to avoid injury to the middle colic artery, which should be well out of the way unless adhesions in the lesser peritoneal sac obscure it. With properly placed packs of wet gauze, the stomach is now retracted

upward and the colon downward, and the entire body and tail of the pancreas are brought into view. McCaughan⁵ recommends elevation of the patient's back by a suitable back rest to bring the pancreas into better position. This would seem a point of definite advantage, especially in stout patients.

With adequate exposure the removal of the tumor of the pancreas may now be undertaken. Dissection is best started at the tail of the pancreas by incision of the peritoneal layer overlying the gland, starting gently to elevate it from its bed (fig 5). The splenic artery and vein lie in close relation to the pancreas and form the chief complication to its easy dissection. Holman³⁵ believed he would ligate them and do a splenectomy if any difficulty was encountered in dissecting them. McCaughan⁵ retracts the vessels early in the dissection and lifts them with a tape to facilitate the catching of their numerous pancreatic branches. Gordon-Taylor,¹⁰ however, states that in removing a large tumor of the body of the pancreas he ligated the splenic artery and vein and noted no difficulty after operation that was related to interference with the blood supply of the spleen. This procedure would appear to be unwise for routine use.

As the dissection is continued from left to right, the superior mesenteric vessels are soon encountered (figs 1 and 2). Here great care, precision and gentleness must prevail in order that they may be left intact. Gordon-Taylor¹⁰ found the tumor in his case so adherent to the portal vein that he removed part of its wall and closed it by suture over an intestinal clamp that he placed longitudinally on it.

Control of bleeding must be largely by hemostat and ligature, though veins may well be closed with a running suture (fig 6). Division of the body of the pancreas itself is best done by making a wedge-shaped excision,

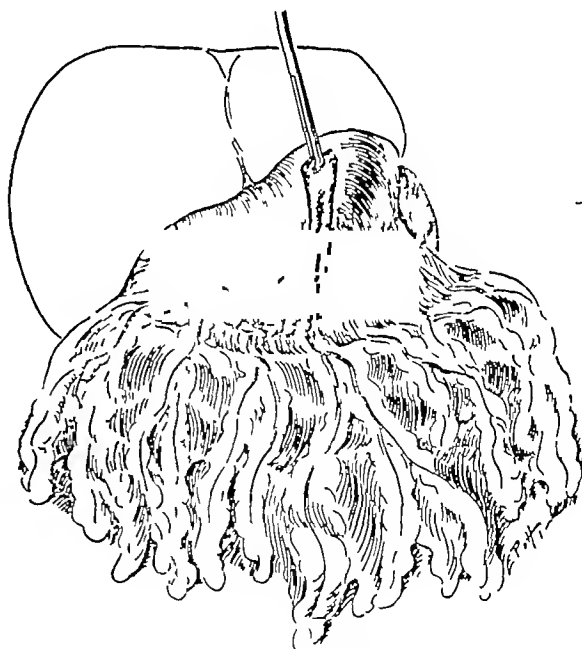


Fig 7—The incision in the gastrocolic omentum has been closed about a cigaret drain that leads to the cut end of the pancreas.

which can then be closed by interrupted or continuous sutures. McCaughan⁵ has found it desirable to place a rubber covered right angle clamp on the gland before cutting it off in order to control the bleeding. Von Haberer employs the electric cautery in excising portions of the pancreas.

34 Whipple A O and Frantz V K. Adenoma of the Islet Cells with Hyperinsulinism. A Review. Ann Surg 101:1299 1335 (June) 1935.

35 Holman Emile and Railsback O C. Partial Pancreatectomy in Chronic Spontaneous Hypoglycemia. Surg Gynec. & Obst 56:591 600 (March) 1933.

36 Cottalorda and Escarras. Epithelioma langheransien. Extirpation guerison. Lyon chir 30:248 253 (March April) 1933.

An escape of pancreatic fluid is so prone to occur after pancreatectomy that all writers agree that a drain should be left in place down to the cut surface of the organ (fig 7). Drainage of pancreatic secretion may continue from a few days to several months and will occasionally require much attention to prevent digestion of the wound surfaces.

Surprisingly few reports are to be found in the literature of successful removal of malignant tumors of the body or tail of the pancreas in the hundred years since Mondiere³⁷ first described cancer of the pancreas. Recent interest in the surgical treatment of pancreatic tumors has been so stimulated by the results obtained by resection of the pancreas or of islet tumors for hyperinsulinism that we may surely anticipate an increase in the number of pancreatic cancers attacked surgically. Wider study of the early symptoms of pancreatic cancer will give increasing opportunity for the application of surgical and radiologic measures to the pancreas. The pancreas is no longer in the realm of the surgically "untouchables" and can readily be approached by surgeons well trained in the management of serious abdominal diseases.

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CORONARY ARTERY DISEASE IN WOMEN

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In women, especially those under the age of 50, coronary artery disease is unusual in the absence of diabetes or hypertension. Yet precordial pain simulating angina pectoris is a very common symptom. Although experienced clinicians have been aware of this fact for years, it is overlooked again and again in daily practice and many mistaken diagnoses result.

During the past seven years in an office practice representing largely patients referred for cardiovascular diagnosis, we have seen 1,672 women, of whom 169, or 10.1 per cent, had coronary artery disease. In the same period we saw 2,135 men, of whom 1,059, or 49.6 per cent, had coronary artery disease. The frequency is 4.9 times as great in men as in women. Of the 169 cases in women 125, or 74 per cent, were associated with hypertension alone, twenty-five, or 14.8 per cent, with both diabetes and hypertension, and sixteen, or 3.5 per cent, with diabetes alone. In only thirteen cases, or 7.7 per cent, was there neither hypertension nor diabetes, and of these only five were in women under the age of 50. In many of the cases in the last group the diagnosis of coronary artery disease is open to some doubt. Fully 50 per cent of the male patients with coronary artery disease had neither hypertension nor diabetes. Approximately one third of all the female patients with hypertension seen by us have coronary artery disease.

Heberden¹ observed only three women in his series of 100 patients with angina pectoris, Forbes² saw eight

in eighty-eight, Osler³ one in forty, and Burwinkle⁴ seventeen in 117. More recent statistics also show a great preponderance of coronary disease in men. White⁵ found the ratio of incidence in men as compared to women to be 3 to 1. Gallavardin⁶ found a ratio of 4.7 to 1. In 1,431 consecutive necropsies showing coronary sclerosis studied by Willius, Smith and Sprague,⁷ men outnumbered women 3.2 to 1. Other observers have reported approximately the same figures.⁸

The validity of all such statistics depends on the criteria employed for the diagnosis of coronary artery disease, and in this respect some of the older literature in particular is open to question. We employed strict criteria for the diagnosis of coronary artery disease. The diagnosis of angina pectoris was made only if the history revealed a typical Heberden's syndrome, that is, substernal or left parasternal pressure or pain provoked by effort or excitement, compelling the patient to halt his activities. In many instances there was typical radiation to the left arm and aggravation of symptoms on exertion after meals or in cold or windy weather. Coronary sclerosis with myocardial fibrosis was diagnosed when, in addition to the classic history, there were electrocardiographic changes indicative of myocardial injury, such as deformation of the RT segment or the T wave or marked alteration of the QRS complex. Coronary thrombosis was diagnosed when there was a history of an attack of severe substernal pain, lasting one or more hours, accompanied by symptoms of shock, often with subsequent cardiac insufficiency, compelling rest in bed for a period of weeks following the attack. We excluded all cases of syphilitic aortitis, as well as all cases of aortic insufficiency of whatever origin.

The favoring influence of hypertension on the development of coronary artery disease in women has been noted by several authors. White⁵ remarks that "many of the women with angina pectoris have hypertension, which may be of enough importance in increasing cardiovascular strain to be in part responsible." Eppinger and Levine⁹ write "One should therefore hesitate to make the diagnosis of angina pectoris unassociated with coronary thrombosis for any woman with a low blood pressure, especially for those under 50 years of age." Mackenzie¹⁰ writes "When therefore we find a woman under 50 with no gross disease of the heart or when we can exclude arterial degeneration, we may fairly assume that the anginal attacks are secondary, especially in women before and about the menopause." In Gallavardin's⁶ series only five of

3 Osler William. Angina Pectoris and Allied States. New York: D Appleton & Co. 1897. p. 22.

4 Burwinkle O. Angina Pectoris. Deutsche med. Wchnschr. 32: 567. 1906.

5 White P. D. Heart Diseases. New York, Macmillan Company. 1931. p. 609.

6 Gallavardin L. Les angine de poitrine. Paris: Masson & Cie. 1925. p. 35.

7 Willius F. A., Smith H. L. and Sprague P. H. A Study of Coronary and Aortic Sclerosis. Incidence and Degree in 5,060 Consecutive Postmortem Examinations. Proc. Staff Meet. Mayo Clin. 8: 140 (March 1) 1933.

8 Bell E. T. and Clawson B. J. Primary (Essential) Hypertension. Arch. Path. 5: 939 (June) 1928. Gager L. T. and Dunn W. L. Heart Disease in Washington. D. C. Study of Etiologic Types and Factors of Race, Age and Sex in 1,200 Cases. M. Ann. District of Columbia 2: 112 (May) 1933. Levine S. A. Coronary Thrombosis. Various Clinical Features. Medicine 8: 245 (Sept.) 1929. Mullins W. L. Age Incidence and Mortality in Coronary Occlusion. A Review of 400 Cases. Pennsylvania M. J. 39: 322 (Feb.) 1936.

9 Eppinger E. C. and Levine S. A. Angina Pectoris. Arch. Int. Med. 53: 120 (Jan.) 1934.

10 Mackenzie James. Angina Pectoris (Oxford Medical Publications). London: Henry Frowde, Hodder and Stoughton. 1923. p. 127.

37 Mondiere, J. T. Recherches pour servir à l'histoire pathologique du pancréas. Arch. gen. de med. 2d series 11: 36-58, 265-294. 12: 133-163. 1836.

1 Heberden William. Commentaries on the History and Cure of Diseases. London: T. Payne. 1802. p. 366.

2 Forbes, J. The Cyclopaedia of Practical Medicine. London: Sherwood, Gilbert and Piper, Baldwin and Cradock. 1833. vol. 1. p. 83.

sixty-six women with coronary artery disease had normal blood pressures and hearts that were not enlarged

Nor has the fact escaped attention that the presence of diabetes mellitus increases the incidence of coronary artery disease in women. Root and Graybiel¹¹ showed that the frequency of coronary artery disease in diabetic patients is almost the same in the two sexes. Contrasting this observation with the usual great excess of coronary artery disease among males they conclude that the diabetes is the cause of this "leveling influence." On the basis of necropsy studies Nathanson¹² reaches a similar conclusion. He finds that in diabetes the tendency to coronary arterial changes is almost as great in the female as in the male. This is true not only of the coronary arteries but even more so for the peripheral arteries. Cases of coronary thrombosis have been described in female diabetic patients under the age of 35.¹³

Ordinarily the diagnosis of coronary artery disease is simple, particularly when there are objective physical

It is the cases that simulate coronary artery disease which require more detailed discussion. This is most graphically done in the light of some illustrative cases.

REPORT OF CASES

M. S., a woman, aged 47, had had a cholecystectomy for gallstones without relief of the symptoms. In October 1925 when she was 37, she was greatly disturbed by some happening and a few hours later a squeezing choking pain developed high in the epigastrium which radiated up the sternum and down the left arm. The late Dr. M. H. Kahn saw her at this time. Her face and hands were white. The blood pressure was 136 systolic 94 diastolic. She was kept in bed for three weeks and had repeated mild pains in the upper part of the chest during this period. The electrocardiogram was negative. On admission to Mount Sinai Hospital in 1927 she complained of severe epigastric pain coming fifteen minutes after meals, radiating to the left and lasting from two to five hours. For half a year she had been having attacks of severe precordial pain radiating to the left arm and right shoulder. The pain was constant, and about twice a week she had attacks during which it became more severe, especially on exertion. Physical examination was negative, the blood pressure was 130 systolic, 90 diastolic, and the electrocardiogram was negative. Roentgenography revealed

Analysis of 169 Cases of Coronary Artery Disease in Women

| | Cases | | Under 60 Yrs of Age | | | Average Age at Onset of Angina in Years | Average Weight | | Average Blood Pressure | | Diagnosis* | | | | |
|---|-------|----------|------------------------|------------|----------------------------|---|-------------------|-------|------------------------------|-----------|-----------------|-----------------------|------------------------|-------------|--|
| | No. | Per Cent | No. | Percentage | Per Cent of Total Cases | | No. | Cases | Systolic | Diastolic | Angina Pectoris | Coronary Sclerosis | Coronary Thrombosis | Known Death | Deaths Directly Attributable to Coronary Artery Disease |
| In presence of hypertension alone | 12 | 74.0 | 39 | 71.2 | 23.1 | 45.5 | 160 | 6 | 132 | 103 | 47 | 56 | 13 | 10 | 7 |
| In presence of diabetes alone | 6 | 3.5 | 4 | 6.7 | 2.4 | 47.5 | 120 | 4 | 122 | 84 | 6 | 13 | 1 | 1 | 1 |
| In presence of both hypertension and diabetes | 2 | 14.8 | 7 | 24.0 | 4.1 | 36 | 150 | 12 | 179 | 97 | 6 | 15 | 6 | 1 | 1 |
| In absence of both hyper | 0 | 5.1 | 3 | 12.2 | 1.2 | 38 | 13 | 8 | 152 | 64 | 3 | 1 | 1 | 1 | 1 |
| tenston and diabetes (Unquestioned cases) | 4 | 2.4 | 3 | 7.0 | 1.7 | 43.3 | 170 | 3 | 131 | 91 | 1 | 1 | 1 | 1 | 1 |
| (Questionable cases) | | | | | | | | | | | | | | | |
| Totals | 169 | 100 | 53 | | 32.5 | | | | | | 62 | 73 | 31 | 14 | 10 |

* See text for criteria for classification

or electrocardiographic signs of heart disease. In many cases, however, objective evidences are absent and the diagnosis must be made on the history alone. This too offers few difficulties in men, because the story of clamping substernal pain on exertion or excitement compelling the patient to arrest his activities, is so clear cut. At times relief of the seizure by glyceryl trinitrate further confirms the diagnosis. When the histories are colored with secondary, usually functional, symptoms the picture is more obscure, the primary symptoms stand out less clearly, and diagnosis may be difficult. This obtains particularly among women patients, in whom even in the presence of coronary artery disease the syndrome is often marked by vasomotor symptoms. The diagnosis of coronary artery disease often depends primarily on the evaluation of symptoms, and this at times is very difficult in women. Mistaken diagnoses of angina pectoris in women are due to a misinterpretation of symptoms and to ignorance of the rarity of coronary artery disease in women who have neither hypertension nor diabetes.

There is no need to elaborate the clinical picture of true coronary artery disease as it occurs in women, for it does not differ from the generally recognized form

some enlargement of the left ventricle. Roentgen study of the gastro-intestinal tract was negative.

We first saw her in 1932, when she complained that for a few weeks she had had episodes of sharp sticking pain to the left of the sternum, which radiated to the left shoulder and arm, brought on by exertion and excitement and accompanied by weakness and nausea. Physical examination and electrocardiography again were negative, fluoroscopy revealed moderate left ventricular enlargement, the blood pressure was 118 systolic, 80 diastolic. A year later she reported that she had been well for six months but that then the precordial pain had returned on walking, her chief complaint however, was epigastric and right hypochondriac pain. Again there was no change in the physical and electrocardiographic manifestations.

She was last seen in February 1936, more than ten years after the onset of the illness. She has much the same symptoms. While doing her housework she becomes dizzy and weak and experiences choking cramps over the entire chest. At times she can walk freely and at times she is compelled to rest after walking a block because of pressure in the lower part of the sternum. Frequently her body shakes and she has palpitation. She is nervous and feels as though "a machine were working in her body." Again physical examination is negative and the electrocardiogram unchanged.

The major attack at the age of 37, together with the present history, suggests coronary artery sclerosis and that she probably experienced a coronary thrombosis at the onset. However, the early age at onset, the persistence of severe symptoms for ten years without the development of any objective signs, and the varied

11 Root H F and Graybiel Ashton Angina Pectoris and Diabetes Mellitus J A M A 96 925 (March 21) 1931
12 Nathanson M H Coronary Disease in 100 Autopsied Diabetics Am J M Sc 183 495 (April) 1932
13 Warren Shields Pathology of Diabetes Mellitus Philadelphia Lea & Febiger 1930

abdominal symptoms, as well as the shaking and palpitation, point rather to a functional derangement, a conversion neurosis

S C., a woman, aged 33, when seen in May 1931, had been having attacks of sticking precordial pain radiating to the left arm for one year, which occurred both at rest and on excitement. Two days after the sudden death of a friend from heart disease she had an attack of severe pain in the back of the left shoulder, radiating down the left arm, and a choking sensation in the neck. The pain lasted two hours. Intermittent attacks of similar pain persisted for two weeks to the time of her first visit. The heart sounds were of good quality, there was a cardiorespiratory murmur at the base of the heart, fluoroscopy revealed no cardiac enlargement. The blood pressure was 105 systolic, 75 diastolic. The electrocardiogram was negative. She was then well for two years, when, following the death of a cousin's baby, sticking precordial pain again developed, radiating to the left shoulder and arm, unrelated to exertion. She soon recovered and was again well for two years, when, following a miscarriage, she became irritable, cried readily, and had indigestion with vomiting and choking. The slightest aggravation or talking provoked sharp substernal pain, which radiated to the left arm and fingers. On walking five blocks she experienced needle-like chest pains, dyspnea and heaviness in the lower part of the sternum which compelled her to rest. Physical and roentgen examinations in January 1936 again were negative. The blood pressure was 110 systolic, 70 diastolic. The electrocardiogram was negative and unchanged.

Although precordial pain radiating down the left arm, associated with a sense of choking at times provoked by walking, suggests angina pectoris, the youth of the patient, the repeated appearance of symptoms following psychic trauma, the free intervals, and the absence of objective signs after five years point rather to a benign form of precordial pain.

G F., a woman, aged 45, while in a motion picture theater sixteen months before her first visit had an attack of severe pain in the left upper parasternal region and under the left breast, preceded by an uneasy nervous feeling in the left side of the chest. She was confined to bed for six weeks under the supposition that she had had a heart attack. She was subsequently warned by one of her physicians against climbing one flight of stairs lest she suddenly drop dead. After getting out of bed, she noted sternal choking on walking, radiating to the left breast and around the back, lasting ten minutes. Two weeks before her visit to us, following excitement, she experienced pain in the lower part of the sternum radiating to the left shoulder and left elbow, lasting about ten minutes. She complained of a constant precordial soreness and weakness, with exaggeration of the symptoms on slight activity. Physical examination was negative. The blood pressure was 118 systolic, 80 diastolic.

An electrocardiogram showed only left axis deviation. She was reassured and told that she had no heart disease. She was advised to increase her activities, and tincture of valerian was prescribed for the pain. She returned ten months later saying that she had become progressively better, especially with the use of valerian. She now walks six or eight blocks and becomes tired but has no chest pain. There is mild intermittent sticking pain in the left side of the chest unrelated to food or exertion but definitely related to changes in weather. She says that the strongest pains in the chest are readily relieved by the application of an electric pad. Physical examination and the electrocardiogram are unchanged.

In this case the diagnosis of a heart lesion and the enforced bed rest following an attack of benign chest pain led to persistent attacks of precordial pain, with radiation to the left arm and substernal choking, for a period of sixteen months. The symptoms were relieved by reassurance and suggestive therapy.

T G., a woman aged 44, stated in November 1935 that for two months exertion and excitement had induced attacks of midsternal pressure lasting from five to ten minutes. Walking five blocks or so brought on fatigue and dizziness, and if she

quicken her step substernal pressure set in, forcing her to stop and rest for a moment. Under emotional stress she experienced substernal pressure, she became dizzy, her hands became ice cold, and she shivered and often cried. She had serious financial worries, her husband's income being only \$15 a week. Physical examination was negative except for many extrasystoles. The blood pressure was 140 systolic and 90 diastolic. The electrocardiogram showed only many ventricular extrasystoles.

The outstanding fatigue and dizziness together with the occurrence of coldness, shivering and crying in the attacks are typical of an anxiety state.

Chest pain may develop in women who have nursed patients with coronary artery sclerosis or who have lost a relative or close friend from this disease. The readiness with which they may develop the classic pattern of angina pectoris is remarkable.

R R., a woman, aged 49, felt responsible for the sudden death of her husband from heart trouble because she had not called a consultant during his final illness. Immediately after his death she complained of pain to the left of the sternum and in the left arm. She stayed in bed for three months while the pain continued steadily. Subsequently she would become weak and shaky on slight excitement. Physical examination revealed no abnormalities except slight dilatation of the aorta. The electrocardiogram showed only left axis deviation. Fourteen months later her physician reported that she was feeling well and had lost all the chest pain.

P R., a woman, aged 47, stated in March 1932 that for six months she had had an almost constant gripping sensation to the left of the sternum, radiating to the left arm as a sense of weakness, aggravated by exertion. Nine days before her visit she was awakened by severe squeezing pain to the left of the sternum, radiating to the left elbow and left posterior part of the chest. The pain was of one hour's duration and was followed by residual weakness. Soon after the pain subsided she became aware of the action of her heart. She experienced at times sudden throbbing of the heart, accompanied by a momentary shock in the head. When she walked two or three blocks, palpitation set in, which caused her to rest. She was stout, and there was moderate left ventricular enlargement. The heart sounds were strong. There was a systolic murmur at the aorta and at the apex. The blood pressure was 135 systolic, 80 diastolic. The electrocardiogram showed left axis deviation, low voltage and a low T wave in lead 2. The diagnosis of coronary artery sclerosis was made at that time. She was not seen again until almost four years later, in January 1936. For three years she had felt fairly well, having had only occasional drawing pains in the left side of the neck and to the left of the sternum, at times awakening her from sleep and lasting from one to two hours. During the six months preceding her second visit she often awakened in the morning with a sinking feeling and weakness, lasting several minutes and relieved by brandy or spirit of ammonia. Two days before this visit she felt weak before retiring and was awakened early in sleep by a sinking feeling, as she described it, which kept her awake all night. The following day she had unusual drawing pains in the neck and chest. She suggested that her present symptoms and attacks were of somewhat the same nature as those four years before. At present walking causes a sinking feeling and compels her to rest a few minutes, partly relieved by taking a deep breath. This necessity of taking a deep breath recurs frequently. Physical examination at this time was unchanged, except for some increased voltage of the T wave in lead 2.

In the light of the four year follow up and a closer analysis of the symptomatology with its characteristic functional stigmas, the original diagnosis of coronary artery sclerosis is most questionable. Of great importance in the entire sequence of events and in arriving at a diagnosis is the history of the illness of her husband, who was observed during the same period. He was first seen in November 1931 complaining of leg pains of several years' duration. Occasional precordial pain and oppression developed in December. In February 1932 he experienced a classic coronary thrombosis with positive electrocardiographic signs. He then was symptom free for three years, but during the past year he had a recurrence of pain in

the legs which occasionally awakened him from sleep. The development and remission of chest pain in the wife paralleled closely the evolution of symptoms in the husband.

The problem becomes more difficult when such pain occurs in women with hypertension, but also in these cases true angina is far from frequent, although precordial pain is very common. This is not astonishing in view of the marked disturbances of the vegetative nervous system that occur in most women with essential hypertension.

A G., a woman, aged 42, seen in August 1930 had had the gallbladder removed when she was 32. At the age of 22 she experienced drilling precordial pain radiating to the left arm which was constant for some time and has always recurred with excitement. At the age of 38 following severe agitation, precordial pain radiating to the left arm set in and forced her to bed for two weeks. For the two months preceding her first visit in 1930 she had attacks of numbness in the hands followed by epigastric pressure which radiated to the left parasternal area. With this the left arm became numb and weak, the fingers white and cold. The attack was often accompanied by tremor of the whole body. On examination her face was flushed and she was nervous. The heart on fluoroscopy showed slight enlargement of the left ventricle and elongation of the aorta. The heart sounds were strong. The blood pressure was 150 systolic, 105 diastolic. The electrocardiogram was negative, showing only left axis deviation. The following month she reported that tincture of valerian had relieved her attacks. In 1932 while at the office she had one of her attacks. The face was flushed, respiration and pulse were rapid and she cried. She was not seen again until four years later in November 1935. Three weeks previously she had experienced sudden retrosternal pressure radiating to the left shoulder which lasted for half an hour and was followed by persistent precordial pain and weakness. Walking did not aggravate the pain. Physical examination at present showed heart sounds of good quality and a systolic murmur at the aortic area. The blood pressure is 180 systolic, 100 diastolic, the electrocardiogram is unchanged.

F A., a woman, aged 50 seen in July 1932 had had a thyroidectomy two months previously for a simple goiter of many years' standing. The menses were regular. One week previously, while lying awake in bed she had experienced a severe, cutting pain from the midsternum through the chest posteriorly, lasting half an hour, followed by a succession of mild fainting spells. A constant gnawing pain in the midsternum appeared and lasted all the week. She was markedly obese. There was moderate left ventricular enlargement on fluoroscopy. The heart sounds were strong. The heart rate was 92. The blood pressure was 160 systolic, 110 diastolic. The electrocardiogram was normal, showing only left axis deviation. In November 1935 a right nephrectomy for hypernephroma was performed. When she was seen in December she stated that she occasionally had sharp pains under the left breast radiating through to the back, unrelated to walking or other exertion. She still had choking spells lasting a moment unrelated to effort. The physical examination and the electrocardiogram were unchanged.

COMMENT

Case histories such as these could be multiplied many times. We present them with a certain hesitancy, so strongly do some of them suggest the presence of coronary artery disease. However, we have yet to see a woman with precordial pain, whether associated with hypertension or not, in whom the subsequent course of the illness indicated that our original diagnosis of benign heart pain had to be revised because of the development of objective physical or electrocardiographic signs of disease of the coronary arteries. And we have had the opportunity of following many patients for from two to five years. On the other hand, in not a few we have been compelled to discard an original diagnosis of angina pectoris in the light of the subsequent events. This record is not evidence of rare diagnostic acumen but rather is due to our awareness of the rarity

of coronary disease in women, which made us weigh each case very carefully before placing it in this category. Knowledge of the frequency of disease is a great aid in diagnosis.

The clinical picture that simulates angina pectoris is by no means new. The nineteenth century literature is replete with papers on false or pseudo angina, vasomotor angina, reflex angina, or secondary angina pectoris. The case reports reveal a preponderance of women. But knowledge of coronary artery disease in those days was very imperfect, so that many errors of diagnosis crept in. On the other hand, the practitioner of today has been drilled so thoroughly to associate heart pain with coronary artery disease that many of the niceties of diagnosis known to previous generations of physicians have been forgotten.

What are the features that distinguish this benign form of precordial pain from that of true angina pectoris? First of all the personality of the patient gives a clue. Women with benign precordial pain are usually anxious and high strung in contrast to the stolidity so often encountered in men with coronary artery disease. The symptoms are very prone to follow emotional or economic disturbances at home, such as the illness or death of a child, marital difficulties or financial stress. These women are always rising and even between attacks of severe pain they complain of lesser continuous pains, palpitation, dyspnea, vertigo and weakness. Frequently they take to bed after an attack of chest pain and the duration of bed rest is out of all proportion to the severity of the attack. The usual patient with coronary artery disease feels well between his seizures.

Diagnosis is greatly aided if the physician is able to witness an actual attack of pain. This often bears the marks of hysterical seizure. The patient feels faint, her voice becomes weak, she grasps for breath and she tosses about and then falls back in a simulated faint, the eyes partially closed and the eyelids twitching unresponsive to commands but aware of her surroundings. Often the limbs are rigid or there may be a shivering of the whole body—the so-called nervous chill. There may be palpitation, the hands and feet may be cold and pale, and the face flushed. The attack wears off gradually. Far too often the physician who is called administers a hypodermic injection of morphine and tells the patient and her family that there has been a heart attack. Not infrequently this diagnosis finally fixes the patient's attention on her heart and ever after all symptoms are referred to this organ. The differential diagnosis should not be difficult for, as Allbutt¹⁴ says, "these faintnesses, palpitations, gaspings, stiflings, bodily agitations, hyperesthesias and psychical commotions are as wholly unlike the ruthless grip of angina pectoris as their frantic alarms are unlike its silent passion." Even in milder attacks there are usually enough vasomotor signs accompanying the pain to make the diagnosis clear.

The character of benign precordial pain often serves to distinguish it from that of true angina pectoris. It is more apt to be diffuse or confined to the region of the apex, it is usually sticking and cutting in character rather than pressing. But these distinctions are not absolute for either type of pain occurs in either condition. Radiation of the pain is of no differential value. Pain in the left shoulder and radiation down the left arm, or a sense of numbness or heaviness of the left

14. Allbutt, T. C. *Diseases of the Arteries Including Angina Pectoris*. London: Macmillan Company, 2: 235, 1915.

arm, are very commonly associated with benign precordial pain. Both the precordial and the arm pain in these patients, however, are much more constant than is the rule in angina pectoris and are less commonly immediately provoked by exertion or even emotion. More usually they are later after-effects. After a severe attack of benign precordial pain one often observes prolonged residual pain or a precordial ache for days after the attack. This is unusual when there is organic disease, even after a coronary thrombosis. Precordial hyperesthesia is very commonly associated with benign chest pain. The patient cannot lie on his left side, he complains of the pain caused by the pressure of the stethoscope. Often during auscultatory examination the patient will halt the physician by saying "That is where my pain is, right under your stethoscope." Often this tender area is located over the fourth left costal cartilage. Such a tender cartilage may be so disabling and annoying that the term perichondritis has been employed to describe the symptomatology.

Kilgore¹⁵ and Baker¹⁶ have published studies of these chest pains. Baker followed forty-three women and nine men with inframammary pain for many years. She noted the intermittent sticking character of the pain, its indefinite relation to effort and its tendency to occur when the patient is tired and after exertion. She found that long remissions from pain are frequent and that relapses usually coincide with some illness or with extra physical or mental strain. In 392 consecutive cases she observed this pain in 42 per cent of patients without heart disease and in 22 per cent of those with organic heart lesions.

Women often experience chest pain while doing their housework but not while walking. This discrepancy in response to different forms of exertion may be due to the nature of household work, which calls for repeated bending while lifting children, cooking, reaching into the icebox, sewing, sweeping and scrubbing floors. Even in the absence of distinct osteo-arthritis of the spine one might expect a variety of chest pains and aches from repeated torsions of the chest and spine, especially in women over 40 in whom obesity and poor posture are so common. Many of these women feel better when they are walking in the open. In men chest pain induced by occupational exertion is usually experienced as well when they walk, unless a definite postural cause of the pain exists.

The most characteristic feature of true anginal pain is its direct relationship to effort or emotional strain. The patient reports very simply and without dramatic embroidery that walking or lifting or excitement induces some form of sensation in the chest or at times in the arm alone, which compels an arrest of activities. After a few moments' quiet the distress is gone and the patient feels as well as ever. In contrast to this simple clear story the individual with benign precordial pain gives a highly colored version of sharp chest pains with all kinds of associated symptoms and vasomotor disturbances. She is not compelled to immobility by the disturbed functioning of her heart but lies down and rests and is overcome with bodily weakness, largely because of her apprehension.

Palpitation is commonly associated with benign heart pain. It may accompany the attack or occur during

periods of freedom from pain. Commonly precordial pain comes at rest, palpitation on exertion. Often these patients are conscious of the beating of their hearts while resting in bed. Palpitation is rarely associated with true angina pectoris unless the attack is induced by a paroxysm of tachycardia or unless the anginal syndrome is complicated by hyperthyroidism. Patients with benign heart pain experience pain first, this is followed by apprehension and palpitation. When an attack of angina pectoris is released by a paroxysm of tachycardia, the patient first experiences palpitation and later on the precordial pain.

Treatment of benign precordial pain is difficult and often unsatisfactory. Some patients are relieved by simple reassurance, by the affirmation that they have no organic heart disease. In others, suggestive therapy is helpful, but all too often these simple measures fail. Frequently much harm is done by directing treatment to the heart or by prescribing drugs such as digitalis or aminophylline, which the patient soon discovers are cardiac remedies. Still greater is the havoc caused by an error in diagnosis, by the physician's statement, no matter how qualified, that the pain does arise in the heart. Many of these patients need skilled psychiatric treatment and would be much better off in the hands of psychiatrists than of cardiologists.

If the physician elicits the clinical history with the preconception that the patient has true angina pectoris, a fairly typical story of this disorder is usually obtained. The greatest care must be taken to avoid leading questions, to discover the real nature of the pain, its location, its duration, and its mode of onset and offset. Far too many patients are given angina pectoris by their physicians. Not a week passes but we see several patients invalided by an erroneous diagnosis of coronary artery disease. Such mistakes at times are due to ignorance, more rarely to cupidity. Most often the error can be traced to the fear of blame if death or serious illness follows after the physician has declared the patient free from organic heart disease. It takes courage to tell a patient with symptoms suggesting heart disease that he has no organic cardiac lesion.

The damage that can be done by a well meaning physician is graphically illustrated by the following case.

A woman, aged 44, had experienced while shopping, a strong aching pain in the upper left parasternal region aggravated by deep breathing. The pain was of about ten hours duration. She was kept in bed for three weeks and had mild recurrences of the pain during this period. Five weeks after the original attack a roentgenogram of the chest and an electrocardiogram were negative. A diagnosis of coronary thrombosis was made and communicated to the patient and her husband. A second complete examination five months later was also negative. She continued to have pain at intervals. It was a dull ache, quite persistent, which did not come immediately after exertion but some hours later. It would come in the evening after a heavy day, for instance. When we examined the patient ten months after the onset we found that she was nervous and apprehensive and was constantly blinking her eyes. The cardiovascular examination, including the electrocardiogram, showed no evidence of disease. The history, the nervousness and the negative examination indicated that there was no organic heart disease. The correctness of the diagnosis was supported by the manner in which it was received by the patient, her husband and her physician. Although it was impossible to discover the complete psychogenic background of the disorder, it was clear that the patient did not wish to lose her conversion neurosis, which ensured the solicitude of her husband and family, the husband, it appeared resented the fact that his wife did not suffer from serious organic heart disease, the physician wrote us that our

15 Kilgore E. S. Angina Pectoris and Pseudo-Angina. *J. A. M. A.* 87:455 (Aug. 14) 1926.

16 Baker Doris M. Left Inframammary Pain. *Lancet* 1: 1280 (June 14) 1930.

diagnosis might possibly be correct, but he would never take the responsibility of allowing the patient to incur the dangers of cardiac overstrain, and insisted on keeping her a chair-ridden invalid

The relative unusualness of coronary artery disease and the frequency of benign precordial pain in women should lead to great caution in the diagnosis of coronary artery disease in women in the absence of hypertension or diabetes. This applies as well to many women in the fifth decade of life with unstable blood pressures and transient rises to 160 or 170 millimeters of mercury. The fluctuating blood pressure level may be only one expression of the many vasomotor instabilities associated with the menopause and does not have the same significance as a maintained arterial hypertension. Even in the presence of hypertension in women, true angina pectoris is much less frequent than is benign precordial pain. However, coronary artery disease does occur at times in women with normal blood pressures who are free from diabetes, particularly in women over the age of 60 who have generalized arteriosclerosis. Isolated cases in young women in the absence of both hypertension and diabetes have been reported.¹⁷ When coronary artery disease occurs in women its course and prognosis are much like those in the male sex.¹⁸ The view that angina pectoris in women is less serious than in men is based on incorrect diagnosis on the inclusion of many cases of benign precordial pain with those of true angina pectoris.

A minor point of practical clinical interest arises from this study. At times the differential diagnosis between coronary thrombosis and pulmonary embolism may be difficult. From an experience similar to that presented in this paper, Averbuck¹⁹ has pointed out that "when the clinical picture suggesting coronary artery thrombosis occurs in a female patient who has neither arterial hypertension nor diabetes, a pulmonary embolus should be suspected." This point is made because of the relative frequency of pulmonary embolism in women under the age of 50, particularly in those who have been subjected to gynecologic operation.

The facts presented in this paper emphasize the need for further study of the relationship between arterial hypertension and coronary artery sclerosis. Coronary artery disease is much more common in men than in women. Arterial hypertension is more frequent in women than in men. Only 50 per cent of men with coronary artery disease have hypertension, whereas about 90 per cent of women with coronary artery disease have hypertension. Yet even in an office practice devoted mainly to cardiovascular diagnosis, only a third of the women with hypertension have symptoms of coronary artery disease. The connection, therefore, between hypertension and coronary artery disease is not a direct one. Hypertension is not the cause of coronary disease but simply accelerates its development. The designation "hypertensive cardiovascular disease," so commonly employed to describe these disease states, is a poor term. It assumes a necessary and fundamental connection between the two disorders. Their true nature can best be discovered by studying uncomplicated coronary artery disease in men and uncomplicated arterial hypertension in women. These apparently represent "pure forms" of these two conditions.

SUMMARY

1 Among patients referred for cardiovascular diagnosis, coronary artery disease was 4.9 times as frequent in men as in women.

2 All but 7.7 per cent of 169 women with coronary artery disease had either arterial hypertension or diabetes mellitus.

3 Coronary artery disease is infrequent in women, particularly in those under the age of 50, unless there is an associated arterial hypertension or diabetes mellitus.

4 Mistaken diagnosis of coronary artery disease in women are common because of the erroneous interpretation of symptoms, such as precordial pain with or without radiation to the left arm, a sense of choking and fear of death. Such symptoms are common in the absence of organic heart disease.

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ARTIFICIAL FEVER IN THE TREATMENT OF GONORRHEAL OPHTHALMIA

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Fever as a therapeutic agent was introduced in 1918 by Wagner von Jauregg¹ who reported use of malaria in the treatment of dementia paralytica. Soon, other fever producing substances were being used such as intramuscular milk and peptone streptococcus and typhoid-paratyphoid intravenous vaccines. With these methods the temperature is uncontrolled and generally of short duration unless the divided dose method of intravenous typhoid-paratyphoid vaccine is employed.

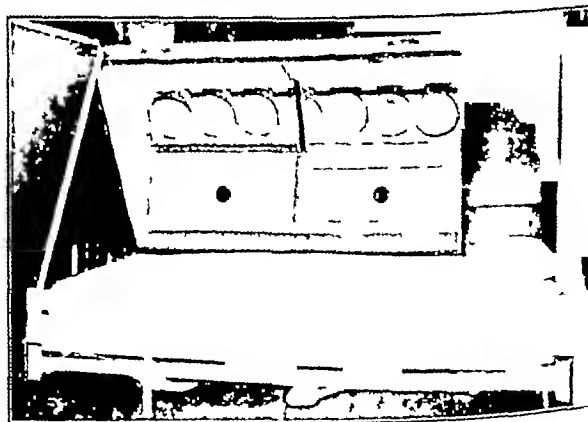


Fig. 1—Cabinet for treatment

Within the past seven years the therapeutic use of accurately controlled fever produced by physical means has slowly but surely supplanted the uncontrolled methods.

Diathermy, radiotherapy, air conditioned cabinets, inductothermy and radiant energy may be used. We employ the latter because of its simplicity, low cost, and

17 Rathe H. W. Sclerosis of the Coronary Arteries with Myocardial Infarct in a Young Woman. *Am. Heart J.* 9:539 (April) 1934.
von Neusser E. Disorders of Respiration and Circulation. *Angina Pectoris*. New York: E. B. Treat & Co. 1909 p. 59.

18 Mullins J.

19 Averbuck S. H. The Differentiation of Acute Coronary Artery Thrombosis from Pulmonary Embolization. *Am. J. M. Sc.* 187:391 (March) 1934.

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1 Jauregg Wagner von. Ueber die Einwirkung der Malaria auf die Progressive Paralyse. *J. Psychiat. Neurol. Wchnschr.* 20:132 1918.

2 Nelson M. O. An Improved Method of Protein Treatment in Neurosyphilis. *Am. J. Syph.* 15:185 (April) 1931.

relative comfort for the patient. A complete description of the cabinet is reported elsewhere.³ Briefly, it consists of a cellotex lined cabinet, heated by seven 120 watt carbon filament bulbs, which fits over a bed and encloses the reclining patient completely except for his head (fig 1). For the treatment of ophthalmologic conditions a moist towel and an electric pad cover the eyes in order to maintain a high temperature.

Careful observation of the patient's condition before and during the treatment is absolutely essential, and only those who are willing to spend the time to observe the reactions should attempt this form of therapy. It must be emphasized that careful selection of the patient be made and contraindications to treatment noted, namely, cardiovascular, renal and liver disease, and a

greatly debilitated, but in the fourth no apparent contraindications to fever therapy were present.

The physiologic reactions and the care of the patient during the therapy are described elsewhere.⁶ During the treatment the patients receive subcutaneously or drink from 3 to 4 liters of water and from 10 Gm (children) to 25 Gm (adults) of sodium chloride supplied in the form of capsules or in a 0.6 per cent solution. Restlessness is allayed by sedatives, such as bromides or codeine. A typical chart showing the temperature, pulse, respiration and blood pressure of a patient during the treatment is given in figure 2.

Fever therapy has been used in various eye conditions: malaria for interstitial keratitis⁶ and in the control of optic nerve atrophy,⁷ and fever induced by

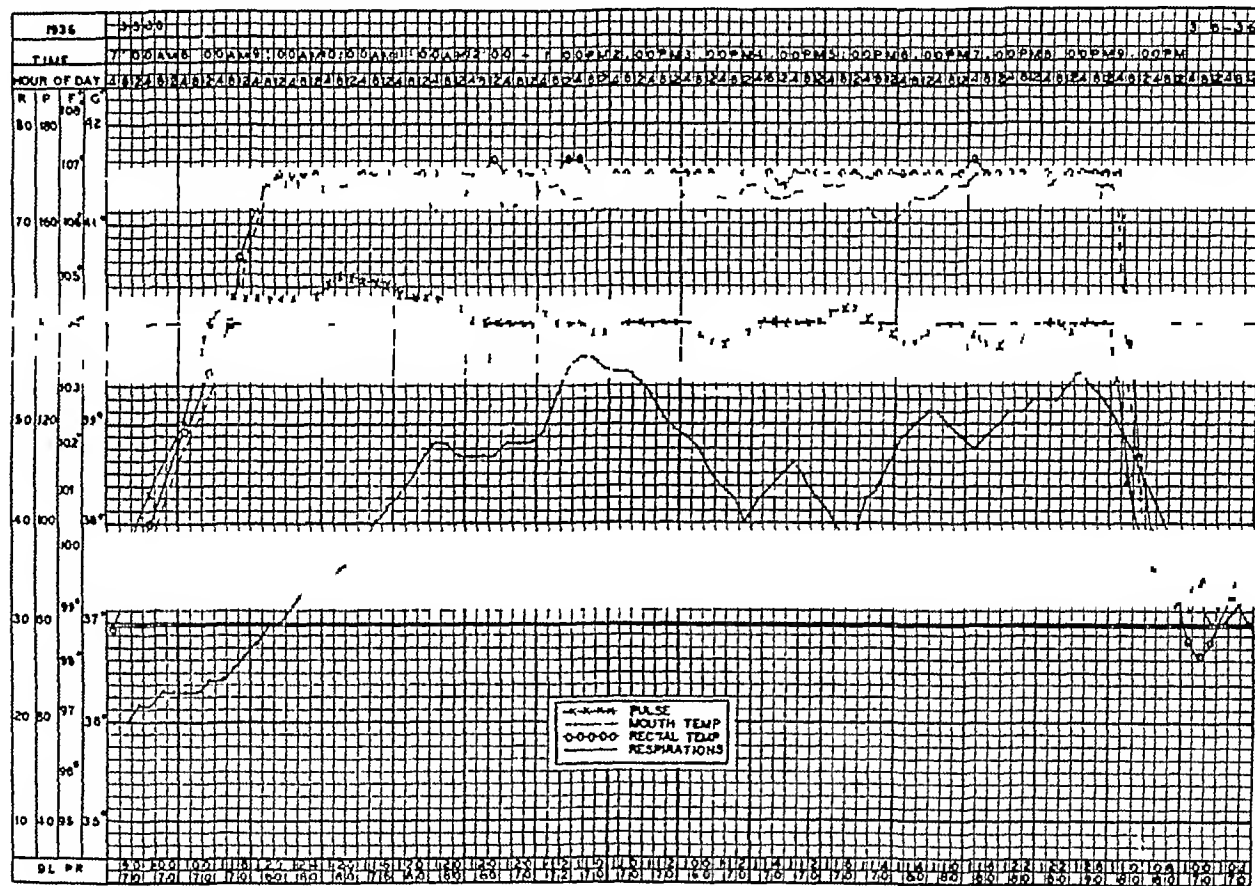


Fig 2—Temperature pulse respiration and blood pressure of a patient during treatment

history of intolerance to heat, such as sun stroke. The infrequent severe reactions include persistent vomiting, circulatory collapse, tetany and convulsions. Although we believe that the benefits derived from the hyperpyrexia therapy outweigh the risk, it should be emphasized that the latter occur. Forty-nine deaths have been reported in a total of 4,809 patients treated (0.6 per cent).⁴ At Duke Hospital approximately 430 fever treatments (at temperatures varying from 40 to 41.5 C) have been given to 280 patients (thirty-three children, 247 adults). Four deaths have occurred (1.4 per cent). One of these patients had carcinomatosis, another had a history of sun stroke, the third was

physical means for corneal ulcer, acute iritis⁸ and ocular syphilis.⁹ However, we have found only two reports of the treatment of gonorrheal ophthalmia by controlled

3 Bishop F W and Warren S L. Comparison of Three Electrical Methods of Producing Artificial Hyperthermia. *J A M A* 104:900 (March 16) 1935. Spekter Louis and McDryde Angus. Effect of Hyperpyrexia in Various Pediatric Conditions. *Am J Dis Child* 48:933 (Oct.) 1934.

4 Report of Council on Physical Therapy. Hyperpyrexia Produced by Physical Agents. *J A M A* 103:1308 (Oct. 27) 1934.

5 Spekter L, Neymann C A and Osborne S L. The Physiology of Electropyrrexia. *Am J Syph & Neurol* 18:28 (Jan.) 1934. Bishop F W, Horton C B and Warren S L. A Clinical Study of Artificial Hyperthermia Induced by High Frequency Currents. *Am J M Sc* 184:515 (Oct.) 1932. Bierman William, and Fishberg Ella H. Some Physiologic Changes During Hyperpyrexia Induced by Physical Means. *J A M A* 103:1354 (Nov 3) 1934. Hensch P S, Slocumb C H and Popp W C. Fever Therapy Results for Gonorrheal Arthritis Chronic Infectious (Atrophic) Arthritis and Other Forms of Rheumatism. *ibid* 104:1779 (May 18) 1935.

6 Ambler J V and Van Cleve J V. Malarial Therapy in Syphilitic Interstitial Keratitis. *J A M A* 102:1553 (May 12) 1934. Dennis C C., and McBride W L. Treatment of Resistant Somatic Syphilis. *Arch. Dermat. & Syph* 30:1 (July) 1934.

7 Clark, C P. Role of Malaria in Control of Atrophy of Optic Nerve Due to Syphilis. Study of Twelve Cases. *Arch Ophth* 15:250 (Feb.) 1936.

8 Whitney E L. Artificial Fever Therapy in the Treatment of Corneal Ulcer and Acute Iritis. *J A M A* 104:1794 (May 18) 1935.

9 Culler A. M. Artificial Fever Therapy of Ocular Syphilis. Fifth Annual Fever Conference. May 1935.

fever.¹⁰ As fever treatment of gonorrheal infections in various parts of the body is beneficial and as the lethal death time of *Neisseria gonorrhoeae* at 41.5 C (106.7 F) varied between six and twenty-four hours,¹¹ we treated six cases of gonorrheal ophthalmia with radiant energy (summarized in the accompanying table).

COMMENT

Treatments for five hours at 41.5 C or lower (never higher) may be given instead of the twelve hourly period, which requires two or three shifts of nurses. However, more treatments will be required. During the first two or three hours of fever the conjunctival discharge diminishes rapidly in amount and the edema becomes less, allowing the irrigating solution to reach all parts of the conjunctiva. Toward the end of the treatment the changes have progressed so that the cornea, which perhaps could not be seen well before treatment, because of chemosis, now can be more clearly

of ulceration of the cornea and ophthalmitis. In case 6 a conjunctival flap was required because of a spreading ulcer. We believe this patient's cornea would have perforated and an ophthalmitis resulted without fever treatment. Only two of these patients had simple conjunctivitis, while four had varying degrees of corneal ulceration. The average length of hospitalization for these six patients was 15.3 days, including the post-operative days. The average length of hospitalization for six patients having gonorrheal ophthalmia treated by irrigations alone or together with intravenous typhoid vaccine was 25.2 days. In the four patients having genito-urinary infections the discharge ceased and gonococci disappeared from the smears.

SUMMARY

Necessary precautions for the safety of the patient include a careful study of his general physical condition before the treatment and careful observation while the

Analysis of Cases of Gonorrheal Ophthalmia Treated with Fever

| Case | Age | Race and Sex | Duration of Infection Before Treatment, Days | Gram Negative Diplococci in Eye Discharge | Condition of Eyes on Admission to Duke Hospital | Results after First Treatment 12 Hours at 41.5 C (106.7 F) | Results after Second Treatment 12 Hours at 41.5 C (106.7 F) | Condition on Discharge | Days in Hospital |
|------|--------|--------------|--|---|---|--|--|--|------------------|
| 1 | 7 yrs | Colored ♀ | 8 | + | I lids of left eye swollen and red; discharge profuse; corneal ulcers | Swelling and discharge absent; smears positive | Treated 12 hours; swelling and discharge absent; smears persistently negative; ulcer healing | Corneal ulcer healed; vision good | 11 |
| 2 | 5 mos | Colored ♂ | 4 | + | I lids of left eye swollen and red; discharge profuse | Swelling and discharge practically absent; smears negative; left eye cleared | Treated because of infection of right eye which cleared; smears persistently negative | Cured | 11 |
| 3 | 6 yrs | White ♂ | 8 | + | Both eyes red and swollen; corneal ulceration; right eye with prolapsed iris; corneal ulcer; left eye | Swelling and discharge practically absent; smears positive | Discharge and swelling absent; smears positive; becoming negative one week later | Right eye lost; corneal ulcer; left eye healed | 20 |
| 4 | 20 yrs | White ♂ | 7 | + | I lids of right eye swollen and red; profuse discharge | Swelling and discharge absent; smears persistently negative | Not required | Cured | 11 |
| 5 | 21 yrs | Colored ♂ | 8 | + | I lids swollen and red; deep marginal erosion; corneal ulcer; right eye discharge profuse | Swelling absent; slight serous discharge; smears persistently negative | Not required | Eye enucleated | 12 |
| 6 | 30 yrs | Colored ♂ | 16 | + | I lids swollen and red; purulent discharge; left eye deep corneal ulcer | Swelling and discharge slight; ulcer still present; smears negative | Not required | Conjunctival flap necessary; vision poor | 21 |

observed. Irrigations may be continued with ease for the next few days. Gonococci, which still may be present, seem to be less resistant to antiseptics. Though irrigations may not be necessary, it is wiser to carry them out at intervals of four hours.

If the infection is not eradicated by the first treatment, the inflammatory process may recur in two or three days, when a second treatment should be given. Two treatments at 41.5 C for from nine to twelve hours have resulted in bacteriologic cures in cases 1 and 2. In case 1 the corneal ulcer healed. In case 2 the simple conjunctivitis healed entirely. In case 3 negative smears were obtained one week after the second treatment. One eye was lost as the result of a perforated cornea, but the corneal ulcer of the other eye healed. In the other three cases one treatment produced negative smears. In case 4 healing occurred without any residua. In case 5 enucleation was necessary because

treatment is being carried out. Contrindications include cardiovascular renal and liver disease, and a history of intolerance to heat, such as sun stroke.

Six patients having gonorrheal ophthalmia were treated. In five, the organisms disappeared after one or two treatments. In the sixth the gonococci disappeared one week following the second treatment. This method of treatment is especially indicated when corneal complications are present.

We believe that fever therapy, when carefully carried out, is distinctly beneficial in gonorrheal ophthalmia. It cruses subsiding of the inflammation and disappearance of the organisms accelerates healing and shortens the stay in the hospital.

10 Kendall H W, Webb W W and Simpson W M. Artificial Fever Therapy of Gonorrheal Arthritis. *Am J Surg* 20: 425 (Sept.) 1935.
Metz M H. Some Unusual Cases Treated with Fever Therapy. Fifth Annual Fever Conference, May 1935.
11 Boak, Ruth A, Carpenter C M and Warren S L. The Thermal Death Time of *Neisseria Gonorrhoeae*. Fifth Annual Fever Conference, May 1935.

A Man's Waist Measure—According to a rule of thumb: "For every inch by which a man's waist measure exceeds his chest measure subtract two years from his life expectation." Any such rule is probably too simple to show fully the danger of extreme overweight, for the data tend to indicate that with increasing weight and age the mortality increases at an accelerating rate.—Sherman, H C. Food and Health. New York, Macmillan Company, 1934.

FRACTURE OF THE NECK OF
THE FEMURSIR ROBERT JONES LECTURE IN ORTHO-
PEDIC SURGERYF J GAENSLER MD
MILWAUKEE

Fracture of the neck of the femur has been receiving increasing attention during recent years because of the general recognition of the fact that the results of treatment are far from satisfactory. My special interest in this field was aroused some seven years ago, through the failure to recognize an impacted fracture. The restoration of perfect function and of solid bony union in this case, in spite of a very brief period of protection from weight bearing, provided the stimulus for further study of this type of fracture. It is believed that the impacted fracture holds the key to a solution of some of the most important problems involved in the treatment of fractures of the neck generally, and that it is from the story of the clinical course of the impacted fracture that one can best understand the underlying principles involved in the healing process.

The reasons for the apparently uniformly successful results in impacted fractures of the hip of the type shown in figure 1 may be enumerated as follows:

- 1 Practically complete apposition of fragments
- 2 Complete immobilization by reason of impaction
- 3 Probable absence of serious damage to vessels carried by the capsula reflexa
- 4 Absence of interposed capsule
- 5 Resumption of early motion
- 6 Relative infrequency of aseptic necrosis

The surgeon, of course, will have no control over circulatory damage or inclusion of the capsule at the time of injury, but if the capsule can be released, as described later, it is believed that conditions are established conducive to early repair of vessel damage with probable avoidance of aseptic necrosis. The other points mentioned may be regarded as essential conditions that must be met or approached by any method of treatment hoping to compete in its results with those noted in the healing of impacted fractures. Assuming that reduction, by whatever method, has been accomplished, it is believed that adequate immobilization is secured more readily by means of internal fixation than by conservative methods now in general use.

A brief report of the case that provided the incentive for the present study seems warranted. I was called to see a woman, aged 52, who had fallen and injured her hip, Jan 1, 1929. There was no shortening, rotation outward or other deformity. Motion was free and painless except at extremes. She was able to stand, to walk and even to squat down with little difficulty. A diagnosis of contusion of the hip was therefore made. A roentgenogram taken three days later showed a subcapital, impacted fracture. Since the patient had been permitted to walk without apparent detriment previous to a diagnosis of fracture, walking was continued, and the patient made an uneventful and complete recovery. My associates and I have seen seven other similar cases since then in all of which recovery occurred with relatively brief and simple support. In all there was impaction and in all there was a slight valgus deformity

of the neck, so that weight was transmitted more perpendicularly and without the shearing action at the site of the fracture.

It was felt that the association of the valgus deformity with impaction was an essential factor in permitting this early function and that possibly this feature might be utilized in the treatment of fractures of the neck that were not impacted. Studies were therefore undertaken in the anatomic laboratory to determine what maneuver might be necessary to produce reduction with impaction and a slight degree of valgus to minimize the shearing force which it was believed was a potent factor in the production of nonunion. Eighteen dissecting room specimens, consisting of the intact femur and the corresponding half of the pelvis, were utilized. The muscles in these specimens had been cut away for the most part, but the capsule was generally intact. The upper portion of the pelvic half was countersunk in concrete and reinforced with wire mesh, likewise the lower end of the femur, including the con-

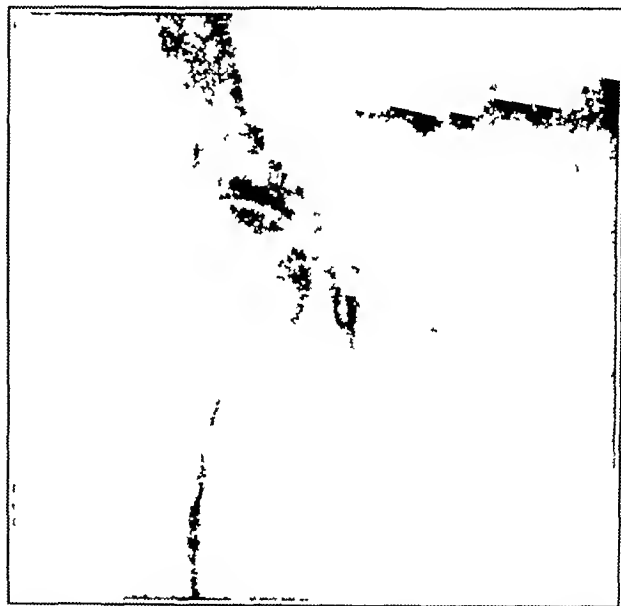


Fig 1—Subcapital impacted fracture on the right. Note the slight valgus deformity resulting in weight being borne more perpendicularly and in reducing the shearing action at the site of the fracture.

dyles and the lower fourth of the femur. The specimens were then put in a testing machine (fig 2), by means of which gradually increasing pressure was applied until a fracture occurred. The descent of the crushing weight was very slow, about fifteen hundredths of an inch to the minute. Fracture generally occurred in about five minutes. During this application of pressure the femur could be seen to bend slightly and fat was observed exuding from the shaft. All the fractures occurred at the neck, none in the shaft, the force varying from 1,300 to 3,000 pounds. In the majority the fracture line extended vertically through the neck from the upper outer margin of the head toward the lesser trochanter in a line parallel with the shaft, thus producing an oblique fracture through the neck (fig 3).

In this process the capsule was not infrequently torn when the neck suddenly gave way, the tear invariably involving the posterior portion of the capsule, often extending to the superior portion. Not infrequently the capsule was caught between the fragments, as

shown in figure 4 Attempts to produce impaction and slight valgus during abduction and traction in extension, the Whitman position, with pressure or a blow against the trochanter, with any force within reason, were unsuccessful This experience tallies with the experimental work of Gill¹ and of Snodgrass² The failure to obtain impaction is due to the fact that the



Fig. 2—Method of producing fractures of the neck of the femur The upper portion of the right pelvic half and the lower end of the femur are fixed in reinforced concrete Gradually increasing vertical force is applied

cortical bone of the neck is very dense and compact, thus lending itself very poorly to a meshing of the fracture surfaces It must be remembered however, that none of the fractures produced experimentally were subcapital, the usual type seen in impacted fractures Had subcapital fractures been produced experimentally, it is quite likely that efforts at impaction might have been successful since the cortical bone in the extreme upper portion of the neck is very thin and would allow meshing of the fractured surfaces with less difficulty In a fall in the living the force producing impaction is probably greater than any force that would be justified in an artificial impaction, because of the danger of fragmentation In these endeavors at reduction and attempted impaction it was further observed that the anterior portion of the capsule was never torn and that in abduction of the hip in the extended position the Y ligament, as pointed out by Whitman³ aided in bringing the fractured surfaces together by its action as a fulcrum at the same time preventing any gaping of the fracture line below Incidentally, actual impingement of the trochanter against the ilium was not observed This again coincides with the experience of Snodgrass in his work on the cadaver

The relation of the capsule to the fracture was of special interest As already stated, the capsule was sometimes found interposed It should be recalled that

the capsule is attached above to the margin of the acetabulum and below to the intertrochanteric line, thus completely covering the neck anteriorly Posteriorly the capsule is attached to just below the middle of the neck, the lower third of the neck not being covered The capsule may thus be described as a skirt suspended from the margin of the socket, long in front and short behind In fractures through the neck the capsule is apt to be torn close to the lower posterior attachment, the hem of the skirt As the lower fragment is pushed up at the moment of fracture it carries the capsule with it, and as the femur is pulled down in efforts at reduction the capsule is wiped into the fracture cleft and is held securely It is interesting to note that, while efforts to release the capsule by traction and extension failed release was readily and invariably accomplished by flexion of the hip to 90 degrees This is explained by the shortness of the skirt posteriorly As the flexion increases the fragments are pulled away from the capsule since the upper attachment of the latter remains fixed to the acetabular margin

In a number of instances it was found that traction on the extended extremity was ineffectual in restoring full length, owing to locking of the fragments, while when upward traction was made with the hip flexed full length was readily restored It appeared, therefore, that withdrawal of the capsule from between the fractured surfaces as well as restoration of length, at least in some cases could be more readily accomplished by the maneuver of flexion and upward traction than by traction in extension and abduction In a few instances it was found that while shortening, that is, longitudinal displacement, was readily corrected, anteroposterior displacement sometimes persisted, the trochanter portion usually lying in a plane anterior to the normal By alternating manual pressure on each side of the trochanter the fragments could usually be

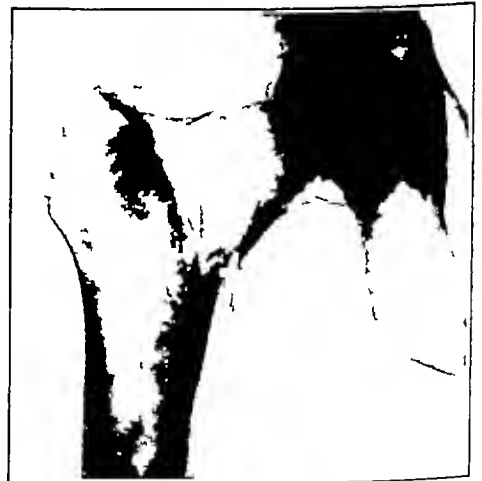


Fig. 3—The common type of fracture of the neck produced as shown in figure 2

brought to settle in proper position, thus correcting the anteroposterior displacement and producing practically perfect reduction

The realization that impaction to say nothing of impaction combined with slight valgus, was difficult or impossible to obtain led to an abandonment of efforts in this direction This much, however, was learned that in the laboratory practically anatomic reduction was readily obtainable by upward traction, as in the

1 Gill A B Treatment of Fracture of the Neck of the Femur *Ann Surg* 96 1 (July) 1932
2 Snodgrass L E Fractures of the Neck of the Femur *Am J Surg* 27 487 (March) 1935
3 Whitman Royal The Abduction Method *Am J Surg* 21 335 (Sept) 1933

Leadbetter⁴ procedure. The method differs, however, from Leadbetter's in that extension is not added as a further step, since reduction is completed with the upward pull and further manipulation is unnecessary.

The problem, then, was to devise means of fixing the fragments immovably, with the hip and knee maintained in flexion of 90 degrees. This was accomplished

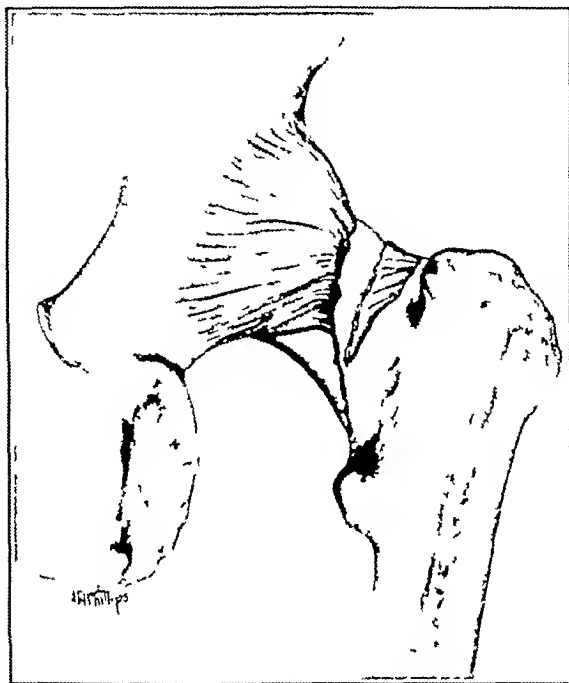


Fig 4—Inclusion of the capsule after reduction of fracture of type as shown in figure 3

in the dissecting room specimens with three knitting needle spikes introduced under direct vision, the technic being modified for subcutaneous introduction of the pins in the living, as described elsewhere.⁵ Since the extremities obviously could not well be held by an assistant during the nailing process, which required considerable time the limbs were supported from overhead bars, some 8 or 9 feet above the floor level, high enough to allow ample clearance for the portable x-ray machine then used (fig 5). This method of overhead support proved efficient, though cumbersome. About this time I was called to reduce a hip in a patient in a distant city. Because the overhead supports before used were not portable, some other plan for supporting the extremities had to be devised. Accordingly, plaster half-shells were made, from midthigh to toes supporting both extremities in the position of flexion of both hips and knees at 90 degrees. The plaster half-shells were in turn supported by adjustable pedestals, as shown in figure 6. This form of support has proved satisfactory in that it is adjustable and portable. It is important that the pelvis does not rest on the table in order that one may have the benefit of continuous body weight traction, which serves to insure maintenance of proper relation of the fragments during the subsequent spiking. The pedestals supporting the plaster half-shells are therefore raised so that the pelvis swings free about an inch above the table top. An added advantage of the suspended pelvis is that the flat x-ray cassette

can be placed under the patient's fractured hip (fig 7 A and B) in taking the lateral view without disturbing his position. Abduction of the flexed thigh is added to coapt firmly, or to lock the fragments and also to make possible the taking of the roentgenograms in both anteroposterior (fig 8) and lateral views without shifting the patient. A final step in the maneuver is the internal rotation of the thigh corresponding in degree to the angle of anterior torsion on the uninjured side, the average being about 12 degrees. The advantage of the abducted and internally rotated position lies in the fact that these maneuvers bring the neck parallel to the operating table and perpendicular to the table edge, materially facilitating the introduction of the spikes at proper angles.

Reduction by the maneuver described, namely, traction in flexion, appears to be based on sound anatomic and mechanical principles for the following reasons:

1 Flexion relaxes the anterior portion of the capsule and the Y ligament. It also relaxes some but not all of the important pelvifemoral muscles, as will be shown later.

2 The capsule, if interposed, is withdrawn as previously described.

3 Anteroposterior displacement if present, is readily corrected by lateral pressure, the maneuver being facilitated by the suspension of the pelvis.

4 Tendency to redisplacement is minimized because of the steadying effect of the weight of the pelvis hanging from the femurs as fixed points.

5 The position makes possible the taking of repeated roentgenograms in both anteroposterior and perfect lateral views without shifting the patient during the sometimes tedious process of spiking.

While the statement that flexion relaxes the muscles about the hip joint, facilitating reduction, would probably go unchallenged at first glance, closer study shows that such a statement must be very definitely qualified.

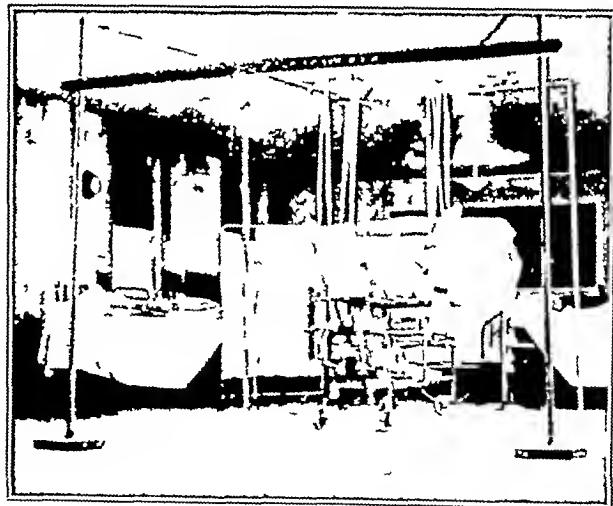


Fig 5—Overhead bars for support of the extremities with knees and hips flexed at 90 degrees

In order to clarify this point, the following procedure was carried out. The origins and insertions of all muscles about the hip were marked with tacks driven into a skeleton, the heads of the tacks left projecting. Elastic cords representing the individual muscles were then attached to these tacks and the difference in the length of the cords was noted in the flexed position as compared to the extended position, as shown in the accompanying tables.

⁴ Leadbetter, G. W. A Treatment for Fracture of the Neck of the Femur. *J. Bone & Joint Surg.* 15: 931 (Oct.) 1933.

⁵ Gaensler, F. J. Subcutaneous Spike Fixation of Fresh Fractures of the Neck of the Femur. *J. Bone & Joint Surg.* 17: 739 (July) 1935.

In table 1 are listed the muscles whose points of origin and insertion are approximated, with resulting relaxation favoring reduction.

In table 2 are listed the muscles whose points of origin and insertion are separated, with resulting stretching and hindrance to reduction.

It will be noted in table 1 that only the first four muscles enumerated were relaxed to any considerable extent and that, on the other hand (table 2), there was a definite and considerable elongation of the adductor magnus, the biceps, the semitendinosus and the gluteus maximus.

TABLE 1—*Muscles Shortened by Flexion of Hips to 90 Degrees*

| | |
|--------------------|--------|
| Sartorius | 9.7 cm |
| Gracilis | 1.8 cm |
| Tensor fasciae | 4.4 cm |
| Iliopsoas | 1.5 cm |
| Pectineus | 2.3 cm |
| Gluteus minimus | 2.1 cm |
| Gemellus inferior | 1.8 cm |
| Obturator externus | 1.2 cm |
| Piriformis | 0.0 cm |

Figure 9 shows a tracing of a lateral roentgenogram of the lumbar spine, pelvis and femur of a young man. There is noted the normal lordosis. The hip is in extension. The slightly oblique line bisecting the anterior superior spine and the middle of the greater sciatic notch is used merely as a convenient indicator of the position of the pelvis.

In figure 10 it is noted that the femur is flexed through 90 degrees. It should be observed also, however, that the pelvis is moved 48 degrees in the same direction, so that the actual flexion of the femur on the pelvis is only 90 — 48, or 42 degrees.

The tables of muscle relaxation and stretching are prepared from measurements in which the normal lordosis was undisturbed. In other words there was an actual flexion of 90 degrees. When the lordosis is diminished, as in figure 10, relaxation of the anterior muscles is diminished, but this difference is offset by diminution also in the stretching of the posterior muscles.

One may summarize the results very briefly by saying that during hip flexion the muscles lying anterior to the hip joint are relaxed while those lying posterior to the joint are stretched. It is probable that during anesthesia muscle tension may be practically disregarded and that the advantage of the flexed position recognized clinically must be attributed to the relaxation of the anterior portion of the capsule especially of the Y ligament, and of the fascia lata.

On reviewing the literature, reduction by traction in flexion is found to date back to Dupuytren⁶ who in his "Leçons orales," published in 1839 the year of his death, described the method in detail. The flexed position of the hip and knee was maintained until bony union occurred, a result which, according to his writings, occurred with regularity.

In figure 11 there is pictured the pillow support arranged according to the very careful description of Dupuytren, although no picture accompanied his text. He stresses particularly the need of having the pillows high enough to prevent the buttock from resting on the bed in order to get the proper traction effect. This method may well deserve consideration as a temporary measure in the very aged if the general condition does not warrant immediate reduction or as an alternative to

that diminishing minority who still feel that it is best to make the patient as comfortable as possible and to avoid all attempts at reduction. It would at least have the advantages of avoiding decubitus and of really making the patients comfortable, with perhaps a chance of duplicating many of the happy results reported by Dupuytren. This author stresses the point that he was the first to advocate reduction in flexion and voices his astonishment that Potts who had advocated reduction in flexion of practically all the long bones because of the advantage of muscular relaxation, had neglected to mention flexion as an aid in reduction of fracture of the neck of the femur.

In more recent times reduction in flexion was recommended by Maxwell⁷ in 1876 by Ruth⁸ in 1921 and by Leadbetter⁹ in 1933. All these authors, however, added extension as a final step in the reduction maneuver. I should like to repeat that the method I described terminated with abduction and internal rotation of the flexed hip, extension being avoided as an unnecessary further step which might conceivably produce malunion because of the constant tendency of the hip, when extended to roll out.

The need for adequate fixation is now being generally recognized but it was also recognized by many of the earlier writers among them Senn⁹ who in his interesting monograph in 1883 stressed this point particularly and suggested a method of reinforcing the external fixation of the plaster cast with a pin incorporated in the plaster and engaging the trochanter. Among Senn's conclusions the following are of interest:

The causes of nonunion are not to be found in the broken bone but in the difficulties encountered in treatment. All the various methods of treatment suggested and practiced have failed in securing perfect coaptation and uninterrupted immobilization (p. 102).

If we could keep the broken surfaces in perfect coaptation and maintain reduction and immobility these fractures would heal in the same way as impacted fractures (p. 103).

The earliest reported transfixion was in 1850 thirty years before the antiseptic era by von Langenbeck,¹⁰ who succeeded in introducing a screw through a 1 cm.

TABLE 2—*Muscles Elongated by Flexion of Hips to 90 Degrees*

| | |
|--------------------|--------|
| Adductor magnus | 7.0 cm |
| Biceps | 7.0 cm |
| Semitendinosus | 3.0 cm |
| Gluteus maximus | 3.4 cm |
| Quadratus femoris | 3.2 cm |
| Gemellus superior | 2.0 cm |
| Rectus femoris | 2.0 cm |
| Obturator internus | 1.9 cm |
| Adductor brevis | 1.0 cm |
| Adductor longus | 0.9 cm |
| Gluteus medius | 0.8 cm |
| Semimembranosus | 0.6 cm |

incision over the trochanter, fixing the fragments in perfect position. Unfortunately his patient died of hospital gangrene but in spite of this he expressed the firm belief that this method would find favor in the future. König¹¹ in 1875, using antiseptic precautions, succeeded in nailing a fracture of the neck of the femur in a youthful individual by introducing a metal drill

7 Maxwell T J Intracapsular Fracture of the Neck of the Femur Chicago M J & Examiner 33 401 1876

8 Ruth C E Fractures of the Femoral Neck and Trochanters, J A M A 77 1811 (Dec 3) 1921

9 Senn Nicholas Fractures of the Neck of the Femur Tr Am S A 1: 333 1883

10 von Langenbeck Verhandl d deutsch Gesellsch f Chir seventh congress 1 92 1878

11 König Discussion and Case Report Verhandl d deutsch Gesellsch f Chir seventh congress 1: 93 1878

6 Dupuytren Baron G Leçons orales de clinique chirurgicale faites à l'Hôpital Dieu de Paris ed 2 1 258 1839

through a small incision over the trochanter Trendelenburg¹² appears also to have been intrigued with the idea of internal fixation. He reports having made numerous attempts on the cadaver to introduce a peg through the trochanter without free opening of the joint. He states: "Sometimes you hit it more frequently you miss. With practice you may reach such dexterity that you can generally hit it but it is easy to go by." Because of the difficulty of striking the head

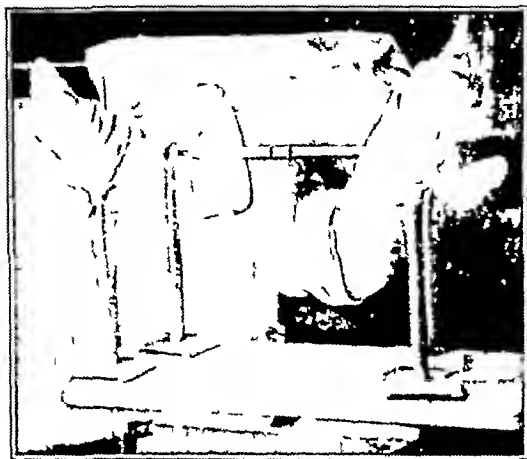


Fig 6—Extremities resting in plaster half shells which are in turn supported by pedestals adjustable as to height

with the nail, he suggested exposure of the site of the fracture from behind, drilling the outer fragment from within, removing the drill and reinserting it from without to engage both the trochanter and the head fragments under guidance of the finger. Nicolaysen¹³ reported thirteen successful cases of spiking without skin incision in 1897, using a three cornered nail driven directly through the skin without skin incision, although he used a plaster cast in addition. This was done without the use of the X-rays.

No attempt will be made to review the more recent literature, which abounds in reports of attempted internal fixation, many of the authors devising ingenious methods of spiking, either open or closed, and many with very encouraging results. Among these contributors may be mentioned Lemon,¹⁴ T. Turner Thomas,¹⁵ Smith-Petersen,¹⁶ Sven Johansson,¹⁷ Moore,¹⁸ Knowles,¹⁹ Wescott,²⁰ King,²¹ Telson and Ransohoff²² and Gaensler.⁵

Accurate reduction and complete immobilization of sufficient duration must be considered the crux of the situation. Without these essentials one cannot conceive the reestablishment of the circulation across the fracture line, and on this reestablishment healing must ultimately depend. Other factors involved in healing are favorable or unfavorable solely, or at least largely, as they affect the circulatory damage.

While apposition of one half or even one third in fractures of the long bones is usually considered sufficient to secure union and a good functional result there is no such margin of safety in fractures of the neck of the femur because of the well known fact that union is by endosteal rather than by periosteal bone formation. Schmorl²³ believes that this is due to the fact that the periosteum of the neck is entirely devoid of a cambium layer.

Reduction must be practically complete in order to supply a cross section sufficiently strong to carry the normal load. It is believed that in the vast majority of instances the circulation, impaired though it may be, is still sufficient for securing bony union, provided always that the repair process is favored by accurate apposition and perfect immobilization. When nonunion occurs it may generally be explained on the basis of interference with a circulation which under more favorable conditions would have been adequate to secure bony union. In support of this view the following considerations are deemed pertinent.

In subcapital fractures the plane of the break lies in the zone regarded by many as the most poorly supplied with blood. As a matter of fact, in the uninjured hip the subcapital area is very well supplied. A glance at dry femurs in the dissecting room will dispel any doubt on this point (fig 12). In such specimens one will find a relatively large number of good sized nutrient foramina grouped on the superior

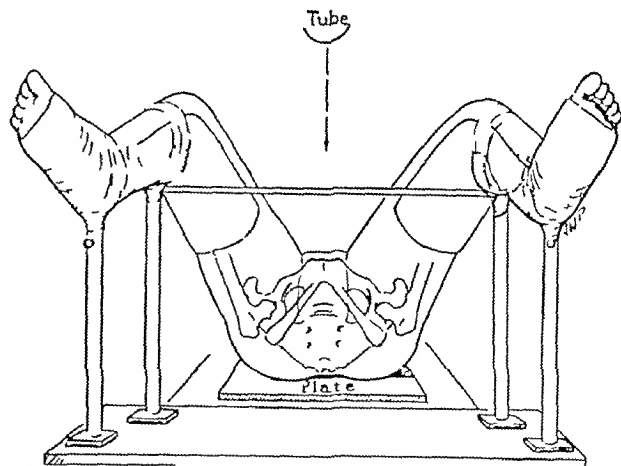


Fig 7—The author's method of obtaining lateral view of the hip after reduction and without shifting the patient.

surface of the neck close to the head, with a few scattered foramina on the posterior and anterior surfaces. In some of these dissecting room specimens, which for the most part were derived from older people, the nutrient foramina in the foeca, the attachment of the ligamentum teres, were few in number, rather minute and indeed more often than not absent altogether (fig 13). In other words, the supply from the ligamentum teres, while variable, is frequently very

23. Schmorl G. Die pathologische Anatomie der Schenkelhalsfraktur. München med Wchnschr 71: 1381 (Oct 3) 1924.

12. Trendelenburg. Verhandl d deutsch Gesellsch f Chir seventh congress 1 89: 1878.

13. Nicolaysen J. Lidt om Diagnosen og Behandlingen av Fr colla femoris (A Little about the Diagnosis and Treatment of Fractures of the Neck of the Femur). Nord med arkiv 8: 1897.

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15. Thomas T. T. Fixation by a Wood Screw Without Arthrotomy in Certain Fractures of the Neck of the Femur. Am J Surg 25: 292 (Sept.) 1921.

16. Smith-Petersen M. N., Cave E. F. and VanGorder G. W. Intra capsular Fractures of the Neck of the Femur. Treatment by Internal Fixation. Arch Surg 23: 715 (Nov.) 1931.

17. Johansson Sven. On the Operative Treatment of Medial Fractures of the Neck of the Femur. Acta orthop Scandinav 3: 362, 1932. Pseud arthrosis of the Neck of the Femur Treated by a Method of Extra Articular Osteosynthesis. ibid 4: 214 1933.

18. Moore A. T. Fracture of the Hip Joint (Intracapsular). A New Method of Skeletal Fixation. J South Carolina M A 30: 199 (Oct.) 1934.

19. Knowles F. L. Fractures of the Neck of the Femur. Wisconsin M J 35: 106 (Feb.) 1936.

20. Wescott H. H. A Method for the Internal Fixation of Trans cervical Fractures of the Femur. Virginia M Monthly 59: 197 (July) 1932. A Method for the Internal Fixation of Transcervical Fractures of the Femur. J Bone & Joint Surg 16: 372 (April) 1934.

21. King Thomas. Recent Intracapsular Fractures of the Neck of the Femur. A Critical Consideration of Their Treatment and a Description of a New Technique. M J Australia 1: 5 (Jan 6) 1934.

22. Telson D. R. and Ransohoff N. S. Treatment of Fractured Neck of the Femur by Axial Fixation with Steel Wires. J Bone & Joint Surg 17: 727 (July) 1935.

scant or absent, while that from the capsular vessels is relatively abundant. While anastomoses between these two sets of vessels has been denied,²⁵ Wolcott²⁶ has recently demonstrated by injection methods that such anastomoses do occur. In view of this extensive injury to and inclusion in the fracture line of soft parts, capsule and synovial membrane must result in serious circulatory impairment. This in part explains the frequency of nonunion in the unimpacted

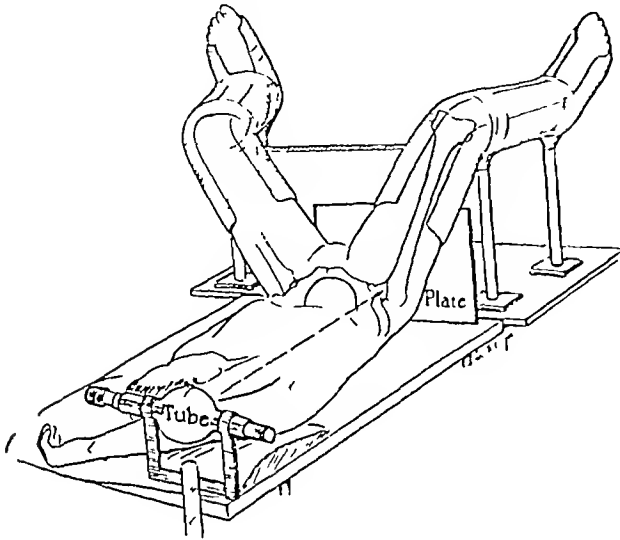


Fig. 8—The author's method of obtaining anteroposterior view of the hip after reduction and without shifting the patient. Confirmatory roentgenograms in two directions have been insisted on for practically every other fracture. The procedure shown in figure 7 and here makes this possible for the neck of the femur.

cases. In the impacted cases there is in all likelihood no serious damage of the vessels and no inclusion of capsule. Immobilization because of the impaction is perfect and union is the rule. The relative infrequency or absence of aseptic necrosis in this type may also be taken as evidence of an adequate circulation. The comparatively large number of nutrient foramina for the capsular vessels carried by the capsula reflexa must be regarded as incontrovertible evidence of the abundance of blood supply in the uninjured part.

In case of fracture the situation is quite different. According to Schmorl, the blood supply from the capsular vessels may be seriously curtailed, depending on how much of the synovial membrane is peeled off from the neck and whether or not there is inclusion of the torn capsule between the fracture surfaces. In the case of capsular inclusion, which occurred in 75 per cent of his cases of subcapital fracture, he believed that the blood supply must be cut off practically completely with resulting necrosis of the head. The loss of neck frequently observed, he believes, is due not so much to rubbing of the fracture ends as advocated by Schanz, as to a resorption due to tearing of the synovial vessels impaired nutrition of the neck and inactivity. On the basis of his pathologic examinations Schmorl concludes that inclusion of capsule and synovial membrane must not be underestimated in the production of nonunion, and he raised the question whether the difficulty of impaired circulation may be offset by suitable position and fixation without operative intervention. This question should probably be answered in the affirmative, because it is more than likely that early, careful anatomic reposition of the bone fragments by the

method of flexion as already described will release the capsule and bring about restoration of fairly normal relation of soft parts thus providing proper conditions for the reestablishment of circulation, just as one expects repair of vessel damage in torn ligaments in other situations.

The frequency of nonunion in the ordinary, non-impacted cases cannot reasonably be attributed to lack of circulation. It is much more likely that the blood supply was in fact sufficient for bony union had immobilization been such as to favor repair of the circulatory damage. This is proved by the fact that the high Schanz osteotomy in cases of nonunion of long standing is followed by firm bony union at the site of the original nonunion in about 50 per cent of the cases. Schanz²⁷ had observed this late healing in old cases of nonunion and ascribed the unexpectedly happy results to the elimination of the shearing force at the site of the fracture as shown in the following quotation: 'Through the elevation of the neck the fracture site is placed below the head and the body weight no longer pushes the head downward past the fracture surface but directly against it. This provides more favorable weight bearing relations and may even lead to late bony union.' The fact that the osteotomy is well below the fracture line and that the latter is not drilled or molested in any way would indicate that the circulation was adequate for healing at the time of the original injury and that union might as well have occurred first as last had proper immobilization been attained.

Schanz's pupil Pauwels²⁸ has elaborated on this idea of elimination of shearing force and adduced a mass of convincing evidence to prove the theory of Roux²⁹ that pressure stimulates bone production while tension inhibits bone production. According to this theory the connective tissue organization of the interfragmentary clot (*Bildungsgewebe*) can be directed by means of mechanical stimuli to result in (1) bone (2) connective tissue or (3) cartilage depending on the character of the mechanical stimulus. Intermittent functional pressure will result in transformation of the precallous tissue into bone while tension and shearing forces

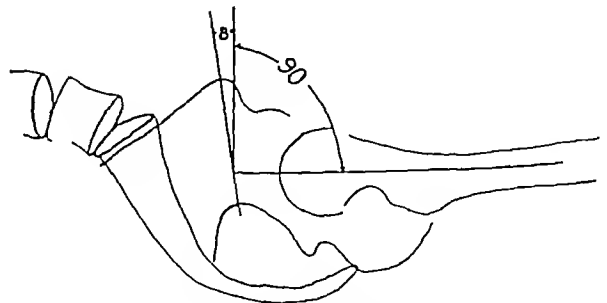


Fig. 9—Tracing of lateral roentgenogram of the lumbar spine pelvis and femur the latter in normal extension. Note the normal lordosis.

inhibit bone production and result in connective tissue, a principle which Pauwels regards as of the utmost significance in consideration of the healing process of fractures of the neck of the femur. In the Schanz osteotomy cases the shearing force is changed into a force of intermittent pressure by the reduction of the fracture plane from a markedly oblique to one more nearly approaching the horizontal. In fractures ade-

²⁴ Wolcott W. E. Circulation of the Head and Neck of the Femur. J. A. M. A. 100:27 (Jan 7) 1933.

²⁵ Schanz A. Ueber die nach Schenkelhalsbrüchen zurück bleibenden Gehstörungen. Deutsche med. Wochenschr. 51:1732 (May 1) 1925.
²⁶ Pauwels Friedrich. Der Schenkelhalsbruch ein mechanisches Problem. Stuttgart Ferdinand Enke 1935 p. 6.
²⁷ Roux von Wilhelm. Gesamte Abhandlungen und Entwicklungen mechanik der Organismen. Leipzig Wilhelm Engelmann 1:357 1895.

quately immobilized by means of internal fixation the shearing force is effectually eliminated, the thrust during weight bearing being converted into a pure pressure effect

Adequate fixation implies complete immobilization not only for the usual period of twelve or even sixteen weeks but until bony union is well under way. Every one is familiar with the cases which look promising while in plaster but which show a gradual slipping

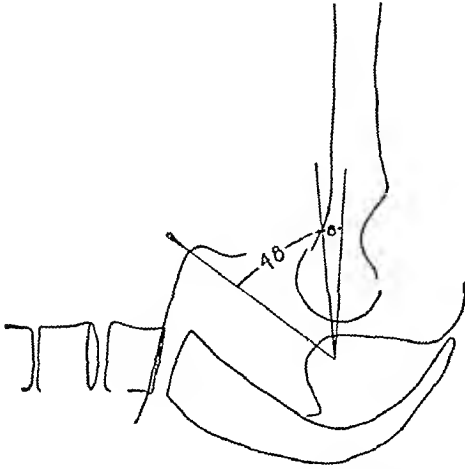


Fig 10—The femur is flexed through 90 degrees but the pelvis is likewise flexed on the trunk through 48 degrees. The lordosis is lost. The actual flexion of the femur is therefore $90 - 48$ or 42 degrees

upward of the trochanter during the first weeks or months after removal of the plaster. This experience is so common that weight bearing is often prohibited for many months or a year. In spite of this, gradual giving way of the soft callus is observed all too frequently. This must mean that fixation in plaster or other conventional methods is inadequate. It is felt that the very slight movement allowed in the cast, especially in the case of stout individuals, no matter how carefully the cast may be molded, is responsible for a fair share of the failures. This gradual giving way is again the result of mechanical interference with the circulation and therefore with the healing process. The tendency of the unsupported hip to roll out, combined with the telescoping effect of contraction of the pelvifemoral muscles, must cause a tendency of the fracture to gape because of the repeated tension strain on the immature callus. The same lesson has been learned in the treatment of fractures of the carpal scaphoid. In this case, however, external fixation is sufficient if maintained for the proper period. In both these instances if fixation is inadequate, allowing even the slightest movement of the fragments one on the other, the process of bone repair dependent in turn on the repair of the circulatory damage is interfered with. Nature's efforts become exhausted and fibrous union results. With this clinical experience it is not strange that surgeons have turned to internal fixation as a more reliable method.

INTERPOSITION OF CAPSULE

Interposition of capsule is regarded by many writers as one of the important factors in the production of nonunion. Referring again to the high Schanz osteotomy for nonunion, it will be recalled that late union occurred in about 50 per cent after proved nonunion. If the capsule, as Schmorl found, is interposed in 75 per cent, it is more than likely that the capsule was interposed in at least some of the 50 per cent of cases

in which bony union had been obtained after osteotomy. In other words, it would appear that late union can occur in spite of interposition of the capsule if proper mechanical conditions are provided and the shearing force is eliminated. The observation of Sven Johansson of x-ray evidence of beginning osseous union three months after internal fixation by means of a Smith-Petersen nail in a case of nonunion of fourteen months' standing may also be taken as supporting the view that an insufficient blood supply was not the explanation of failure in the first attempt, since the circulation proved adequate when proper fixation was established.

Can union occur in spite of interposed capsule? In order to test the importance of interposed capsule as a factor in nonunion, the following procedure was carried out on dogs. The femoral neck was cut through with a chisel, and a flap of capsule was turned into the fracture line, completely covering this. The flap was held in place with silk sutures. The hips were then spiked with three knitting needle spikes and the wound was closed. An effort was made to cut the neck off squarely and cleanly. In four the fracture was subcapital and in five transcervical. No external fixation of any kind was used. The operation was unilateral in seven dogs and bilateral in one, a total of nine hips in eight dogs (fig 14).

OPERATION

A straight skin incision 10 cm long is made, centering over the hip joint. Subcutaneous fat is divided and towels are applied to exclude the skin. Division of fascia by incision at right angles to the skin incision exposes the muscles overlying the joint. The biceps femoris which partially overlies the posterior portion of the trochanter is retracted backward. Muscle insertions overlying the trochanter are detached and reflected upward, exposing the capsule. The capsule is now thoroughly freed, and a large square flap is cut corresponding to the outer half of the capsule. This flap is left attached below while the upper margin of the flap is cut close to the acetabular margin. Three sutures are now placed close to



Fig 11—Dupuytren's method of securing traction in case of fracture of the neck of the femur. Two bed sheets placed over thighs and legs respectively as indicated by arrows in the diagram and fastened to the frame of the bed serve to maintain proper position.

the upper margin of the flap, one in each corner and one in the middle to facilitate secure interposition later. The ligamentum teres is not disturbed. With a large bone hook passed around the neck to steady the bone, the neck is now cut through with a chisel. A few black threads are now woven into the capsule to identify this structure, if possible, in later pathologic study. The capsule is now interposed, the silk stitches previously placed being carried with a sharp aneurysm needle for attachment to the medial portions of the capsule. The fracture is now reduced the fragments being held in position during the

introduction of the three knitting needle spikes. The spiking is facilitated by partially drilling the trochanter and distal portion of the neck at the same time tending to avoid displacement of the fragments during the spiking procedure. The muscles are now reattached to the trochanter. The fascia is closed with interrupted catgut, the skin with interrupted silk. The wound is dressed with a single layer of gauze 1 inch wide and the length of the wound held in place with collodion. The stitches are not removed. They work out in from six to eight weeks. No fixation of any kind is used.

All the animals were adult and weighed approximately 35 pounds (16 Kg). Dog 3 died four days after operation, apparently from the effects of previous experimental work having no relation to the present problem. Dog 6 died of wound infection eight days after operation. Dog 5 showed definite nonunion with marked displacement upward of the trochanter. In this case two Kirschner wires were used for the internal fixation rather than the heavier knitting needles with the result that the wires broke and became displaced. This case must therefore be eliminated on the basis of inadequate fixation. In a sense, this dog did not die in vain, as the specimen may serve as evidence that non union in dogs can occur.

Eliminating three hips for reasons noted in the preceding paragraph leaves six hips for consideration. In one instance, the left hip of dog 4 union was only fairly firm because the animal was killed thirty-five days after operation on this hip. In the five other hips in which the dogs were allowed to live from four to ten months after operation union was firm in every instance. As to postoperative data it may be said that weight bearing in walking as well as in running was resumed in from eight to ten weeks, sometimes with scarcely a perceptible limp.

As to pathologic changes, it was noted that in dog 1 in the right hip there was partial luxation upward of the head with marked thickening of the upper acetabular margin the lower



Fig 12—Dry femur showing surface of neck. Note the many large foramina.

half of the acetabulum being filled with a fibrocartilaginous mass. The capsule at the site of defect showed enormous thickening evidently resulting from the need of support of the head to prevent further upward luxation. There was dense fibrous ankylosis at the hip joint but in spite of this the dog bore weight on the leg in walking and in running with but a slight limp. In dog 2 there were no noteworthy pathologic changes. The cartilage of the head and acetabulum appeared normal. In dog 4 in the right hip there was noted a mild inflammatory reaction in the acetabular fossa, evidently the result of

irritation produced by the projection of one of the nails about 1 mm beyond the cartilage of the head. In dog 4 in the left hip the trochanteric bursa showed slight increase in fluid with some fibrin and granulation tissue in the floor, the result of irritation of the ends of the spikes. There was a thin pannus covering about one fourth of the femoral head, otherwise the cartilage was normal. The fundus of the acetab-

ulum showed deep, red granulation tissue. The specimen obtained from dog 5, the right hip, is especially interesting because it is the only case of nonunion. The head was forced frozen into the acetabulum and rotated outward. The trochanter had ridden up so that the neck rubbed against the femoral shaft just below the fracture site, producing highly polished surfaces on both neck and shaft. Specimens from dogs 7 the right hip and 8 the right hip, showed practically normal cartilage of the head and acetabulum. In none of the dogs was a defect noted in the capsule as the result of interposition of the flap. The repair was by fibrous tissue in several instances thicker than the normal capsule.

SUMMARY

It may be stated that in the five cases in which reduction and spike fixation were satisfactory and of sufficient duration firm bony union resulted. In one union was fairly firm with every

indication that firm union would have resulted had sufficient time been allowed. While "dog is dog and man is man and never the twain shall meet," the conclusion seems justified that union can occur in spite of interposition of capsule and that if the circulatory conditions in dog and man are at all comparable repair of the circulatory damage on which healing ultimately depends is possible provided fixation eliminating the shearing force is adequate.

Within recent years aseptic necrosis has been recognized as a factor of very considerable significance in the problem of the fractured neck. No statistics were available to indicate the frequency of the condition. My impression as well as that of colleagues with whom the subject was discussed is that it is much less frequent in (1) impacted fractures and (2) in those cases in which reduction and internal fixation are satisfactory than in nonimpacted fractures treated by conservative methods. If for the sake of argument these assumptions are granted one may speculate on the causes of this difference in incidence. The necrosis, of course, is due to lack of circulation in the head fragment. In the impacted fracture the circulation is much less damaged and fixation is efficient allowing uninterrupted progress in repair. One must think of the mitral repair process in terms of fine capillary shoots penetrating the "bildungs-gewebe," attempting to bridge the gap. The smaller the gap and the more rigid the fixation, the more rapid the repair. In the impacted fracture these conditions are met perfectly. The gap is microscopic rather than macroscopic, and fixation is perfect.

In the nonimpacted cases treated with conservative means the circulatory damage incidental to tears of the synovial membrane and perhaps capsular inclusion is great and the processes of repair of vessel damage are constantly interfered with by movement of greater or lesser extent permitted in spite of careful application of the plaster cast. In the nonimpacted fracture treated by adequate internal fixation, movement is effectually eliminated and repair proceeds undisturbed. The cause



Fig 13—Dry femur. Note the absence of foramina in the fossa.

of the relative frequency of aseptic necrosis in the non-impacted fracture treated conservatively must therefore be placed squarely at the door of inadequate fixation, interfering with circulatory repair. In this connection attention should be called to the work of Carey,²⁸ who measured the stress on the femur during contraction of the thigh muscles produced by the electric current. He removed a 2 inch (5 cm.) section from the middle of the shaft of the femur, replacing this with a hydraulic gage firmly secured by peg extensions into the open medullary canal of the upper and lower fragments. The force of the muscular contraction in the sense of stress on the bone was then readily measurable. His figures are astonishingly high reaching a maximum of more than ten times the body weight of the entire animal. No analogous measurements are available for the neck of the femur but because of the shaft neck angle it is readily seen that contraction of the powerful pelfemoral muscles must result in a tremendous shearing force rather than in pure stress acting in a direction perpendicular to the cross section of the neck. Contraction of these muscles therefore even if the patient is in a large double spica may very well result in a slight shearing motion of the fracture surfaces, one on the other. This no doubt explains the occasional gradual upward riding of the trochanter due to yielding of the immature callus observed even before weight bearing, and sometimes indeed while the patient is still in the cast. In the fracture with satisfactory internal fixation, on the other hand muscular contraction can result only in intermittent pressure in the direction of the longitudinal axis of the neck—pure stress devoid of shearing factor and therefore in stimulation of bone formation.

One point with reference to aseptic necrosis should be cleared up. Reported changes in femoral heads coming on years after fracture when until then no increased density of the head was noted as compared to the rest of the bone must be classified as something other than aseptic necrosis. Just as in osteomyelitis one expects to recognize a sequestrum within a period of three or four months because of the retention of the calcium salts in the fragment deprived of circulation and the carrying off of the lime salts in the living bone, so one should be able to recognize necrosis of the head fragment when it exists, within a reasonable period of time. It is inconceivable that the circulation should be competent for months or years and then fail with resulting necrosis. To me it seems that some of the cases in question must be classified as osteo-arthritis, the changes undoubtedly coming on more rapidly because of the joint damage sustained at the time of injury.

The importance of early activity as a factor promoting union is probably very considerable. It is being stressed more and more in the treatment of fractures in general. It is believed that no one will question the wisdom of early movement at neighboring joints so long as the fragments themselves remain securely fixed. In fracture of the ribs, where motion is uninterrupted because of respiratory movements and where fixation due to the splinting action of the adjacent ribs is efficient fractures heal promptly and nonunion is probably unknown. Clinical evidence of the low ebb of metabolism during inactivity is furnished by the fact that encasement of a child's leg in plaster will cause sufficient bone atrophy within six weeks to allow manual

breaking with but little difficulty. Clark and Swenson²⁹ in studying the circulation in the rabbit's ear have demonstrated on the moving picture film that gentle stroking of the ear will transform narrow, sluggish capillary streams into what looked like raging torrents under the microscope. Since massage is but a poor substitute for muscular activity, the inference is no doubt correct that the blood supply during activity is vastly increased over that in a state of rest. In the impacted fracture and in the spiked fracture one has assurance of secure fixation so that early, in fact immediate, motion within reasonable limits is not only permissible but indicated. Waldenström,³⁰ an advocate of spiking rather than plaster fixation suggests that early motion is conducive to improvement of the circulation through the vessels of the ligamentum teres the alternating stretching and relaxation of the ligament assisting in pumping the blood along its course. Certainly retention for months in plaster with the ligamentum teres stretched taut and compressed, as it must

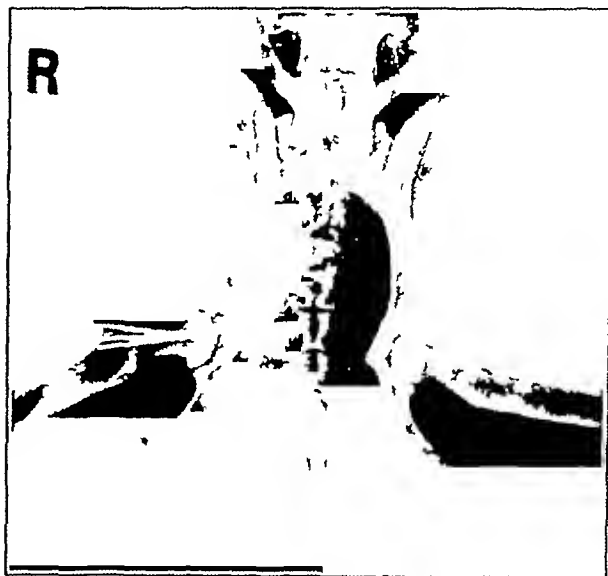


Fig. 14—Roentgen appearance of pelvis and hips of dog 4 after fracture of the neck of the right femur. Interposition of flap of capsule reduction and spiking. Firm union resulted in spite of the interposed capsule.

be in the widely abducted and extended position, is not compatible with abundant blood supply. Indeed, thrombosis of the vessels under such conditions would probably be a frequent finding if pathologic evidence were available.

While encouraging reports of internal fixation are at hand from many authors each developing his own technique not enough time has elapsed to permit one to speak of end results. It appears likely, however, that end results will be reached earlier in those cases in which internal rather than external fixation is used, since conditions established by internal fixation are more or less comparable to those obtaining in the impacted cases. Complications and mishaps may be expected in any new procedure, and indeed many have been reported, but each such incident has been a lesson often pointing the way to avoidance of danger. It is to be hoped that out of the many procedures all differing somewhat in technical details some method or methods

²⁹ Clark, E. R., and Swenson, E. A. Anatomical Dept. University of Pennsylvania.

²⁸ Carey, E. J. Experimental Physiologic and Pathologic Muscular Back Pressure and Its Relationship to the Formation, Regeneration and Deformation of Bone. *Anat. Rec. (supp.)* 48: 12, 1931.

³⁰ Waldenström and Henning. Necrosis of the Femoral Epiphysis Owing to Insufficient Nutrition from the Ligamentum Teres. *Acta chir. Scandinar.* 75: 185, 1934.

more or less generally applicable will be developed so that in the hands of skilful surgeons in well equipped hospitals the percentage of success will be materially increased

It is recognized that no one method of reduction will fit all cases, also that not all cases properly reduced and properly spiked will go on to solid union. It is believed however that there is sufficient evidence, clinical and experimental that internal fixation has decided advantages over external fixation and that present day conventional methods, while representing a distinct advance as compared with earlier methods will give way to more precise and more certain procedures

In the foregoing an attempt has been made further to rationalize first the method of reduction of fractures of the neck of the femur by traction in flexion and secondly the method of internal fixation. This attempt is based in part on clinical observation and in part on experimental studies on the skeleton and on animals. If this presentation³¹ will serve in some small measure in placing internal fixation on a sound basis and in stimulating continued efforts at perfection and simplification of the technic insuring a wider acceptance its purpose will have been accomplished

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THE TREATMENT OF CHRONIC VARICOSE ULCERS

BY MEANS OF ACETYL-BETA-METHYLCHOLINE
CHLORIDE IONTOPHORESIS

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NEW YORK

Chronic ulcers associated either with varicose veins or with the occlusions following phlebitis of the deep veins constitute one of the most severe and disabling conditions affecting the lower extremities. Despite the numerous forms of treatment including vein injection recommended during the past fifty years certain of these ulcers fail to heal. This is a report of the results of a new method of treatment of these ulcers which appears to be more satisfactory than any hitherto suggested.

The formation of varicose ulcers is now generally accepted as being the result of venous stasis secondary to the dilatation of the veins and weakening of venous valves. This produces an increasing backpressure into the capillary bed, with the development of pressure edema and the waterlogging of the tissues. With the associated anoxemia, impaired nutrition and accumulation of toxic waste products of metabolism the resistance of the tissues to trauma and infection is reduced. Chronic ulceration may then occur, following the slightest bruise, abrasion, infection or even spontaneously. A similar process frequently follows deep

phlebitis. In many instances, both phlebitis and varicose veins play a part in the production of such ulcers. There has been no difference in response to this treatment so that we have not subdivided these groups in this report.

The actual ulceration may begin with a gangrene and separation of the superficial layers of the skin, or pieces of wet dead tissue of varying sizes, representing the entire thickness of the skin may come away from time to time. In certain instances a portion of the external wall of the vein sloughs away with its covering of skin. These ulcers are usually irregular in shape, only the deeper seated lacunar ulcers are round or oval. These ulcers can usually be differentiated from syphilitic ulcers, which are more clearly "punched out." Blood studies should be used nevertheless to clear up this point in each instance. The size varies from that of a pinhead to ulcers of huge size. The largest in our series was 11 by 6 cm. The base of these ulcers is usually covered by a slough with abundant seropurulent discharge present. The surrounding area is most often indurated, edematous and markedly pigmented.

Logically the healing of varicose ulcers should be dependent on an increase in the local circulation and the elimination of local edema and anoxemia with accompanying improvement in the nutrition of the tissues. Many of the previous forms of treatment such as rest and elevation, elastic bandages, rubber sponge pressure bandages "Unna's boot," injection and ligation of veins have been used in an attempt to promote this physiologic state.

Dianow¹ reported in 1930 thirty cases of varicose ulcers treated by acetylcholine (0.1 Gm daily subcutaneously) in addition to the usual treatment of rest in bed and wet dressings or ointments. Except for one failure all (about 97 per cent) healed in six weeks. Of 109 previously treated in the same way without acetylcholine injections 31 per cent failed to heal and forty-nine of the ulcers required more than six weeks to heal.

Because we believed that the local induction of vasodilating drugs might be even more effective in stimulating the circulation and hence in healing the varicose and postphlebitis ulcers we used acetyl-beta-methylcholine chloride² by the method of iontophoresis as first described from this clinic.³ A preliminary report of nine cases successfully healed by this method was included as a part of a broader study presented before the Section on Pharmacology and Therapeutics of the American Medical Association in June 1935.⁴ These patients had had their ulcers for from seven months to thirty-seven years, without relief from any previously used treatment.

In this paper we present the results of the treatment of the first twenty-six consecutive cases of varicose and postphlebitis ulcers that have come under our care since we began this form of treatment. No selection of cases was undertaken. We would stress the following conditions of our experiments:

1 With three exceptions our patients had been through a control period ranging from one to thirty-seven years during which time all recognized forms of

31 The author is indebted to the late Dr. M. G. Millar for help in the work on experimental fractures to Dr. H. W. Wierka of the orthopedic staff of the University of Wisconsin Medical School in the work on dogs and to Dr. A. C. Schmidt in the study of the effect of hip flexion on relaxation of muscles.

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Read before the Section of Medicine, New York Academy of Medicine, Dec. 17, 1935.

From the Vascular Clinic of the Department of Medicine of the New York Post Graduate Medical School and Hospital of Columbia University.

1 Dianow, I. Du traitement des ulcères variqueux par l'acetylcholine. Rev. med. de la Suisse Rom. 50:277, 1930. J. de med. de Paris 50:619, 1930.

2 The acetyl-beta-methylcholine chloride (Mechoyl) used in these studies was supplied through the kindness of Merck & Co., Rahway, N. J.

3 Kovacs, Joseph. The Iontophoresis of Acetyl-Beta-Methylcholine Chloride in the Treatment of Chronic Arthritis and Peripheral Vascular Disease. Preliminary Report. Am. J. M. Sc. 188:32 (July), 1934.

4 Kovacs, Joseph, Saylor, Leslie, and Wright, I. S. The Pharmacological and Therapeutic Effects of Certain Choline Compounds. Am. Heart J. 11:53 (Jan.) 1936.

treatment for this condition had been tried on one or more of them without success

2 During our period of treatment, no patients were hospitalized or put to bed. On the contrary, all were urged to continue their daily occupations, which included washing, ironing, chopping wood, cooking, and selling real estate



Fig 1 (case 14)—S. L. a man aged 30, duration of ulcer four and one-half years, size 1.25 by 0.75 cm, duration of treatment three weeks, number of treatments twelve. Appearance of ulcer July 26, 1935

3 No other form of treatment was used. (A plain petrolatum dressing was permitted during the early stages of the treatment, if it made the patient more comfortable.)

4 No patient received injections for varicose veins during the course of this iontophoresis treatment. After the ulcers had healed, we had the veins injected, when indicated.

The technic of this form of treatment, together with descriptions of local and general reactions, has been described previously by us.⁵ We summarize this material here only briefly.

TECHNIC

A standard 0.5 per cent solution of acetyl-beta-methyl-choline chloride is used. Reinforced asbestos paper is saturated with the 0.5 per cent solution of the drug and wrapped around the foot and leg as high as the knee. The ulcerated area is not covered during treatment until a firm scab has formed over it. After this has occurred, the application may be made directly over the healed area also. A malleable metal plate is placed over the wet asbestos paper and connected to the positive pole of a galvanic machine. The metal plates are never applied over the ulcerated area. A large, regular moist pad electrode is used as a dispersive electrode. This is placed under the back and connected with the negative pole. The current is turned on and slowly increased to 20-30 milliamperes. At the end of the

treatment, the current is slowly reduced and turned off. Treatment is given in some cases daily, but generally two to three times weekly for from twenty to thirty minutes.

GENERAL REACTIONS

A moderately severe reaction resulting from this iontophoresis treatment might be characterized by (1) a marked flush extending over the face, chest and upper part of the abdomen, (2) increase in pulse rate, (3) a deeper, slower respiration cycle, (4) a marked drop in blood pressure (which has been so profound on several occasions that it was necessary to terminate the experiment with atropine), (5) marked salivation (in one instance as much as 140 cc of saliva was collected in twenty minutes), (6) marked lacrimation, (7) profuse diaphoresis, (8) increased intestinal peristalsis with abdominal griping and occasional immediate defecation, (9) occasional substernal pressure, (10) diuresis, in certain individuals, to a varying degree, (11) changes in the electrocardiogram resulting in temporary inversion of the T waves in one or more leads, (12) slight cyanosis at the tips of the extremities, with a drop in surface temperature, which usually rises above the original level in from one to six hours. If desired, immediate cessation of effects may be produced by the injection of atropine, one one-hundredth grain (0.00065 Gm.) subcutaneously.

These systemic reactions constitute an exact duplication of the reactions following the subcutaneous or



Fig 2 (case 14)—Appearance Aug 23, 1935. Ulcer healed, only scaling and pigmentation remain.

intravenous administration of the same drug but are more certain, more prolonged and more easily controlled. They are rarely noted with iontophoresis, except in a mild form.

LOCAL REACTIONS

In addition, there is a characteristic local reaction, directly under the site of the application of the drug. This consists of (1) a feeling of prickling followed

⁵ Kovacs (footnotes 3 and 4)

by warmth during the treatment (2) the appearance of goose-flesh immediately after removal of the asbestos paper (3) a local blush of the skin (4) sweating of the skin, which may continue from six to eight hours, (5) an elevation in surface temperature, during treatment followed by a drop during profuse sweating

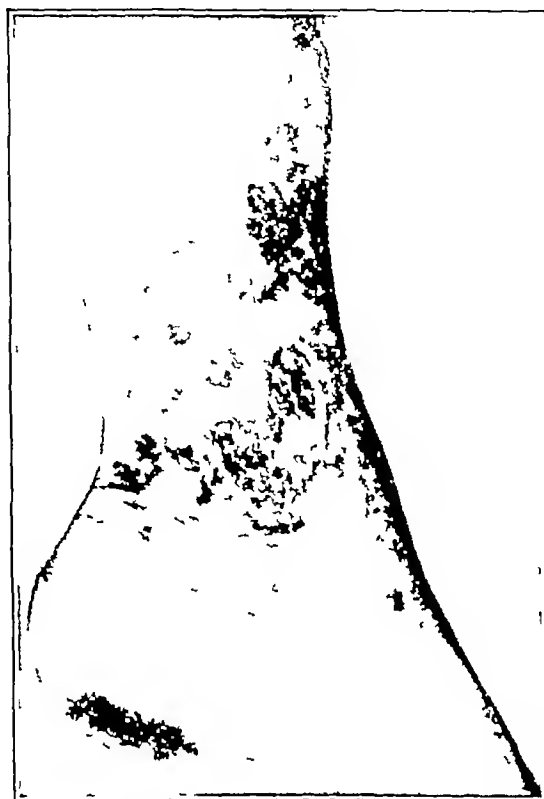


Fig 3 (case 17)—U. H. a woman aged 63 duration of ulcer two years size 5.5 by 8 cm duration of treatment twenty weeks number of treatments 100 Appearance of ulcer April 10 1935

(with accompanying evaporation) and a rise above the former level in from one-half to five hours

Neither the general nor the local effects noted can be produced with the use of saline iontophoresis or by the galvanic current alone. Likewise they cannot be produced by merely soaking the area in the solution or by using an ointment containing up to 25 per cent of the drug. Acetyl-beta-methylcholine chloride solution plus the use of the galvanic current must therefore be responsible for the effects.

Individual variations in reactions are noted as in the use of most drugs. Some individuals who scarcely react to the first treatment show an increasing reaction to subsequent treatments.

RESULTS

Twenty-six patients with varicose ulcers have been treated by acetyl-beta-methylcholine chloride iontophoresis. The age the duration and size of the ulcers the duration and number of treatments and the results in each case are given in the accompanying table. Of the twenty-six patients only three did not have satisfactory results. The histories of these three cases are as follows:

The first case with an unsatisfactory result was that of a woman (patient 3) with a post-partum phlebitis and varicose ulcer of eight year duration. She had been bedridden for seven months before we started treatment. The ulcer was healed after twenty-one treatments but when thyroid extract was given by the family physician in doses up to 4-6 grams

(0.26-0.4 Gm) a day, to help the patient reduce, the ulcer promptly recurred and could not be rehealed. The patient was overweight, although the basal metabolism was normal. We are unable to state definitely the cause of the recurrence this time.

The second patient was S. E. (24), a man, aged 31, who had two large varicose ulcers of four years' duration on the right leg. One of these was a punched-out ulcer at the middle of the calf, 2.5 cm in diameter, surrounded by a discolored, brawny, scaly, edematous area, 1.2 by 8 cm in size, in which several small (pinhead sized) ulcers were present. These ulcers healed after twenty-four treatments and the surrounding area was much improved. The other ulcer was located over the internal malleolus. This was 4.5 by 2.25 cm in size, punched out, and surrounded by an inflamed, edematous indurated area of 10 by 5 cm. This ulcer showed no improvement after forty-two treatments. This patient is a cook and must stand on his feet steadily for ten hours a day without rest. Although we have urged all our patients to continue with their daily occupations, because this individual was on his feet more steadily than any other persons in the series, because this ulcer always became more inflamed and painful during the latter part of each day's work, and because we feel that this patient has a complicating deep-vessel phlebitis, it would seem likely, in this one instance that hospitalization would be necessary to insure a reasonable chance of healing the remaining ulcer.

The third patient, B. G. (22), had only four treatments in the course of one week and then had to return to his home, about 150 miles from New York. His family physician is now giving these treatments under our guidance.

COMMENT

The mechanism by which this healing is accomplished is not clear. Two explanations seem possible. The



Fig 4 (case 17)—Appearance Aug 13 1935 ulcer healed only scaling and pigmentation remain

results may be due to either one or to a combination of the two. The production of an increased local circulation may promote a more rapid removal of the waste products and increase local nutrition, thus producing regeneration of the tissues, or secondly the marked local diaphoresis, which may continue for from

four to eight hours after the treatment, may reduce the edema resulting from the hydrostatic pressure, and, by relieving the tissues of this overload of fluid, may permit healing. We realize that it is preferable to close the causative veins as part of the treatment and have recommended injection therapy in suitable cases at the conclusion of the experiment. It is to be expected that, if the etiologic factors are not removed, all ulcers of this type will tend to recur unless treatment is continued. There are however ulcers which do not heal after injections and other cases in which injections are

The Treatment of Varicose Ulcers with Acetyl Beta-Methylcholine Chloride Iontophoresis

| Patient | Age in Years Sex | Duration of Ulcer | Size of Ulcer | Duration of Treatment | No. of Treatments | Result |
|---------|---------------------|-------------------|---|-----------------------|-------------------|------------------------|
| 1 N S | 60 ♂ | 12 years | 1.5 by 1.7 cm | 0 weeks | 18 | Healed |
| 2 B K | 62 ♀ | 37 years | 2 ulcers of 2 cm diameter | 0 weeks | 16 | Healed |
| 3 M A | 29 ♀ | 8 years | 2.5 cm diameter | 16 weeks | 60 | Healed (re-opened) |
| 4 A I | 70 ♀ | 20 years | 4 by 3 cm | 3 weeks | 13 | Healed |
| 5 U | 62 ♀ | 20 years | 7 by 6 cm | 9 weeks | 50 | Healed |
| 6 S R | 47 ♀ | 7 years | 2 cm diameter | 16 weeks | 16 | Healed (1 treatment) |
| 7 C | 60 ♀ | 23 years | 11 by 6 cm | 0 weeks | 16 | Healed |
| 8 J | 51 ♂ | 7 months | 2 cm diameter | 5 weeks | 13 | Healed |
| 9 D C | 58 ♂ | 1 year | Left 5.7 by 4.0 cm, right 7 by 4.1 cm | 8 weeks | 22 | Healed (13 treatments) |
| 10 S G | 51 ♀ | 10 years | 3.5 by 0.5 cm, 3 by 4 cm | 10 days | 7 | Healed |
| 11 E N | 23 ♂ | 12 years | 4 by 1.5 cm | 10 days | 4 | Healed |
| 12 F R | 49 ♀ | 3 years | 1.5 by 2 cm, 1.5 by 1 cm | 12 days | 5 | Healed |
| 13 E D | 50 ♀ | 7 years | 4 by 2 cm | 11 days | 5 | Healed |
| 14 S L | 30 ♂ | 45 years | 1.2 by 0.75 cm | 7 weeks | 12 | Healed |
| 15 T R | 57 ♀ | 20 years | 1 by 1 cm | 8 weeks | 24 | Healed |
| 16 A V | 50 ♂ | 3 years | 2.5 cm diameter | 2 weeks | 5 | Healed |
| 17 U H | 63 ♀ | 2 years | 5.5 by 3 cm | 20 weeks | 100 | Healed |
| 18 C S | 48 ♀ | 20 years | 11 by 3 cm | 16 weeks | 47 | Healed |
| 19 O A | 51 ♀ | 3 months | 1.75 cm diameter | 1 week | 5 | Healed |
| 20 R F | 54 ♂ | 2 years | 2.3 by 3.1 cm | 12 weeks | 38 | Healed |
| 21 B G | 36 ♀ | 3 years | 1.6 by 1.2 cm | 6 weeks | 24 | Healed |
| 22 B G | 57 ♂ | 6 years | 5 by 2.5 cm | 1 week | 4 | Unimproved, stopped |
| 23 T S | 51 ♀ | 1 year | 0.5 cm diameter | 6 weeks | 11 | Healed |
| 24 S E | 31 ♂ | 4 years | 1 calf 2.5 cm diameter, ankle 4.3 by 2.6 cm | 12 weeks | 39 | Not improved |
| 25 G S | 52 ♂ | 10 years | 1.8 by 0.7 cm | 2 weeks | 10 | Healed |
| 26 O C | 63 ♂ | 1 week | 2 ulcers of 0.5 cm diameter | 2 weeks | 9 | Healed |

not to be recommended, as, for example, with diabetes or phlebitis. In these groups this form of treatment should have especial value. We find such patients quite willing to continue to take treatments once a week or every ten days, to prevent the recurrence of their former condition.

When one considers the duration of these ulcers preceding treatment and the fact that the patients were neither put to bed nor given any other form of treatment, the results are encouraging and the method warrants further study and clinical use.

115 East Sixty-First Street

TULAREMIC PNEUMONIA

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AND

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CHICAGO

Tularemia is a relatively newly described disease in medical literature. First described in ground squirrels by McCoy and Chapin¹ in 1912, it was recognized as a disease of man by Francis² in 1922. Since the time of its discovery it has been considered a septicemia and has been recognized clinically in this form.

In 1924 Verbruyck³ first made mention of a pneumonic process specific for this disease in the report of a fatal case with necropsy. Examination of the lung revealed hard, irregular, discrete nodules in the lower lobe of the left lung, and microscopic study showed principally caseation necrosis. The pneumonia with consolidation was not determined clinically, however, and no mention is made of any relationship between these lesions and the disease itself. In 1925 Francis,⁴ in a comprehensive report on tularemia, made no mention of a complicating pneumonia. In a clinicopathologic study Simpson⁵ reported one case of a fulminant tularemic bacteremia with necrotizing nodules in the lungs. In the same year Bardon and Berdez⁶ reported another case with necropsy which revealed a caseous pneumonia very similar, as they remarked, to tuberculosis. Bunker and Smith⁷ reported four similar cases, in one of which *Bacterium tularense* was recovered from the sputum before death. As far as we are able to determine, this is the only report in the literature in which *B. tularense* has been found in the sputum.

The first mention of tularemic pneumonia as a clinical entity appeared in 1931, when three separate reports appeared in the literature. Blackford⁸ suggested that the so-called clinical bronchopneumonias seen in patients suffering from tularemia were probably the result of tularemic pulmonary lesions. In a study of thirteen cases he found six presenting involvement of the lungs, one of which was examined post mortem and showed tularemic abscess cavities in both lungs. Permar and MacLachlan's⁹ patient developed an atypical pneumonia clinically, which at autopsy was found to have been caused by large areas of caseation necrosis in both lungs. They called attention to the grave prognosis associated with such lesions. The pathologic changes were characterized by interstitial and alveolar necrosis apparently due to arteriolar and venous thrombosis. The exudate was described as being chiefly a mononuclear one in the alveoli, and they noted a large

From the Medical Service of Dr. LeRoy H. Sloan, Cook County Hospital.

¹ McCoy G. W. and Chapin C. W. Further Observations of the Plague-like Disease with Report of *B. Tularense*. *J. Infect. Dis.* 10: 61, 1912.

² Francis Edward. Tularemia, a New Disease in Man. *J. A. M. A.* 78: 1015 (April 8), 1922.

³ Verbruyck J. R. Tularemia. *J. A. M. A.* 82: 1577 (May 17), 1924.

⁴ Francis Edward. Tularemia. *J. A. M. A.* 84: 1243 (April 25), 1925.

⁵ Simpson W. M. Tularemia with Postmortem. *Ann. Int. Med.* 1: 1007 (June), 1928.

⁶ Bardon Richard and Berdez George. Tularemia. Report of a Fatal Case with Postmortem Observations. *J. A. M. A.* 90: 1369 (April 28), 1928.

⁷ Bunker C. W. O. and Smith E. E. Tularemia. *U. S. Nav. M. Bull.* 26: 901 (Oct.), 1928.

⁸ Blackford S. D. Pulmonary Lesions in Human Tularemia. *Ann. Int. Med.* 5: 1421 (May), 1932.

⁹ Permar H. H. and MacLachlan W. W. G. Tularemic Pneumonia. *Ann. Int. Med.* 3: 687 (Dec.), 1931.

collection of plasma cells in the interstices Sante¹⁰ reported a case of tularemia in which the patient developed a persistent nonproductive cough X-ray examination of the chest revealed an irregular consolidation in one lung The patient slowly recovered and subsequent roentgenograms of the chest were negative The fact that it required months for the chest to clear makes it highly suggestive that this was tularemic pneumonia, as we shall later point out Tureen¹¹ reported a case in which there were pulmonary involvement and an accompanying pleural effusion, the patient recovered, although convalescence was protracted and a thickened pleura was a residue

Gudger's¹² patient died and necropsy revealed a massive pleural effusion accompanied by pulmonary caseation necrosis, no organisms were found in the lung, but culture from the spleen of an inoculated guinea-pig gave a fruitful growth of *B. tularensis* Gudger considered tularemia of the lungs a highly fatal disease and mentioned Tureen's¹¹ report of tularemic pneumonia with recovery as being the only one in the literature up to that time, although Sante's case also seems to fall into this group Gundry and Warner¹³ mention pulmonary lesions as a definite component of tularemia and report one case with necropsy Blackford¹⁴ insisted that pleuropulmonary infections were frequent in patients who recovered Archer, Blackford and Wissler,¹⁵ in an x-ray study pointed out that the diagnosis could not be made by this means alone Kavanaugh,¹⁶ in a review of 123 cases, found six with pleurisy, three with pleural effusions, and one with pneumothorax, the first mention of this complication in the literature In his case it was associated with a fatal outcome Bernstein,¹⁷ in an excellent review of the literature to date, summarizes the twenty-one

recorded necropsies, two of which were unsatisfactory or incomplete as far as examination of the lungs was concerned Of the remaining nineteen, sixteen had pulmonary disease consisting chiefly of caseation necrosis

From what has been said, it seems obvious that tularemia may involve the lungs with a frequency that makes it not at all uncommon Because of the fact



Fig 1—Area of opacity in middle third of right lung Dec 5 1935

that it is generally regarded as a highly fatal disease it occurred to us that report of a case with recovery was indicated

REPORT OF CASE

First Admission—P M., a white man, aged 47, a laborer, born in Italy and residing in the United States for the past twenty-five years, was admitted to the medical service of one of us (L H S) in the Cook County Hospital, Nov 25, 1935, complaining of headache, cough, and chills and fever for one week He stated that his illness was ushered in by a severe chill followed by a high fever and a drenching sweat. He noted severe headache, which became progressively worse, and a cough, which was productive of a thick yellow sputum. There had been no hemoptysis All these symptoms had persisted unabated until the day of admission He had had most of the usual childhood diseases, gonorrhea twenty-five years before and an inguinal herniorrhaphy fifteen years before. His wife had had two spontaneous abortions, but nine children were living and well

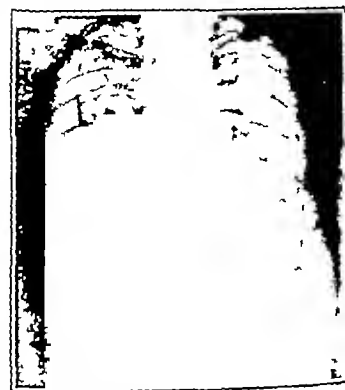


Fig 2—Massive effusion in right pleural cavity Jan 16 1936

On admission the temperature was 103 F, the pulse 110 and the respiration rate 24 The lips and nails were faintly cyanotic The pupils reacted well to light and in accommodation, and the eyes were otherwise normal Examination of the throat was negative and there was no cervical adenopathy The heart and lungs showed no abnormalities Aside from a soft spleen, which was palpable one fingerbreadth below the left costal margin, examination of the abdomen revealed nothing of importance. The extremities were essentially normal, and the reflexes were physiologic. It is noteworthy that no cutaneous lesion of any kind was present and no adenopathy. Because of evident sepsis, further inquiry was made and a history obtained of the patient's having skinned a wild rabbit about two weeks before the onset of his illness A tentative diagnosis of tularemia was then made.

The temperature remained elevated, the pulse relatively slow, and the following day the patient complained of severe sticking pain on the anterior surface of the upper portion of the right side of the chest, aggravated by coughing and breathing. Examination of the lungs was again negative, pain continued and four days later dullness tubular breathing, bronchophony and fine moist rales were discovered over the anterior surface of the upper third of the right lung Roentgenograms at this time revealed an area of opacity in the middle third of the right lung extending out from the hilus (fig 1) Four days later, December 9, another roentgenogram showed extension of this process laterally Ten days after admission the temperature became normal by lysis and remained so, although physical and x-ray signs of pulmonary consolidation persisted

A blood count at the time of admission showed 4,500,000 red blood cells, 85 per cent hemoglobin (Tallqvist) and 8,400 white cells, with a differential count of 70 per cent polymorphonuclear leukocytes, 24 per cent lymphocytes, 5 per cent large mononuclears and 1 per cent eosinophils Repeated urinalyses were negative The blood culture was negative on two occasions, as were serum agglutination tests for typhoid and the melitensis porine and bovine strains of *Brucella* The blood Wassermann reaction was negative and repeated stool examinations and cultures revealed nothing unusual Examination of the sputum showed many mixed nonspecific organisms Agglutination for *B. tularensis* was positive 1:160 November 25, 1:640 December 3 and 1:640 December 13

December 19 the patient was discharged with the diagnosis of tularemic pneumonia unresolved X-ray examination at this time still showed considerable density in the region of the right hilus

Second Admission—Jan 15 1936 the patient was readmitted During the interim he had been complaining of dull pain in the right side of the chest associated with some dyspnea For three days prior to this admission he had been coughing a good deal

10 Sante L R Pulmonary Infection in Tularemia Case Report Am J Roentgenol 25 241 (Feb) 1931

11 Tureen L L Tularemic Pneumonia J A M A 99 1501 (Oct 29) 1932

12 Gudger J R Tularemic Pneumonia J A M A 101 1143 (Oct 7) 1913

13 Gundry L P and Warner C G Fatal Tularemia Ann Int Med 7 83 (Jan) 1934

14 Blackford S D Pulmonary Manifestations in Human Tularemia J A M A 104: 891 (March 16) 1935

15 Archer V W Blackford S D and Wissler J E Pulmonary Manifestations in Human Tularemia J A M A 104 895 (March 16) 1935

16 Kavanaugh C N Tularemia Consideration of 123 Cases with Observations at Autopsy in One Arch Int Med 55 61 (Jan) 1935

17 Bernstein Alan Tularemia Report of Three Fatal Cases with Autopsies Arch Int Med 56 1117 (Dec) 1935

and had been expectorating about one cupful of thick yellow sputum daily. Physical examination at this time revealed diminished expansion of the right lung, and flatness over the right side of the chest posteriorly from the level of the fifth thoracic vertebra down. Tactile fremitus, breath sounds and voice sounds were totally absent over this area. X-ray examination at this time demonstrated a massive effusion in the right pleural cavity with evidence of slight pneumothorax (fig 2).

Thoracentesis yielded 200 cc of a slightly clouded amber fluid. Stained smears revealed no organisms and a predominance of lymphocytes. Agglutination tests on the fluid for *B. tularensis* were positive 1:512. Serial roentgenograms demonstrated progressively decreasing amounts of fluid in the pleural cavity accompanied by an increased amount of air, and marked thickening of the pleura. Repeated sputum examinations were negative for tubercle bacilli. Cultures of the fluid revealed nothing, nor did inoculation into a guinea-pig. Further agglutination tests for *B. tularensis* on the blood and pleural fluid were increasingly positive up to 1:2,880. Eight days after admission, while bending over, the patient had a violent coughing spell and expectorated about 4 ounces (120 cc) of a thin yellow fluid. Increased cough and expectoration continued for about ten days, during which roentgenograms revealed extensive hydropneumothorax with 80 per cent collapse of the lung (fig 3). A bronchial fistula was suspected. February 18 the patient left the hospital with diminished cough and expectoration and a right hydropneumothorax, with about 60 per cent collapse of the lung.

Examination March 5, revealed dullness over the right side of the chest posteriorly with distant breath sounds and no rales. There was hyperresonance anteriorly and a positive coin test was elicited. A roentgenogram showed a 60 per cent pneumothorax and a markedly thickened pleura (fig 4). The patient's clinical condition was good.

The final diagnosis was tularemia with pneumonia complicating persistent hydropneumothorax, and chronic pleuritis.

COMMENT

From the reports in the literature, particularly in the light of recent pathologic studies, we are led to believe that tularemic pneumonia is not a rare disease, although it is often unrecognized. While only one



Fig 3—Hydropneumothorax Jan 21 1936

instance of recovery of the organism from the sputum has been recorded⁷ and while an absolute clinical diagnosis is difficult in the absence of this finding, the frequent association of caseous pneumonia with tularemia makes it reasonable to assume that an atypical pneumonia developing in a patient with a clinical history of tularemia, particularly if associated with pleural effusion combined

with a protracted course, and the failure to establish tuberculosis or other specific granulomas as the etiology, is sufficient evidence to establish the clinical diagnosis of tularemic pneumonia. It is noteworthy that, in all the reported cases, as in Sante's,¹⁰ Kavanaugh's¹⁶ and ours, the physical and x-ray signs of pulmonary consolidation do not appear until quite late in the course of the disease and do not disappear until long after apparent clinical recovery, if at all.

The process evidently begins with involvement of the hilus, which then spreads peripherally, making early diagnosis difficult.

The prognosis is generally considered to be very unfavorable but reports of tularemic pneumonia with

recovery, together with the fact that many cases are probably unrecognized, throw some doubt on this conclusion.

With regard to pathogenesis, tularemia is usually associated with an obvious cutaneous lesion which is considered the portal of entry, although Francis¹⁸ and Simpson⁵ have shown that the organism may pass through the unbroken skin, although these cases are usually associated with regional adenopathy. It seems reasonable that in so-called typhoidal or cryptogenic tularemia, in which there is neither an ulcer nor adenopathy, the portal of entry may be other than the skin in some instances, as in the respiratory or gastro-intestinal tracts.¹⁰ In our case, for example, the onset of productive cough shortly following the constitutional symptoms, together with the absence of a cutaneous lesion, may be interpreted as being due to a primary tularemic pneumonia. The absence of physical changes may be explained by the presence of localized hilar involvement.



Fig 4—Pneumothorax and thickened pleura March 5 1936

CONCLUSIONS

1 A case of tularemic pneumonia with recovery was complicated by a spontaneous hydropneumothorax.

2 The late onset, the lobular distribution and the prolonged course are the outstanding clinical manifestations.

3 No effective specific treatment is known, in our patient supportive and palliative measures resulted in recovery.

55 East Washington Street.

¹⁸ Francis Edward and Lake, G. C. Tularemia. *Pub Health Rep* 37: 392 (Feb 24) 1922.

¹⁹ Beck, H. G. and Merkel, W. C. Tularemia. Fatal Case of the Typhoid Form Caused by Ingestion of Rabbit with Autopsy Report. *South M J* 28: 422 (May) 1935. Amoss, H. L. and Sprunt, D. H. Tularemia. *J. A. M. A.* 106: 1078 (March 28) 1936.

Clinical Investigation in the "Florid Twenties"—Keeping pace with the spirit of abandon which characterized the florid twenties, clinical investigation ran riot, recognizing no bounds, philosophical, intellectual, technical or financial. With apparently unlimited financial resources the business man's concept of mass production tended to creep into academic medical circles without due appreciation of the differences in the aims of business and of science. Under this spell of enthusiasm it seemed reasonable to expect that with organized groups of investigators, spacious laboratories, endless equipment and technical assistance the mysteries of medical science must bow before the concerted onslaught and bow promptly. Medical students and young graduates without consideration of 'Geist' or other qualifications were urged to enter laboratories. The sobering effect of the economic crash upon industrial and financial structures has had far-reaching repercussions and has been seriously felt in most of the clinics of this country. The problem of curtailment and economy has involved all those interested in clinical investigation and we are now confronted with the inevitable and healthy task of taking account of stock and separating the wheat from the chaff. In other words, we must decide what out of this great orgy of clinical investigation, is most worthy of salvage.—Loeb, Robert F. Comments on Clinical Investigation. *Science* 83: 423 (May 8) 1936.

TUBERCULOSIS OF THE CLAVICLE

REVIEW OF THE LITERATURE AND
REPORT OF A CASEJACOB SIRKIN, M.D.
ANDE. A. BAUMGARTNER, M.D.
NEWARK, N. J.

Tuberculosis of the clavicle has rarely been reported. We have been closely observing such a case in the past year and have made a rather careful search of the cases reported. Recently Macey¹ at the Mayo Clinic briefly reported a case of tuberculosis of the left clavicle and right malar bone, both of which are infrequently seen. Coley² reported a case about forty years ago. We have seen no other American reports. There have been twenty-one cases reported in the French literature that we have seen. Couillard-Labonette³ in 1898 gave a review of the literature in which he stated that LeDentu,⁴ Reverdin⁵ and Thierry⁶ had reported cases

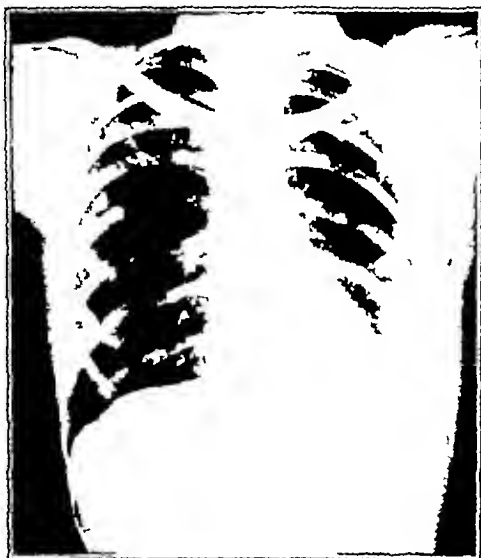


Fig. 1—View of chest.

We have included these cases in our report. Couillard also added three new cases of his own. Connor reviewed the literature and, besides quoting the cases cited by Couillard, made reference to a case reported by Bakardjeff.⁸ This, too, has been included in our report. Connor added one new case. Besides these we have found one case described in the German⁹ literature and one in the Scandinavian¹⁰.

Since so few cases have been reported, we have tabulated those found in the literature since 1882, the date of the discovery of the tubercle bacillus by Koch. In the table we have given the pertinent data concerning the cases.

From the Newark State School.

¹ Macey, H. B. Tuberculosis of the Clavicle and Malar Bone. Proc. Staff Meet., Mayo Clin. 10: 289 (May 8) 1935.² Coley, W. B. Tubercular Osteitis of the Clavicle Simulating Malignant Disease. Operation Recovery. New York M. J. 54: 230 1891.³ Couillard-Labonette, J. M. Contribution à l'étude de la tuberculose de la clavicle et de ses articulations. Fac. de med. et de pharm. de Bordeaux 61: 1898.⁴ LeDentu, Soc. de chir. 1882.⁵ Reverdin, Rev. med. de la Suisse Rom. 1886.⁶ Thierry, Thec. de Paris 1890.⁷ Connor, A. Tuberculose de la clavicle. Gaz. d. hop. Paris 77: 1021 1904.⁸ Bakardjeff, Thec. de Montpellier 1902.⁹ Schaefer, H. Leber das Auftreten von Erweichungsherden in Schienbeinkopf. Chirurg. 2: 1 1930.¹⁰ Huitfeldt, Tuberculosis clavicularum behandlet med resektion og fri benplastik fra ribben. Forh. Kri. Trans. kir. for. 1912 p. 51.

The table lists thirty cases. Eleven of the patients were females, eighteen were males, and the sex of one was not stated. The ages have varied from 10 to 72, the latter case being the one reported by Macey.¹ Twenty-one of the patients were between the ages of 10 and 40, and eleven of these were between 20 and 29.



Fig. 2—Close-up view of right clavicle showing destructive process.

Of these eleven, eight were males. There were four females between the ages of 10 and 19. The ages of two were not given. In twelve patients the left clavicle was involved and in eleven the right, while the one diseased was not specified in seven cases.



Fig. 3—View of pelvis showing sacroiliac joint involvement.

In fifteen cases, including ours, just half of those here tabulated we have considered as definite proof that the lesion was tuberculous. In eight of these cases histologic examination was accepted as proof of the case. In two cases material from the lesion injected in a guinea-pig proved the lesion while in a third this was

used as confirmatory evidence. In two cases x-ray evidence alone was given and accepted, and in three others it was confirmatory to histologic examination or guinea-pig inoculation. Tubercle bacilli were found in the curettings or discharge in two patients and, in our patient along with x-ray examination and guinea-pig inoculation, proved the case.

Eighteen patients were treated by excision or resection of the diseased bone, and in ten patients curetting only was done. In several cases curetting was attempted at first and excision practiced later. One patient refused operation and one, accepted as tuberculous from x-ray evidence only, was treated by rest and sunlight. In twenty-one patients the result was said to be good or the patient said to be cured. The outcome of the treatment

inserted because the tumor fluctuated, and a study of the pus showed many tubercle bacilli. The details were as follows:

REPORT OF CASE

The history is rather incomplete owing to the fact that the patient, being mentally defective, cannot give an accurate story of her previous illnesses. Nothing is known of her family except that her parents were mentally defective. She entered the Newark State School in February 1931. She had chicken-pox, measles and mumps as a child, convulsions were present until the establishment of menstruation, she had given birth to two children uneventfully before admission. A diagnosis of mild hyperthyroidism with exophthalmos had been made. She had frequent colds and attacks of tonsillitis. She was ill from August 1932 to January 1933, with a diagnosis of pulmonary tuberculosis, after which time she resumed her usual duties and, apparently, was recovered.

Cases of Tuberculosis of Clavicle

| Reference | Date | Sex | Age | Clavicle | Proof | Treatment | Outcome | Other Tuberculous Foci |
|---|------|-----|-----|----------|---|---------------------------|-----------------|--|
| Jahresheft d. d. chir. Abt. d. Spital in Basel 1884-1885, p. 11 | 1887 | ♂ | 32 | Left | | Excision | Good | Not given |
| Gungolphe M. Mém. et compt. rend. Soc. d. sc. méd. de Lyon 30:263, 1890 | 1890 | ♀ | 16 | Left | | Excision | Good | Not given |
| Petitpierre M. Thèse Fac. d. méd. et de pharm. de Lyon series 1 no 530 1890 | 1890 | ♀ | 34 | Right | | Curetted | Good | Not given |
| | | ♀ | 38 | Right | | Curetted | Good | Not given |
| | | ♀ | 22 | Left | | Curetted | Good | Left knee abscess right breast |
| Coley | 1891 | ♂ | 41 | Left | | Curetted | Not stated | Spine right forearm frontal |
| Ozenne ¹¹ | 1893 | ♀ | 28 | Right | Histologic | Curetted | Good | No other foci |
| Couillard ³ | 1898 | | | | | | | |
| Le Dentu ⁴ | 1892 | ♂ | 60 | ? | Microscopic | Resection | Cured | Not given |
| Reverdin ⁵ | 1893 | ♀ | 10 | ? | | Curetted | Good | Bronchitis |
| Thierry ⁶ | 1890 | ♂ | 42 | ? | | Resection | Cured | Pulmonary |
| | | ♀ | 50 | Right | | Resection | Good | Not given |
| | | ♀ | 10 | Left | | Resection | Sinus per sited | Not given |
| Kahn G. Thèse Paris 1900 | 1900 | ♀ | 10 | Right | | Resection | Not stated | Not given |
| | | ♀ | 20 | ? | Histologic | Resection | Sinus per sited | Glands in neck as child |
| | | ♂ | 23 | Right | Histologic | Resection | Cured | None given |
| | | ♂ | 22 | Left | Histologic | Resection | Good | Pleurisy 9 years before |
| Chopioet C. Arch. méd. de Toulouse 7:74 1901 | 1901 | ♂ | 22 | Right | | Resection | Good | Not given |
| Conor | 1904 | ♂ | 13 | Left | Guinea pig inoculation | Resection | Good | Not given |
| Bakardjoff ⁸ | 1902 | ♂ | 22 | Left | | Resection | Good | Pleurisy |
| Hultfeldt ¹⁰ | 1912 | ♂ | 29 | Left | X ray histologic | Resection | Good | Glands of neck |
| Martio A. Arch. gén. de chir. 8:700 1914 | 1914 | ♀ | 50 | ? | Guinea pig inoculation | Patient refused operation | Not stated | Not given |
| | | ♂ | ? | ? | X ray | Excision | Good | Not given |
| | | ♂ | 30 | Left | Histologic | Resection | Good | Not given |
| | | ♀ | 22 | Right | ? | Resection | Not stated | Not given |
| | | ♀ | 22 | Left | ? | Resection | Not stated | Not given |
| | | ? | ? | ? | Tubercle bacilli from curetting | Curetted | Not stated | Not given |
| Ménard L. Paris méd. 1:148 (Jan 8) 1927 | 1927 | ♂ | 47 | Right | Tubercle bacilli | Curetted | Not stated | Kidneys |
| Schaefer ⁹ | 1930 | ♂ | 16 | Right | X ray | Sunlight | Cured | Not given |
| Macey ¹ | 1935 | ♀ | 72 | Left | X ray histologic | Curetted | Good | Malar |
| Sirkin and Baumgartner | 1935 | ♀ | 20 | Right | Tubercle bacilli guinea pig inoculation x ray | Curetted sun lamp | Healing | Urinary tract sacro-iliac joint healed pulmonary |

is not given in seven cases, while in two, both after resection, a sinus persisted. For the case in which operation was not done the outcome is not given.

There were known tuberculous foci besides the clavicle in eleven cases. Other bones or joints were involved in four cases, the knee, spine, frontal bone, malar bone and sacro-iliac joint. There was a breast abscess, probably tuberculous, in one of these. The lungs were apparently diseased in five cases, with pleurisy in two, bronchitis in one and pulmonary tuberculosis in two. The glands of the neck had been involved, as shown by the history in two cases. Two cases presented renal tuberculosis, as proved by the finding of tubercle bacilli in catheterized specimens. Ozenne¹¹ is reported as stating that no other foci of tuberculosis were present in his case, while in eighteen no data are given as to other tuberculous lesions.

We have recently had under our care a young woman with a swelling over the clavicle. A needle was

In January 1935 the patient complained of pain in the right hip while walking. Examination revealed no pain on weight bearing but extreme pain was present on internal rotation and abduction of the thigh. Roentgenograms of the hip at that time revealed nothing remarkable. February 6 the patient complained of dysuria and said that she thought the urine had appeared red at times. Examination of the chest and abdomen was negative, and the right hip was the same as before, there was no tenderness at the costovertebral angles and no edema of the extremities. The blood pressure was 120 systolic, 72 diastolic. A kidney function test was done which showed 52.6 per cent phenolsulfonphthalein excreted in the first hour and 15 per cent excreted in the second hour, for a total of 67.6 per cent with a total of 730 cc. of urine. A Mosenthal test of voided urine at that time showed specific gravity for the night urine to be 1.015 and the quantity 930 cc. The day urine varied in specific gravity from 1.005 to 1.015, and the total quantity was 620 cc. The reaction of the different specimens of urine was either neutral or alkaline. Albumin was present in quantities from a trace to two plus. No sugar was found. There were pus and epithelial cells present, few bacteria, and no casts. Menstruation apparently had always been irregular. The patient's weight had been stationary at about 105 pounds (47.6 Kg.).

¹¹ Ozenne M. Ostéite tuberculeuse suppurée avec séquestre de la diaphyse de la clavicule. Congrès pour l'étude de la tuberculose. Bull. méd. 12:845 1898.

Illness—The patient complained of swelling, May 17, with pain and extreme tenderness, at the junction of the sternum and the right clavicle. She stated that there had been no accident or injury.

The patient had a mongoloid appearance, vision in the left eye was impaired. There was an external strabismus of the left eye. The thyroid was slightly enlarged. The tonsils were small and not infected, and the teeth were in good condition. Abdominal striae were present. The heart, lungs and abdominal organs showed no abnormalities on physical examination. Deep reflexes were exaggerated, no pathologic reflexes were present. No lymph glands were palpable in the neck or axillae, but several small ones were found in the inguinal regions. There was no pain in the region of the hips or pelvis on palpation or manipulation. A pelvic examination showed a second degree retroversion, and the right tube contained several small nodules. The left tube was not remarkable. The area at the junction of the right clavicle and the sternum was slightly swollen and quite tender. No redness was present. On pressure a snap could be felt and the protuberance receded slightly. A tight bandage of orthopedic felt was applied and the swelling receded considerably.

The blood pressure was 120 systolic, 72 diastolic and has remained so since. The Wassermann reaction of the blood was negative. The basal metabolism was +2 per cent.

The patient felt much better and on June 5 the swelling was entirely gone and there was no pain. About ten days later the swelling and tenderness again appeared and the same treatment was instituted. There again appeared to be an improvement, but this was not permanent. Finally on two separate occasions greenish pus was obtained by means of a needle (done under aseptic conditions) which revealed many acid-fast bacilli. Inoculation of guinea-pigs each time culminated in their death from tuberculous lesions in the lungs and other organs, with demonstration of numerous tubercle bacilli in these tissues. A few weeks later the area broke down and a sinus resulted. The blood counts at this time ranged from 5,300 to 7,400 leukocytes, with 75 per cent neutrophils, otherwise the count was essentially normal.

Following this, roentgenograms of the chest and pelvic regions were taken by Dr. L. W. Oehlbeck of Clifton Springs, N. Y., who reported: "The fluoroscopic study of the chest shows an elevated left diaphragm, which shows a marked limitation in excursion. Both diaphragms are sharply outlined and the right apparently shows fairly good movement. From the films it is also apparent that there is pleural thickening at the left apex. The hilus shadow on this side is rather heavy and it is possible that there are small calcified areas present. On the right side the apex is clear, but there is a fair area of increased density noted at the infraclavicular area. There is a fair sized defect noted on the exterior surface of the inner end of the right clavicle. The sternal end of the right clavicle appears irregular in outline as compared with the left. There are no changes present to suggest new bone formation."

Conclusions—There is evidence of old tuberculosis on the left with pleural thickening and osteomyelitis of the inner end of the right clavicle. While it is possible that the area of increased density in the right infraclavicular area could be caused by increased thickness of the overlying soft tissue, it would seem well to check this area at a near date in the future.

"Destructive process noted in the right sacro-iliac joint, the cartilage has mainly been destroyed, and the lesion as a whole appears destructive in type without proliferative changes."

The possibilities are good for the lesion being a tuberculous one. This, of course, particularly in view of the fact that other tuberculous foci are already established."

The roentgenograms are reproduced herewith.

The patient was given ultraviolet treatments daily, but with negligible improvement. The temperature varied from 97.2 to 99.4 F., most of the time being between 98 and 98.6 F. October 2 the patient was operated on by Dr. C. W. Webb of Newark, N. Y., who found the sternoclavicular joint apparently normal but the cart just adjacent involved. The necrotic area in the clavicle was curetted and it was noted that the area did not extend into the surrounding tissues. A petrolatum gauze pack was inserted. Boric acid ointment dressings were used and the gauze packing gradually was forced out by the underlying granulation tissue. The temperature varied between 98 and

100 F. until on November 1 it rose to 100.2 F., and she was very uncomfortable in the region of the right kidney. However, the temperature again went down to normal limits for several days, but on November 10 she started to have a temperature of 100.8 F. and by November 13 it began varying from 98.6 to 101.6 F. The blood count on December 4 showed 4,900,000 red cells, hemoglobin 85 per cent (Tallqvist), 20,000 leukocytes, 87 per cent neutrophils, 10 per cent lymphocytes, 27 per cent large mononuclears, and 0.3 per cent eosinophils.

Examinations of voided urine showed acid-fast bacilli with many pus and red blood cells. Albumin ranged about two plus. No sugar or casts were found. Ureteral catheterized specimens of urine showed red cells and pus cells in the urine of the right kidney, while the left urine was clear. Blood urea nitrogen examinations varied from 9.0 mg to 13.3 mg per hundred cubic centimeters of blood.

She remained about the same with a slight drop in temperature until November 18, at which time the temperature began to vary between 99 and 102 F. and she again felt uncomfortable in the right kidney region. November 20 she showed variations in temperature from 98.6 to 103.2 F. The next day the temperature rose to 104.2 F. and the pulse, which previously had ranged from 90 to 120, rose to 158. During this period she was given phenobarbital and codeine as necessary for her pains and on November 25 cystoscopic examination was done by Dr. W. C. Eikner of Clifton Springs, N. Y., who reported that the cystoscope was readily inserted. The urine was found to be grossly bloody and extremely purulent. From eight to ten irrigations were necessary before a clear medium could be obtained. The bladder capacity was estimated at around 250 cc. Inspection of the bladder revealed a rather interesting picture. Surrounding the region of the right ureteral orifice a hopeless conglomerate ulcerative lesion was seen, which seemed to extend over the trigon and was confluent with rather heavy ulcerative and inflammatory processes across the fundus of the bladder. Some areas on both lateral walls were less involved and appeared to be only chronically inflamed. The greater portion of the bladder mucosa, however, was extremely red and either ulcerative or preulcerative in type. Much less of the retraction was seen surrounding the left ureteral orifice than that of the right. The right ureteral orifice was never distinctly seen and retraction was evident as from a chronically infected ureter pulling it upward. Clear spurts of urine were seen from the region of the left. The catheter was readily advanced up the left ureter to the pelvis, with no obstruction being met. It was impossible to engage the catheter in the right ureter. Fairly clear urine was obtained from the left, though drops came irregularly. Indigo carmine was then given intravenously and after seven minutes was seen coming faintly from the left and after ten minutes very strongly. At no time was any seen to come from where the right ureteral orifice should be. Observation was extended for approximately seventeen minutes.

December 9 a right nephrectomy was performed by Dr. John C. Carmer of Lyons, N. Y. The kidney was filled with green pus and microscopically showed evidence of tuberculosis. Since that time the patient has been receiving cod liver oil and ultra violet treatments to the whole body daily. The operated area at the clavicle is still draining slightly but is slowly healing as is the nephrectomy incision. The patient feels very much better, and the temperature has been normal for several weeks. The pulse ranges around 85 and the white blood count varies between 6,000 and 7,000, with about 65 per cent neutrophils. Her weight, which dropped to 85 pounds (38.6 Kg.) at the time of the nephrectomy, has risen to 94 pounds (42.6 Kg.). A guinea-pig, injected with bladder urine seven weeks ago, is gaining weight. The urine is clear, has contained one plus albumin or less, and has contained red cells and white blood cells microscopically. Pelvic examination at present shows no nodules in the right tube. There are no symptoms or signs that show evidence of sacro-iliac disease at present.

At present (June 10, 1936) the patient weighs 108 pounds (49 Kg.) and is up and about. The area at the clavicle has completely healed and the area at the nephrectomy incision has almost healed. The latest urine report shows no red cells, a few pus cells and a trace of albumin, which is an improvement over the previous urinalysis. The last guinea-pig inoculated with the patient's urine was released after nine weeks as not infected with tuberculosis.

COMMENT

Tuberculosis of the clavicle apparently occurs quite infrequently. The older surgeons saw occasional cases of necrosis of the clavicle, these were called syphilis, tuberculosis or cancer. In a review of the literature since 1882 we have found fourteen papers dealing with twenty-five cases of this disease, and in these references were made to four other cases which, with the one we describe, make thirty cases. Age appears to be an important factor, as most of these patients were between 10 and 40 years of age, ten of them between 10 and 20 and only four more than 50 years of age. Sex apparently has little influence, since the disease is about equally frequent in the two sexes. There is no apparent predilection for either clavicle. Some writers have divided the disease according to the part of the bone involved. It would seem that this is not necessary. The question in a few of the reported cases was whether the sternoclavicular joint or the clavicle was the site of the disease. The cases here reported are those showing tuberculosis of the shaft of the clavicle. In our patient it was a question at first as to the joint involvement, but operation showed the joint surfaces normal and the disease in the clavicle. We believe that it was diaphyseal in origin, but in late stages it is difficult or impossible to say that the epiphyses were not involved first.

It is claimed by some that the only method of treatment is by excision. Certainly in some cases curetting appears to have been sufficient for a cure. However, also in some cases curettage has had to be repeated because of a persistent sinus. In two cases reported as treated by resection, sinuses developed and drained a long time. The important point appears to be the complete removal of the diseased portion of the bone. Certainly it is proved that there is no special handicap in complete removal of the diseased clavicle for, if the periosteum is not destroyed, new bone develops. Bone transplantation has been done successfully.

The question of a primary focus in the clavicle vexes here as in other bone tuberculosis. Though infrequently described, there appears to be no anatomic or pathologic reason why primary clavicle involvement cannot occur. Trauma was associated with several of the cases reported, it was definitely not associated in some. Other foci of tuberculosis are described in eleven cases, involving other bones in four cases, while the lungs, glands of the neck, kidneys and breast were tuberculous in others. Our patient had tuberculosis of a kidney and this has been successfully removed, with recovery of the patient continuing to this time. Another unusual tuberculous involvement in our patient is the sacro-iliac joint as is evidenced by the x-ray examination.

CONCLUSION

A patient developing a tumor over the right clavicle was found to have tuberculosis of the clavicle. Apparently developing later, at least with symptoms occurring after this, the right kidney was involved and removed. X-ray examination showed a lesion diagnosed tuberculosis of the sacro-iliac joint by the roentgenologist. The diseased clavicle was curetted and is now healing. Tubercle bacilli were found in the pus removed by needle from the clavicular tumor and injected into guinea-pigs, which developed the typical lesions.

Twenty-nine cases of tuberculosis of the clavicle described in the literature showed that this disease

occurs in the young adult of either sex and that thorough curetting or excision cures the condition. In one case sunlight, with no other treatment, also apparently effected a cure.

529 Church Street.

CULTURE OF HUMAN BONE MARROW

A SIMPLE METHOD FOR MULTIPLE CULTURES

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AND

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In a preliminary report on the culture of human bone marrow¹ a number of problems were outlined for solution. It is our purpose in this note to report progress on problem 4, "development of improvements in the apparatus and of simplified apparatus for multiple short experiments." The original apparatus duplicates as nearly as possible conditions within the body but is so complex that large numbers of experiments could be carried out only at great expense. The method described here, while not duplicating body conditions so exactly, permits satisfactory growth of marrow and is convenient for growing a large number of cultures at the same time.

The method consists in the use of vials with rubber vaccine caps. The type in which sterile 50 per cent dextrose solution is ordinarily dispensed is most satisfactory, especially those with the vaccine caps on each end. The procedure is as follows:

Sterilize the vials in the autoclave or by boiling and, using aseptic technic, introduce into the vials with a sterile syringe and needle the desired amounts of culture medium. Perform a sternal puncture or remove aseptically part of another culture and introduce this material with a syringe and a 20 to 22 gage needle into as many vials as desired. Aspirate filtered gas mixture of any desired composition into the syringe and introduce a needle through the top of the vaccine cap to permit the air to escape from the vial. Force this gas mixture through the lower cap, bubbling it through the medium until it is equilibrated. Then remove both needles and place the vials in an ordinary 37.5 C. incubator or water bath. To withdraw the culture for examination, simply mix thoroughly by shaking and aspirate with a sterile syringe and needle. To change the medium,² allow the culture to settle or centrifuge³ and introduce a needle through the bottom vaccine cap until the point is just above the level of the cells. Withdraw the medium and in a similar way introduce the desired amount of fresh medium.

By the use of this vaccine vial technic it has been possible to make rapid strides in the study of the effects of variation in the composition of the medium, and cultures showing many mitotic figures are now readily obtained. Its disadvantage is that the composition of the medium and that of the gas mixture are not held constant as they are in the original apparatus. The advantages of this technic are its simplicity, the ease of making transfers, and its adaptability to running a large series of cultures differing in only one factor.

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¹ Osgood E. E. and Muscovitz B. S., Culture of Human Bone Marrow. Preliminary Report J. A. M. A. 106: 1888 (May 30) 1936.

² It seems possible that with the type of vial with one cap kept in a water bath a continuous gas flow or a steady flow of medium previously equilibrated with the desired gas mixture could be introduced through a long needle and allowed to flow out through a short needle slowly enough not to disturb the cells.

³ This type of vaccine vial will fit in the metal tubes of the size used for 100 cc. centrifuge tubes and so can be centrifuged if for any reason removal of the medium is desired shortly after the cells have been mixed.

Clinical Notes, Suggestions and New Instruments

A SIMPLE AND INEXPENSIVE METHOD OF MAKING LANTERN SLIDES OF SKETCHES AND TYPED MATERIAL

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The use of lantern slides showing tables, classifications and sketches, during scientific presentations, lends much to the clarity of a paper and has had an increasing vogue. The following method was worked out to obviate the expense of the photographic method of making such lantern slides.

A sheet of cellophane, the size of a standard lantern slide, is placed between two sheets of heavy carbon paper, the carbon side toward the cellophane. These are then placed between two sheets of thin white paper, folded into an envelope of the same size. The material to appear on the slide is typed in the usual manner, a three-fourths inch blank border being left. A clear carbon copy is thus produced on the cellophane, which is then removed and mounted between two lantern slide cover-slips, the edges being taped with standard lantern slide binding tape.

Free-hand sketches can be made directly on the cellophane with india ink by means of a fine pen-point. Diagrams of apparatus can be traced in the same fashion. The india ink dries rapidly after which the sheet of cellophane can be mounted as described.

One of the chief advantages of this method, aside from the considerable saving involved, is the fact that the images projected on the screen from these slides are much larger than those from lantern slides made by photographic reduction. The amount of material that can be typed on the sheet of cellophane is necessarily limited. This may make it necessary to break up large tables into a number of smaller ones, but the resulting images can be seen even in the rear of large lecture rooms.

2501 West Grand Boulevard

SEVERE GASTRIC HEMORRHAGE PRODUCED BY VIOLENT ABDOMINAL MASSAGE

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It is fairly well known that severe exertion involving the abdominal muscles can produce hematemesis in patients with peptic ulcer. I can remember a number of such cases. In one instance a traveling salesman, with a big trunk on the back of his car, was lying on his stomach struggling to jack up a rear wheel when suddenly his mouth filled with blood. That a man can put great shearing strain on the movable parts of the bowel that adjoin fixed ones is shown by the recorded cases in which a man, perhaps standing on a chair with his hands above his head putting up a picture, slipped and, in trying to save himself, contracted the muscles of the anterior abdominal wall and tore the duodenum or the first few inches of jejunum so badly that prompt surgical intervention was necessary.

The case here reported is that of a man, aged 31, who has suffered with pains of duodenal ulcer off and on since he was 11. A while ago he placed himself in the care of an irregular practitioner, who put a large electrode on the lower part of the patient's abdomen and sent through him a strong, rhythmically interrupted current which caused all the abdominal muscles to contract vigorously several times a minute. In a few minutes he began to be greatly distressed and shortly afterward before he could call the man back to the booth to shut off the current he began to vomit such large quantities of blood that he became almost exsanguinated and had to have several transfusions. He never showed any other tendency to bleed in the twenty years in which he has had the ulcer.

Certainly it would appear that vigorous massage of the abdomen is not a good treatment for peptic ulcer. In fact,

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bending over and contracting the abdominal muscles are to maneuvers so hard on many patients with ulcer that one wonders how a laborer with the disease can ever get well. It is hard enough sometimes for a man with ulcer to stay well when he can sit at a desk all day.

Special Clinical Article

THE BONE MARROW

CLINICAL LECTURE AT KANSAS CITY SESSION

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The improvement in the technic of biopsies of the bone marrow has added a valuable method to the diagnostic laboratory procedures to which the clinician can resort in the cases in which the examination of the peripheral blood fails to give definite information. The importance of the examination of the bone marrow in vivo becomes evident if one considers the fact that the circulating blood does not always reflect the condition of the bone marrow. Great differences exist sometimes between the cellular content of the blood and that of the bone marrow which may be the source of diagnostic errors. Since the biopsy of the bone marrow is expected to become widely used in clinical medicine, I shall present a brief discussion of the normal bone marrow and of the changes that are observed in some of the important disturbances of blood formation.

THE NORMAL BONE MARROW

In early childhood active, red marrow fills the cavities of all the bones. By the age of 7 years, fat cells start to appear between the cells of blood formation, and with progressing age the active marrow gradually recedes from the distal portions of the skeleton toward the trunk. Its place is taken by an adipose tissue that is somewhat different from the adipose tissue in other locations. Thus its iodine number is different and it contains more cholesterol esters than the other fat deposits of the body. In the adult, the active red marrow is confined to the flat and short bones and to the proximal portions of the humerus and femur (Neumann,¹ Hedinger,² Askanazy,³ Piney,⁴ Turnbull⁵). In the phalanges of the fingers and the toes the bone marrow is rich in connective tissue fibers.

The weight of the bone marrow amounts to from 34 to 59 per cent of the body weight⁶ and there are five ninths of a gram of marrow to one gram of blood. Approximately half of the bone marrow of the adult individual is in an active state (red marrow) while the other half consists of fat tissue (yellow or adipose marrow). The red marrow, therefore, equals in weight

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Read in the General Scientific Meetings at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 12, 1932.

1. Neumann E. Das Gesetz der Verbreitung des roten und gelben Knochenmarkes. *Centralbl. f. med. Wissenschaften* 30: 321, 1887.

2. Hedinger E. Die Verbreitung des roten Knochenmarks im Oberschenkel des Menschen. *Berl. klin. Wchnschr.* 50: 2121, 1913.

3. Askanazy M. Knochenmark. In Henke F. and Lubarsch O. *Handbuch der speziellen pathologischen Anatomie*, vol. 1, part 2. Berlin: Julius Springer, 1927. Funktionen des Knochenmarks unter normalen und pathologischen Bedingungen. *Schweiz. med. Wchnschr.* 62: 681 (July 25) 1932.

4. Piney A. The Anatomy of the Bone Marrow. *Brit. M. J.* 2: 192 (Oct. 28) 1932.

5. Turnbull H. M. In Vaughan J. M. *The Anemias*. London: Oxford University Press, 1934.

6. Mechanik N. Untersuchungen über das Gewicht des Knochenmarkes des Menschen. *Ztschr. f. d. ges. Anat.* 70: 58, 1926.

the liver. In advanced age or in wasting diseases the fat may disappear from the marrow to become replaced by a semiliquid gray and translucent material (gelatinous marrow). In dystrophic and malacic diseases of the bone and in chronic inflammation the bone marrow changes into fibrillar connective tissue (fibrous marrow).

The fat tissue of the bone marrow is in a very labile state.⁷ When the demand for new blood cells rises above the normal level new areas of blood formation are quickly formed and the active marrow expands in a centrifugal direction toward the distal parts of the long bones. The small islands of red marrow in the proximal portions of the humerus and femur enlarge and fuse together, and foci of active marrow, which are located about dilated blood capillaries, appear in the midst of the fat tissue. An excessive demand for blood cells may call for a widening of the bone marrow spaces, which is accomplished by the resorption of the bony trabeculae that cross the marrow cavities and eventually also by the resorption of the inner layer of the cortical bone.

Microscopically the red marrow consists of a cellular reticulum the meshes of which are filled with the precursors of the cells of the circulating blood. This cellular reticulum is anchored to the endosteum that covers the inner surfaces of the bone. It forms also the lining of the sinusoidal blood spaces into which the mature blood cells are discharged and which connect the terminal branches of the arteries with the veins. In addition to the sinusoids, in which the blood is circulating very slowly, there are fine capillaries, which are usually closed to the circulation. I believe that all the cells of the bone marrow are derived from a common parental cell, which breaks loose from the cellular reticulum and drops off into the spaces between the branched and anastomosing reticulum cells. In the case of erythropoiesis the mobilized, undifferentiated cell, which has been called the hemocytoblast, develops into a large cell with a deeply basophilic cytoplasm and a round nucleus that contains a fine and dense chromatin net (the erythrogonia). In succeeding generations the cells decrease in size, the chromatin arranges itself in the form of coarse clumps, and in the cytoplasm hemoglobin appears, which causes the cytoplasm to become first amphophilic (polychromatic) and later acidophilic (orthochromatic). Approaching maturity the nucleus shrinks to a small, deeply stained clump, which is finally expelled, and the cell is ready to start on its trip through the body. Normally the very immature and deeply basophilic forerunners of the red blood cells are scanty, and the bulk of the erythropoietic tissue is composed of the smaller cell forms with the different degrees of hemoglobinization of the cytoplasm (erythroblasts and normoblasts). According to Sabin,⁷ Doan⁸ and Peabody⁹ the red cells ripen in the closed capillaries. The anoxemia in these closed capillaries is said to favor the multiplication and maturation of the red cells. When new red cells are needed, the closed capillaries are opened and the mature erythrocytes are discharged into the circulating blood.

The granulated cells are derived from an intermediate, nongranulated and basophilic cell (the myeloblast), which, according to my opinion, is distinctly different from the erythrogonia. Maturation is accomplished by

the formation of granules in the cytoplasm, by a decrease of the basophilia of the cytoplasm, and by structural changes of the nucleus which lead to the lobulated nucleus of the mature granulocyte. The granulated cells are endowed with ameboid motility and pass easily through the wall of the sinusoids. The granulopoietic tissue of the normal marrow is made up chiefly of granulated cells with oval, bean and rod shaped nuclei and well differentiated granulation (myelocytes and metamyelocytes). The youngest, nongranulated cells (myeloblasts) and the cells with the earliest, deeply basophilic and coarse granulation (promyelocytes) are scanty.

The megakaryocytes which originate from the same stem cell as the cells of the erythropoietic and granulopoietic series, are attached to the wall of the sinusoids and extend cytoplasmatic processes through the wall into the lumen of the sinusoids. These cytoplasmatic processes, which are cast off into the blood, form the blood platelets.¹⁰ In addition to the cells described, the normal bone marrow contains lymphocytes, monocytes, plasma cells and a few mast cells. The lymphocytes often form small nodules which are located in the proximity of arterial capillaries.

In sections of normal bone marrow, granulopoietic tissue equals or slightly exceeds erythropoietic tissue (Schilling,¹¹ Doan and Zerfas,¹² Dameshek¹³ and others). In smears made from aspirated bone marrow fluid, from 12 to 25 per cent of the nucleated cells belong to the erythropoietic series (Arinkin,¹⁴ Escudero and Varela,¹⁵ Loewinger,¹⁶ Nordenson,¹⁷ Segerdahl,¹⁸ Young and Osgood,¹⁹ Van der Merve,²⁰ Weiner and Kaznelson²¹). Of the granulated cells, from 0.6 to 3 per cent belong to the oxyphilic variety. There is approximately one megakaryocyte to 400 bone marrow cells (Nordenson,¹⁷ Custer and Krumbhaar²²). The monocytes vary between 2 and 7, the lymphocytes between 5 and 15 per cent.

It is evident that considerable variations exist in the cellular composition of the normal bone marrow. In addition to individual factors, age, sex, race, diet and stage of nutrition, the climate and the geographic location play an important role. In high altitudes the erythropoietic tissue will be more active than in the lowlands. Hedinger² refers to the significance of endemic goiter.

In the time allotted to me I shall be able to discuss only one of the functions of the bone marrow, namely,

10 Wright J. H. Die Entstehung der Blutplättchen. Virchows Arch f. path. Anat. 186: 55, 1906.

11 Schilling Victor. Das Knochenmark als Organ. III Funktion des Markparenchyms und Leukozytose. Deutsche med. Wchnschr. 51: 516 (March 27) 1925.

12 Doan C. A., and Zerfas L. G. The Rhythmic Range of the White Blood Cells in Human Pathological Leukopenia and Leukocytosis. A Study of Thirty Two Human Bone Marrows. J. Exper. Med. 46: 511 (Sept.) 1927.

13 Dameshek, William. Biopsy of the Sternal Bone Marrow. Its Value in the Study of Diseases of Blood Forming Organs. Am. J. M. Sc. 180: 617 (Nov.) 1935.

14 Arinkin M. J. Die intravitale Untersuchungsmethodik des Knochenmarkes. Folia haemat. 38: 233 (June) 1929.

15 Escudero, P. and Varela, E. M. La biopsia del midollo osseo nelle sue applicazioni in ematologia. Haematologica II. Recen. 3: 65, 1932.

16 Loewinger Simon. Das Bild des Knochenmarkes bei der konstitutionellen hämolytischen Anämie. Folia haemat. 54: 27 (Nov.) 1935.

17 Nordenson N. G. Histologiska kvantitativa studier av normal och patologisk benmärg. Hygiea 96: 193 (March 31) 1934.

18 Segerdahl Elsa. Ueber Sternalpunktionen. Acta med. Scandinav. suppl. 64: 1935.

19 Young R. H. and Osgood E. E. Sternal Marrow Aspirated. Daring Life. Arch. Int. Med. 55: 186 (Feb.) 1935.

20 Van der Merve C. F. Beenmergonderzoek in de Kliniek. Scheltema and Holkema. Amsterdam 1935.

21 Weiner W. and Kaznelson P. Ueber die zellige Zusammensetzung des Knochenmarkes nach Erfahrungen mittels der Sternalpunktion nach Seyfarth. Folia haemat. 32: 233 (May) 1926.

22 Custer R. P. and Krumbhaar E. B. The Histopathology of the Hemopoietic Tissue in Hemophilia. Am. J. M. Sc. 180: 620 (May) 1935.

7 Sabin Florence R. Bone Marrow. Physiol. Rev. 8: 191 (April) 1928.

8 Doan cited by Sabin.

9 Peabody F. W. Hyperplasia of Bone Marrow. Man. Am. J. Path. 2: 487 (Nov.) 1926.

the formation of the blood cells. It may be mentioned, however, that as an important part of the reticulo-endothelial system the bone marrow shares in all the functions that have been attributed to this system, as for instance the formation of the bile pigment, the production of antibodies and the storage of certain substances which are either foreign to the body or accumulate in the tissue fluids in excessive amounts. Thus in Gaucher's disease and in Niemann-Pick's disease, which, as the recent important studies of Thannhauser²³ have shown, is closely related to the former, the storing capacity of the reticulum cells of the bone marrow may be taxed to a degree that the production of the blood cells is diminished. The bone marrow contributes to the blood proteins, especially the fibrinogen, and produces more prothrombin than the spleen and the liver.

The mechanism that regulates the maturation of the blood cells and their discharge into the circulating blood and is responsible for the fairly constant cellular composition of the blood is still poorly understood. The granulated cells enter the blood in a certain rhythm, which shows small hourly accessions and a larger diurnal tide in the afternoon and at midnight. Chemotaxis and the stimulating effect of degradation products of cells on the homologous cells (Myagow's principle) seem to play an important role. With regard to the erythropoiesis it has been stated that the new formation and mobilization of the erythrocytes is controlled by the oxygen tension of the blood. Hoff,²⁴ Dockhorn,²⁵ and Papilian²⁶ and others suggest a regulation of the activity of the bone marrow through the vegetative nervous system but Naegeli²⁷ points out that the nerve fibers of the bone marrow are restricted to the proximity of the blood vessels. The depressing influence of the spleen on the bone marrow has been often discussed and seems to be borne out by experimental studies as well as by clinical observations. The hormones of the thyroid gland stimulate apparently the bone marrow, and Roger²⁸ suggests that the hormones of the pituitary gland and the gonads may have a similar effect (see also Naegeli²⁷). According to Hubble,²⁹ the hormones of the suprarenal cortex increase the productivity of the erythropoietic and granulopoietic tissue, and the basophilic cells of the anterior lobe of the hypophysis exert a stimulating influence on all the blood forming cells and produce eventually polycythemia vera. This action of the anterior pituitary lobe may be an indirect one through the thyroid and the adrenal. The productivity of the normal bone marrow is tremendous. If one assumes that the average span of life of the erythrocyte is about four weeks, 900 billions of erythrocytes are produced daily by the bone marrow.² Finally it may be emphasized that the formation of the blood cells and the passage of the blood cells into the blood stream are two distinctly separate and independent phenomena.

THE ANEMIAS

In anemia the erythropoietic tissue of the bone marrow may be increased (hyperplastic), diminished (hypoplastic) or exhausted (aplastic), or it may present deviations from the normal mode of maturation with the formation of abnormal red cells (dysplasia). In the active stage of pernicious anemia the dysplasia of the erythropoiesis is the outstanding feature. The red marrow usually replaces most of the fatty marrow, although in some cases a considerable amount of adipose marrow may persist.³⁰ The erythropoietic tissue greatly exceeds the granulopoietic tissue, and the megakaryocytes are few in number and often degenerated. The erythropoietic tissue contains many very immature, large basophilic cells, which are often found in mitotic division, and it is already in this early stage of differentiation that the hemoglobinization of the cytoplasm begins. Owing to this premature hemoglobinization, large cells result the cytoplasm of which is very rich in hemoglobin and the nucleus of which has the dense, reticular structure of the hematogonia (the *novau perle* of the French authors). These cells are the megaloblasts, which were first described by Paul Ehrlich and which are typical of pernicious anemia and certain other forms of hyperchromic macrocytic anemia. Turnbull³¹ emphasizes that much confusion has been caused by the erroneous identification of the megaloblast with the earliest cell forms of the erythropoiesis. The latter are found in many types of severe anemia. The megaloblast of pernicious anemia is a cell which contains hemoglobin and which loses its nucleus by pyknosis and extrusion like the normoblast. The product of the megaloblastic erythropoiesis is rich in hemoglobin, a real functional giant which is doomed to quick destruction, since it is an abnormal cell. The majority of the investigators consider the megaloblast as characteristic of pernicious anemia (Arinkin,³² Becart,³¹ Dameshek,³³ Holmes and Broun,³² Jagic and Klima,³⁴ Loewinger³⁵ Naegeli,²⁷ Peabody,³⁴ Piney,³⁶ Segerdahl,³⁸ Tempka and Braun,³⁶ Turnbull,³¹ Van der Merwe²⁰ and others). Van der Merwe²⁰ recommends examination of the sternal bone marrow for the differential diagnosis of pernicious anemia and carcinoma of the stomach with pernicious-like blood changes. In contrast to the proliferation of the erythrogenias and their abnormal maturation into megalocytes and gigantocytes, erythroblasts and normoblasts are scanty in the bone marrow of cases of pernicious anemia. The granulopoietic tissue which is relatively diminished in quantity presents certain anomalies. Thus the myeloblasts are increased in number and there is a premature lobulation of the nucleus which starts at the time when the granulation is still scanty and young. The lobulation of the nucleus progresses and when the mature leukocyte is formed its nucleus has many more segments than the normal leukocyte (so-called shifting to the right). When the dysplasia of the bone marrow of pernicious anemia

23 Thannhauser S J. *Leber Lipoidosen*. Klin. Wchnschr. 13 161 (Feb. 3) 1934.

24 Hoff cited by Dockhorn.²⁵

25 Dockhorn E. *Leber die vegetative Regulation der Erythropoese*, Folia haemat. 54 248 1936.

26 Papilian V. and Jiann St J. *Der Einfluss des vegetativen Systems auf das Knochenmark*, Virchows Arch. f. path. Anat. 264: 361 1927.

27 Naegeli Otto. *Blutkrankheiten und Blutdiagnostik*, ed. 5 Berlin Julius Springer 1931.

28 Roger G H. *La moelle osseuse* in Roger G H. and Binet Leon. *Traite de physiologie normale et pathologique*, ed. 2 Paris Masson et Cie. 7 1934.

29 Hubble D. *The Influence of the Endocrine System in Blood Disorders*. Lancet 2 117 (July 15) 1933.

30 Sheard Arthur. *Pernicious Anemia and Aplastic Anemia*. New York William Wood & Co. 1924.

31 Becart A. *La ponction de la moelle osseuse sternale dans l'anémie pernicieuse*, Bull. et mem. Soc. med. d. hop. de Paris 138: 472 (Oct. 12) 1934.

32 Holmes W F. and Broun G O. *Clinical Study of Bone Marrow by the Method of Sternal Puncture*. Proc. Soc. Exper. Biol. & Med. 30 1306 (June) 1933.

33 Jagic and Klima cited by Young and Osgood.³⁴

34 Peabody F W. *The Pathology of the Bone Marrow in Pernicious Anemia*. Am. J. Path. 3 179 (May) 1927.

35 Piney A. *The Nucleated Red Cells Found in the Circulation in Pernicious Anemia*, J. Path. & Bact. 27: 249 (July) 1924.

36 Tempka T. and Brann B. *Das morphologische Verhalten des Sternalpunktes in verschiedenen Stadien der perniciosen Anämie nach seine Wandlungen unter dem Einfluss der Therapie*. Folia haemat. 45 355 1932.

approaches the stage of exhaustion plasma cells become a conspicuous feature.³⁷ Perlebody³⁸ and many others have observed that in pernicious anemia the reticulum cells of the bone marrow become transformed into macrophages which engulf many erythrocytes. This erythrophagocytosis seems to be pronounced only in autopsy material.

The antianemic treatment prompts a reversion of the megaloblastic erythropoiesis to the normoblastic type (Becart,³¹ Dameshek,¹³ Peabody,³⁴ Van der Merwe³⁰). A similar reversion takes place during a spontaneous remission. The megaloblasts disappear, the most immature cell forms decrease in number, and erythroblasts and normoblasts dominate the picture. The red marrow recedes to the trunk. Nordenson¹ states that with liver therapy the return to the normal blood formation requires approximately twelve days. Segerdahl¹⁸ observed, after large doses of liver, a disappearance of the megaloblasts within twenty-four hours and suggests the determination of the disappearing time as a criterion for the potency of an antianemic substance. Under the influence of infectious irritation the dysplastic bone marrow of pernicious anemia may fail to respond to antianemic treatment.³⁹

In the macrocytic anemia of sprue the cytologic picture of the bone marrow is similar to that of pernicious anemia but the megaloblastic transformation is decidedly less marked (Witts, Fairley and Goodhart⁴⁰ Rhoads and Castle,⁴¹ Turnbull⁴). The response to effective treatment is the same as in pernicious anemia. The macrocytic anemia associated with diseases of the liver fails to show the megaloblastic reaction of the bone marrow (Rossier,⁴² McLamos⁴³).

The bone marrow of the patients with hypochromic microcytic anemia is hyperplastic and the erythropoiesis which does not show any obvious morphologic anomalies predominates over the granulopoiesis. Megaloblasts are absent (Dameshek,¹³ Van der Merwe³⁰) but small groups of erythrogonias are found. There are numerous normoblasts and, in severe cases, also many polychromatophilic erythroblasts.¹⁸ It has been suggested that the deficiency in iron may interfere with the final stages of erythrocytic maturation. Under adequate iron therapy the hyperplastic marrow recedes.⁵

Loewinger,¹⁶ Young and Osgood,¹⁹ Dameshek¹³ and Weiner and Kaznelson²¹ describe a great predominance of the nucleated red cells in the bone marrow in cases presenting hemolytic family jaundice. The nucleated red cells vary considerably in size, and macronormoblasts and micronormoblasts are found. After splenectomy the macronormoblasts disappear but the micronormoblasts persist.²¹ According to Jones,⁴⁴ the erythropoiesis in acholuric family jaundice shows a peculiar though nonspecific anomaly which consists of the direct transformation of the reticular cells into normoblasts without the intermediary stages of differ-

entiation. In sickle cell anemia the nucleated red cells of the bone marrow are of normal shape.⁴⁵ In the erythroblastic anemias of infancy and early childhood the bone marrow is extremely hyperplastic, leading to a more or less marked reduction of the bony structures. The marrow is crowded with erythroblasts and there are also many erythrogonias. Normoblasts are often less conspicuous than the earlier forms of erythropoiesis. The granulopoietic tissue which is relatively scanty, may be rich in oxyphilic myelocytes, and the megakaryocytes are numerous.

In typical aplastic anemia the bone marrow fails as a unit (Frank,⁴⁶ Lescher and Hubble,⁴⁷ Middleton and Meyer⁴⁸ and many others). Pure red cell aplasia is very rare. A considerable number of authors have been struck by the fact that in cases which clinically show most of the symptoms of aplastic anemia the bone marrow is found normal or even hyperplastic (see for instance Thompson, Richter and Edsall⁴⁹). These cases, however, usually show some evidences of regeneration in the peripheral blood and should properly be separated as pseudo-aplastic anemia from the true aplastic anemia.⁵⁰ In analogy to the observations of Frank,⁴⁶ Sheard,³⁰ Dameshek,¹³ Young and Osgood¹⁹ and others, I have found in typical cases of aplastic anemia an extreme exhaustion of the bone marrow. Careful search may disclose an occasional small nest of myeloid cells, but the majority of the cells that are found between the fat cells prove to be plasma cells, lymphocytes, monocytes and proliferated histiocytes. There are no apparent differences in the histologic picture of the bone marrow between the cases of idiopathic and symptomatic aplastic anemia. In osteosclerotic anemia the bone marrow changes into connective tissue, which later becomes ossified. The ossification of the marrow cavities may be secondary to an aplasia of the bone marrow, as for instance in the senile osteosclerotic anemia, or it may be due to a congenital anomaly of the bone forming tissue, as in Albers-Schoenberg's marble bone disease.

POLYCYTHEMIA VERA

Vaquez's disease is associated with a hyperplasia of all the elements of the bone marrow (hyperplastic panmyelopathy of Askanazy). Reznikoff, Foot and Bethea⁵¹ have recently advanced the theory that the increase in red cells may be the reaction to a fibrosis of the wall of the capillaries and arterioles of the bone marrow which causes an anoxemia and a compensatory excessive erythropoiesis. Whether this explanation holds true for all cases of polycythemia remains to be shown. It does not take into account that not only the erythropoietic tissue is hyperplastic but also the granulopoietic tissue and the megakaryocytes, and that polycythemia vera shows the tendency to change into myelogenous leukemia. Attempts have also been made to consider polycythemia vera the counterpart of per-

37 Whitby L E H and Britton C J C Disorders of the Blood Philadelphia P Blakiston's Son & Co 1935

38 Peabody F W and Brown G O Phagocytosis of Erythrocytes in the Bone Marrow with Special Reference to Pernicious Anemia Am J Path 1 169 (March) 1925

39 Bethell F H The Response to Infection in Bone Marrow Dyscrasia J Lab & Clin Med 20 362 (Jan) 1935

40 Witts L S Fairley N H and Goodhart G Discussion on Megalocytic Anemia of Tropical and Nontropical Countries Proc Roy Soc Med 35 1703 (Sept) 1932

41 Rhoads C P and Castle W B The Pathology of the Bone Marrow in Sprue Anemia Am J Path (supp) 9 813 1933

42 Rossier J Etude sur l'état de la moelle osseuse dans la cirrhose hépatique Ann d'anat path 9 245 (March) 1932

43 McLamos B Das rote Blutbild bei Lebererkrankungen Deutsches Arch f klin Med 177 209 1935

44 Jones P The Reticulo-Endothelial Origin of Erythrocytes in Biopsied Human Marrow Anat Rec. (supp) 61 21 1935

45 Jaffe R H Die Sichelzellenanämie Virchows Arch f path. Anat. 263 452 1927

46 Frank E Aleukia haemorrhagica, in Schittenhelm A Handbuch der Krankheiten des Blutes und der blutbildenden Organe Berlin Julius Springer 2 390 1925

47 Lescher F G and Hubble D A Correlation of Certain Blood Diseases on the Hypothesis of Bone Marrow Deficiency or Hypoplasia Quart. J Med 1 425 (July) 1932

48 Middleton W S and Meyer O O Marrow Insufficiency Ann Int Med 8 1575 (June) 1935

49 Thompson W P Richter M N and Edsall K S An Analysis of So-Called Aplastic Anemia Am J M Sc 187 77 (Jan) 1934

50 Krumbhaar E B Editor's footnote in Thompson, Richter and Edsall⁴⁹

51 Reznikoff Paul Foot N C and Bethea J M Etiologie and Pathologic Factors in Polycythemia Vera Am J M Sc 189 753 (June) 1935

pernicious anemia and to explain it on the basis of an excessive production of the hematopoietic (anti-anemia) substance which is supposed to be formed in the stomach (Morris,⁵² Hitzengerger,⁵³ Barath and Fülöp⁵⁴)

AGRANULOCYTOSIS

Similar to the disturbances of erythropoiesis one can distinguish between hyperplasia, hypoplasia, aplasia and dysplasia of the granulopoietic tissue. Agranulocytosis is one of the most striking examples of the discrepancies that may exist between the conditions present in the peripheral blood and the condition of the bone marrow. Schultz⁵⁵ and after him many authors have described an aplasia of the granulopoietic tissue as characteristic of agranulocytosis and unquestionably in some instances the disappearance of the granulocytes from the circulating blood is due to an exhaustion of the granulopoiesis. In their recent book on agranulocytosis, Sabrazes and Saric⁵⁶ expressly state that the bone marrow of the sternum, vertebral bodies and epiphysis of the long bones is devoid of granulocytic elements. Soon after Schultz's first publication it became, however, apparent that aplasia of the granulopoietic tissue was not the rule in a granulocytosis and that cases occurred in which the bone marrow was either normal or hyperplastic. The combination of a profound neutropenia of the circulating blood with an active multiplication of the progenitors of the neutrophils in the bone marrow induced Fitz Hugh and Comroe⁵⁷ to suggest that the essential disturbance in agranulocytosis might be an arrest of the maturation of the granulocytes. In a subsequent study Fitz Hugh and Comroe⁵⁸ brought forward additional proof for this explanation, which was also greatly strengthened by the careful histologic investigations of Custer⁵⁹ and Darling, Parker and Jackson.⁶⁰ Custer⁵⁹ pointed out that the failure of the proliferating myeloblasts to differentiate into myelocytes and neutrophilic leukocytes might result from the lack of an intrinsic maturation factor. Similar to pernicious anemia in which the erythron is affected, agranulocytosis then would be a dysplastic condition of the granulopoiesis. From the cases of agranulocytosis which I have studied I have obtained the impression that the early cell forms of the granulopoietic series proliferate but that they fail to mature because they degenerate. This degeneration, which may be caused by toxins or which may be an allergic phenomenon, explains, I believe, better the fulminating and so often rapidly fatal course of the disease than a mere maturation arrest. Tissue cultures made from the bone marrow of patients suffering from agranulocytosis may help to decide whether it is a maturation arrest or a degeneration that prevents the

young granulopoietic cells to ripen. In the cases in which the peripheral neutropenia is associated with an active proliferation of healthy, young granulocytes in the bone marrow, a disproportion between the supply and the destruction of the mature granulocytes in the circulating blood may exist, just as in hemolytic anemia the increased erythropoiesis fails to compensate for the destruction of the erythrocytes. The investigators who distinguish sharply between idiopathic and symptomatic agranulocytosis emphasize that the maturation arrest is pathognomonic of the idiopathic form and is not observed in the symptomatic form. The other elements of the bone marrow do not seem to be affected in agranulocytosis. Prolonged agranulocytosis leads to a proliferation of the plasma cells and histiocytes of the bone marrow.

THE LEUKEMIAS

In leukemia the bone marrow is usually very hyperplastic. The microscopic picture of the leukemic bone marrow depends on the type of leukemia, but within the same group considerable individual variations may occur. In chronic myelogenous leukemia there is a diffuse hyperplasia of the bone marrow and I have often observed that the relation between erythropoiesis and granulopoiesis is maintained at the normal level. The granulopoietic tissue is composed mainly of myeloblasts and promyelocytes. The latter are unusually large and their granulation is atypical, irregular and scanty. The myelocytes may mature to fairly normal neutrophilic leukocytes. In cases presenting very high counts of the white blood cells I have frequently found that the neutrophils which are derived from the abnormal myelocytes are small and crippled with a poorly defined granulation, a scanty cytoplasm and an abnormally lobulated nucleus. Thus there is in these cases not only a hyperplasia but also a dysplasia of the granulopoiesis. Some cases of myelogenous leukemia show a predominance of eosinophilic or basophilic myelocytes and leukocytes.

The more rapid the course of the leukemia, the greater is usually also the percentage of the earliest cell forms. In acute myelogenous leukemia the bone marrow is packed with myeloblasts. In many cases of acute leukemia, especially in children, the hemocytoblast excels by far all other cells. The hemocytoblast may show a greater tendency to differentiate in the erythropoietic direction than in the granulopoietic direction. There are cases of acute and of subacute leukemia in which the proliferation of the megakaryocytes and their precursors is the outstanding feature, and other cases in which the bone marrow consists chiefly of immature monocytes. A few cases of leukemia have been described in which the bone marrow is composed of plasma cells.⁶¹

In most of the cases of lymphatic leukemia the bone marrow resembles lymphatic tissue. Granulopoietic and erythropoietic tissue, however, persists in the form of small perivascular islands which, under the influence of complicating infections, may become greatly activated and replace most of the lymphatic tissue. In this connection I mention the atypical cases of lymphatic leukemia in which the proliferation of the lymphatic cells is confined to the bone marrow, and the liver, the spleen and the lymph nodes are not affected (medullary

⁵² Morris cited by Barath and Fülöp.⁵⁴

⁵³ Hitzengerger cited by Barath and Fülöp.⁵⁴

⁵⁴ Barath, Emil and Fülöp, Josef. Untersuchungen über die pathogenetischen Beziehungen zwischen perniziöser Anämie und splenomegaler Polycythämie. Ztschr. f. klin. Med. 129: 172, 1935.

⁵⁵ Schultz, W. Gangraneszierende Prozesse und Defekt des Granulocytensystems. Deutsche med. Wchschr. 44: 1495, 1922.

⁵⁶ Sabrazes, Jean and Saric, Rene. Angines lympho-monocytaires agranulocytosées, leucémies leucopéniques. Paris: Masson et Cie, 1935.

⁵⁷ Fitz Hugh, T. and Krumhaar, E. B. Myeloid Cell Hyperplasia of the Bone Marrow in Agranulocytic Angina. Am. J. M. Sc. 153: 104 (Jan.) 1932.

⁵⁸ Fitz Hugh, T. and Comroe, B. J. Agranulocytic Angina (Pernicious Leukopenia). Am. J. M. Sc. 185: 522 (April) 1933.

⁵⁹ Custer, R. P. Studies on the Structure and Function of Bone Marrow. II. Bone Marrow in Agranulocytosis. Am. J. M. Sc. 189: 607 (April) 1935.

⁶⁰ Darling, R. C., Parker, Frederic and Jackson, Henry. The Pathologic Changes in the Bone Marrow in Agranulocytosis. Am. J. Path. 12: 1 (Jan.) 1936.

⁶¹ Osgood and Hunter, W. C. Plasma Cell Leukemia. Folia haemat. 52: 369, 1934.

lymphatic leukemia of Aubertin,⁶² Liotti,⁶³ Fries,⁶⁴ Hirschfeld⁶⁵ and Zanatz⁶⁶)

It is in the typical cases of leukemia in which the blood examination or the clinical picture does not correspond to the classic description that the biopsy of the bone marrow will be found very useful. I refer to the acute aleukemic leukemias, which are often confused with aplastic anemia, thrombocytopenic purpura or septicemia, and to chronic aleukemic myelogenous leukemia, which is frequently diagnosed as morbus Brunt or sepsis lenta. During the past few years I have studied forty-seven cases of acute leukemia seven of which were aleukemic throughout their entire course and nine cases of chronic myelogenous leukemia two of which had never shown a leukemic blood picture. In none of these nine cases was the leukemia recognized during life. The value of a new method can be appreciated if one is familiar with its limitations. There are rare cases of leukemia in which the bone marrow biopsy is disappointing. Long standing myelogenous leukemia, in particular its aleukemic variety may finally lead to an exhaustion of the bone marrow and the marrow becomes replaced by connective tissue or bone (osteosclerotic aleukemic myelosis). In the early stages of very acute cases of leukemia the bone marrow may be hemorrhagic and poor in myeloid cells (Jaffe,⁶⁷ Segerdahl¹⁸)

THROMBOCYTOPENIC PURPURA

According to the current conception the megakaryocytes are the source of the blood platelets, and thrombocytopenic purpura (Werlhof's disease) has therefore often been attributed to an alteration of these cells. Because of the loss of blood from the multiple hemorrhages the bone marrow is hyperplastic. The megakaryocytes are numerous. I have counted from two to four megakaryocytes per hundred bone marrow cells. Many of them are well preserved except that they are smaller than normal and that their fine azurophilic granulation is often missing. This disappearance of the specific granulation of the megakaryocytes has been stressed by Frank⁶⁸ and Schmincke,⁶⁹ and Frank believes that it may be due to a maturation arrest. Frank⁶⁸ and Schmincke⁶⁹ describe also severe degenerative changes which I have not been able to find. It should be remembered that single degenerating megakaryocytes are present in the normal bone marrow. Rohr⁷⁰ refers to a peculiar configuration of the megakaryocytes in thrombocytopenic purpura: the cytoplasmatic protrusions disappear and the cell borders become straight and sharp. After splenectomy the budding of the cytoplasm is said to reappear. From these observations it would seem that thrombocytopenic purpura is due to a dysplasia and not to an exhaustion of the thrombocytopoiesis. Falconer and Morris¹ advise against biopsy of the bone marrow in cases of purpura.

62 Aubertin cited by Zanatz.⁶⁶
63 Liotti D. Medullary Lymphoblastic Leukemia. *Riforma med* 46:1011 (June 23) 1930.
64 Fries Margaret E. Symptomatic Thrombocytopenic Purpura Complicating Leukopenic Medullary Leukemia. *Arch pediat* 47:69 (Feb) 1930.

65 Hirschfeld, cited by Zanatz.⁶⁶
66 Zanatz A. T. Zur Frage der medullären Lymphadenose Virchow's Arch f path Anat 292:356 1934. Weitere Untersuchungen zur medullären Lymphadenose. *ibid* 294:80 1934.
67 Jaffe, R. H. The Nature of the Anemia in Acute Leukemia. *Arch Path* 20:725 (Nov.) 1915.
68 Frank E. Die haemorrhagischen Diathesen in Schittenhelm A. Handbuch der Krankheiten des Blutes und der blutbildenden Organe. Berlin Julius Springer 2:289 1925.
69 Schmincke H. Zur Kenntnis der essentiellen Thrombopenie. *Verhandl der deutsch path. Gesellsch* 25:50 1930.
70 Rohr cited by Loewinger.
71 Falconer E. H. and Morris L. M. Clinical Comparison of Aplastic Anemia, Idiopathic Purpura, Hemorrhagica and Aleukemic Leukemia. Based on Studies of Bone Marrow. *M. Clin North America* 6:353 (Sept.) 1922.

HEMOPHILIA

In a recent publication Custer and Krumbhaar²² describe the appearance of the bone marrow in three cases of hemophilia. They emphasize that the erythropoiesis and granulopoiesis are strictly normal, both being very active, and that the megakaryocytes are distinctly more numerous than normal. The morphology of the megakaryocytes shows no anomalies.

TUMORS OF THE BONE MARROW

It is interesting to note that the plasma cell, which plays only a minor role in normal blood marrow, is the most common source of primary neoplasms of the bone marrow. Of ten myelomas that I have recently studied, eight were composed of plasma cells, one of myelocytes and one of lymphoblasts. In the literature there are also reports on erythroblastic myelomas. Of the other tumors that originate in the bone marrow I mention reticular cell lymphosarcoma, liposarcoma and benign angioma and angiosarcoma.

BONE MARROW BIOPSY

The upper portion of the sternum, at the height of the second or third rib has been found the most suitable place for the removal of samples of the bone marrow. The sternal marrow remains active throughout life, and the anterior cortex of the bone is only from 0.9 to 2 mm thick. The thickness of the sternum amounts to about 1 cm (Van der Merwe²⁰). Two methods have been recommended, one of which consists in the removal of a core of marrow with the aid of a small trephine (Custer,²⁰ Dameshek,¹³ Tuohy and Gillespie¹²) while the other is based on the aspiration of marrow fluid through a modified spinal puncture needle (Amprino and Penati,⁷³ Arinkin¹⁴ Baserga,⁷⁴ Becart,³¹ Henning,⁷⁵ Klima and Rosegger,⁷⁶ Loewinger¹⁶ Reich,⁷⁷ Segerdahl,¹⁸ Van der Merwe,²⁰ Young and Osgood¹⁹). For research and systematic studies the former method is the method of choice, since it permits sectioning of the marrow with preservation of the topographic relations of the cells and also the preparation of smears and imprints. Aspiration biopsy has the advantage of simplicity and does not require the technical skill that is necessary for the first method. With aspiration biopsy one must keep in mind that the aspirated fluid does not give the correct picture of the bone marrow in situ because cells that are still connected with the reticulum are less apt to become mobilized than cells that are free. The inflowing blood will necessarily dilute the aspirated material and it is therefore advisable not to aspirate more than 0.1 or 0.2 cc. After coagulation in a small watch glass the aspirated fluid can be fixed and sectioned like a piece of bone marrow (Amprino and Penati⁷³). In the majority of cases a carefully prepared spread of the marrow fluid will be found sufficient to obtain definite information as to the condition of the bone marrow.

531 Grant Place.

72 Tuohy E. L. and Gillespie M. G. A Trephine Modified to Secure Bone Marrow (Sternal) Biopsy. *J A M A* 104:1404 (April 20) 1935.

73 Amprino R. and Penati F. Die Probeexcision aus dem Knochenmark des Brustbeines. *Klin Wchnschr* 14:131 (Jan 26) 1935.

74 Baserga Angelo. Technique of Sternal Puncture. *Riforma med.* 50:1707 (Nov 3) 1934.

75 Henning N. Die Bedeutung der intravitalen Knochenmarkuntersuchung für die klinisch-hämatologische Diagnostik. *Deutsche med Wchnschr* 61:1543 (Sept 27) 1935.

76 Klima R. and Rosegger H. Zur Methodik der diagnostischen Sternalpunktion. *Klin Wchnschr* 14:541 (April 13) 1935.

77 Reich C. Modified Technique for Sternal Puncture and Its Value in Hematologic Diagnosis. *J Lab & Clin Med* 20:286 (Dec.) 1934.

Meat Allergenic Extract Lederle² Dill Leaves Allergenic Extract Lederle² Duck Meat Allergenic Extract Lederle² Egg Plant Allergenic Extract Lederle² Endive Allergenic Extract Lederle² Flounder Allergenic Extract Lederle² Fluke Allergenic Extract Lederle² Frog's Legs Allergenic Extract Lederle² Garlic Allergenic Extract Lederle² Ginger Allergenic Extract Lederle² Goat Meat Allergenic Extract Lederle² Goat Milk Allergenic Extract Lederle² Goose Meat Allergenic Extract Lederle² Guinea Hen Meat Allergenic Extract Lederle² Haddock Allergenic Extract Lederle² Halibut Allergenic Extract Lederle² Henna Allergenic Extract Lederle² Herring Allergenic Extract Lederle² Hops Allergenic Extract Lederle² Horse Meat Allergenic Extract Lederle² Horse Radish Allergenic Extract Lederle² Kale Allergenic Extract Lederle² Lentil Allergenic Extract Lederle² Lettuce Allergenic Extract Lederle² Lobster Allergenic Extract Lederle² Mace Allergenic Extract Lederle² Mackerel Allergenic Extract Lederle² Mushroom Allergenic Extract Lederle² Nutmeg Allergenic Extract Lederle² Oat (Meal) Allergenic Extract Lederle² Okra Allergenic Extract Lederle² Olive Allergenic Extract Lederle² Onion Allergenic Extract Lederle² Oyster Allergenic Extract Lederle² Oyster Plant Allergenic Extract Lederle² Parsley Allergenic Extract Lederle² Parsnip Allergenic Extract Lederle² Pea (Black Eyed) Allergenic Extract Lederle² Pepper (Green) Allergenic Extract Lederle² Peppermint Allergenic Extract Lederle² Perch Allergenic Extract Lederle² Pickered Allergenic Extract Lederle² Pike Allergenic Extract Lederle² Pompano Allergenic Extract Lederle² Potato (Sweet) Allergenic Extract Lederle² Pumpkin Allergenic Extract Lederle² Quail Allergenic Extract Lederle² Rabbit Meat Allergenic Extract Lederle² Rabbit Serum Allergenic Extract Lederle² Radish Allergenic Extract Lederle² Sardine Allergenic Extract Lederle² Scallion Allergenic Extract Lederle² Scallop Allergenic Extract Lederle² Senna Allergenic Extract Lederle² Shad Allergenic Extract Lederle² Shad Roe Allergenic Extract Lederle² Shrimp Allergenic Extract Lederle² Smelt Allergenic Extract Lederle² Soy Bean Allergenic Extract Lederle² Squab Allergenic Extract Lederle² Squash Allergenic Extract Lederle² Squid Allergenic Extract Lederle² Sturgeon Allergenic Extract Lederle² Sugar Cane Allergenic Extract Lederle² Swiss Chard Allergenic Extract Lederle² Tapioca Allergenic Extract Lederle² Tea Leaf Allergenic Extract Lederle² Terrapin Allergenic Extract Lederle² Thyme Allergenic Extract Lederle² Tomato Allergenic Extract Lederle² Trout (Lake) Allergenic Extract Lederle² Trout (Sea) Allergenic Extract Lederle² Tuna Fish Allergenic Extract Lederle² Turkey Meat Allergenic Extract Lederle² Turnip Allergenic Extract Lederle² Vanilla Allergenic Extract Lederle² Watercress Allergenic Extract Lederle² Weakfish Allergenic Extract Lederle² Whitefish Allergenic Extract Lederle² Whiting (Fish) Allergenic Extract Lederle²

1:10 Dilutions Cori Serum Allergenic Extract Lederle² Eel Allergenic Extract Lederle² Jack Bean Allergenic Extract Lederle² Leek Allergenic Extract Lederle² Sole Allergenic Extract Lederle²

Products marketed in dilutions representing 1 mg and 0.001 mg of nitrogen per cc. Silk (Silk-worm) Allergenic Extract Lederle²

Products marketed in dilutions representing 0.2 mg and 0.001 mg of nitrogen per cc. Millet Seed Allergenic Extract Lederle² Mule Dander Allergenic Extract Lederle²

Products marketed in dilutions representing 0.2 mg and 0.001 mg of nitrogen per cc. Anise Seed Allergenic Extract Lederle² Canary Seed Allergenic Extract Lederle²

Products marketed in dilutions representing 0.1 mg of nitrogen per cc. Canary Dander Allergenic Extract Lederle² Chicken Feathers Allergenic Extract Lederle² Duck Feathers Allergenic Extract Lederle² Goose Feathers Allergenic Extract Lederle² Parrot Feathers Allergenic Extract Lederle² Pigeon Feathers Allergenic Extract Lederle² Turkey Feathers Allergenic Extract Lederle²

Products marketed in dilutions representing 0.1 mg and 0.001 mg of nitrogen per cc. Brazil Nut Allergenic Extract Lederle² Cashew Nut Allergenic Extract Lederle² Chestnut (Spanish) Allergenic Extract Lederle² Coconut Allergenic Extract Lederle² Hazelnut Allergenic Extract Lederle² Hickory Nut Allergenic Extract Lederle² Pecan Allergenic Extract Lederle² Pepper (Black) Allergenic Extract Lederle² Pepper (Red) Allergenic Extract Lederle² Pignolia Nut Allergenic Extract Lederle² Pistachia Nut Allergenic Extract Lederle² Walnut (Black) Allergenic Extract Lederle² Walnut (English) Allergenic Extract Lederle²

Products marketed in dilutions representing 0.1 mg and 0.001 mg of nitrogen per cc. Caraway Seed Allergenic Extract Lederle² Lycapodium Allergenic Extract Lederle² Pappy Seed Allergenic Extract Lederle²

Products marketed in dilutions representing 0.1 mg and 0.001 mg of nitrogen per cc. Camel Dander Allergenic Extract Lederle² Cuttlefish Allergenic Extract Lederle² Deer Dander Allergenic Extract Lederle² Hog Dander Allergenic Extract Lederle²

Products marketed in dilutions representing 0.1 mg and 0.00001 mg of nitrogen per cc. Castor Bean Allergenic Extract Lederle²

Products marketed in dilutions representing 0.05 mg and 0.001 mg of nitrogen per cc. Guinea Pig Dander Allergenic Extract Lederle²

Products marketed in dilutions representing 0.01 mg of nitrogen per cc. Ascaris Allergenic Extract Lederle²

Products marketed in dilutions representing 0.01 mg and 0.001 mg of nitrogen per cc. Mink Dander Allergenic Extract Lederle² Muskrat Dander Allergenic Extract Lederle² Raccoon Dander Allergenic Extract Lederle²

Products marketed in dilutions representing 0.001 mg of nitrogen per cc. Fox Dander Allergenic Extract Lederle² Mouse Dander Allergenic Extract Lederle²

The methods used in preparing the extracts bearing numbers 1 to 10 are described under Allergenic Extracts Lederle (New and Nonofficial Remedies 1935 p 29) The general method of extraction is also given in N N R 1935

The product marked 11 is prepared by the following method The dried warms are ground and treated with taluol and ether until practically fat free The residue is extracted with the buffered solution The dialyzed extract is sterilized by Berkefeld filtration and standardized according to its nitrogen content

The product marked 12 is prepared by the following method The ground material is washed with taluol, alcohol and ether until practically oil free The resulting residue is dried and extracted with the buffered solution The extract is boiled for three minutes for detoxification The coagulum formed is separated at once from the extraction by filtration The toxin free extract is sterilized by filtration and standardized on the basis of its nitrogen content

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION FRANKLIN C BING, Secretary



HALE'S PRIDE VEG-ALL

Distributor—Halc-Halsell Company, McAlester, Okla

Manufacturer—The Larsen Company, Green Bay, Wis

Description—Mixture of carrots, potatoes, celery, green beans, cabbage, peas, corn, lima beans, onions, sweet peppers, salt and water prepared by efficient methods for retention in high degree of the natural mineral and vitamin values, the same as the accepted "Larsen's Veg-All" (THE JOURNAL, Aug 12, 1933, p 525)

FORT HAMILTON BRAND PINEAPPLE JUICE

Distributor—The E H Frechtling Company, Hamilton, Ohio

Manufacturer—Hawanan Pineapple Company, Ltd, San Francisco

Description—Canned Hawaiian pineapple juice retaining in high degree the natural vitamin content, the same as Dole Hawaiian Finest Quality Pineapple Juice (Unsweetened) (THE JOURNAL, June 3, 1933, p 1769)

REYNOLDS STURGEON BAY BRAND PITTED RED CHERRIES WATER PACK—WITHOUT ADDED SUGAR

Manufacturer—Reynolds Preserving Company, Sturgeon Bay, Wis

Description—Canned cooked red Wisconsin cherries packed in water without added sugar or salt The same as Cello Red Pitted Cherries Packed in Water Without Added Sugar or Salt (THE JOURNAL, Sept 14, 1935, p 885)

GOLD-PAK BRAND GRAPEFRUIT JUICE

Manufacturer—Ariz-Sweet Grapefruit Growers, Ltd, Peoria, Ariz

Description—Canned Arizona grapefruit juice, retaining in high degree the original vitamin C content The same as Ariz-Sweet Brand Grapefruit Juice, THE JOURNAL, April 25, 1936, page 1474

GRIDLEY (FAST FROZEN) CHOCOLATE ICE CREAM

Manufacturer—Gridley Dairy Company, Inc., Milwaukee.

Description—Pasteurized, homogenized, chocolate flavored ice cream containing cream, evaporated milk, sugar, milk, cocoa, chocolate liquor, egg yolk, gelatin, vanilla extract and salt Contains not less than 13 per cent milk fat. For description of manufacture see THE JOURNAL, Sept 7, 1935, page 801

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SATURDAY, JULY 11, 1936

THE STRENGTH OF BONE

The several types of connective tissue are not greatly dissimilar when considered from the point of view of qualitative chemical composition. Tendon, cartilage and bone in the laboratory all yield essentially the same kind of compounds. The chemical difference between these tissues lies largely in the relative quantities of the characteristic substances constituting them. From each can be obtained collagen, mucoid and inorganic salts, but even the beginner in histochemistry is aware of the fact that the so-called ash constituents play a far more important part in the make-up of bone than they do in cartilage or tendon. This localization of inorganic salts in bone has long been considered the characteristic chemical feature of this tissue. Although the skeleton of the new-born mammal is more or less cartilaginous, the proportion of ash increases with age, under ordinary conditions of nutrition, until at maturity considerably more than half of the mass of the dry, fat-free bone consists of inorganic material. To add further significance to this reservoir of salts is the fact that almost the entire supply of the indispensable calcium of the body resides in the bones. It is reasonable therefore that, in considerations of the function, pathology and repair of bone, attention is focused primarily on this distinguishing aspect of its composition.

In the light of this emphasis, it is interesting to note in a recent report¹ the conclusion that under certain conditions the strength of bone depends more on the organic part of this tissue than on the degree to which the bone approaches the normal composition as regards the inorganic portion. In this study, groups of young rats were restricted for various periods to experimental rations extremely poor in mineral salts. At the end of this interval the breaking strength of the bone was correlated with the composition and with the measurements of length and two diameters. Although increase in body weight was largely suppressed by the dietary

restriction imposed, there was appreciable increase in length and diameters of the representative bones examined. However, the strength of these bones was subnormal. Other groups of rats similarly treated were realimented with an adequate ration and the same tests made at stated intervals of refeeding. One group stunted for three weeks and refed for six weeks showed a definitely greater breaking strength than a second group stunted for six weeks and refed for twelve weeks. Further examination of the data shows that this difference in strength could not be correlated with the ash content of the respective bones but that where the strength was greater, the measurements of the bone more closely approached those of the normal controls. It was apparent that the early period of restricted nutrition had adversely affected the architecture of the bone, as reflected in the measurements, to a degree somewhat proportional to the duration of the under feeding. Likewise it appears that within limits "the breaking strength of a bone is more closely correlated with the integrity of the organic pattern as reflected in size than with the amount of inorganic matter deposited in the bone."

The studies described deal with dietary adjustments far more extreme than any likely to be encountered in practice. Nevertheless the results point definitely to the importance of serious consideration of the non mineral part of the skeleton in certain situations. These observations will be of particular interest in the fields of orthopedics, surgery and dental pathology, in which not infrequently therapeutic emphasis involving oral administration of calcium salts seems somewhat misplaced.

BCG AS A TUBERCULOSIS PREVENTIVE

There are a number of reasons why the use of the living vaccine known as BCG, twelve years after its first use in France, should still be discussed and debated among those concerned with the prevention and cure of tuberculosis. It has never been conclusively demonstrated that the use of this vaccine is an effective means of preventing human tuberculosis. The reports of studies of its value as an effective vaccine in animals are greatly at variance despite the fact that these studies have been made by excellent investigators. The greatest value of BCG is in cattle but, in view of the variation in reported results, one could scarcely conclude that it is justifiable to use it universally in man. Those who have tried to produce a fixed virus without virulence using a bile medium by the method of Calmette and Guérin have failed to do so. Especially notable in this connection are the studies of A. Stanley Griffith¹ using seven bovine strains and exactly the method of the French scientists over a period of ten years. Yet he failed to alter the virus.

Since 1900 it has been well known that the injection of certain strains of tubercle bacilli raises the resistance

¹ Clarke M. F., Bassin A. L. and Smith A. H. *Am. J. Physiol.* 115: 546 (May) 1936.

¹ Griffith A. S. *Lancet* 1: 303 (Feb. 6) 361 (Feb. 13) 1932.

of certain animals to a later killing dose of virulent tubercle bacilli. But the vaccination of man with living tubercle bacilli had never been seriously proposed until 1922, when Professor Calmette enthusiastically suggested it and French physicians began to practice it. This enthusiasm was not shared by British and American physicians primarily because the determination as to whether it should be used in commerce was in Great Britain in the hands of the Medical Research Council and in the United States in the hands of the National Institute of Health (U. S. Public Health Service) and the Bureau of Animal Industry (Department of Agriculture), which are government agencies. Their conservatism was based on the premise that the ability of the vaccine to justify the claims of the French scientists should be proved by animal tests before employing it wholesale in man.

The enthusiasm with which the French scientists advocated their prophylactic vaccine received a severe blow from the American and British point of view when Prof. Major Greenwood² in England criticized the methods of statistical study that were used by Calmette to prove the value of his vaccine. There is still a great tendency to base conclusions on empirical observations rather than on rigid scientific technique in human epidemiologic studies, in which it is so difficult and so important to provide comparable controls.

The method of administering the vaccine has changed three times in this period. Administration by mouth in the early days of life was first advocated. This apparently is gradually disappearing as a method of election. The next method was administration by subcutaneous injection. This was so frequently followed by "cold abscesses" that this also is gradually giving place to the method of intracutaneous injection. Experiments in animals have shown little value for the oral method as a means of prevention. The subcutaneous method and the intracutaneous method are variable in their results in animals. The intravenous method³ of vaccination has proved to be the most efficacious in cattle, although this also varies within wide limits. The greatest difficulty has been to determine how long the period of increased resistance lasts. This also apparently varies in many instances and is often of short duration, that is, under one year.

Many different cultures of BCG have been sent to the United States in the hands of various persons, laymen and physicians alike. Different workers have used cultures obtained at different times from the French laboratories. The result is variation in the experimental work that has been carried on, for little has been done to check the constancy of the characteristics of these strains. When the matter of human use first required attention in the United States, Dr. G. W. McCoy, director of the National Institute of Health, conferred with Dr. Theobald Smith, Dr. William H. Park, Dr. Eugene L. Opie and Dr. William Charles

White. It was agreed that Dr. Park and Dr. Opie should undertake to use the vaccine (with the consent of parents) in children in the United States with as careful control conditions as possible. These studies were undertaken with the approval of Dr. McCoy. One study⁴ was carried on from the Department of Health of New York City and the other⁵ from the Henry Phipps Institute in Philadelphia. The results of these studies have been published from time to time. They are among the best attempts in the world at adequate control comparisons, but one can only conclude, after studying them, that they do not provide conclusive evidence for general use of the vaccine.

It is not the purpose here to analyze the experiments by various persons in different countries but rather to offer certain conclusions based on a careful study of the data and a familiarity with several of the experiments in different countries. The whole subject has been fairly reviewed by K. Neville Irvine⁶. It may be concluded that

1. Practically all strains of BCG used in children have been avirulent. (Nothing has been said of the Lubeck disaster, as this was proved to be a laboratory accident.)

2. It has been proved that there is a definite increase in the resistance of cattle by the use of this vaccine, although it varies within wide limits and the duration of the increased resistance also varies within wide limits.

3. The evidence of increased resistance produced by this vaccine in many other species of animals is not very convincing.

4. The oral method, if one is to judge by animal experiments, is not efficient.

5. One is not justified in taking the animal experiments, even those in cattle, as a reason for universal vaccination in man.

Sufficient arguments can however be presented for the use of this vaccine in groups for which little can be done by other methods, as for example the Negroes in the South and the Indians on the reservations, where the present machinery is not adequate in view of the peculiar circumstances surrounding their condition. It would be possible, under conditions in which a high death rate prevails, over a period of twenty years to determine something of the value of BCG and also to add to our knowledge. That there is no conclusive proof of the efficacy of the vaccine in man is in part due to the short duration of the experiments and to the small number of those involved in the carefully controlled experiments as well as to the inadequacy of the accurate data on the control groups.

4 Keresztesi Camille, Park W. H., Vogel P. and Levine M. Fate of Children of Tuberculous Families Including Those Treated and Those Not Treated with BCG. *Am. J. Dis. Child.* 48: 507 (Sept.) 1934.

5 Aronson J. D. and Dannenberg A. M. Effect of Vaccination with BCG on Tuberculosis in Infancy and in Childhood. *Am. J. Dis. Child.* 60: 1117 (Nov.) 1935.

6 Irvine, K. N. *The BCG Vaccine*, Oxford University Press, London. Humphrey Milford 1934.

2 Greenwood Major. *Brit. M. J.* 1: 793 (May 12) 1928.

3 Buxton J. B., and Griffith A. S. *Lancet* 1: 393 (Feb. 21) 1931.

Current Comment

THE INHERITANCE OF ESSENTIAL PENTOSURIA

There are at least two well known types of chronic essential pentosuria, differing from each other in the nature of the pentose excreted. A simple test allows the easy identification of *l*-xyloketose in the urine and thus the positive diagnosis of this type of pentosuria. In a recent study of forty-one such cases, Lasker and her collaborators¹ believe that they obtained evidence which strongly indicates that xyloketosuria is inherited as a recessive characteristic. Twenty pentosuric families were observed. The accepted methods of plotting the cases occurring in families were followed, and four factors indicated that the inheritance of this abnormality is probably controlled by a single recessive gene. Thus, although xyloketosuria is rare in the general population, it is frequently found in families in which known cases exist. Most of the patients with pentosuria were Jews, a fact which strongly supports the contention that the disease is hereditary. The disease was found present in the children of ten families in which neither parent showed evidence of the disease. Hence, if inherited, the abnormality would almost certainly be recessive in character. Finally, one case was observed in a child born to cousins. The likelihood of members of her generation in this family showing the trait was especially great if xyloketosuria is to be considered as a recessively inherited abnormality, both because one parent had the disease and because the parents were related to each other. The authors further state that causes other than heredity may apparently produce pentosuria. They believe it possible, however, that where such causes are operative the pentosuria may have been overlooked and was not discovered until after the event that was believed to have led to its occurrence.

SELENIUM CONTENT IN WHEAT

In previous comments on the possible dangers of selenium poisoning¹ it has been pointed out that selenium in the soil is most likely to reach toxic concentrations in semiarid regions, those which furnish the great wheat fields of the world. Robinson² has recently investigated the problem further by analyzing the selenium content of wheat grown in various parts of the world. Early in the investigations it was found that nearly all the selenium present in the grain could be concentrated in the gluten fraction of the wheat. The estimation of exceedingly small quantities of selenium was difficult and the final results used therefore were the mean of duplicate and frequently triplicate analyses. A variation in the selenium content of commercially purchased wheat of from 0.1 to 1.9 parts per million was found. All wheats contain some selenium. It is improbable, according to Robinson, that

any field grown wheat is entirely free from that element. The Canadian wheat and the South African wheat with selenium contents of between 1 and 2 parts per million, show that there are soils in other countries which contain considerable quantities of this element. The presence of small amounts of selenium in random selections of commercially obtained wheat does not eliminate the possibility that there are areas represented in the mixed sample which may produce wheat with a sufficiently large content to be toxic. Thus wheat from a small plot in a larger field in Wyoming contained 27 parts of selenium per million and a toxic wheat from a small plot in a larger field in South Dakota contained 26 parts per million. No work was done on the relation between selenium and the flour milled from the wheat. Since the gluten of the wheat carries most of the selenium, the examination for selenium of the glutes proposed for special diets becomes especially interesting, since presumably the dry-land wheats would be used for gluten extractions. Of two such samples of gluten examined, one contained 0.8 part of selenium per million and the other 16 parts per million. A gluten purchased in New York contained 12 parts per million. The gluten raised by Hurd-Karrer on artificially selected soils contained 340 parts of selenium per million. A gluten of this selenium content and the gluten separated from the toxic field grown wheat would be dangerous to use and one containing 16 parts per million could hardly be considered wholesome.

MONOCYTES IN AGRANULOCYTOSIS

Rosenthal and Abel¹ believe that they can differentiate three main types of agranulocytosis at the onset of symptoms according to the predominance of certain cells. The first type is that with relative lymphocytosis, the second, agranulocytosis with unusual monocytosis (leukopenic infectious monocytosis), and the third, hypoleukocytic angina in which all the symptoms of agranulocytosis are present, including leukopenia, but without much change in the differential blood count. They now report fourteen more cases of agranulocytosis with monocytosis and attempt to show the possible relation of this form of the disease to the administration of drugs. The majority of their cases began like infections, with malaise, chilliness, weakness and anorexia. Soreness of the tongue and gums, often with ulcerations, was not infrequently observed. Cervical lymphadenopathy was present in three instances. The etiologic factors of the disease are uncertain, though it has been suggested that abnormal disturbances of the bone marrow, unusual septic processes, or the influence of drugs is largely responsible. History of drug taking was elicited prior to the onset of symptoms in nine of the fourteen cases reported. It was interesting to note, however, that in one case a preparation containing barbituric acid derivative and aminopyrine was given on six different occasions during the acute stage of the disorder but seemed to have had no influence on the favorable progress of the disease. The most striking hematologic feature of the cases reported was not only the relative increase in the percentage of monocytes but

¹ Lasker, Margaret Enklewitz, Morris and Lasker, G. W. The Inheritance of Xyloketosuria (Essential Pentosuria). *Human Biology* 8: 243 (May) 1936.

² Robinson, W. O. Selenium Content of Wheat from Various Parts of the World. *Indust. & Engin. Chem.* 28: 736 (June) 1936.

¹ Rosenthal, Nathan and Abel, H. A. The Significance of the Monocytes in Agranulocytosis (Leukopenic Infectious Monocytosis). *Am. J. Clin. Path.* 6: 205 (May) 1936.

in several instances an actual absolute increase. The authors believe that the prognosis is more favorable in agranulocytosis accompanied by monocytosis than in other forms of the disease. In their total group of twenty-two patients so far observed, seventeen have recovered a percentage of 77. Treatment other than local applications when indicated was unnecessary in the mild cases, although in more severe ones the patients received either pentose nucleotide or liver extract intramuscularly or intravenously.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Personal—Dr. William J. Donald Lafayette, has been named health officer of Baldwin County, effective July 1, to succeed Dr. Stephen A. Durick, Bay Minette, who has resigned to enter private practice.—Dr. Joseph J. Repa, Cresson, Pa., has been added to the Alabama State Department of Health as full time pediatrician.—Dr. Charles J. Fisher, Moulton, has been appointed health officer of Lawrence County.

Pediatric Meeting—Dr. Wallace A. Clyde Fairfield, was elected president of the Alabama Pediatric Society at its eleventh annual session in Montgomery recently. Other officers are Drs. Jacques H. Baumhauer, Mobile, vice president and Martin G. Neely, Fairfield, secretary. Speakers at the meeting included:

- Dr. Daniel Lesesne Smith, Sr., Spartanburg, S. C., Upper Respiratory Infections
- Dr. Samuel F. Ravenel, Greensboro, N. C., Experiences with Nephritis in Children
- Dr. Owen H. Wilson, Nashville, Vomiting in Young Babies with Special Reference to Pyloric Stenosis
- Major Houston H. Parsons, Fort McClellan, Mumps
- Dr. John Signorelli, New Orleans, Eczema from the Pediatrician's Standpoint

ARIZONA

Dr. Wyatt Receives the Stacey Award—Dr. Bernard L. Wyatt, formerly director of the Desert Sanatorium and Institute of Research, Tucson, has received the James E. Stacey Award for 1936 awarded by the University of Cincinnati College of Medicine. The award consists of a medal and an honorarium of \$100 and is given for significant contribution in the field of focal infection. Dr. Wyatt graduated from New York University and Bellevue Hospital Medical College in 1905, and for a time was medical officer of health of the district of Abaco, Bahama Islands.

ARKANSAS

Society News—At a meeting of the Southeast Arkansas Medical Society in Lake Village, recently, Dr. Joseph F. Shuffield, Little Rock, gave a lantern demonstration on fractures, and Dr. Guy C. Jarratt, Vicksburg, read a paper on "Pyuria in Children."—At a meeting of the Ouachita County Medical Society in Camden, May 7, a motion picture on "Treatment of Burns," furnished by Dr. Grover C. Penberthy, Detroit, was shown.—Dr. Lee Vallette Parmley, Little Rock, gave his presidential address at the spring meeting of the First Councilor District Medical Society in Tyronza, June 18, on "The Trend of Medical Legislation." Other speakers included Drs. Rufus C. Shanley, Jonesboro, on "Diagnosis of Acute Diseases of the Abdomen," Robert T. Nowlin, Memphis, "Importance of Pain as a Symptom in Disease," and Charles S. Holt, Fort Smith, "Surgery in Tuberculosis."

CONNECTICUT

Personal—Dr. Benjamin G. Horning has been named superintendent of the Hartford board of health.—Dr. James C. Fox, Jr., associate clinical professor, Yale University School of Medicine, New Haven, has been appointed clinical professor of neurology, effective July 1.

DISTRICT OF COLUMBIA

Rocky Mountain Spotted Fever—Two children have been treated for Rocky Mountain spotted fever at Children's Hospital, Washington, it was reported June 9. One child was from near Upper Marlboro, Md., and the other from Chevy Chase. Thirty-nine cases have been reported in the district since 1931, with thirteen deaths. While there is no cause for alarm, it is pointed out that, in certain sparsely built up sections in the district, ticks are prevalent and may infect one with the fever. Five of the persons reported ill in the district had not been out of the city.

Personal—Miss Clara Dutton Noyes, national director of the American Red Cross Nursing Service, died in Washington, June 3, aged 66. Miss Noyes graduated from the Johns Hopkins School of Nursing in 1896 and before the World War served as superintendent of nurses at Bellevue Hospital, New York, and Johns Hopkins Hospital, Baltimore.—Clinton T. Messner, D.D.S., chief of the dental department, U. S. Public Health Service, since 1924, died in Washington, May 28. A native of Oxford, Ind., Dr. Messner served in the army medical corps during the World War.—Dr. Alice Hamilton, Boston, technical adviser on industrial poisons, U. S. Department of Labor, was presented with the national achievement award of the Chi Omega Sorority, June 22.—The honorary degree of doctor of science was conferred on Major General Charles R. Reynolds, U. S. Army, by Dickinson College, Carlisle, Pa., at its recent commencement.

GEORGIA

Additions to Staff of Health Department—Dr. Edmund S. Burwell has been appointed associate clinician in the division of tuberculosis control, Georgia State Department of Health, Atlanta. Dr. Samuel Ross Brown, recently of the U. S. Veterans' Hospital, Muskogee, Okla., will assist in the bureau of venereal disease control. Dr. Fritz A. Brink, Jacksonville, Fla., has been appointed district health officer with headquarters in Blackshear. Dr. David M. Wolfe, Augusta, has been appointed assistant chief of the division of epidemiology.

Chattahoochee Valley Meeting—The thirty-sixth annual session of the Chattahoochee Valley Medical Association will be held at Radium Springs, July 14-15. The following will be included among the speakers:

- Dr. James P. Collier, Tuscaloosa, Ala., Acute Appendicitis
- Dr. Thomas R. Littlejohn, Sumter, S. C., Cardiovascular Syphilis and Elementary Syphilis
- Dr. Seale Harris, Birmingham, Pituitary, Thyroid, Adrenal, Hepatogenous and Pancreatic Diabetes Mellitus
- Dr. Arthur Mazyck, Jr., Dothan, Ala., Carbohydrate Intolerance
- Dr. James M. Bryant, Jacksonville, Fla., Early Diagnosis of Carcinoma of the Cervix Uteri

A symposium on public health will be held Wednesday morning by Drs. James N. Baker, Montgomery, state health officer of Alabama, Thomas F. Sellers, chief of laboratories, department of public health, Atlanta, Wilbur A. McPhaul, Jacksonville, state health officer of Florida, and Dr. Joseph Yampolsky, Atlanta. Dr. Marye Y. Dabney, Birmingham, will deliver the W. J. Love Memorial Address, Wednesday afternoon, on "The More Useful Procedures in Present Day Gynecology." The session will be concluded with addresses by Drs. Orion O. Feaster, St. Petersburg, and Benjamin H. Minchew, Waycross, presidents, respectively, of the Florida and Georgia medical associations.

ILLINOIS

Rabid Dogs—The state health department has issued a bulletin asking the cooperation of the public in the proper handling of emergencies involving the risk of rabies. The department reports that during the week June 14-20, twenty-six animal heads from seventeen counties were sent to the diagnostic laboratories of the state health department for examination, and during the same period vaccine for giving the Pasteur antirabic treatment to 131 persons in twenty-four counties was sent out by the department. Up to June 30, 373 heads had been examined by the department laboratories this year, vaccine sufficient to treat 1,353 persons had been distributed, and 4,374 cases of dog bite wounds had been reported.

Chicago

Report of Behavior Clinic—There were 1,374 cases referred for examination to the behavior clinic of the criminal court of Cook County during the first five years of its existence, according to a recent report. Of this number, 1,268 received complete psychiatric, psychological and physical examinations and intensive social service investigation, six were given only physical examinations on order of the judge, sixty-four refused examination or were discharged before a complete examination.

could be made, thirty-six were short-service cases, that is, they were transferred to the psychiatrist at the House of Correction or sent to some other clinic. There were 199 patients, or 156 per cent, who were found to be actively psychotic and were committed to hospitals for mental disease, 122, or 96 per cent, were found to be so mentally defective that commitment to an institution for the feeble-minded was warranted, an additional 7 per cent were mentally defective (borderline) but not sufficiently so for commitment. 192, or 151 per cent, were found to be suffering from some mental or nervous disorder or personality defect but not serious enough to warrant commitment by the court to a hospital for mental diseases. In most of these cases treatment was recommended, 661 patients or 52 per cent, showed no evidence of organic or functional nervous or mental disease or feeble-mindedness. Under the classification "Psychoses," dementia praecox led the list of diagnoses with a total of sixty, the paranoid state was second with forty-one, and alcoholic psychosis third with twenty. Although it was intended that examinations by the behavior clinic be made after a person was convicted of a crime but not yet sentenced, the majority of cases have been referred after indictment but before conviction.

INDIANA

Hospital News—The dedication of a new \$50,000 health preventorium at the Julia Jameson nutrition camp Bridgeport, took place June 21. The building was made possible through special gifts from individuals and organizations to the Marion County Tuberculosis Association. The camp, which is operated by the tuberculosis association, opened with seventy-five children enrolled.—The medical library of the late Dr. Rud Van Sweringen, Fort Wayne, has been given to the Methodist Hospital Fort Wayne, by Mrs. Van Sweringen in memory of her husband.—As a memorial to physicians who have served in the Indianapolis City Hospital, a lane of elm trees has been started on the hospital grounds by the women's auxiliary of the Indianapolis Medical Society. This lane is a part of the memorial park surrounding the hospital which has been dedicated to physicians who have gratuitously cared for patients unable to pay. It connects the city hospital with the James Whitcomb Riley Hospital for Children and other hospitals of the Indiana University Medical Center (THE JOURNAL, July 8, 1933, p. 146).

KANSAS

Activities of State Board of Health—County medical societies will be asked to establish liaison committees to serve with the state board of health, according to the state medical journal, to aid in the further coordination of the board's activities. The state board recently established a district laboratory to serve southeast Kansas, which will occupy space in the Parsons State Hospital. Raymond E. Leach is the bacteriologist in charge.

Veteran Physicians Honored—Dr. Arthur J. Anderson, Lawrence, was guest of honor at a dinner meeting of the Douglas County Medical Society in Lawrence, May 7, in celebration of his completion of fifty years in the practice of medicine. He was presented with a silver plaque. Judge Hugh Means spoke on "Some Medical-Legal Aspects of Practice." Dr. Charles M. Stemen, Kansas City, was guest of honor at a similar celebration, May 26, held by the Wyandotte County Medical Society, the occasion was a dinner dance.

KENTUCKY

Alumni Reunion at Louisville—The University of Louisville School of Medicine conducted a two-day clinical course for alumni June 8-9. There were symposiums by the faculty on nephritis, management of injuries, the blood and hormones of the anterior pituitary. The bacteriologic and serologic laboratories of the Louisville City Hospital, which are affiliated with the school of medicine, also held open house during the two days. The second day's sessions were a house warming for a new annex to the medical school. The alumni banquet was held at the Brown Hotel Monday evening June 8 with Dr. William Barnett Owen as toastmaster. Dr. John Walker Moore, dean of the school of medicine, was chairman of the committee in charge of clinics.

Society News—Drs. Charles B. Billington, Wickliffe and John F. Dunn, Arlington, addressed the Tri-County Medical Society (Hickman, Ballard and Carlisle counties) on hypertension and acute infection of the middle ear, respectively.—Dr. George E. Rockwell, Cincinnati, addressed the Harrison County Medical Society, Cynthia June 1 on Allergy as Seen by General Practitioners.—Dr. Frank T. Linton

Princeton, was elected president of the Southwestern Kentucky Medical Association at its annual meeting in Paducah, May 19.—Dr. Walter Dean, Louisville, was elected president of the eye, ear, nose and throat section of the Kentucky State Medical Association at the annual meeting of the section in Louisville May 22, succeeding Dr. Frank C. Thomas, Lexington.

MASSACHUSETTS

Personal—Dr. John L. Jacobs, New York, has been appointed associate professor of pathology and bacteriology at Tufts College Medical School, Boston, effective July 1, it is reported.—Dr. Vincent P. Cummings has been appointed city physician of North Adams to succeed Dr. William F. McGrath.

Society News—Dr. Kurt E. J. Lande, New York discussed "Forensic Medicine in Europe, Legal Medicine in America" before the Harvard Medical School, May 21.—Dr. Louis E. Phaneuf, Boston, discussed "Pelvic Infection in Women" before the South End Medical Club, Boston, June 16.—Recently elected officers of the New England Physical Therapy Society are Drs. Claude L. Payzant, Boston, president, George B. Carr, Lynn, and Chester S. Leach, Brattleboro, Vt., vice presidents, and William D. McFee, Boston, secretary.

MICHIGAN

Personal—The honorary degree of doctor of science was conferred on Dr. Roy D. McClure, Detroit, by Ohio State University, Columbus, June 15.—Dr. Walter J. Cree was given the honorary degree of master of science at the annual commencement exercises of Wayne University, Detroit, June 18.

Bureau of Information—The organization of a bureau of information by the public relations committee of the Michigan State Medical Society is under way, according to a recent announcement. It was pointed out that the work of the bureau will eventually necessitate the creation of speakers' bureaus in all county medical societies, bringing the physician in closer contact with the public.

Canfield Memorial Lecture—Four hundred dollars has been given to the board of regents of the University of Michigan School of Medicine by Phi Rho Sigma fraternity as the nucleus for a memorial lectureship fund in honor of the late Dr. Roy B. Canfield, professor of otolaryngology at the school. The fraternity expects to add other donations from time to time. When the principal reaches such a sum that the annual income from it, in the opinion of the medical faculty and of the president and regents, will serve as an appropriate honorarium to the person or persons chosen to give the lecture, the Dr. Roy Bishop Canfield Memorial Lecture will be inaugurated.

Changes at the Medical School—Elizabeth C. Crosby, Ph.D., has been promoted to professor of anatomy in the University of Michigan School of Medicine, Ann Arbor, and Dr. Erwin E. Nelson, to professor of pharmacology. Other changes include:

Charles R. Brassfield, M.S., to assistant professor of physiology.
Dr. Frank Hartsuff Bethell, assistant professor of internal medicine.
Dr. Stanley M. Goldhamer, assistant professor of internal medicine.
Dr. Franklin Davis Johnston, assistant professor of internal medicine.
Dr. Don Marshall, assistant professor of surgery.
Dr. Luis Iglesias, assistant professor of surgery.

The Edward Swift Dunster Scholarship has been made available at the medical school. The interest from a fund of \$1500 will be used for the scholarship, which is named in honor of the late Dr. Dunster, who was for many years a professor in the medical school. Dr. Dunster died in 1888. Dr. Max M. Peet, professor of surgery at Michigan, was honored in May when a bird, *Botaurus lentiginosus peeti*, a variety of American bittern was named for him. Dr. Peet has been a student of ornithology for thirty years and possesses a fine collection, the *University Hospital Bulletin* reports.

MINNESOTA

Personal—Dr. Charles H. Mayo, Rochester, has been named professor emeritus of surgery of the medical and graduate schools, University of Minnesota.—Dr. James R. Kingston, Deer River, has been appointed health officer of the northern district of Minnesota with headquarters in Bemidji. The district is composed of Koochiching, Itasca, Hubbard and Beltrami counties.

Georgopoulos Sentenced for Illegal Practice—George D. Georgopoulos pleaded guilty to practicing healing without a basic science certificate in municipal court, Faribault, May 16 and was sentenced to pay a fine of \$500 and costs or serve six months in the Rice County jail. He was unable to pay the fine and was placed in jail. The defendant had examined and treated a tuberculous patient at Faribault and received \$20. In

his room in St Paul, a trunk was found full of medicine and medical instruments. When arrested he stated he had a license but produced instead two diplomas bearing the name Reliable Laboratories, St Paul, Minn. One of the diplomas was in hematology and urinalysis and the other in physical therapy. Georgopoulos stated that the school was operated by one Philip Stern in the Pittsburgh Building, St Paul. He claimed he attended a course for two months to secure the diploma in hematology and urinalysis for which he paid \$140. He went another month to get the diploma in physical therapy, for which he paid \$15. He admitted having treated several patients his fees ranging from \$2 to \$10 for each patient. He was arrested in St Paul in 1929 for a similar offense at which time he pleaded guilty and paid a fine of \$250. Subsequently in federal court he was denied citizenship because of his unlawful practice of medicine.

MISSISSIPPI

Personal—Dr Cecil C Smith, Indiana formerly director of the Sunflower County Health Department has been placed in charge of the Pearl River County Health Department. Poplarville. He has recently returned from a year's study at Johns Hopkins School of Hygiene and Public Health Baltimore, where he received the certificate in public health.

Society News—Dr Willard H Parsons Vicksburg, addressed the First Mississippi Medical Society in Philadelphia June 18, on "Reduction of Surgical Mortality."—The George County Medical Unit was reorganized at a meeting April 7 and application for a charter filed. Speakers at a meeting, June 5 were Drs James A Dorsett and Jack L Spiceland Lucedale, on 'Proper Use of Anesthesia in Labor and Tannic Acid Treatment of Burns' respectively.—Dr Robert E Wilson, Greenville, addressed the Issaquena-Sharkey-Warren Counties Medical Society in Vicksburg June 10 on 'Erysipelas in Children'.

NEVADA

Plague-Infected Ground Squirrels—Plague infection has been identified in ground squirrels shot on a sheep ranch near Lamoille in Elko County recently the U S Public Health Service reports. The infection was determined by inoculating guinea pigs with fleas removed from fifty ground squirrels. It was said that previous examinations of hundreds of squirrels had not revealed any suggestive lesions.

NEW HAMPSHIRE

Veteran Physicians Honored—At the recent annual meeting of the New Hampshire Medical Society Dr Ellen A Wallace, Manchester, received a gold medal in recognition of her membership in the society for fifty years. At the same time honor was paid to Drs Frederick L Hawkins Meredith and John F Robinson, Manchester, who have been in practice fifty years.

Society News—Dr Benjamin P Burpee Manchester discussed obstetrics before the Strafford County Medical Society, Rochester, in April.—Drs Clifford L Derick Boston, and Elmer J Brown Manchester, addressed the Hillsborough County Medical Society Nashua, April 28 on 'Staphylococcus Infections and Their Treatment' and 'Medical and Surgical Treatment of Prostatism' respectively.

NEW JERSEY

Personal—Dr Ellen C Potter, director of medicine of the New Jersey Department of Institutions and Agencies, received the honorary degree of doctor of laws at the annual commencement of the New Jersey College for Women, New Brunswick, June 6.

State Medical Election—Dr Spencer T Snedecor, Hacksack was chosen president elect of the Medical Society of New Jersey at the annual meeting in Atlantic City June 3. Dr Francis R. Haussling, Newark, was installed as president, Drs William G Herrman, Asbury Park, and William J Carrington, Atlantic City, were elected vice presidents and Dr John B Morrison, Newark, reelected secretary.

NEW YORK

Personal—Dr Joseph Frederick Painton, Buffalo, has been appointed associate in medicine at the University of Buffalo School of Medicine.—Dr Max J Schwerdt, Staten Island, was guest of honor at the annual dinner of the Richmond County Medical Society in April, celebrating his fiftieth anniversary in the practice of medicine.—Dr Hickson Field Hart, Peekskill, celebrated the fiftieth anniversary of his graduation from the College of Physicians and Surgeons New York, May 13.

Hospital News—The name of Bloomingdale Hospital, White Plains, which is affiliated with New York Hospital, New York, has been changed to New York Hospital, Westchester Division. The Westchester institution has been conducted by the Society of the New York Hospital since 1821. Dr Clarence O Cheney, formerly director of the New York State Psychiatric Institute, New York, was recently appointed medical director (THE JOURNAL, March 14, p 929).—Dr Hobart A Burch, Rochester, Minn., has been appointed director of the x-ray department of St Joseph's Hospital, Elmira.

Board of Psychiatric Examiners—Under the provisions of a law passed by the 1936 legislature establishing a board of qualified examiners in the state department of mental hygiene, the following have been appointed to constitute the board: Drs Frederick W Parsons, commissioner of mental hygiene, Vernon C Branham, Woodbourne, appointed by the commissioner of correction, Lloyd H Ziegler, Delmar, appointed by the superintendent of education, and Israel Strauss, New York, selected by the Medical Society of the State of New York. The code of criminal procedure has been amended to require that courts appointing a commission to examine persons charged with crime include at least one qualified psychiatrist.

New York City

Deaths from Alcoholism Decrease—A compilation of deaths from alcoholism reported to the New York City Department of Health since 1931 shows that these deaths have decreased in the past five years. In 1931 there were 794 deaths, 1932, 574, 1933, 666, 1934, 596, and 1935, 509. There has also been a sharp decrease in the number of deaths and serious illness from alcohol poisoning, the report said.

Personal—Dr Herbert C Chase has been appointed professor of surgery at New York Polyclinic Medical School and Hospital.—Dr Stephen P Jewett, clinical professor of psychiatry, New York Medical College and Flower Hospital, has been appointed director of the neurologic division of Metropolitan Hospital.—The Society of Alumni of Bellevue Hospital celebrated its fiftieth anniversary recently and presented a watch and chain to Dr Leroy W Hubbard, Mount Vernon, N Y, sole survivor of the nineteen founders.—Dr Howard Fox was recently elected an honorary member of the Austrian Dermatologic Society.

Changes at New York University—Dr Harold D Senior, professor of anatomy and director of the anatomic laboratories at New York University College of Medicine since 1910, has been made professor emeritus. The college announces the appointment of Dr Frederic Wertham as assistant clinical professor of psychiatry, effective in September. Dr Irving Graef has been promoted to be associate professor of pathology, Drs Lauretta Bender and Nathaniel Ross, assistant clinical professors of psychiatry, and Walter Bromberg, assistant clinical professor of psychiatry, all effective in September. In recent months Drs Albert A Epstein, Isidore W Held and Thomas A Martin have been appointed clinical professors of medicine and Dr Karl M Bowman professor of clinical psychiatry. In addition the following promotions have been made:

Dr Harrison S Martland professor of forensic medicine
Dr Howard C Taylor Jr associate professor of obstetrics and gynecology

Dr Wilhelm Bierman assistant clinical professor of therapeutics.
Drs Anthony S Bogatko, Victor Carabba, Thomas J Galvin, Francis M Harrison, John H Mulholland, Joseph Nash, John Nelson, Harry A D O'Connor, Samuel Standard and Hippolyte M Wertheim assistant clinical professors of surgery.

Ninth Graduate Fortnight—The subject of the ninth annual Graduate Fortnight of the New York Academy of Medicine, to be presented October 19-31, will be "Trauma, Occupational Diseases and Hazards." Twenty-two hospitals will offer coordinated afternoon clinics and clinical demonstrations, and evening sessions will be held at the academy. Among speakers who will address the evening sessions are:

Dr Henry E Sigerist, Baltimore Historical Background
Dr John J Moorhead Accidents and Their Management
Dr Marvin A Stevens Hazards in Athletics
Dr Foster Kennedy Fatigue and Noise in Industry
Drs Henry H M Lyle, New York Harry L Gilchrist Washington D C and Col. Adeline Gibson U S Army Governors Island N Y, War Injuries and Emergencies
Dr William Darrach General Principles of Fracture Treatment
Alexander O Gettler Ph D Toxicology of Industrial Poisonings
Dr Alice Hamilton Boston Medical Legal Aspects of Industrial Poisonings
Dr Temple S Fay Philadelphia Injuries to the Head
Dr Byron P Stookey Injuries to the Spine

A scientific exhibit of books, pathologic and research material, apparatus for resuscitation and other first aid appliances will be assembled and demonstrations will be held at regular intervals.

NORTH DAKOTA

Hospital News—A new seven story building is being erected at the North Dakota State Hospital, Jamestown, according to the *American Journal of Psychiatry*. The building, which will furnish infirmary care and treatment for 450 patients, will cost \$360,000, part of which is supplied by the federal government and the remainder by the state.

OHIO

Personal—Dr. Will M. Hoyt, Hillsboro, has been appointed health officer of Highland County.—Dr. Burrell Russell, New Philadelphia, has been appointed a member of the board of trustees of Ohio State University, Columbus.—Dr. Henry P. Worstell, Columbus, has been appointed orthopedic consultant to the medical division of the state industrial commission.—Dr. Archie J. Martin, who recently completed his internship at the Ohio Valley General Hospital, Wheeling, W. Va., has been appointed health commissioner of Belmont County.—Dr. Chester W. Waggoner, Toledo, has been appointed to the state medical board for a term of seven years. He succeeds Dr. James G. Blower, Akron.

Society News—Dr. Murat H. Cherrington, Logan, spoke on epidemic encephalitis at a meeting of the Hocking County Medical Society, Logan, May 14.—Dr. Edward H. Wilson, Columbus, addressed the Hempstead Academy of Medicine, Portsmouth, May 11, on "Nonunion of Fractures".—Dr. Harley O. Bratton, Columbus, addressed the Morrow County Medical Society, Mount Gilead, May 12, on "Medical and Surgical Treatment of Prostatic Hypertrophy".—Dr. John E. Greiwe, Cincinnati, addressed the Warren County Medical Society, Lebanon, on "The Electrocardiogram and the Coronary Circulation".—Dr. George I. Nelson, Columbus, discussed treatment of heart failure as the guest of the Auglaize County Medical Society, Wapakoneta, June 11.—Dr. Louis Mark, Columbus, addressed a joint meeting of the Miami and Shelby county medical societies at Sidney, June 4, on "The Modern Trend in Treatment in Tuberculosis".—The Stark County Medical Society recently began publication of a quarterly bulletin.—Dr. Charles C. Wolferth, Philadelphia, addressed the Mahoning County Medical Society, Youngstown, June 16, on cardiovascular disease.

OREGON

Society News—Drs. Edward C. Bull and LeRoy H. Briggs, San Francisco, were guest speakers before the Southern Oregon Medical Society at its annual meeting at Klamath Falls in May, on "Fracture of the Tibia and Fibula Involving the Ankle Joint" and "Nonpulmonary Tuberculosis" respectively. Dr. Elza D. Johnson, Klamath Falls, president of the society, gave his official address on "The Ancient Art of Prescription Writing".

PENNSYLVANIA

Hospital News—The state department of welfare is making a census of county mental hospitals to supplement data on state-owned institutions.

Cancer Meeting—The Cambria County Medical Society held an all day cancer meeting for physicians and the public in Johnstown June 11. Speakers were Drs. George E. Pfahler, Philadelphia, Edwin A. Merritt, Washington, D. C., William F. MacFec, New York, Samuel J. Waterworth, Clearfield, Walter M. Bortz, Greensburg, and George W. Grier, Pittsburgh. Drs. Laurrie D. Sargent, Washington district counselor and Alexander H. Colwell, Pittsburgh, president of the Medical Society of the State of Pennsylvania, also appeared on the program.

Philadelphia

Hospital News—The Preston Retreat celebrated the centenary of its chartering, June 14. The building was completed in 1840, but lack of income prevented it from opening until 1865. Dr. John Cooke Hirst is medical director of the fifty-bed maternity hospital.—The first annual banquet of the ex-resident physicians of St. Joseph's Hospital was held at the Bellevue-Stratford recently with Dr. James A. Kelly as toastmaster.

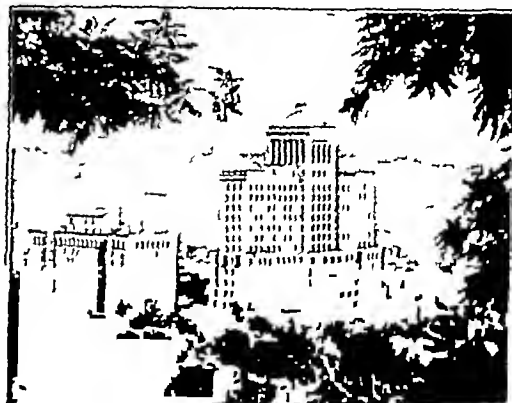
Faculty Changes at Temple—New appointments to the faculty of Temple University School of Medicine include the following:

Dr. John F. Huber, associate professor of anatomy
Dr. Thomas M. Durant, associate professor of medicine
Dr. George Elbert Farrar, Jr., assistant professor of medicine
Dr. David Soloway, assistant professor of histology and embryology
Dr. Walter S. Cornell and T. Ruth Weaver and Lyle Jeanne Ch.E., assistant professors of hygiene, sanitation and public health.

The promotion of Dr. Harriet L. Hartley to be professor of hygiene, sanitation and public health was also announced.

Pittsburgh

The New Allegheny General Hospital—The Allegheny General Hospital, first opened fifty years ago with fifty beds, dedicated a new building with a capacity of 600 beds June 22-26. Dr. Morris Fishbein, Chicago, editor of *THE JOURNAL*, and Mr. E. H. Foley Jr., director of the legal division of the Public Works Administration, were the speakers at the formal dedication June 24. Work on the new building was begun in 1929 after a fund of \$5,000,000 had been raised by popular subscription. In 1931 construction was halted because of the depression and was resumed in 1935 with a loan of \$2,000,000 by the Public Works Administration. The hospital is of the skyscraper type with a central stem twenty floors high and wings set back at intervals. It has nine floors for private patients, one for semiprivate patients and two for ward patients. One is devoted to care of children. The obstetric department



The New Allegheny General Hospital

occupies the fifteenth, sixteenth and seventeenth floors. One wing houses the Singer Memorial Laboratory, running from the basement and including the third floor. The outpatient department and various special departments are on the second floor. Dr. Gustav Walter Zulauf is superintendent of the hospital.

TEXAS

Health at San Antonio—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended June 27, indicate that the highest mortality rate (21.6) appears for San Antonio and for the group of cities as a whole, 10.9. The mortality rate for San Antonio for the corresponding period last year was 15.6 and for the group of cities, 10.5. The annual rate for eighty-six cities for the twenty-six weeks of 1936 was 12.9 as against a rate of 12.2 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Special Society Elections—Dr. Edward H. Schwab, Galveston, was elected president of the Texas State Heart Association at the recent annual meeting and Dr. Robert M. Barton, Dallas, secretary. Drs. Arthur J. Schwenkenberg, Dallas, was made president of the Texas Neurological Society and Dr. Wilmer L. Allison, Fort Worth, reelected secretary. The Texas Railway Surgeons Association elected Dr. Charles E. Scull, San Antonio, president, and Dr. Ross B. Trigg, Fort Worth, secretary. Dr. George B. Cornick, San Antonio, was made president of the Texas Pediatric Society and Dr. Frank H. Lancaster, Houston, was reelected secretary. At the meeting of the Texas Dermatological Society, Dr. Culver M. Griswold, Houston, was elected president and Dr. Everett R. Seale, Houston, reelected secretary. All these societies met in Houston during the annual session of the State Medical Association of Texas.

WASHINGTON

Society News—Dr. Morris Fishbein, editor of *THE JOURNAL*, addressed the King County Medical Society, Seattle, July 2, on "New Forms of Medical Practice".—Dr. Howard B. Kellogg, Seattle, addressed the Cowlitz County Medical Society, Yakima, in May on "Diagnosis and Treatment of Thromboangiitis Obliterans" and Mr. Harry Mackler, chemist, on "Irritating Properties of Smoking Tobaccos".—Drs. Walter

Kelton, Seattle, and Herbert W E Johnson Everett, addressed the Snohomish County Medical Society, Everett May 7, on "Chavide Crutch Splint" and Injection Treatment of Hemorr respectively

WEST VIRGINIA

State Medical Meeting and Election—Dr William S Fulton, Wheeling, was chosen president of the West Virginia Medical Association at the annual session in Fairmont, June 8-10, to take office January 1, succeeding Dr Charles G Morgan, Moundsville. Drs George R Miller, Fairview and Frank C Hodges, Huntington, were elected vice presidents. Guests of honor at the meeting were

Dr Lawrence T Royster Charlottesville Va Rheumatic Heart Disease in Children
Dr Frank H Lahey Boston Collstones and Ulcers
Dr Arthur M Fishberg New York Coronary Thrombosis
Dr James Homer McCready Pittsburgh Status of the Allergic Nose in Sinusitis Hay Fever and Asthma
Dr George R Livermore Memphis Tenn Diseases of the Prostate
Dr Warren T Vaughn Richmond Va Newer Methods in the Diagnosis and Treatment of Food Allergy
Dr George Alvin Ulrich Philadelphia Breech Presentations

Dr Frank C Hodges Huntington delivered the annual oration on medicine, on "The Diagnostic Value of Intradermal Injections," and Dr Russell B Bailey, Wheeling the oration on surgery, on "Thoracic Surgery." Dr Thurman B Rice Indianapolis, was the speaker at the annual banquet, Wednesday evening, June 10, at the Fairmont Hotel, on health fads. The West Virginia Heart Association, the West Virginia Society of Industrial Physicians and Surgeons and the West Virginia Society of Obstetricians and Gynecologists held their annual sessions during the week. Tuesday afternoon June 9 a monument to the founders of the association was dedicated at Rivesville

GENERAL

Fever Therapy Conference Postponed—The First International Conference on Fever Therapy which was to have been held in September, has been postponed to March 30 April 2, 1937. Sessions will be held at the College of Physicians and Surgeons of Columbia University New York. A tour has been arranged to follow the conference to enable physicians to observe methods of fever therapy used in various hospitals. The American committee consists of Dr Walter M Simpson, Dayton, Ohio, chairman, William Bierman, New York, Frank W Hartman, Detroit, Leland E Hinsie, New York, Clarence A Neymann, Chicago, and Stafford L Warren, Rochester, N Y. Further information may be obtained from Dr Bierman, 471 Park Avenue, New York.

Child Neurology Research—With a grant from the Friedsam Foundation, a special committee is to be formed under the direction of Dr Bernard Sachs New York, to stimulate research in child neurology and allied fields, so that physicians and other scientists may contribute to the thorough investigation of problems bearing on the care and cure of those afflicted with any of the nervous and mental disorders from birth through adolescence. This work is to be nationwide in scope and is to be encouraged by stipends, scholarships or otherwise and is not to be limited to special groups or institutions. The committee is to be made up of two neurologists in addition to Dr Sachs, the director, two pediatricians, one orthopedic surgeon and two laymen. The foundation has been established to carry out the bequests and intentions of the late Colonel Michael Friedsam, who was greatly interested in child health and welfare. The trustees have agreed that neurology and psychiatry have important relations to the early training of children, to development of character and to general medical and home conditions, and that the problems of child health and welfare may be properly considered to be closely allied fields for investigation. Details of the program already under consideration will be announced early in the autumn. After September 10, communications may be addressed to Child Neurology Research, Bernard Sachs, M D, Director, 116 West Fifty-Ninth Street, New York.

Provisional Figures for Fourth of July Accidents—Traffic accidents led the list of causes of death in Fourth of July accidents, accounting for 254 lives throughout the nation, the Chicago Tribune reported. Seven fatalities from firecrackers were reported, according to a compilation of the Associated Press. The American Museum of Safety reported the injury of at least 7,738 persons and thirty deaths in a compilation of Fourth of July accidents in 1935. More deaths were recorded for the holiday this year than for the previous five years, with a provisional total of 444 deaths. One hundred and four persons were drowned, while miscellaneous tragedies accounted for

thirty-seven more in fifteen states. In New York City 591 persons were treated at hospitals for fireworks burns. Two men were killed at Lexington, Mich., when fireworks blew up on a scow during the celebration there, and sixteen spectators at a community fireworks display at Findlay, Ohio, were hurt by a noise bomb that shot across the river into the crowd instead of rising in the air as expected. 343 injuries were attributed to fireworks in St Louis. Kansas City, which has an anti-firecracker ordinance, reported 100 injuries with no deaths, 300 minor fireworks injuries were reported in northern California. In Remsen, Iowa, fifteen families were homeless on account of a fire started when a little girl's firecracker was lighted in a tent near a cafe. Business establishments covering four blocks were in ruins, with the estimated damage reported at \$1,000,000.

Society News—The Eastern section of the American Congress of Physical Therapy held a meeting in Philadelphia, May 27-28. Speakers the first day included Drs Norman E Titus New York, on "Treatment of Erysipelas with Ultraviolet Energy," Gervase J P Barger, Washington, D C., "Fever Therapy in Office Practice" and John de P Currence, New York, "Physical Therapy in Treatment of Arthritis." The second day was devoted to clinics at Jefferson Hospital and a joint meeting was held with the Philadelphia County Medical Society the evening of May 27.—Dr John H Stokes, Philadelphia, was elected president of the American Dermatological Association at its annual meeting, June 5, Dr Frederick D Wedman, Philadelphia, is secretary.—The American Otolological Society elected Dr Edmund P Fowler, New York president for the coming year, Dr Thomas J Harris New York, is secretary.—At a meeting of the Association for the Study of Internal Secretions, May 12, Dr Francis M Pottenger Monrovia, was chosen president, and Dr Eberle Kost Shelton Santa Barbara, secretary. The next annual session will be held at Atlantic City.—A W Jones, St. Louis executive secretary of the St. Louis Tuberculosis and Health Association was elected president of the National Conference of Tuberculosis Secretaries at its annual meeting in New Orleans in April.—Dr Munford Smith, Los Angeles, was chosen president of the American Sanatorium Association at the annual session in New Orleans in April.

Pan American Conference of Health Directors—The third Pan American Conference of National Directors of Health was held in Washington in April with representatives from South and Central American countries, Mexico and Cuba present. Dr Hugh S Cumming, former surgeon general of the U S Public Health Service, was elected president of the conference and Dr João Barros Barreto, Brazil, general secretary. Among the subjects discussed was a report on modern trends in public health. The conference recommended establishment of scientific services especially charged with the study of problems of public health, distinct from those concerned with health administration, it recommended also study in each country of methods of sewage disposal, investigations of industrial diseases and accidents, especially pneumoconiosis, extension of maternity centers and education of women in health matters. A report on health problems in high altitudes, presented by the delegate from Peru, prompted the conference to suggest that countries with inhabited high plateaus organize institutes to study these problems and report to the Tenth Pan American Sanitary Conference in 1938. Consideration was given to the subject of nutrition. The conference urged active campaigns against drug addiction, improvement in control over traffic in narcotics and investigation of results obtained by enforcement of international agreements. Other topics discussed at the conference were amebiasis, leprosy, poliomyelitis, trachoma, venereal disease, malaria, the carrier problem and vaccines.

CORRECTIONS

Dural Sac Instead of the Cord—In Dr Walter D Abbott's paper on "Compression of the Cauda Equina by the Ligamentum Flavum," published in THE JOURNAL June 20, the words dural sac should have been used instead of the words "the cord," in lines 5 and 6, page 2130.

Reference to Ergotamine Tartrate—A reference to Dr S S Lichtman's communication to the editor, entitled "Clinical Use of Ergotamine Tartrate," inadvertently was left in the index in the June 27 issue of THE JOURNAL. This communication was withdrawn from the pages at the last moment to provide space in that issue for the obituary of Dr Tate Mason, President of the Association, whose death occurred a few hours before THE JOURNAL went to press. Dr Lichtman's communication appears in the present issue, page 148.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 23, 1936

Decline in Medicinal Use of Alcohol

At one time alcohol was extensively prescribed in England for the treatment of disease, mainly for its supposed action as a stimulant, but its use has been diminishing, as shown by figures given in a booklet by Dr C C Weeks entitled "Alcohol in Hospital Practice." Combining the figures of every class of hospital, he found that in 1900 with 383,000 patients the average cost of alcohol per patient was 20 cents, which in terms of brandy is equivalent to $6\frac{3}{10}$ ounces. In 1923 with 670,800 patients the average cost was 16 cents per patient, equivalent to $1\frac{3}{10}$ ounces of brandy. The much greater reduction in the brandy than in the cost is due to a great increase in the cost of alcoholic drinks since the war. In 1934 with 1,704,222 patients, the cost was 75 cents equivalent to $\frac{9}{100}$ ounce per patient. In the great London hospitals the decrease in thirty-four years has been from 10 ounces per patient to less than 1 ounce, and in the provincial hospitals from nearly 8 ounces to about three-fourths ounce. Since 1889 the spirits used in mental hospitals of the London County Council have been reduced from 20 ounces to less than one-fifth ounce per patient.

Dr Weeks attributes the reduction to the convergent effect of many lines of evidence regarding the nature and action of alcohol, from physiologic and pharmacologic investigation and a clearer recognition of its pathologic action. Clinically it has been shown that when alcohol is withheld the death rate from pneumonia, for example, is reduced and the period of convalescence from infectious diseases shortened. Prof John Hay contrasted the cases of pneumonia treated at the Royal Southern Hospital, Liverpool, with and without alcohol. He wrote:

The results were remarkable. They left no doubt in my mind that alcohol given to fortify and strengthen the heart failed in its purpose, and instead of helping the patient to fight the infection materially diminished his chances of recovery. The average age in each group was 35 years. Deleting the cases moribund on admission, the mortality in the cases treated with alcohol was 36.8 per cent in those treated without alcohol 21.4 per cent. At the Western Fever Hospital, London Dr J D Rolleston found that in the year before he became superintendent 2,589 ounces of brandy had been used while in the early months of 1926 914 ounces had been used. As a result of his advice and example only 77 ounces was used in the rest of the year. In 1927 25 ounces was used in 1928, 1 ounce. Since then neither in the hospital nor in the extensive ambulance service has any wine or spirit been used in the treatment of many thousands of patients. In the army the strong tradition in favor of the issue of a rum ration after exposure to cold and wet is dying out. A new regulation, issued in 1926 provides for the issue of a ration of rum or a pint of cocoa.

Broadcasting an appeal on behalf of the National Temperance Hospital, Lord Moynihan said: "It has done national work in demonstrating that the routine use of alcohol in the treatment of disease is unnecessary. It is difficult to realize that fifty years ago the use of alcohol was considered necessary in the treatment of disease and for the maintenance of good health. In 1873 the hospital began its work. The general attitude of the medical profession was antagonistic. In one of the leading medical journals of that time the doctors of the hospital were solemnly warned that there was such a place as Newgate (the well known gaol) and that their rash attempt to treat disease without alcohol might result in conviction for manslaughter."

Today medical science is of one mind that alcohol, while it has its uses, is unnecessary and often harmful in the routine treatment of disease."

The Medical Research Council's Alcohol Investigation Committee reported: "The popular belief in alcohol as a remedial action on the heart or the respiration and on the vital activities in general. Rational medicine has long abandoned this belief, but it still lingers in popular practice."

Beer Preferred to Milk

The desirability of increased consumption of milk by the nation has of late been frequently emphasized in the press. It is among the lower classes especially that the consumption of milk is deficient. But statistics supplied by G B Wilson, consulting secretary to the great temperance organization, the United Kingdom Alliance, shows that they prefer to spend the money derived from returning prosperity on alcoholic beverages. The year 1935 has been one of more employment and more spending of money. The nation consumed 22,710,000 bulk barrels of beer, an increase of 4.9 per cent over 1934 and of 17 per cent over 1933. On this beer the nation spent \$750,000,000. The estimated consumption of liquid milk was 802,000,000 gallons as against 817,000,000 gallons of beer. The price paid for the milk was \$415,000,000, as against \$750,000,000 for the beer. The deficient consumption of milk by the lower classes is shown by the dietitian Sir John Orr in his work entitled "Food, Health and Income." Thirteen and one-half million persons with weekly incomes of \$7.50 and over per head drank 400 million gallons of milk a year, while the same number of persons with incomes under \$4 drank only 240 million gallons.

Drug Smuggling in Ships

At the meeting of the Advisory Committee of the League of Nations in Geneva the United States delegate, Mr Stuart Fuller, proposed drastic measures for the prevention of the illicit traffic in opium and other dangerous drugs. He asked that the owners of ships in which contraband drugs were found might be liable to fines and that notices of reward for information which might lead to seizures should be posted prominently in passenger and cargo vessels and in harbors. Penalties for smuggling should be posted in conspicuous places in these ships. He cited as a good example the warning issued by the British government. The custom of permitting visitors on board vessels on sailing day presented a special problem. They should not be allowed to go on board without special permission and should not be allowed to leave the ship without passing through the customs. In a large liner the ship's company should include detectives who could mingle with the passengers. The Canadian delegate, Colonel Sharman, said that in his country it had been necessary to maintain patrol boats at night to prevent contact between the crew and passengers from the shore. On the other hand Mr G S Hardy, delegate for India, said that experience in that country showed that it might not be always wise to hold owners or officers of a ship responsible for contraband found on board. It was suggested that the help of the seamen's unions should be sought in combating drug traffic in ships.

Silicosis in Coal Miners

The results of an investigation into the causes of miners' silicosis, particularly in the South Wales anthracite coal field were set forth in a paper read to the Institute of South Wales Engineers by Dr T D Jones, professor of mining at the University College of South Wales. He said that research at the Banting Institute, Toronto, showed that inhalation of small quantities of nitrous fumes with silica dust immensely increased the rate of formation of fibrous nodules in the lungs. This fact caused the matter to be taken up by the explosive experts.

and important conclusions had already been reached. The experiments carried out proved that the principal factor affecting the proportion of nitrous fumes was the wetness or dryness of the condition of firing. The connection between nitrous fumes and silicosis raised the whole question of ventilation in relation to shot firing. It was not the amount of firing done but the conditions in which it took place that mattered. From a comprehensive statistical survey his deduction was that the harm attributed solely to dust in anthracite mines was the result of a number of factors, an important one being exposure to cold on the trolley trains taking men in and out of the collieries. Protection of the men on these would go a long way to prevent silicosis. As to the curative treatment experts on pulmonary disease should take up the matter at once and the Welsh National Memorial Association should make provision for the treatment of silicotic cases, even though tuberculosis was absent.

Sterilization of the Unfit

By a large majority the National Conference of Labor Women adopted a resolution for legalizing the voluntary sterilization of the unfit. Dr. Caroline Maule recommended this for persons who were mentally defective or suffering from mental disorder or believed to be carriers of grave physical disability which had been shown to be transmissible; also persons believed to be likely to transmit mental disorder or defect. This voluntary sterilization should be subject to safeguards. Referring to the Roman Catholic opposition to voluntary sterilization she said that no one who felt strongly on the question had a right to impose their views on Protestants or agnostics. As the suggested bill made sterilization voluntary Roman Catholics would not have to be sterilized if they did not wish to be. Another physician, Dr. Edith Summerskill said that she supported voluntary sterilization on purely medical grounds as a form of preventive medicine. The time was coming when they should prevent people from getting sick. The resolution was opposed by Miss Spencer of the University Labor Federation who suggested that it might be dangerous to put a piece of legislation through which could be used for other ends. The vote by a show of hands, gave a large majority in favor of the resolution.

Registration of the Mothers' Age at Birth

Though English vital statistics have been carefully compiled and made the subject of scientific investigation for many years, it is curious that while every birth has to be registered the important fact of the mother's age is not included in the particulars required, as it is in most civilized countries. It is an essential datum in investigating the recent decline in fertility. Its absence has compelled statisticians when dealing with this subject to have recourse to the tables of other countries where the mother's age is registered and apply them to the English birth rate, so as to draw a conclusion as to the English birth rate at the various ages. This may be a reliable method but it is obviously not so satisfactory as the actual figures. In reply to a question in parliament the minister of health stated that it had been for some time the intention to make the necessary alteration in birth registration on the first suitable occasion.

Pollenarium for St. Mary's Hospital

The inoculation department of St. Mary's Hospital has extended its laboratories by the construction of a pollenarium (a building for the collection of grass pollen) which is used in the diagnosis and treatment of hay fever. During 1935 Lord Iveagh, chairman of the inoculation department grew for it six separate crops of grasses and grain for the collection of pollen with which to treat hay fever. The pollenarium has been built alongside the crops, so that the pollen can be collected under the best conditions. Some 28 pounds has been collected, which represents 580,000 million million grains.

PARIS

(From Our Regular Correspondent)

May 22, 1936

Annual Report of Social Insurance for 1934

The secretary of labor, whose department administers the social insurance law, has published his report of the application of the law for 1934. The total received as premiums during 1934 was a little over 3 billion francs (about 192 million dollars). This was about 130 million francs (about 10 million dollars) less than the average sum received during the period since 1930. Seven million individuals paid premiums during 1934 the average amount paid by each insured person was about 240 francs (14 dollars) as compared to 280 francs in 1930-1931. The total received in francs as premiums was distributed as follows: 1,378 million francs to the 'caisses de repartition' which provide for old age and invalidity (permanent) insurance, 1,238 million francs to the 'caisses de capitalisation', which act as a sinking fund for the social insurance law, 78 million francs to the unions de reassurance et caisses de garantie, which serve as a sort of savings bank for the 'caisses' or distributing agencies dealing directly with sickness claims.

Expenditures for sickness, invalidity, maternity benefits and old age insurance rose from 1,086 million francs (about 66 million dollars) to 1,215 million francs in 1934. The average premium received in 1934 was 240 francs, 200 francs (on the average) being paid out as benefits. Of the latter sum, about 82 per cent represents sick benefits, 14 per cent maternity insurance, 3 per cent death claims, and miscellaneous disbursements 1 per cent.

Invalidity has functioned only since 1933 hence comparatively little has been disbursed under this heading so far. Seventy per cent of the permanent invalidity claims were made by insured suffering from pulmonary tuberculosis, 8 per cent from tabes or general paralysis of the insane, and 4 per cent from cancer. The total administrative personnel is 7,000, or less than one official for each thousand insured persons.

The social insurance law has been in force since the fall of 1930 yet this report of the minister of labor has been unable to throw any light on (a) which diseases give rise to the greatest amount of reimbursement by the caisses (b) the age periods in which morbidity and mortality rates are highest, (c) how much is disbursed for tuberculosis, measles, rheumatism and measles and (d) how much is spent on the family of the sick insured individual.

Another criticism raised by the author of an article in the *Siecle medical* of April 15, 1936, is that the agencies (caisses) which act as the primary receiving and disbursing centers have but little information in these annual reports to serve as a guide as to which individuals should be considered as good and which as poor risks.

Atropine in Postencephalitis Complications

Roemer of Wurtemberg as the result of the research work of Bremer and some personal clinical experience, found that in the majority of cases following encephalitis the complications were favorably influenced by large doses of atropine. If one began with small doses as much as 20 mg (one-third grain) could be given three times daily.

At the March 24 meeting of the Academie de medecine of Paris Marinesco and Facon of Rumania reported their results with this method of treatment in 200 cases. A solution containing 0.5 Gm (7½ grains) to one hundred cubic centimeters of water was employed. One drop corresponds to 0.25 mg (1½ grain) of atropine. The first dose given is one drop three times a day and in most cases this can be increased to three drops three times a day within ten days, then two drops for the following ten days and one drop during the rest of the

course of treatment Dryness of the throat is not a contra-indication and disappears soon If other symptoms, such as vertigo, palpitation or gastric distress appear, the dose should not be increased for several days As a rule, a larger dose is soon tolerated Roemer has given as high as from 150 to 300 drops a day, but the authors obtained excellent results in giving only 40 to 60 drops a day In all cases this amount could be reduced in a short time without interfering with the efficacy of the drug Atropine has a better effect in recent cases, especially in younger individuals, if no previous treatment, e. g., scopolamine, has been employed

The action of the atropine on the rigidity seems to be more marked than its influence on the tremor At times the latter seems to increase although the rigidity is disappearing, but, as soon as an adequately high dose is reached the tremor becomes less marked and often completely disappears The tremor in paralysis agitans is less influenced than that observed in Parkinson's disease, because of the difference in the pathologic changes in the two diseases In spite of this, atropine ought to be employed in paralysis agitans because one often observes remarkable improvement The ocular symptoms are less uniformly influenced by atropine, but nevertheless an improvement is often noted

Some cases illustrative of efficacy of the use of atropine in the postencephalitic Parkinson syndrome were cited by Marinresco and Facon The presence of marked cardiovascular disease is a contraindication to the use of atropine The authors have never observed any cardiovascular disturbance in 200 cases treated with atropine The anorexia, with resultant emaciation, at times noted can be combated by the use of insulin At times, a troublesome diarrhea occurs, but it responds to the administration of pepsin and hydrochloric acid The action of atropine on the vegetative nervous system best explains its efficacy in most cases of postencephalitic Parkinson's disease, which the authors believe is due to vagotomy

New Laboratories of Medical School

The demolition of the buildings of the Charité Hospital has been completed Many of the most celebrated medical teachers of France glorified these buildings and there has been much criticism that such important landmarks in the development of medicine during the past three centuries should have been given over to the house wreckers to be replaced by a modern building to be occupied by the laboratories of the Faculté de médecine the only medical school in Paris Some years ago the Rockefeller Foundation offered to contribute three million dollars on the condition that the medical school should leave its present buildings in the Latin quarter and move to a district where lecture halls and laboratories could be in close proximity to one another This offer was refused much to the regret of many graduates of the school who have criticized placing the laboratories about half a mile from the main lecture halls in which the curriculum of the exclusively clinical years is given

Among the most interesting portions of the old Charité Hospital was the amphitheater, in which Courvoisier and later Laënnec taught This has disappeared completely Another room of historic interest is that which the interns on emergency duty used as a gathering place and dining hall Many artists who were friends of the interns and who have since become famous decorated the walls of this *salle de garde*. Fortunately the Assistance publique or administrative body responsible for the free hospitals of the department of the Seine in which Paris is situated have had this historic room reconstructed and medical visitors to Paris can in the future admire the magnificent interior of the *salle de garde* with its invaluable historic associations at the museum of the Assistance publique on the *quai de Tournelle* Those interested in medical history will be well repaid in visiting this landmark.

Complications Following Cesarean Section

In a paper published in the March 15 issue of the *Gazette médicale de France*, P Brault of Rennes reports his observations of forty-nine pregnancies following cesarean section. The low operation was introduced into France by Schikele and later (1923-1924) by Professor Brindeau Brault considers this as the greatest advance in obstetrics since the discovery of asepsis. The high (corporeal) operation has been practically abandoned in favor of the low one The wisdom of this change is amply confirmed by the end results of the high versus the low technique, as the following personal observations of Brault show

UTERINE RUPTURE AFTER HIGH CESAREAN SECTION

Since 1919, Brault has been able to follow seventeen pregnancies (of longer than three months' duration) in patients previously operated by the high cesarean technique. Four uterine ruptures (22 per cent) were observed in the seventeen cases. This percentage would at first seem high, but statistics found in the literature (varying from 2 to 20 per cent) include all types of cesarean operations and not the high alone. In these four rupture cases four different surgeons or obstetricians had operated One of them was a personal case. In the remaining seventeen pregnancies a low operation was necessary in six and a high in seven In eleven of the thirteen cases the condition of the uterine scar was noted In four of the eleven the scar was defective, in two only of thin paper-like consistency Suture of the uterine incision with catgut is more likely to result in faulty union than when one uses silk, as Professor Couvelaire of Paris has shown

LOW (SUPRAPUBIC) CESAREAN SECTION

Brault has not observed a uterine rupture in thirty-two pregnancies occurring in twenty-five women, following the low operation There have been three spontaneous, two forceps and one basiotripsy In the twenty-two cases in which a second (low) operation was performed, no trace of the former (low) incision could be found In three additional cases, a high (second) operation was done, in one case because it was impossible to mobilize the pelvic peritoneum, and in two because Brault deemed that sterilization was indicated. Important adhesions were found in only 11 per cent of the twenty-six low as compared to 36 per cent of seventeen high operations The change, following the low operation, most frequently noted at the second intervention was the elevation of the base of the bladder and obliteration of the vesico-uterine fold. This condition should be borne in mind by the operator if a second low cesarean operation becomes necessary

Carcinomatosis and Fever of Undetermined Origin

An unusual case was reported by Olmer and his associates of Marseilles at the March 27 meeting of the Société médicale des hôpitaux of Paris A man, aged 42, entered the hospital March 28, 1935, on account of persistent fever of undetermined origin. A severe chill followed by profuse perspiration marked the onset, about ten weeks before admission. The fever rose to 102 F and remained so for three weeks The only accompanying symptom had been a severe hematemesis About five weeks before admission a number of small nodules on the trunk and right thigh were noted, which had continued to increase in size, and at the same time cough and marked expectoration appeared An attack of a renal lithiasis had occurred seven years before and a brother had died from gastric and a sister from uterine cancer On examination, enlargement of the spleen and liver and a subicteric tint and leukocytosis were found Nine days after admission, the blood culture was positive for the streptococcus A few days later, an ascites and a para-umbilical nodule appeared Biopsy of a nodule revealed the adrenal as the primary seat of the tumors Death occurred

about eighteen days after admission. At the necropsy a large number of enlarged mediastinal lymph nodes compressing the trachea and esophagus were found, and innumerable small nodules of carcinomatous aspect on the peritoneum and in the parenchyma of the liver, kidneys, pancreas and left lung. The primary tumor was a malignant adenoma of the right adrenal. In Olmer's case the clinical picture was that of a septicemia (fever, large liver and spleen, subicteric tint, positive blood culture and subicteric tint). Similar reported cases of malignant adrenal neoplasia with generalized metastasis and accompanied by fever were cited by the authors. Some authors are of the opinion that the widespread metastasis is the cause of the fever but in Olmer's case, at least there was a concomitant septicemia to explain the fever.

BERLIN

(From Our Regular Correspondent)

May 13 1936

New Regulation of the Supervisory Medical Consultant Service

The supervisory medical consultant service (*vertrauensärztliche dienst*) was until recently regulated by certain provisions of the national insurance law according to which the insurance societies might permit an investigation by a supervisory medical consultant (*vertrauensarzt*) of the insured's disabilities and the amount of the benefits to be allowed.

The supervisory consultant was however prohibited from infringing on the professional prerogatives of the insurance physician (*kassenarzt*). The insurance society officials were also empowered to appoint either a supervisory consultant or a committee composed of physicians to function in the same capacity. The national physicians and insurance societies' committee had already issued "rules to govern the investigation of the certifications and recommendations of insurance physicians. Special instructions for the supervisory medical consultants were likewise issued by individual sick insurance societies.

Now the supervisory medical consultant service has been regulated anew by a decree of the minister of labor which became effective April 1, 1936. The innovations are of far-reaching significance. They are the fruit of past experience with supervisory medical service and are especially designed to keep pace with the reorganization of the social insurance.

The power to regulate the supervisory medical service has been taken from the individual sick insurance societies and vested in the insurance authorities of the respective states (*landesversicherungsanstalten*). Each insurance authority shall hereafter be composed of three sections: an invalid insurance section, a sick insurance section and a supervisory medical service section.

The director of the last named section must be a physician experienced in supervisory medical service. Among his responsibilities are numbered all questions involving the service together with all pertinent sociomedical problems. This means that he is expected to select the personnel for the supervisory service, keep himself informed as to the condition of the insured, and pass on the necessity for therapeutic substances and apparatus, the advisability of hospitalization and so on. Among the sociomedical functions of the director may be mentioned the inspection of health institutions (hospitals, sanatoriums and the like) and the promotion of prophylactic health services as well as participation in those political activities which involve questions of public health campaigns against common diseases, investigation of facts of genetic import, and similar activities.

A director of supervisory medical service of the state insurance authority does not as a rule, himself engage in the actual routine duties of service, such as investigation of the patients. For the actual performance of the service each state or province

is divided into small districts (*unterbezirken*), within each of which a supervisory service bureau is established. Individual supervisory physicians may be active for a number of sick insurance societies, namely, for all the societies represented within a given subdistrict. There is accordingly an average of one official supervisory consultant for each 25,000 insured persons. In addition, any active physician not connected with the insurance societies who possesses the necessary qualifications may be enrolled by the subdistrict for this service. Specialists too, when it is deemed expedient, may be called in to supplement and assist the supervisory service.

The supervisory medical service stations are to have charge of the necessary diagnostic routines, above all the highly important roentgen procedures. Each station is to possess adequate laboratory facilities. In addition, each station is to have charge of its own assisting personnel. A card is made out for each insured person examined by the supervisory service, and it is especially to be noted whether or not a roentgenogram of the insured has been made and where it is to be found. This is designed to obviate a needless duplication of pictures. If the insured moves his residence from the jurisdiction of a station, the case history and other papers are transferred to the station of proper jurisdiction. In this way an individual record is preserved which contains all pertinent information and which constantly accompanies the insured so long as his dealings with the insurance society continue.

The supervisory medical consultant service now advises and assists the insurance societies by investigating the disabilities of insured persons and recommending the amount of the benefit to which the claimants are entitled. The supervisory physician also may express himself on the necessity of hospitalization or the admittance into a sanatorium or convalescent home of a sick benefit claimant, and in addition he may certify as to the necessity for and value of the therapeutic substances and appliances. The decision will then rest with the insurance holder himself, whose opinion, however, should not run counter to that of the supervisory doctor excepting for reasons of weight. All these activities are carried out not at the instance of the various sick insurance societies but by order of the insurance authorities in the several states. The supervising physician accordingly is under no obligation to the insurance society but is considered an official and employee of the insurance authority.

The new statute expressly states that the supervising physician must not encroach on the professional activities of the insurance physicians. An insurance doctor on the other hand may propose a second examination of the insured by a supervisory physician in order to verify his own diagnosis.

Specific provisions govern the cooperation between supervisory consultants and the attending physicians of hospitals, sanatoriums and convalescent homes. The supervising physician is, first, to obtain the history from the attending physicians, and he should not resort to an examination of the patient unless such a procedure seems absolutely necessary. Such an examination must be undertaken in the presence of the attending physician. The authority of the attending physician must in no way be encroached on nor shall the routine of the institution be unnecessarily disrupted. It is further expressly stipulated that the results of such an examination shall not be discussed with the attending physician in the presence of the patient. The present expansion of the supervisory medical consultant service within institutions for the care of the sick is in accordance with the expressed wish of the national *fürher* of medicine.

This reorganization of the supervisory service is regarded as a most important step forward. The supervising physician, since he now receives his commission from the insurance authority, exerts a sort of indirect influence on the individual

insurance societies Among those who participated in the drafting of the new regulations were the supervising physicians themselves together with the national führer of medicine and the League of Insurance Physicians of Germany

BUCHAREST

(From Our Regular Correspondent)

May 28, 1936

Infant Mortality in Rumania on the Increase

According to Professor Mezinescu of the Bucharest university, infant and child mortality has increased in recent years. Investigations made by Mezinescu revealed that 50 per cent of the infants died before reaching the first year of life, and of those remaining alive only 50 per cent reached the fifth year. In other words, 12,000 infants die in Rumania before reaching 1 year of age. Not only do we lead in this field in the whole of Europe, says Professor Mezinescu, but what is more regrettable, the rate of infant mortality is not as low now as it was fifty years ago. The situation is not much better in towns than in villages. The mortality rate is highest in Bessarabia and the lowest in the county of Ilfov, which comprises the capital city, Bucharest. Mezinescu calls the attention of the government to the fact that large districts comprising from twenty to twenty-five villages have only one doctor.

Sympathetic Ophthalmia, a Seasonal Disease

At a recent meeting of the Oradea Medical Society, Dr. Bela Waldmann, senior ophthalmologist to the Oradea County Hospital, read a paper which was awarded the prize of the society. The subject was the connection between the occurrence of sympathetic ophthalmia and catarrhal disorders of the nose and upper air passages. In his study of the pathogenesis of sympathetic ophthalmia, which appeared in 1933 in the *Wiener medizinische Wochenschrift*, Waldmann expressed the opinion that the etiologic agent of sympathetic ophthalmia migrates into the eye from the accessory nasal sinuses and thence reaches the other eye by way of the optic nerve or through the ciliary nerves. In a study of sixty-nine cases, fifty-three occurred during the influenza period from October to April, while sixteen cases occurred in the warm months from May to September. Waldmann submitted a questionnaire to sixty-eight eye clinics in all parts of the globe, requesting details of all sympathetic ophthalmia cases that were treated during the latter ten years. Ten questionnaires were returned, filled out with scrupulous care, from Baltimore, Berlin, Budapest, Ghiza (Egypt), London, Madras, Manchester, Munich, Stockholm and Vienna. These blanks embodied 124 cases, which, with the sixty-nine cases mentioned totaled 193 cases. The answers submitted showed that three fourths of the cases occurred between October and April. The proportion at the clinic of Professor Meller at Vienna was 7/1. With these data Waldmann feels justified in asserting that sympathetic ophthalmia is a seasonal disturbance. In India it was the rule 1,000 years ago to perform cataract operations in the springtime and to take care that the patients were free from cold. In the book of Halifa it is stated that the Arabians had two special instruments besides those regularly used at cataract operations for the purpose of blowing into the nose various powders for averting catarrhal disorders.

From the statistical reports submitted, Waldmann concluded that sympathetic ophthalmia supervening after cataract operations occur, on an average, in 40 per cent of the cases. Operations with magnets were followed by sympathetic ophthalmia in eight cases. This fact induced Waldmann to propose that in all cases in which one can expect after recovery only a scanty vision of the injured eye or a prospect that the sight will be lost entirely, to remove the eye and in case of the reluctance of the patient rather to leave the metal piece in the eye. The

advantage of preventive enucleation is attested by the Berlin statistics, which, out of twelve cases, embodies only those in which the other eye was unimpaired when the microscopic examination already established the presence of sympathetic ophthalmia. In contrast with these facts, evisceration caused sympathetic inflammation in three instances according to the report of another clinic.

Treatment of Sciatica with Local Anesthesia

Dr. Corneliu Sarbatorescu of Jassy has treated during the last ten years, by means of local anesthesia, thirty-four patients suffering from sciatica. Twenty-three were cured and remained free from recurrences. He makes an alkaline 2 per cent solution of procaine hydrochloride by boiling down to half of its volume a solution consisting of sodium bicarbonate 0.25 Gm., sodium chloride 0.5 Gm., procaine hydrochloride 1 Gm., in 100 cc. of sterilized distilled water. The technic of injection is as follows. A lumbar puncture needle is used, with a glass syringe containing 20 cc. of the solution. The patient sits with the trunk strongly bent forward and with the buttocks projecting backward slightly over the edge of the operating table. The position of the sacrococcygeal membrane, which closes the lower end of the sacral canal, is then identified. Its shape is that of an inverted U or V. The projection formed by the elementary laminae or cornua of the fifth sacral vertebra is first felt for. Between these two cornua is the membrane, which feels elastic and yields slightly to firm pressure. In very fat subjects it may be impossible to find the fontanel. Such cases ought to be excluded at the outset. The needle is pushed perpendicularly through the membrane until it impinges on the anterior bony wall of the sacral canal. The point of the needle is then slightly withdrawn and its direction changes till it runs upward along the canal, pushing up for a distance of 4 to 5 cm. The fluid is then injected slowly, about five minutes being taken to empty the syringe. In a successful case, the injection goes easily and without resistance, no subcutaneous edema is produced, and the patient usually has a feeling of tingling or pressure in both legs. After the injection the patient remains with the trunk propped up and the legs dependent. Any slight feeling of faintness can be checked by a temporary horizontal posture. In from fifteen to twenty minutes all symptoms of sciatica disappear. It is advisable to keep the patient in bed for three or four days afterward.

Dr. Sarbatorescu does not claim that this treatment should be adopted as a routine method in all cases of sciatica. It should be applied when all usual methods fail. A careful diagnosis must first be made. Arthritis and intrapelvic and other local causes must be carefully excluded, and even then, before epidural injections are resorted to, the patient should have a fortnight's energetic treatment with hot applications, diathermy and antineuralgic drugs. The method is specially suitable to cases of root pains in which the distribution extends higher up the buttock than in ordinary sciatica. The technic is admittedly somewhat more difficult than that of injection into the sciatic nerve trunk.

Some Factors in the Spread of Typhoid

At the Oradea Medical Society, Dr. Joan Sandor showed by large charts that the great decrease in the incidence of typhoid in the period from 1925 to 1935 was coincident with the increase in the number of parks and alleys in the city. Greater facilities for the isolation of the sick, the supervision of the milk supply and of other foodstuffs, and the removal of flies and refuse had also contributed. Many cases were imported from the adjacent villages, where public hygiene is much to be desired. Sandor had found lake fish to be responsible for many cases of typhoid. The disease may be acquired also by direct contact, the fingers of the patients' attendants being soiled by excreta, and thus food prepared by them becomes infected.

Marriages

PETER ZIMO, Harrisburg, Pa, to DR RUBY CLAIRE VIRGINIA EHRMAN of Middletown in Bethlehem recently

DELMAR F WEAVER JR Stanardsville Va to Miss Benlah Borah Thrift of Washington, D C, April 2

ROBERT WATKINSON HUNTINGTON JR Memphis, Tenn, to Miss Katherine Upchurch of Paris, recently

SAMUEL SHWARTZ Boston to Miss Lillian Rella Resnick of Washington, D C, at New York, recently

WILLIAM EDWIN BARRETT, Logansport, Ind to Miss Mary John Embree of New Harmony, June 18

PAUL T LAMFY, Anderson Ind to Miss Marion Whetsell of Bedford in Indianapolis, recently

ROBERT LOUIS MCGEE to Miss William Elizabeth Harrelson, both of Raleigh, N C, in April

OSMAH E HARRELI to Miss Margaret Jane Hughes both of Jacksonville, Fla, April 6

VAN A OBLF to Miss Opal B Martin both of Spokane, Wash March 30

FRANK VARNUS to Miss Beatrice Brasch, both of Freeport, N Y, June 24

Deaths

Francis Henry Williams ☉ Boston Harvard University Medical School, Boston 1877 Massachusetts Institute of Technology, Boston 1873, since 1879 a practitioner of medicine in Boston, and a pioneer in the development of roentgen ray and radium therapy instructor in materia medica from 1884 to 1885 and materia medica and therapeutics from 1885 to 1886 assistant professor of materia medica and therapeutics from 1886 to 1888 and assistant professor of therapeutics from 1888 to 1891 at his alma mater, member and from 1917 to 1918 president of the Association of American Physicians member of the New England Roentgen Ray Society and the Societe de Radiologie Medicale de France, honorary member of the American Radium Society, American Roentgen Society and the Radiological Society of North America life member since 1882 of the corporation of the Massachusetts Institute of Technology and member of the executive committee for twenty five years visiting physician from 1896 to 1913 and later senior physician to the Boston City Hospital, author of 'The Roentgen Rays in Medicine and Surgery' and 'Radium Treatment of Skin Diseases New Growths, Diseases of the Eye and Tonsils,' and frequent contributor of clinical and research work to the periodical literature, aged 84, died June 22

Imas Pryor Rice ☉ Aurora Ill University of Illinois College of Medicine, Chicago 1913, served during the World War medical director of the Kane County Spring Brook Sanitarium, aged 47 on the staffs of the Sherman Hospital Elgin and St Joseph Mercy Hospital where he died April 23 of a staphylococcal infection, complicated by pneumonia

James Whitney Hall, Chicago Kentucky School of Medicine Louisville, 1890, member of the Illinois State Medical Society, served during the World War for many years a member of the lunacy commission of the Cook County Court, aged 66, died, April 29 in the Illinois Central Hospital, of coronary sclerosis and hypertension

Max Rosenthal, New York, Medizinische Fakultät der Universität Leipzig, Saxony, Germany, 1887 member of the Medical Society of the State of New York president of the medical board and on the staff of the Sydenham Hospital on the staffs of the Bronx Hospital and the Beth David Hospital aged 70, died, April 3

Bernard Lauriston Hardin ☉ Washington D C Columbian University Medical Department Washington 1895 on the consulting staffs of the Garfield Memorial Hospital and the Central Dispensary and Emergency Hospital aged 65 died April 29, of intestinal hemorrhage due to jejunal ulcer and chronic nephritis

Marshall Julius Pierson ☉ Akron Ohio Hahnemann Medical College and Hospital of Philadelphia 1917 served during the World War, on the staffs of the City Hospital and St Thomas Hospital, aged 43 died, April 29 in the Cleveland Clinic, of carcinoma of the stomach and rheumatic heart disease

William Henry Hutchinson, Childersburg, Ala Chattanooga (Tenn) Medical College, 1893, member of the Medical Association of the State of Alabama, past president of the Talladega County Medical Society, aged 69, died, April 17 in a hospital at Sylacauga, of influenza and strangulated hernia

Jessie Elizabeth Bedford Stubbs, Hot Springs, S D College of Physicians and Surgeons, Keokuk, Iowa, 1897 assistant child welfare chairman for the American Legion Auxiliary Department of South Dakota aged 70, died, April 13, in St Mary's Hospital, Rochester, Minn, of carcinoma

Frederick Herbert Nichols, Jamestown, N Y, Syracuse University College of Medicine, 1903, member of the Medical Society of the State of New York, aged 60, died, April 15 in St Joseph's Hospital, Syracuse, of hemolytic streptococcus septicemia, due to an infection sustained while operating

Charles Burr Graves ☉ Gales Ferry, Conn, Harvard University Medical School, Boston, 1886, past president of the Connecticut State Medical Society, on the staffs of the Lawrence and Memorial Associated Hospitals, New London, aged 75, died, April 24, in a sanatorium at Enfield

Joseph I Knoblauch ☉ Metamora Ill Northwestern University Medical School Chicago, 1893, past president of the Woodford County Medical Society, formerly mayor and for many years president of the high school board of education, aged 68, died, April 29, of carcinoma

John Timothy Reynolds, Quincy, Mass, Baltimore Medical College, 1905, member of the Massachusetts Medical Society, on the staff of the Quincy City Hospital, aged 54, died, April 28, in the New England Baptist Hospital, Boston, of carcinoma of the sigmoid

Amy Rilus Robinson Chapman, Franklin, Neb, Grand Rapids (Mich) Medical College, 1900, Lincoln Medical College of Cotner University, 1902 member of the Nebraska State Medical Association, aged 65, died, April 8, of diabetes mellitus and nephritis

Thomas Joseph Ragsdale, Lees Summit, Mo, Marion-Sims College of Medicine St Louis, 1895 member of the Missouri State Medical Association, aged 62 died, April 13 of pulmonary embolism, influenza, chronic myocarditis and cholecystitis

Thomas Crouse Quickel, Gastonia, N C, Tulane University of Louisiana Medical Department, New Orleans 1900 member of the Medical Society of the State of North Carolina, aged 60, died, April 28, of chronic myocarditis and hypertension

Harrison Talmage Smith, Independence, Va Medical College of Virginia, Richmond, 1908, member of the Medical Society of Virginia, for many years a member of the state legislature, aged 52, died suddenly, April 18, of heart disease

Eben Carver Norton, North Chatham, Mass University of Vermont College of Medicine, Burlington, 1885, member of the Massachusetts Medical Society, aged 79, died, April 11, of cerebral hemorrhage, arteriosclerosis and cholelithiasis

Howard Alonzo Wagner ☉ Shawnee, Okla, University of the South Medical Department, Sewanee, 1901 served during the World War, on the staff of the Shawnee Municipal Hospital, aged 60, died April 26, of coronary thrombosis

Sewell Norris Pilchard ☉ Easton, Md Jefferson Medical College of Philadelphia 1910 past president of the Talbot County Medical Society, on the staff of the Emergency Hospital, aged 49, died, April 12, of cerebral hemorrhage

Walter Scott Sowell, Birmingham, Ala, University of Alabama Medical Department, Mobile, 1899, served during the World War aged 61, died, April 27 in the Veterans Administration Facility, Tuscaloosa, of pulmonary tuberculosis

Robert Lee Greer ☉ Oakfield, Tenn, University of Nashville Medical Department, 1890, past president of the Madison County Medical Society, veteran of the Spanish-American War, aged 70, died, April 21 of miliary tuberculosis

Milton Jacobson ☉ Amsterdam, N Y Medical College of the State of South Carolina Charleston, 1919, aged 47, on the staffs of the Montgomery Sanatorium and the Amsterdam City Hospital, where he died, April 29 of cerebellar tumor

Vincent Aloysius Peters ☉ Lees Summit Mo State University of Iowa College of Medicine, Iowa City, 1926, deputy coroner of Jackson County, aged 33, died, April 15, in St Luke's Hospital, Kansas City, of septicemia

J P Prescott, Lake Park Ga, Atlanta Medical College, 1890 member of the Medical Association of Georgia formerly member of the county school board member of the council of Lake Park and mayor aged 70, died April 4

Cecil Durham Stech, Council Bluffs, Iowa, John A. Creighton Medical College Omaha, 1913, aged 46 on the staff of the Mercy Hospital, where she died, April 12, of streptococcal infection, pneumonia and meningitis

Lawrence Arthur Renehan, Darien, Conn. University of Vermont College of Medicine, Burlington, 1922, served during the World War, aged 41, died, April 29, of chronic nephritis, myocarditis and arteriosclerosis

Charles Ramey Thomas, Roodhouse, Ill. St. Louis Medical College, 1887, member of the Illinois State Medical Society, past president of the Greene County Medical Society, aged 72 died suddenly, April 3

Charles W. Fleenor, Bristol, Va., Kentucky School of Medicine, Louisville, 1893, member of the Tennessee State Medical Association, aged 65, died, April 5, in Holston Valley, of coronary thrombosis

Ralph Jackson Raybeck, Pittsburgh, University of Cincinnati College of Medicine, 1919, aged 41, on the staff of the Allegheny General Hospital, where he died April 27, of coronary thrombosis

Harry Edward Anderson, Somersworth, N. H. Medical School of Maine, Portland 1910, past president of the Strafford County Medical Society, served during the World War, aged 49, died, April 22

William Domenico Vento, New York University and Bellevue Hospital Medical College, New York, 1903, aged 57, died, April 15, in the Flower Hospital, of arteriosclerosis and hypertension

Alfred J. Pickering, Huntington, W. Va., Maryland Medical College, Baltimore, 1910, formerly city health officer, aged 61, died, April 17, of cardiorenal disease and cerebral hemorrhage

James Madison Horton, New York, College of Physicians and Surgeons, Baltimore, 1890, member of the Medical Society of the State of New York, aged 71, died, April 21, of lobar pneumonia

Elam Turner Murphy, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908, aged 60, died, April 27, of carcinoma of the prostate

Arthur Edgar Graves, New Waverly, Ind., Rush Medical College, Chicago, 1884, member of the Indiana State Medical Association, aged 79, died, April 27, in the Harper Hospital, Detroit

Silas Franklin Johnson, Los Angeles University of Southern California College of Medicine, Los Angeles, 1894, for many years a medical missionary, aged 70, died April 19

Joseph Anthony Tempesto, Trenton, N. J. Jefferson Medical College of Philadelphia, 1913, member of the Medical Society of New Jersey, aged 45, died April 17, of nephritis

Roy William Allen, Rochester, Minn. State University of Iowa College of Medicine, Iowa City, 1904, aged 55, died April 27, in St. Mary's Hospital, of fracture of the femur

Edward Payson Morrow, Canton, Ohio, Miami Medical College, Cincinnati, 1883, on the staff of the Aultman Hospital, aged 77, died April 14, of coronary arteriosclerosis

William Henry Estes, Lincoln, Ga. University of Georgia Medical Department, Augusta, 1900, formerly member of the state legislature, aged 59, died April 21

Leonard McClintock, Beacon, N. Y. Albany (N. Y.) Medical College, 1897, on the staff of the Highland Hospital, aged 65, died, April 21, of coronary thrombosis

Joseph Camille Eugene Arseneau, Fort William, Ont. Canada, Trinity Medical College, Toronto 1906, aged 58, died, April 6, in Rochester, Minn., of arteriosclerosis

Samuel Fearn Perkins, Los Angeles Vanderbilt University School of Medicine, Nashville, Tenn. 1921, served during the World War, aged 37, died April 20

Roswell W. Comstock, Maumee, Ohio, Detroit College of Medicine, 1901, served during the World War, member of the board of education, aged 60, died April 27

John Ridout, Annapolis, Md. University of the City of New York Medical Department, 1892, aged 68, died April 28, near Ellicott City, of cerebral hemorrhage

Charles W. Beitzel, Norton, Kan. Jefferson Medical College of Philadelphia, 1890, aged 67, died April 30, in a local sanatorium of pulmonary tuberculosis

Frank Stedman Bulkeley, Ayer, Mass., Harvard University Medical School, 1902, aged 57, died, April 19, of hypernephroma with pulmonary metastasis

Joseph L. Price, Sherman, Ky., Kentucky School of Medicine, Louisville, 1884, member of the Kentucky State Medical Association, aged 76, died, April 16

John L. Axtell, Cochran, Pa., Western Reserve University Medical Department, Cleveland, 1882, aged 76, died, April 6, of chronic myocarditis

Lourey L. Quick, New Waverly, Ind., Medical College of Indiana, Indianapolis, 1879, Civil War veteran, aged 89, died April 25, of bronchopneumonia

Frederick Raymond Glover, Mahwah, N. J., University of the City of New York Medical Department, 1885, aged 73, died, April 4, of heart disease

Peyton Page Nottingham, Ferrum, Va., University of the South Medical Department, Sewanee, Tenn., 1904, aged 55, died suddenly, March 10

Lewis Edward Haecker, Hampton, Iowa, Rush Medical College, Chicago, 1894, on the staff of the Lutheran Hospital, aged 72, died, April 18

John F. Cromley, Lamar, Mo., Eclectic College of Physicians and Surgeons, Indianapolis, 1894, aged 79, died April 30, of diabetes mellitus

Austin McMichael, Rockport, Mo., St. Louis Medical College, 1879, member of the Missouri State Medical Association, aged 81, died, April 7

Ragnvald Leland, Kenyon, Minn., University of Minnesota Medical School, Minneapolis, 1895, aged 70, died, April 28, of coronary thrombosis

John Arden Conley, Penn. Yan., N. Y., Eclectic Medical College of the City of New York, 1888, aged 68, died, April 13, of paralysis agitans

George S. Matlock, Carthage, Ark., University of Arkansas School of Medicine, Little Rock, 1900, aged 69, died, April 26, of acute nephritis

Marcell Hartwig, Los Angeles, Medizinische Fakultät der Friedrich-Wilhelms-Universität, Berlin, Prussia, 1873, aged 85, died, April 18

Will K. Johnson, Garnett, Kan., Keokuk (Iowa) Medical College, 1891, aged 79, died, April 30, of chronic cystitis and nephritis

Edward Marcellus Bixby, Oakland, Calif., College of Physicians and Surgeons of San Francisco, 1899, aged 77, died, April 24

William F. C. Hormann, Los Angeles, Bennett College of Eclectic Medicine and Surgery, Chicago, 1903, aged 70, died April 5

Simeon McCausland Metcalf, Los Angeles, Harvard University Medical School, Boston, 1881, aged 78, died, April 28

Robert White Naylor, Toronto, Ont., Canada, University of Toronto Faculty of Medicine, 1915, aged 46, died, April 16

Florence V. Wall Cheney, Turlock, Calif., California Medical College, San Francisco, 1891, aged 68, died, April 13

Elmer Jones Davis, San Diego, Calif., Rush Medical College, Chicago, 1903, aged 67, died, April 12, of heart disease

John Robert Blackledge, Abbeville, Ala., Medical College of Alabama, Mobile, 1889, aged 80, died, April 28, of senility

Ira Holden Fiske, Pasadena, Calif. (licensed in California in 1920), aged 85, died, April 12, of chronic myocarditis

Elwin Witt Ames, Los Angeles, University Medical College of Kansas City, Mo., 1894, aged 68, died, April 4

George E. Grover, Traverse City, Mich., Saginaw (Mich.) Valley Medical College, 1898, aged 69, died, April 1

William H. Armstrong, Rogersville, Tenn., Louisville (Ky.) Medical College, 1889, aged 74, died, April 9

Joseph Edward Blackshaw, Hemet, Calif., Pulte Medical College, Cincinnati, 1891, aged 81, died, April 18

Walter D. Pelle, Louisville, Ky., Hospital College of Medicine, Louisville, 1889, aged 73, died, April 1

John H. Snively, Justus, Ohio, Medical College of Ohio, Cincinnati, 1891, aged 73, died, March 31

William Stephan, Cincinnati, Medical College of Ohio, Cincinnati, 1896, aged 77, died, April 21

Robert E. Atkinson, Proctorville, Ohio, Columbus Medical College, 1886, aged 84, died, April 2

Bureau of Investigation

LION CROSS HERB TEA OR LION CROSS TEA

A "Wonder of Nature" Declared a Fraud

From New York City the Lion Cross Phar Lion Cross Products Co" and the 'Lio Pharmacy' exploited a cure-all" herb mixture known as Lion Cross Herb Tea or Lion Cross Tea.

According to the memorandum of Mr Karl A. Crowley, Solicitor for the Post Office Department the business was carried on by one Benjamin Eidinger under the above mentioned names Lion Cross Herb Tea or Lion Cross Tea was offered through the mails as a preparation that would "when used as directed" heal those suffering from stomach trouble rheumatism, kidney and liver troubles hardening of the arteries and various other ailments.

Oldest Medical Wonder

Against Stomach Troubles and Rheumatism Acclaimed Best by Latest Tests

Since 1799 thousands of people have regained their normal health after years of suffering from stomach troubles of all types such as constipation, indigestion, gas, and sour stomach which are the basic factors of such maladies as high blood pressure, rheumatism, periodic headaches, pimples on face and body, pains in the back, liver, kidney and bladder disorder, exhaustion, loss of sleep and appetite. Those sufferers have not used any man-made injurious chemicals or drugs of any kind they have only used a remedy made by Nature. This marvelous product grows on the highest mountain peaks where it absorbs all the healing elements and vitamins from the sun to aid HUMANITY in distress.

It is composed of 19 kinds of natural leaves, seeds, berries and flowers scientifically and proportionately mixed and is known as LION CROSS HERB TEA.

LION CROSS HERB TEA tastes delicious, acts wonderfully upon your system and is safe even for children. Prepare it fresh like any ordinary tea and drink a glassful once a day hot or cold.

A one dollar treatment accomplishes WONDERS makes you look and feel like new born. If you are not as yet familiar with the beneficial effects of this natural remedy LION CROSS HERB TEA try it at once and convince yourself. If not satisfactory money refunded to you.

Try it and convince yourself with our money-back guarantee.

One week treatment \$1 00 Six weeks treatment \$5 00

In order to avoid mist in getting the genuine LION CROSS HERB TEA

The advertising matter quoted in the Solicitor's report described this nostrum as a natural wonderful remedy (God's Gift) which had helped hundreds of men, women and children with such unrelated conditions as:

| | | |
|-----------------------|------------------------------|----------------------------|
| Headache | Loss of appetite | Back pains |
| Heartburn | Loss of sleep | Kidney disorders |
| Indigestion | Rheumatism | Arthritis |
| Gas on stomach | Neuralgia | Bladder trouble |
| Female irregularities | Loss of pep in men and women | Pimples and skin eruptions |

The famous quack of seventeenth century England Sarah Cornelius de Heusde, proclaiming her knowledge of the mysteries of nature, new inventions, natural remedies to cure many and divers complaints from the sign of the Red Lion could not have matched the healing qualities proclaimed for the twentieth-century Lion Cross Tea of New York City.

Lion Cross Herb Tea was described as being composed of nineteen varieties of natural flowers, berries, seeds, barks and roots. No ordinary herbs were these. An advertisement translated from a foreign language newspaper introduced during the Post Office Department hearing declared that they grew on the tops of the highest mountain peaks nearest the sun where they absorbed all the healing vitamins and elements which aid to restore the normal functions, thereby bringing health to every organ of your body.

Admittedly, this was good old Mother Nature at her "patent medicine" best, healing headaches, rheumatism, and throwing in for good measure 'the mysterious vitamin 'E' which brings back lost procreative powers to men and women.' Of the nineteen assorted flowers and other parts of plants that this 'shotgun' herb conglomeration was alleged to contain, the shrinking violet was certainly not one. An advertisement of Lion Cross Herb Tea carried by the *Radiant Health Digest*, a publication which, incidentally, calls itself *A National Journal of Food Science*, states "Oldest Medical Wonder—Against Stomach Troubles and Rheumatism—Acclaimed Best by Latest Tests—Since 1799 thousands of people have regained their normal health after years of suffering from stomach trouble of all types such as constipation, indigestion, gas and sour stomach which are the basic factors of such maladies as high blood pressure, rheumatism, periodic headaches, pimples on face and body, pains in the back, liver, kidney and bladder disorders, exhaustion, loss of sleep and appetite. Those sufferers have not used any man-made injurious chemicals or drugs of any kind, they have only used a remedy made by Nature."

Persons who nibbled at such advertising bait received a special typewritten letter. The letterhead on which such letters were written contained what purported to be a coat of arms with the notation 'Est 1799.' A printed circular accompanying the letter proclaimed:

Dear Friend

Do not throw this important message away, but read it to the very end and digest every word of it because this information will save you many dollars and bring HEALTH, HAPPINESS AND LONG LIFE to you and your dear ones.

A specimen of the "Oldest Medical Wonder," when examined by government chemists, was found to consist of a coarsely ground mixture of herbs, as follows:

Senna leaves, corn flowers (Centaurea), fennel seed, caraway seed, anise seed, chamomile flowers, dried orange peel, saffron flowers, licorice root, basswood (tilia) flowers, triticum, sassafras bark, juniper berries, peppermint leaves, lavender flowers, equisetum, mullein leaves and marshmallow root.

This, then, was the drugless life-prolonger, strength-giver and nerve-balancer! The blessing for diabetes and loss of powers" failed utterly to impress the government's medical experts, who declared that practically the only therapeutic effect of the preparation would be laxative and diuretic, with a slight carminative action on the stomach, and that a tea brewed from this mixture and used as directed would not heal persons suffering from all stomach troubles, rheumatism and kidney and liver troubles.

The Solicitor's memorandum to the Postmaster General contained further medical testimony to the effect that no treatment known to the medical profession will cure hardened arteries or restore atrophied elastic fibers, and that it is untrue to represent that the tea brewed from Lion Cross Tea will purify the blood. Except for the resultant effects of habitual laxation through the use of this preparation it will have no effect upon the blood, either in purifying it or in regulating its pressure.

The chief danger from nostrums of this type is that many persons having a fundamental belief in herb mixtures and suffering from serious or chronic ailments may be lulled into a false sense of security.

Although the evidence showed that his concern had been in business only about a year, Eidinger's brazen use of the phrase 'Est 1799' no doubt bolstered the faith of many of the gullible in his nostrums. Indeed, among the complaints received were some from newspapers which, taken in by the apparent age of the firm, had accepted advertising copy for which they had received no pay.

The Solicitor for the Post Office Department, after hearing the evidence, recommended that a fraud order be issued against the Lion Cross Phar, Lion Cross Products Co., Lio Pharmacy, and their officers and agents as such at New York. The Postmaster General under date of April 20, 1936, found the above-mentioned concerns and parties engaged in conducting a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and closed the United States mails to them.

Correspondence

CLINICAL EXPERIENCE WITH ERGOTAMINE TARTRATE

To the Editor—Clinical reports of gangrene from the use of ergotamine tartrate recently published in *THE JOURNAL* (May 9, pages 1625 and 1631) merit comment. The case reported by Yater and Cahill emphasizes anew the dangers of ergotism when overdoses are given. The case reported by Gould, Price and Ginsberg in the same issue indicates that even therapeutic doses may lead to serious consequences in special instances.

Since I advocated the use of ergotamine tartrate for the relief of distressing pruritus in jaundice and uremia (*THE JOURNAL*, Nov. 14, 1931, p. 1463) Snell and Keyes have reported its successful use in thirteen cases of jaundice without ill effect (*M. Clin. North America* 16:1455 [May] 1933). My further experience with the drug for this purpose has been with approximately seventy-five persons. Three instances have occurred in which unfavorable side actions might possibly be connected with its use. A man, aged 65, with advanced generalized atherosclerosis, developed a brief attack of tachycardia with precordial distress following a second oral dose of 1 mg. Three subsequent doses caused no complaints. A second person in the same age decade, with obstructive jaundice due to carcinoma, developed a clinical picture simulating coronary artery thrombosis with feeble pulse, cyanosis and fall in systolic blood pressure after four doses had been taken by mouth. The drug was discontinued. The entire clinical picture changed. The patient made a complete recovery from the circulatory disturbance. A jaundiced physician, aged 45, received three doses of ergotamine by mouth for pruritus. The peripheral veins were seen to be collapsed when attempts were made to collect blood samples. Four days later, after 7 mg. of the drug had been taken the pulse was noted to be very feeble and the extremities cold. The systolic blood pressure was not measurable. Bradycardia was persistent. Aside from weakness, the patient was alert, accepted food, and appeared well. Oscillometric readings and skin temperatures were reduced in all extremities. Three days later all objective disturbances had disappeared. The patient recovered from the severe liver degeneration.

Pruritus was relieved in approximately 50 per cent of cases. Resistant cases usually failed of relief by all other measures. The first dose may indicate the prospect of relief. I have found the best method of administration to be as follows: The first dose is given in the evening. If it is beneficial the patient sleeps undisturbed by itching. Three doses are then given by mouth the following day. The drug is discontinued if no relief is obtained and if pains and paresthesias appear in the limbs. If partial relief is obtained, the drug is continued for three more doses. I have seen complete relief following a single dose in a patient with itching lasting several months due to obstructive biliary cirrhosis. The itching was so severe that gloves were worn during sleep.

Ergotamine tartrate has been used over longer periods of time in the treatment of hyperthyroidism and more recently in migraine (Lennox, *W. G. Med. England M. J.* 210:1061 [May 17] 1934). The drug was administered to forty-five patients with this condition without harm. Sometime ago in the course of carefully controlled studies evaluating measures for the treatment of essential hypertension I had occasion to test the effects of the drug in fifteen patients with arterial hypertension in doses of 1 mg. three times daily over a period of four weeks. The patients were warned to discontinue the drug promptly if unfavorable reactions appeared but none occurred. Thus in Lennox's and my experience no mishap occurred in fifty cases with use of the drug over longer periods.

The use of powerful drugs for the relief of distressing clinical symptoms is always fraught with the danger of misuse by the careless and inexperienced despite warning as to their potential toxic effects. This is especially true of medicaments which are effective in milligram doses. Single doses may produce remarkable results. When ineffective, even larger and repeated doses may fail to produce the desired therapeutic response. In the hands of the experienced, the response is gaged from dose to dose and standing orders are not issued.

Dangers from overdosage apply to all drugs. In the case of ergotamine tartrate treatment, therapeutic doses must be given only when strict supervision of the effects of the drug on the patient is possible. Single doses have relieved pruritus in jaundice and attacks of migraine. The use of such a powerful and effective remedy should not be discontinued because reports of gangrene following overdosage appear in the literature or because therapeutic doses prove toxic in a person under special circumstances of advanced atherosclerosis, heart failure, and complicated history of intoxications with barbitals and narcotics. The drug should be continued to be used in conservative dosage by physicians who can evaluate its virtues and dangers.

S. S. LICHTMAN, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT OF ITCH DUE TO VARIOUS CAUSES

To the Editor—For several years I have been called to treat patients afflicted with a severe itching of the skin. The only sign of the malady is a small papule about the size of a pinhead which is either raw or reddish brown and apparently has had its top scratched off. The papules are thinly scattered over the arms, legs and trunk. I have never seen them on the head, face, palms or soles of the feet. The condition affects all ages and both sexes, is apparently contagious and is seen most often in the spring and autumn. Phenolized ointments relieve the itching and after prolonged use the trouble disappears. I should like a prompt remedy if you can so favor me. Please omit name.

M.D. Montana.

ANSWER—The brief description suggests (1) scabies of human or animal origin, (2) pediculosis vestimentorum or bird pediculosis, (3) straw mite itch and (4) trombidiasis—leptus mowers' mite, harvest bug.

1. The typical lesion of scabies is a papulovesicle and not a papule which has "apparently had its top scratched off," though many such scratched lesions may be seen. The burrow of scabies is often difficult to find. Localization of the eruption about the anterior axillary folds, the female breast, the male genitalia, the webs of the fingers and on the buttocks of those who sit at work is a more obvious characteristic. Discovery of the mite, its feces and eggs in a thin slice of epidermis about and including the papulovesicle is the final proof.

Scabies of animal origin is rare and can be eliminated in an epidemic as described.

The treatment of human scabies is the use of Danish ointment for twenty-four hours applying it after a good soaking bath with hot water and soap with care that all the skin from the neck down to the ends of the fingers and toes, is covered by the ointment. Then the patient dons the underwear already worn. In twenty-four hours another good bath is taken with a change of underwear, night clothes, sheets, pillow cases and careful sterilization of all clothing that has been in contact with the skin during the course of the disease. All in the family, whether infested mildly or severely, must be treated at the same time. If Danish ointment fails to clear up the disease (do not mistake secondary dermatitis due to scratching or the irritation of the ointment for scabies) a four day course of the old fashioned formula 10 per cent each of precipitated sulfur, chalk, green soap and Peruvian balsam in petrolatum will probably succeed. The cleanup is the most important part of the treatment.

2 Pedeniosis vestimentorum is manifested by papules topped by blood crusts, blood crusts flit on the skin, scratch marks and secondary dermatitis, most marked in the areas in which the clothing is tight. It is proved by the discovery of the louse in the seams of the clothing. Treatment consists of bathing and sterilization of all clothing.

Bird louse dermatitis resembles scabies occurring as an eruption of discrete papules, though not in the typical preferred areas of scabies, and without burrows or organisms in the skin, on it or in the clothing. The louse retreats after feeding, to the cage or hen house or pigeon house where it may be found in the crevices. Careful cleansing of the hands after care of the birds and removal of their cages from the vicinity of the patient will cure. It is not likely that this would occur in epidemics such as described.

3 Straw itch is caused by a small mite found in the dust from grain or straw. It attacks those who work with grain or who sleep on straw mattresses. The skin lesions are small wheals with central vesicles, on the neck, trunk and limbs. The hands and feet are seldom involved. Larger lesions sometimes occur, vesicles up to 0.3 cm in diameter. Chills and fever, malaise and anorexia may initiate the attack. Itching is more severe at night. A bath, sterilization of the clothing and avoidance of contact with grain or straw dust should cure, for the fever, rest in bed and a mild sedative.

4 The harvest mite, *leptus* is a larva from brick to vermilion red, which becomes active from April to July depending on the latitude and elevation. It is more common in dry summers, is present on grasses and underbrush, and attacks the feet and legs commonly, but it may also be found on the legs or trunk and less on the arms. Women and children are more susceptible than men, perhaps because their legs and feet are less protected. The lesions are follicular papules with the red mite showing in the center. Later they become hemorrhagic. They occur particularly where the clothing is tight enough to stop the travel of the mites at the shoe tops, under garters or at the belt line and may increase in number for a day or so after infestation but there may be a second crop three or four days after the first one. The disease subsides spontaneously in three or four weeks.

The treatment consists of a bath and application of 6 per cent oil of peppermint, rosemary or pine needles in an ointment and a change of clothing, including the garters. The clothing should be sterilized.

SUBCUTANEOUS OXYGEN THERAPY—RASH DUE TO LAMBS WOOL

To the Editor—Inquiries have been made regarding the subcutaneous injection of oxygen to replace the tent or catheter method. I would appreciate a working knowledge of this method of therapy. I have in the past months treated two cases of rash seemingly attributable to genuine lamb's wool fur. In one case only the neck was involved, the person having only that type of fur collar on the coat she was wearing. The other patient a boy of 12 developed a generalized urticarial rash with angioneurotic edema of the scrotum and foreskin after wearing an overcoat lined with this material. Perhaps you could help me in determining the exact dye or irritant causing this reaction. The name genuine lamb's wool seems to be a trade name. In both instances the color of the fur was dark brown. Please omit name.

M D Wisconsin

ANSWER.—The simplest method available for subcutaneous oxygen therapy uses an inflated rubber bag containing from 400 to 500 cc. of oxygen. A large needle on a syringe is inserted into the subcutaneous tissues of the abdominal wall. Suction is made on the syringe to make sure that the needle is not in a vein, and the syringe is removed leaving the needle in place. The rubber bag is connected with the needle by means of rubber tubing and an adapter. A stopcock on the tubing is opened. The bag is gently compressed and the oxygen introduced into the subcutaneous tissue. If the rate of absorption is rapid, 1,000 cc or more may be injected. If the rate of absorption is slow, multiple areas may be used for injection. Injections may be given twice a day. There are two complicated special appliances on the market for this method namely, the "oxygenateur" by Dr. Bayeux of Paris and the Loth apparatus, Utrecht, Netherlands.

The skin manifestations described may be due either to the effect of wool or to the effect of aniline dye or even to the effect of some other antigenic substance not suspected by the patient. If wool is responsible, the more unrefined it is, the more troublesome. A patch test done with undyed wool if negative after twenty-four hours, would indicate the possibility that the aniline dye mentioned is a cause for the skin condition. The variability of the composition of dyes precludes in most cases, tests with them so that a diagnosis by the process of elimination is frequently necessary.

THROMBOPHLEBITIS AFTER CESAREAN SECTION

To the Editor—There seems to be little definite information in the current literature as to when it is safe to start movements, active and passive, of a limb following thrombophlebitis with embolic phenomena. Eight weeks ago, following a massive hemorrhage I elected classic cesarean section in a case of placenta praevia centralis because the child was still viable and I feared that a Braxton Hicks maneuver would destroy the baby. The postoperative course was uneventful and on the fourteenth day there were sudden signs of a pulmonary embolism with infarction. After the use of sedatives for a week the embolic signs and symptoms subsided and the left thigh became swollen and tender along with abdominal distention, sudden hemorrhoids and bladder irritability, which I assumed were due to deep pelvic thrombosis involving the left common iliac vein and the peritreal and prevesical veins. Blood culture was negative. The temperature has remained normal or subnormal but there has been a tachycardia (110/110) for six weeks ever since the first embolic phenomena which I assume is due to a low grade toxemia though the last white cell count is only 6,400 with 74 per cent neutrophils. The treatment to date has been elevation of the limb, dry heat and sedatives. After six weeks of such management (just when the prognosis seemed fair), there was another pulmonary embolism almost as severe as the first. There have been many small showers in the interim. The external saphenous vein is just now becoming involved. What is the present status of citrate solution intravenously? Is surgical ligation of the iliac vein advisable to prevent further emboli? I fear that the thrombosis may extend into the inferior vena cava. When would you chance passive motion? When active motion? Why has no lung abscess developed after all these septic pulmonary emboli? Peham and Amreich recommend six weeks of bed rest after all signs and symptoms are absent. Can you cite other authorities?

M D, Nevada

ANSWER.—There is no inflexible rule for the management of patients with thrombophlebitis. Rest in bed, immobilization and elevation of the affected limb and repeated applications of hot, wet packs are advisable. Ordinarily, active motion may be allowed safely a few days after tenderness to pressure over the vein, systemic fever, and edema have disappeared, provided there is no clinical evidence of extension of the inflammatory lesion. In the usual case of thrombophlebitis the period of confinement of the patient to bed need not exceed two weeks. Long periods of inactivity are not only unnecessary in the usual case but tend to produce neuroses centering on the affected limb, especially when patients were psychopathic or neurasthenic before phlebitis occurred.

The incidence of fatal pulmonary embolism resulting from phlebitis is very small apparently because the inflammatory process has anchored the thrombus to the wall of the vein. However, pulmonary infarction is not uncommon but it is rarely followed by lung abscess. The explanation for this is not clear. Perhaps bacteria, if present in the thrombus, are not viable in the lung. The case cited by the correspondent is unusual. Continued rest in bed, immobilization of the limb, and the application of heat are advisable. The intravenous injection of a solution of sodium citrate is not of recognized value. Ligation of the iliac vein is rarely indicated. The operation itself is additional cause for thrombophlebitis, and there is no good evidence that the ligature would prevent extension of inflammation. Thrombosis of the distal inferior vena cava is not ordinarily serious. Treatment after the inflammation is quiescent, namely, adequate support to prevent edema must be applied to two extremities instead of to one if thrombosis of the vena cava occurs.

RELATIVE EFFICIENCY OF SEDATIVE DRUGS

To the Editor—Can you give me an approximate idea of the relative rapidity of the various commonly used sedatives (given in their average dose) and also their relative duration of action? It is my impression that, in general, the rapidity of action is inversely proportional to the duration of the effect. I am interested chiefly in the barbituric acid derivatives but I would also like to know how other sedatives such as bromide chloral and bromural compare with them. Kindly omit name.

M D Connecticut

ANSWER.—The barbituric acid derivatives may be divided into those of prolonged and those with short action. Thus pentobarbital sodium and picrotoxin belong to the agents of relatively short action (from three to six hours) and phenobarbital and barbital to those of enduring action (from six to eight hours), with amylal and cyclohexenyl ethyl barbituric acid ranging somewhere between these. The proposition that the more rapid the onset of action the shorter the effect may seem to be borne out by the rapid onset of the action of most of the rapidly acting barbiturates, e. g., the fact that the action of pentobarbital and cyclohexenyl ethyl barbituric acid sets in earlier than with most of the other barbiturates, the effect of which is in general secured within half to three quarters of an hour. This relation is, however, not essential, as the onset of action depends on rapidity of absorption, which in turn depends on a water and lipid solubility factor as well as possible dissociations in the organism. The duration of the effect, on the

other hand, depends on the rapidity of destruction in and elimination from the organism. In the agent of brief action a destruction occurs so rapidly that it is completed over night, while barbitol is eliminated slowly and largely unchanged, so that with full doses there is often a certain degree of depression experienced the next day and there is liability to cumulative action. The hypnotics of short duration may initiate a sleep which then continues throughout the night even though the action of the narcotic itself has ceased. If the patient awakens too early, a hypnotic of more prolonged action is indicated. Chloral hydrate acts rapidly, within fifteen minutes, so that it may be given just as the patient goes to bed, while the barbiturates are better given from half to three quarters of an hour before bedtime. As chloral hydrate in moderate dosage is rapidly eliminated, it does not produce sleepiness the next day. Bromide action is slow in onset. It is not a true hypnotic. It merely lessens reflex excitability and restlessness and thus favors sleep but does not force it on the individual as do the true hypnotics. As it is slowly eliminated, its effects are rather enduring. Bromural is also a sedative rather than a narcotic, it produces sedation and slight sleepiness within half an hour and thus may suffice to induce sleep in mild cases of insomnia. Its real action continues for about three to five hours, but, as before stated, sleep once induced may continue longer.

EFFECTS OF OVARECTOMY

To the Editor—Please advise me what the untoward symptoms are following the removal of both ovaries. Is intermittent sweating marked one of them? If so, what would be the suggested dose of theelin in oil? What would be the interval and the probable duration of such treatment? Please use initials only.

M D Alabama

ANSWER—In a woman of menstruating age, removal of both ovaries produces a surgical menopause with the possibility of having menopausal symptoms of varying degree. The intermittent sweating, hot and cold flashes and feeling of tiredness may in some cases be quite marked, while in other cases they may be slight or even absent.

It has been found that treatment with estrogenic substance together with the oral administration of bromides acts in many instances to alleviate or completely relieve the annoying symptoms. The estrogenic substance is best used in an oil solution, 2,000 rat units per cubic centimeter administered in deep intramuscular injections once a week. Any of the ethically produced and standardized products may be used. It may be necessary to carry on such treatments over a period of many months or until such a time as the menopause is well established and the vasomotor disturbances accompanying its onset have subsided. The bromides act to cut down on the patient's nervous irritability and to decrease the reaction to the vasomotor stimuli.

It must be remembered that it is possible for the patient to have conditions not associated with the genital tract which may be responsible for the discomfort or add to it. Because of this, hypertension, cardiac disease, renal insufficiency and blood dyscrasias must be ruled out before one can extend hope for improvement by hormone replacement therapy plus the use of sedatives.

GAUZE SPONGE IN PERITONEAL CAVITY

To the Editor—As a search through standard textbooks and reference works on surgery has been unsatisfactory would you kindly inform me regarding the symptoms caused by a gauze sponge left in the peritoneal cavity? Could such a foreign body in this location give no signs or symptoms for a period as long as three months postoperatively? Might three sponges be lost in the peritoneal cavity of a moderately obese woman and give no signs or symptoms? Please omit name.

M D Minnesota.

ANSWER—In most instances in which sponges have been removed after being left in the abdomen the symptoms were the result of suppuration.

It would seem impossible to differentiate irritation by a foreign body from localized peritonitis following operation. Pressure symptoms that not infrequently affect the bladder are usually due in either instance to an abscess. The chief differentiating symptoms are that in postoperative peritonitis there is acute inflammation with tympanites, while with a foreign body there may be few or no symptoms until secondary infection develops.

Provided suppuration does not develop, the early symptoms of irritation and pressure which might simulate those after a laparotomy could subside either completely or partially. In the latter instance any persisting symptoms might simulate adhesions which might follow a low grade infection that had subsided.

In the event of infection developing about a gauze sponge or foreign body, suppuration would persist until the foreign body had passed out or was removed at a subsequent operation.

One or even three small sponges might remain in the abdomen three months or longer with no symptoms, provided their size did not produce pressure symptoms and they did not become secondarily infected.

In the course of several hundred operations on animals it has been observed on several occasions in which sterile gauze sponges were left at a previous operation weeks or months before that these sponges were completely surrounded by omentum with no suppuration or surrounding adhesions. There were no symptoms due to the presence of these walled-off sponges. It is possible that animals may tolerate foreign material better than human beings. No doubt the size of the sponge is of importance as well as the size of the omentum that may be available for surrounding it and preventing contact with the intestinal wall, through which infection may come.

In the presence of a large omentum there would be a better chance for it to wall off a gauze sponge without the development of secondary infection or other symptoms.

INJURY TO ROOF OF MOUTH IN REMOVING TOOTH

To the Editor—A woman, aged 23 single suffering pain in a tooth due to a cavity, saw her dentist. He noted the cavity in the left molar and advised its removal. This was done. There was no abscess or other evidence of infection on this tooth when removed. As the dentist was removing the tooth the patient noticed a sharp pain in the roof of her mouth. She called his attention to this. He told her there was a slight laceration of the roof of the mouth whether due to scratching with the tooth as he was removing it or to the instrument (dental forceps) he did not know. This occurred Aug 14 1935. I was called that evening and noted the laceration extending over the right posterior palate, which the patient said was painful. I advised hot irrigations. The dentist was consulted. He said that rinsing the mouth would be sufficient. This was done August 17. The girl was unable to open her mouth. She suffered pain in the roof of the mouth and in her neck. I again advised hot irrigations and also fomentations to the neck. On the 19th, at the request of the dentist, she used antiphiogistine externally. That night the pain was intense. A hypodermic did no good. No improvement had occurred on the 20th. She had a temperature of 103.2 F. At 7 p. m. August 22 she had a severe chill. I removed her to the hospital and gave a citrated blood transfusion. For two days she had a septic temperature. Drainage then began from her mouth. The fever subsided by lysis. Drainage coming from the roof of the mouth continued for nearly two weeks. The question arose as to how an abscess could develop on the palate. It was generally believed to be due to the trauma of the laceration. However the dentist says that the drainage from the tooth socket moved backward up the pillars and fauces to the palate. Does this occur? My impression as to drainage is in a direction opposite to this the drainage being into the submaxillary and deep cervical glands. Kindly omit name.

M D Coosuechent.

ANSWER—It would seem unlikely that the acute infection described was due to any other cause than the injury to the roof of the mouth and the bacterial invasion through this portal of entry. The normal course of lymph drainage from both of the regions mentioned is toward the upper deep cervical lymph nodes, from the palate region by way of nodes along the internal maxillary artery and from the lower molar zone by way of submaxillary channels. Only in cases of blocked drainage can the lymph flow be reversed. In this case the first evidences of inflammation were in the palate, and extension was along the normal paths for drainage without involvement of the extraction site and the regions next in line. Consequently there is no reason to believe that drainage was blocked and that infection extended from the extraction socket to the roof of the mouth by way of the pillars and fauces.

OPERATIONS FOR OCCLUSION OF FALLOPIAN TUBES

To the Editor—My daughter in law is 30 years old five years ago she gave birth to a son. Everything was normal. She has had no children since. Examination shows occlusion of both tubes near the fimbriated ends. She is in perfect health and desires more children. Unfortunately an operation seems the only way out. My son was home from Ohio and consulted me about it but I am not in a position to give him any advice. I want therefore, to ask you. What percentage of these operations is successful? Can you give me the names of any surgeons in Cleveland Cincinnati Pittsburgh or other cities in that neighborhood where this work has been successfully done?

M D Minnesota.

ANSWER—Operations for relief of sterility ascribable to occlusion of the fallopian tubes are satisfactory in not more than one third of the cases. Obstructions limited to the fimbriated ends of the tubes offer a somewhat more favorable prognosis.

Before resorting to surgery the fertility of the husband should be determined, despite the fact that he is the father of a healthy child 5 years of age. He should also be questioned relative to the possibility of having acquired a gonorrheal infection the most common cause of bilateral tubal occlusion.

Most authorities advocate radiography of the tubes prior to operation, although some are content with a Rubin test. Instillation of iodized oil and radiography give more detailed information than a Rubin test, but some hesitate to use it as a routine procedure because of the possibility of lighting up an infection.

It is inappropriate to recommend in *THE JOURNAL* the names of any individuals. Through the leading hospitals and medical schools one can readily obtain the names of competent gynecologists.

FASCIA STAIN

To the Editor—I need to know of a stain that will stain fascia only. This stain should not stain muscle, fat, nerve or anything but fascia.

T. E. ZINKAN, M.D., San Jose, Calif.

ANSWER—There is no known stain that will stain fascia only. There are several stains that will differentiate connective tissue or elastic fibers from other structures. The most useful are the following:

A Mallory connective tissue stain. The connective tissue stains deep blue, nuclei red.

1. Remove paraffin with xylene
2. Absolute alcohol
3. 95 per cent alcohol
4. 80 per cent alcohol
5. Wash in water
6. Zenker's solution twenty-four hours (if not Zenker fixed material)
7. Aqueous solution of iodine (Lugol's solution) fifteen minutes
8. Decolorize with 5 per cent solution of sodium thiosulfate for thirty seconds
9. Wash thoroughly with distilled water
10. 0.5 per cent aqueous solution of acid fuchsin two minutes
11. Wash in distilled water
12. 1 per cent phosphomolybdic acid nine minutes
13. Transfer directly to Mallory's stain from two to four minutes
14. Wash with 95 per cent alcohol
15. Dehydrate with several changes of 95 per cent and absolute alcohol
16. Clear in xylene
17. Mount in balsam

B Van Gieson's stain for connective tissue. The connective tissue is deep red, the nuclei are black.

1. Fixation in almost any fixative
2. Remove paraffin and so on, as usual
3. Mix Heidenhain's iron hematoxylin solution 1 with equal parts of No. 2. Stain from four to five minutes
4. Wash in distilled water
5. Van Gieson's picric acid fuchsin one minute
6. Dehydrate
7. Clear in xylene
8. Mount in balsam

C Weigert's elastic tissue stain. Elastic tissues are from dark blue to black, the nuclei stained lightly with carmine. Formaldehyde fixation is preferred.

1. Remove paraffin with xylene
2. Absolute alcohol
3. 95 per cent alcohol
4. 80 per cent alcohol
5. Distilled water
6. Place in 1 per cent safranin for twenty-four hours or in an autoclave from three to five hours
7. Wash in absolute alcohol
8. Elastic stain from five to twenty minutes (use microscope)
9. Rinse several times in absolute alcohol
10. Clear in xylene and mount in balsam

STREPTOCOCCUS CARRIER AND OBSTETRICS

To the Editor—A helper in a hospital constantly shows streptococcus in smears from her throat. A culture sent to the state laboratory was reported staphylococcus only. She had her tonsils thoroughly removed a few years ago. Would you consider it dangerous to have her working around the obstetric department? What can be done to clear up the condition? She has been given streptococcus serum and has been using mild antiseptics in her throat. Please omit name.

M.D. Minnesota

ANSWER—If streptococci persist in the helper's throat in spite of local and general treatment, it is best to have her stay away from the obstetric department. There is always the possibility that at some time or other the streptococci may become virulent, especially during the winter months, and the helper may then become a direct cause of infection. If the helper should constantly wear a mask which would cover not only her mouth but also her nose, the risk of infection would be reduced considerably but there would still be the danger of contamination from her hands. The risk should not be taken, especially when it ought to be possible to employ the helper in some kind of work in a part of the hospital where there is no danger of infection.

TUBERCULOUS LYMPHADENITIS

To the Editor—A woman aged 30, married, with two children, weighs 155 pounds (70 Kg.) appears healthy and has no complaints except swellings on the side of the neck. She had swollen glands in the right cervical region five years ago resulting in two abscesses which required incision and took about four months to heal. During the past five years the glands have become enlarged occasionally but have not resulted in abscesses. In January 1935 a swollen gland developed on the left side of the neck which required incision and which healed in five months. In August 1935 swelling developed on the right side, which was incised and is still not healed but has a small scab which on removal disclosed a granulating area with some discharge. At this time December 1935, she has two other swellings on the right side of the neck which are not very tender, are apparently adherent to the skin and are quite movable. Blood examination reveals 74 per cent hemoglobin, 3,900,000 erythrocytes, 5,600 leukocytes, 33 per cent neutrophils, 1 per cent myelocytes, 50 per cent lymphocytes, 8 per cent mononuclears, 6 per cent eosinophils, 3 per cent basophils, 11 per cent staff cells, 21 per cent segmented forms. Examination of the urine gives negative results. The blood Wassermann reaction is negative. The tuberculin test with 0.001 cc. of old tuberculin is positive. The basal metabolism is 16 per cent. Roentgen examination of the teeth and of the chest gave negative results. During the past four months the patient has been advised to rest more frequently, to drink cod liver oil and milk and to take calcium phosphate one tablet twice daily. She has gained 10 pounds (4.5 Kg.) on this regimen yet the swollen glands have come again. Is there anything else that can be advised? I have assumed a diagnosis of tuberculous adenitis. Can it be anything else? I have now advised general ultraviolet therapy twice weekly, also local heliotherapy. What is the opinion regarding these measures? Please omit name.

M.D., New York

ANSWER—The clinical history and the laboratory examinations are both typical of a tuberculous lymphadenitis. There is one other possibility and that is a superimposed Hodgkin's disease. This should be determined by a biopsy with a pathologic and bacteriologic examination.

If it is found to be only tuberculosis, the treatment should be aimed at a progressive tuberculous lymphadenitis: relative rest periods, removal from the responsibility of care of the children and household, and a balanced and adequate diet, including vitamins. This has apparently been done. Ultraviolet therapy administered in progressive dosage is indicated as well as progressively administered heliotherapy, if there is adequate sunlight. The latter need not be strictly local. The trouble with sunlight is its inconstancy. In most parts of the United States there is so much fluctuation of light that the advantages from such methods are little or nil. Measured ultraviolet radiation is much to be preferred, because it can be measured and given in accurate and proper dosage.

TREATMENT OF EARLY SYPHILIS

To the Editor—Printed in a copy of *Modern Medicine* in December 1934 was Friedman's Ready Reference tables for the treatment of early syphilis. In case you have no reference it goes as follows: one week of neoarsphenamine 4.5 Gm. and 0.6 Gm., second week neoarsphenamine 0.6 Gm., third week, 0.1 Gm. of a bismuth compound and neoarsphenamine 0.6 Gm. End of course one seronegative primary syphilis. From the fourth to the eighth week a bismuth compound and neoarsphenamine. From the ninth to the seventeenth week, a bismuth compound. So it goes on in alternate nonrest periods courses through course five. What I should like to know is whether this may be considered authoritative? Second the entire course of treatments would take eighty-one weeks. Is less than this justifiable? Please omit name.

M.D. Virginia

ANSWER—The article by H. L. Friedman entitled "Early Syphilis—Diagnosis and Treatment Graphically Represented" was published also in *Colorado Medicine* (31:353 [Oct.] 1934). The course of treatment outlined by Dr. Friedman may be regarded as adequate. It differs in certain minor respects from the standard treatment procedure suggested by the Cooperative Clinical Group (*THE JOURNAL*, April 21, 1934, p. 1267). These differences are as follows:

1. The dosage of neoarsphenamine should be from 0.45 to 0.6 Gm. for women and from 0.6 to 0.75 Gm. for men. Nothing is gained and something probably is lost by starting treatment with smaller doses than these. There is no adequate reason for starting the treatment of early secondary syphilis with bismuth compounds. In all stages of early syphilis, treatment is more properly initiated with an arsphenamine.

2. The preparation of bismuth utilized by Dr. Friedman is not mentioned, and the dosage suggested (from 0.1 to 0.15 Gm.) is a trifle small. An adequate dose of the preferable insoluble bismuth salicylate is 0.2 Gm.

3. The treatment of seropositive primary syphilis should be at least as long as that of early secondary syphilis.

4. The total duration of treatment, as outlined by the group, is approximately ten weeks shorter than that suggested by Dr. Friedman.

5 The after-care of treated patients should not cease with a three to five year observation period but should be prolonged throughout the patient's lifetime.

The essential feature of the treatment plan suggested by Dr Friedman is, however, the same as that outlined by the Cooperative Clinical Group, namely, that the treatment of early syphilis shall be continuous throughout, with no interpolated rest periods of any sort

EDEMA IN DIABETES

To the Editor—A woman aged 42 who has had diabetes for four years but has been under management for only one year complains of edema of the lower extremities during the day. This disappears at night but appears in the hands, arms and face in the morning. She states that her eyes are swollen so badly that she can hardly open them at times. Last Christmas she was in the hospital for diabetic coma. During the past summer she developed an infection in her thigh as the result of insulin administration. Since this episode she has had this edema. The output of urine is diminished. She has menstruated only once in the last six months in October. At this time edema disappeared for about ten days. She is taking about 30 units of insulin daily and showing some sugar but she was sugar free this fall and the edema was unaffected. She is on a diet of 65 Gm of protein, 135 of fat and 85 of carbohydrate. No urinary cardiorespiratory digestive or nervous symptoms are apparent. The physical diagnosis and examination are essentially negative except for marked pitting edema from the mid thigh down on both extremities. Hemoglobin is 70 per cent the urine contains 0.2 per cent of sugar but no albumin. Can this be a nutritional edema from mineral deficiency? If not what are other possibilities? What treatment is there? Please omit name

M D Iowa

ANSWER—The fact that this edema affects not only the legs but also the arms and the face and that the infection mentioned developed in only one thigh makes it unlikely that the infection is responsible for the edema. The absence of menstruation might be due to an early menopause but also suggests that dietary deficiency is a factor in this edema. The present diet may be inadequate in calories but seems to be supplied with enough protein and therefore does not seem responsible for the trouble. Mineral deficiencies rarely if ever cause such edema. Essential for the diagnosis would be a determination of the total proteins of the blood plasma as well as the relative amount of serum albumin and serum globulin. A low protein content of the blood plasma, particularly a low albumin content, would support the diagnosis of nutritional edema.

HIGH VITAMIN ACID ASH DIETS IN URINARY INFECTION

To the Editor—What is the rationale of the high vitamin acid ash diet in infections of the urinary tract? Why is sodium chloride so strictly prohibited in this diet? Should the diet consist exclusively of foods that have acid ash or may the diet be supplemented by basic or neutral foods? Isn't it an incongruity that everything that is prepared with salt is taboo? The diet lists allow American cheese Cheddar cheese and frankfurters. All these foods have a large percentage of salt. Where can I look up this subject in detail? Where am I to get a complete table of foods generally consumed as to their ash reaction whether acid basic or neutral?

ROBERT FISHER M.D. New York

ANSWER—The rationale of the high vitamin A acid ash diet in infections of the urinary tract depends on the production of an acid urine. The inhibition of the growth of bacilli by acid urine dates to the work of Shohl and Janney in 1917 (*J. Urol.* 1:211 [April] 1917). The contraindication for the inclusion of much sodium chloride in these diets is discussed by Charles Higgins of Cleveland. His most recent report on the subject is in *Surgical Clinics of North America* 15:923 (Aug.) 1935. Lists of acid and basic foods can be found in "The Chemistry of Food and Nutrition" by Sherman edition 4, New York: Macmillan Company, 1932, and in "Nutrition and Diet in Health and Disease" by J. S. McLester, Philadelphia and London, W. B. Saunders Company, 1927.

CARCINOMA OF FUNDUS OF BLADDER

To the Editor—I have a patient who has a carcinoma of the fundus of the bladder. This growth is 5 by 3 cm in diameter and is a hard mass. The bladder capacity is 2½ ounces. The general condition of the patient is good. Is the prognosis of the patient better by treating him with radium or better by transplanting the ureters into the bowels and removing the bladder? Please omit name.

M D Tennessee

ANSWER—There still is a good deal of diversity of opinion regarding treatment of carcinoma of the fundus of the bladder. Suprapubic cystostomy with surgical diathermy is the procedure in a great many clinics. Others are of the opinion that the implantation of radium with the cystoscope is the method of elimination. In the third group one finds those who believe in cystostomy and here one finds diversity of opinion on the

one hand are those who believe that the ureter should be implanted into the bowel, and in the other group one finds men who believe that the ureter should be transplanted into the skin and catheters inserted into the ureter.

INTRAVENOUS ALCOHOL AS NONSPECIFIC PROTEIN THERAPY

To the Editor—Would you send me indications contraindications, dangers and the technic of intravenous alcohol preparations in the treatment of suppurating fetid disorders especially of the lungs? I find many references, all of foreign origin as for example "Intravenous Alcohol Preparations in Treatment of Suppurating Fetid Disorders" (*Mit. Klin.* 30:538-543 [April 20] 1934). I find it referred to as the Lander method 33¼ per cent alcohol. RAYMOND L. EVANS M.D., Sayre, Pa.

ANSWER—One must look on intravenous injection of alcohol (33¼ per cent) as a form of nonspecific proteotherapy the alcohol acting as a "denaturant" of the blood protein with which it comes in contact in sufficient concentration. Its indications may therefore be conceived quite broadly, as by Breuer and Aron (*Wien med. Wchnschr.* 85:868 [Aug. 3] 1935), who advocate it also in diverse other infectious diseases, such as erysipelas, diphtheria, tonsillitis, scarlet fever, furuncles and phlegmons. Debility so extreme that the patient might not survive the protein shock constitutes the chief contraindication. Cardiac depression is the chief danger, which may be possibly antagonized, when encountered, by intravenous injection of 20 cc. of 33 per cent dextrose and by the usual heart stimulants. The technic requires drawing the alcohol into the syringe without the needle and testing the patency of the needle with sterile physiologic solution of sodium chloride rather than with alcohol. The injection should not be started until blood wells into the needle and should then be made extremely slowly, blood being drawn into the syringe from time to time.

BLOOD VESSELS IN FAT

To the Editor—In a speech made in Washington in 1924 Dr K. H. Beall stated that there are about 4500 feet of blood vessels in each pound of human fat. This speech was published in the *Southern Medical Journal* of May 1924 under the head "The Parasitism of Fat." So far I have been unable to discover any facts that tend to prove or disprove Dr Beall's statement and I am wondering whether you can shed any light on the subject.

HARRY H. FIELD New York

ANSWER—The length of the blood vessels in one pound of fat, such as exists in the human superficial fascia, has not been definitely worked out. The length of blood vessels in one pound of human skeletal muscle has, however, been estimated approximately (Krogh, *Anatomy and Physiology of Capillaries*, 1924, p. 10). Krogh's calculations would indicate that in one pound of muscle (human) the length of blood capillaries is approximately 568 miles.

Vascularity of fat is great, though apparently less than that of muscle. In a kitten in which the blood vessels were injected with carmine gelatin and preparations made in identical manner of muscle and of fat from the mammary gland, the blood vessels in the muscle tissue were apparently five times as numerous as the capillaries in the fatty tissue (This is a rough approximation). Assuming that the same proportion exists in the human animal the length of capillaries in one pound of fatty tissue would be a little over 100 miles.

ETIOLOGY OF PALPITATION

To the Editor—Is the onset of palpitation (pulse average 84) following (1) small amounts of alcohol (2) smoking a cigaret (3) slight effort (4) ephedrine and epinephrine used as sprays (5) one-half grain (0.03 Gm.) of thyroid extract ingested in a person aged 30 with no other physical sign or laboratory finding of heart disease evidence of occult heart disease? The palpitation is visible and easily felt and lasts from minutes to hours. During this period there is frequent sighing and marked weakness. Omit name place.

M D New York

ANSWER—Palpitation is the consciousness of the heart's action, whether fast or slow, regular or irregular. It may be a disagreeable sensation and in a nervous or sensitive person become quite distressing. The sensation is one of pounding or thumping but sometimes there may be fear, weakness, pain or even dyspnea.

The commonest cause of palpitation is a simple increase in the rate and force of the heart beat under the influence of exertion or excitement. Fatigue, infection, neurocirculatory asthenia, thyrotoxicosis, and in some persons tea, coffee, tobacco, alcohol, epinephrine or ephedrine or procaine hydrochloride for local anesthesia frequently cause the heart to beat harder and faster. Palpitation is especially likely to occur during convalescence from illness that has no organic effect on the heart.

There are other causes of palpitation, such as the abnormal tachycardia, paroxysmal tachycardia, auricular fibrillation or auricular flutter. In a patient aged 30 with no other physical signs or laboratory signs of heart disease palpitation does not itself indicate the presence of any disease. A basal metabolic rate determination would be advisable to exclude thyrotoxicosis. An electrocardiogram during the attack will reveal the presence of any abnormal tachycardia. Alcohol, tobacco, coffee, ephedrine and thyroid extract may cause palpitation in healthy persons without indicating the presence of organic heart disease.

REACTION TO SULFARSPIHENAMINE IN SYPHILIS

To the Editor—A white woman aged 42 weighing 205 pounds (93 kg.) was found to have a 4 plus Wassermann reaction. This was discovered when the patient presented herself with an ulcer in her nose. I immediately put her on one weekly injection each of bismuth salicylate intramuscularly and sulfarsphenamine 0.4 Gm. also intramuscularly. Owing to the patient's overweight intravenous injections are difficult. After three weeks' treatment the nasal ulcer healed but the patient began to have attacks of nausea and gagging immediately following the sulfarsphenamine injections. These attacks last for half an hour after ward she feels well and has no complaints. What is the cause of these attacks? Is faulty technique to blame? I follow exactly the directions given. What can be done to prevent these attacks? Should the injections be discontinued? The patient begins to dread the sulfarsphenamine and wishes to be treated only by bismuth compounds which I do not consider sufficient. So far she has received seven injections of each chemical.

M D New Jersey

ANSWER—The nausea and gagging that appear following the intramuscular injection of sulfarsphenamine may be attributable to a psychic effect, a nitritoid reaction or one of the mild gastro-intestinal upsets that follow injections of arsenic. As a rule, intramuscular injections do not produce pronounced psychic reactions. The nitritoid reactions from intramuscular injections of sulfarsphenamine usually appear four or more hours after the injection, although such reactions have been reported as appearing immediately or up to half an hour after the injection. The nausea and gagging that this patient encountered is probably the result of an idiosyncrasy to the drug. Accordingly, faulty technique is probably not a factor. It would seem advisable to try another intramuscular preparation such as bismuth arsphenamine sulfonate, bearing in mind that this contains sulfarsphenamine, and if a reaction is noted following it, further use of intramuscular preparations would not seem warranted. In view of the difficulty of intravenous injections it would probably be necessary to limit the treatment to the use of intramuscular injections of a bismuth preparation giving the patient probably twenty injections to a course at least twice a year for a minimum of three years.

IRON PRESCRIPTION NOT RELATED TO CARIES

To the Editor—In March 1935 I prescribed this treatment for a patient with secondary anemia:

R Ferr et ammonii citratis
Syrupi auranti
Aqua q s

ad 8
℥ss

Sig Two teaspoonfuls in a little water after meals

This was refilled several times. During the following summer and fall caries of the teeth developed requiring extensive dental repairs. The patient is firmly convinced and her dentist supports her in this conviction that the iron prescription was responsible for the damaged teeth. Please inform me whether there is any evidence to support such a theory of tooth decay.

M D New York

ANSWER—The iron prescription referred to being free from corrosive acid, could not possibly have produced dental caries. It must have been due to some other cause.

SEPTIC SORE THROAT AND SCARLET FEVER

To the Editor—For the past two years there has been a long drawn out epidemic of scarlet fever in this region. Many cases have been and still are being reported as septic sore throat and I must admit that I find nothing in my books that shows any possibility of mistaking the two diseases. These cases of septic sore throat show a rash over the body which in my opinion is scarlet fever. What I wish to learn is whether or not septic sore throat gives a generalized skin rash and also what the differential diagnostic points are of each disease. I would prefer having my name omitted.

M D Wyoming

ANSWER—In epidemics of septic sore throat, occasional rashes are reported. These are usually erysipelas but transient generalized rashes may occur. Dr D J Davis has shown that septic sore throat is caused by a hemolytic streptococcus which produces a toxin that is weak in comparison to scarlet fever toxin and is not neutralized by scarlet fever antitoxin. In case a generalized rash appears, the diagnosis may be made

by means of a blanching test with scarlet fever antitoxin. In selecting antitoxin for this purpose it is important to choose a preparation that contains no erysipelas or septic sore throat antitoxin. Some of the commercial preparations are taken from horses which have been immunized with more than one kind of hemolytic streptococcus toxin, so that the serum contains more than one kind of antitoxin, although at present it is not so labeled.

USE OF SNAKE VENOM IN CARCINOMA AND IN HEMORRHAGE

To the Editor—Will you kindly forward to me what information you have as to the use of snake venom in the control of pain as in carcinoma when morphine has lost its control and again the use in controlling hemorrhage as in prostate or bladder hemorrhage.

M D Illinois

ANSWER—There is no evidence that snake venom is of value in the control of pain associated with cancer.

Snake venom has been used in idiopathic bleeding of various kinds. It is apparently effective in nasal bleeding in cases with actual local vascular changes such as are found in Osler's disease and even in the presence of erosions (Peck, S M, and Rosenthal, Nathan. Observations on the Effect of Moccasin Snake Venom in Hemorrhagic Conditions, *THE JOURNAL*, (March 30 1935, p 1066). It has also been used in cases of gastric and urinary hemorrhage by Dr Peck with apparently beneficial results in a number of cases. Since it can be given in daily doses of 1 cc. without any harmful effects, there is no contraindication to its use in the type of case inquired about. The initial dose should be 0.5 cc. of the 1:3,000 dilution (supplied by the Lederle Laboratories), rapidly increased to a maximum dose of 1 cc. daily until the hemorrhage has been controlled. After that the number of injections per week can be reduced until the proper maintenance dose is reached and the proper therapeutic response obtained. A detailed description of doses is given in the report mentioned.

TREATMENT OF HYPERHYDROSIS

To the Editor—I have a patient whose chief complaint is of extremely profuse and debilitating night sweats. She has at the present time practically no other complaint. Several months ago she underwent a pelvic operation with a rather stormy postoperative course. One ovary was removed but one remains and her endocrine system is otherwise in good order so far as one can tell. Her blood pressure is normal. Her heart function is good. She does not have any fever, is in a fairly good state of nutrition and is more or less actively engaged as a nurse. She has been somewhat subject to these sweats at intervals for years but during the past few months they have been worse than heretofore. Changes in the ventilation of the bedroom, the amount of bed clothing used and so on seem to be entirely ineffective. Can you suggest anything in the way of treatment? Please omit name.

M D Kentucky

ANSWER—Hyperhydrosis is symptomatic of neurasthenia, anemia, obesity, general debility, or a combination of these. The patient may require as etiologic regimen, some form of rest cure or other change in her mode of living. She may need iron and arsenic, and/or a reducing diet if there is obesity. Roborant treatment, most especially in the form of tonic hygienic measures, is likely to be of advantage, and sea salt or alum may with advantage be added to the water. Strychnine in liberal doses and atropine in guarded dosage—so as not to produce distress—taken at bedtime may prove to be of temporary value until the more radical measures have had time to act.

KEYSTONE AND SNELLEN TESTS

To the Editor—In *Queries and Minor Notes* in *THE JOURNAL*, January 11 page 147, it was stated that a certain vision testing device 'does not exaggerate but rather minimizes the visual acuity as compared with that obtained by using the Snellen chart at 20 feet. Is this based on actual tests? Is there any published article to confirm that statement?

S H MONSON M D Cleveland

ANSWER—The observation that the Keystone test does not exaggerate the vision is made by a competent ophthalmologist using the test on school children. There is as yet no publication on the subject.

USELESSNESS OF PAINTING THROAT WITH MILD SILVER PREPARATIONS

To the Editor—Does painting the throat with mild protein silver or neosilvol do any real good in acute follicular tonsillitis? Please omit name.

M D New Jersey

ANSWER—No excepting to the extent to which relief is obtained by any cleansing of the tonsillar crypts stopped up with exudate.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALASKA Juneau Sept 1 Sec Dr W W Council Juneau
ARIZONA Basic Science Little Rock Nov 2 Sec. Mr Louis E
Gebauer 701 Main St., Little Rock. Medical (Regular) Little Rock
Nov 10 Sec Dr A S Buchanan Prescott Medical (Eclectic) Little
Rock Nov 10 Sec Dr Clarence H Young 207½ Main St Little
Rock

CALIFORNIA Los Angeles July 20 23 Sec Dr Charles B Pinkham,
420 State Office Bldg Sacramento

CONNECTICUT Medical (Regular) Hartford July 14-15 Endorse-
ment Hartford July 28 Sec Dr Thomas P Murdock 147 W Main
St Meriden Medical (Homeopathic) Derby July 14 Sec, Dr Joseph
H Evans 1488 Chapel St. New Haven

DELAWARE Dover, July 14 16 Sec Medical Council of Delaware,
Dr Joseph S McDaniel Dover

DISTRICT OF COLUMBIA Washington July 13 14 Sec, Commission
on Licensure Dr George C Rnland 203 District Bldg Washington

HAWAII Honolulu July 13 16 Sec Dr James A Morgan, 48
Alexander Young Bldg Honolulu

IDAHO Boise Oct 6 Commissioner of Law Enforcement Hon
Emmitt Pfost, 205 State House, Boise.

IOWA Basic Science Des Moines July 14 Sec Prof Edward A
Benbrook Iowa State College Ames

MASSACHUSETTS Boston July 14 16 Sec Board of Registration in
Medicine, Dr Stephen Rushmore 413 F State House Boston

MONTANA Helena Oct 6 Sec, Dr S A Cooney 7 W 6th Ave
Helena

NEW HAMPSHIRE Concord Sept 10 11 Sec, Board of Registration
in Medicine Dr Charles Duncan State House Concord

NEW MEXICO Santa Fe, Oct 12 13 Sec Dr Le Grand Wnrd
Santa Fe.

OREGON Basic Science Corvallis July 18 Sec Mr Charles D
Byrne University of Oregon Eugene

PUERTO RICO San Juan Sept. 1 Sec Dr O Costa Mandry Box
536 San Juan

SOUTH DAKOTA Rapid City July 21 22 Dir Division of Medical
Licensure Dr Park B Jenkins, Pierre

WASHINGTON Seattle July 13 15 Dir Department of Licenses
Mr Harry C Huse Olympia

WEST VIRGINIA Bluefield July 13 State Health Commissioner Dr
Arthur E McClue Charleston

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NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Sept
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SPECIAL BOARDS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written exami-
nation and review of case histories of Group B candidates will be held
in various cities in the United States and Canada Nov 7 Applications
must be filed at least sixty days prior to the examination Sec Dr Paul
Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY New York Sept 26 All
applications and case reports must be filed sixty days before date of
examination Sec Dr John Green 3720 Washington Blvd St Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan 9
Sec Dr Fremont A Chandler 180 N Michigan Ave. Chicago

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Dr W P Wherry 1500 Medical Arts Bldg Omaha

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November Sec. Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec
29 30 Sec Dr Walter Freeman 1028 Connecticut Ave Washington D C

AMERICAN BOARD OF RADIOLOGY Cleveland Sept 25 27 Sec Dr
Byrl R Kirklm Mayo Clinic Rochester Minn

California March Examination

Dr Charles B Pinkham, secretary, California State Board
of Medical Examiners, reports the written examination held in
Los Angeles, March 10-12, 1936 The examination covered
9 subjects and included 90 questions An average of 75 per
cent was required to pass Sixty-three candidates were
examined 58 of whom passed and 5 failed The following
schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|----------------|--------------|----------------|
| College of Medical Evangelists (1932) | 84 9 | (1934) | 87 6 |
| (1935) 78 9 83 83 8 84 9 85 85 8 86 9 | | | |
| Stanford University School of Medicine (1929) | 88 2 | (1935) | 85 4 |
| University of California Medical School (1935) | 83 | (1935) | 86 1 |
| University of Southern California School of Medicine (1935) | 85 2 | (1935) | 82 1 |
| University of Colorado School of Medicine (1936) | 82 2 | (1936) | 82 2 |
| Loyola University School of Medicine (1927) | 79 9 | (1927) | 79 9 |
| Northwestern University Medical School (1935) | 80 8 * 89 6 * | (1936) | 87 2 |
| Rush Medical College (1934) | 79 9 | (1935) | 81 3 85 2 87 3 |
| University of Illinois College of Medicine (1935) | 84 7 | (1935) | 87 6 |
| University of Louisville School of Medicine (1932) | 84 1 | (1932) | 85 3 |
| Johns Hopkins University School of Med (1915) | 80 1, | (1935) | 89 2 |
| Harvard University Medical School (1935) | 83 | (1935) | 85 2 |
| University of Michigan Medical School (1932) | 85 1 | (1932) | 85 1 |
| St Louis University School of Medicine (1935) | 79 4, 86 9 | (1935) | 76 6 |
| Washington University School of Medicine (1935) | 78 1 | (1935) | 78 1 |
| Creighton University School of Medicine (1934) | 82 1 83 7 84 8 | | |

| | |
|---|------------|
| University of Nebraska College of Medicine (1934) | 81 3 |
| Western Reserve University School of Medicine (1935) | 84 4 |
| University of Oregon Medical School (1934) | 81 2 |
| (1935) 81 1, 82 7, 83 8 | |
| Hahnemann Medical Coll and Hosp of Philadelphia (1935) | 81 3 |
| Jefferson Medical College of Philadelphia (1935) | 84 4 |
| University of Pennsylvania School of Medicine (1935) | 84 4 |
| Baylor University College of Medicine (1935) | 81 3 |
| Medical College of Virginia (1935) | 84 8 |
| University of Virginia Department of Medicine (1933) | 81 9 |
| University of Wisconsin Medical School (1935) | 82 2, 81 3 |
| Johann Wolfgang Goethe Universität Medizinische Fak- ultät Frankfurt am Main (1933)† | 79 2 |
| Université de Genève Faculté de Médecine (1934)† | 79 9 |

| School | FAILED | Year Grad | Per Cent |
|---|--------|--------------|-------------|
| University of Arkansas School of Medicine (1933) | 86 6 | (1933) | 86 6 |
| McHarry Medical College (1934) | 6 1 | (1934) | 6 1 |
| University of Dublin School of Physic Trinity College (1929) | 12 | (1929) | 12 |
| Regia Università degli Studi di Modena. Facoltà di Medicina e Chirurgia (1932) | 13 | (1932) | 13 |
| Regin Università degli Studi di Roma Facoltà di Medi- cina e Chirurgia (1926) | 64 3 | (1926) | 64 3 |

* This applicant has received the M B degree and will receive the
M D degree on completion of internship
† Verification of graduation in process

Vermont February Examination

Dr W Scott Nay, secretary, Vermont State Board of Medi-
cal Registration, reports the written examination held in Bur-
lington, Feb 11-13, 1936 Eight candidates were examined, all
of whom passed. The following schools were represented

| School | PASSED | Year Grad | Number Passed |
|---|--------|--------------|------------------|
| Duke University School of Medicine (1934) | 1 | (1934) | 1 |
| Univ of Vermont College of Medicine (1934, 3) * | 6 | (1935 3) * | 6 |
| McGill University Faculty of Medicine (1931) * | 1 | (1931) * | 1 |

* Licenses have not been issued

Tennessee March Examination

Dr H W Qualis, secretary, Tennessee State Board of Medi-
cal Examiners, reports the written examination held in Memphis
March 25-26, 1936 The examination covered 8 subjects and
included 80 questions An average of 75 per cent was required
to pass Twenty-four candidates were examined, all of whom
passed The following school was represented

| School | PASSED | Year Grad | Per Cent |
|--|--------|--------------|-------------|
| University of Tennessee College of Medicine (1936) | 80 4 | (1936) | 80 4 |
| 81 9 82 1 83 1 83 3 83 6 83 9 84 1 84 1 | | | |
| 84 5 85 85, 85 1 85 3 85 8 85 9, 86 86 86 6 87 4 | | | |
| 87 9 87 9 | | | |

Ten physicians were licensed by reciprocity and 1 physician
was licensed by endorsement from January 13 through May 24
The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--|-------------------------|--------------|---------------------|
| University of Georgia Medical Department (1924) | S Carolina | (1924) | S Carolina |
| University of Louisville School of Medicine (1927) | Kentucky | (1927) | Kentucky |
| Tulane University of Louisiana Medical Department (1910) | Arkansas | (1910) | Arkansas |
| Tulane Univ of Louisiana School of Medicine (1928) | Louisiana | (1928) | Louisiana |
| Washington University School of Medicine (1930) | Missouri | (1930) | Missouri |
| DnLe University School of Medicine (1933) | Texas | (1933) | Texas |
| Medical College of the State of South Carolina (1933) | S Carolina | (1933) | S Carolina |
| Vanderbilt University School of Medicine (1931) | Mississippi | (1931) | Mississippi |

| School | LICENSED BY ENDORSEMENT | Year Grad | Endorsement of |
|---|-------------------------|--------------|-------------------|
| Yale University School of Medicine (1933) | N B M Ex. | (1933) | N B M Ex. |

Ohio Reciprocity and Endorsement Report

Dr H M Platter, secretary, Ohio State Medical Board
reports 16 physicians licensed by reciprocity and 5 physicians
licensed by endorsement on April 7, 1936 The following schools
were represented

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--|-------------------------|--------------|---------------------|
| Howard University College of Medicine (1932) | Virginia | (1932) | Virginia |
| University of Louisville School of Medicine (1935 2) | Kentucky | (1935 2) | Kentucky |
| Johns Hopkins University School of Medicine (1934) | Michigan | (1934) | Michigan |
| University of Michigan Medical School (1931) | Missouri | (1931) | Missouri |
| St Louis University School of Medicine (1933) | New Jersey | (1933) | New Jersey |
| Creighton University School of Medicine (1934 2) | Nebraska | (1934 2) | Nebraska |
| University of Nebraska College of Medicine (1930) | Vermont | (1930) | Vermont |
| Duke University School of Medicine (1934) | | (1934) | |
| Hahnemann Medical College and Hospital of Phila- delphia (1921) | Penna. | (1921) | Penna. |
| University of Pennsylvania School of Medicine (1931) | Penna. | (1931) | Penna. |
| University of Pittsburgh School of Medicine (1934) | Penna. | (1934) | Penna. |
| Medical College of the State of South Carolina (1930) | S Carolina | (1930) | S Carolina |
| Medical College of Virginia (1934) | Virginia | (1934) | Virginia |

| School | LICENSED BY ENDORSEMENT | Year Grad | Endorsement of |
|--|-------------------------|--------------|-------------------|
| Rush Medical College (1934) | N B M Ex. | (1934) | N B M Ex. |
| Tulane University of Louisiana School of Medicine (1931) | N B M Ex. | (1931) | N B M Ex. |
| Harvard University Medical School (1930) | N B M Ex. | (1930) | N B M Ex. |

Book Notices

California Medical Association Cancer Commission Committee Studies
Paper Price 75 cents Pp 129 San Francisco California California
Medical Association 1936

The California medical profession has been exceedingly active in the last few years in conducting effective educational campaigns among both the lay public and the profession. In 1931 the house of delegates of the California Medical Association created a cancer commission as one of the prominent commissions of the association. This small volume is the report for 1936. The presentation takes the form of a series of committee reports on various types of neoplasms made by groups of specialists. It is obvious from the technical form in which these papers are written that they are intended primarily for the medical profession. Different committees report on tumors from the various regions or organs and the Radiological Committee makes some general recommendations as to the use and limitations of radiation therapy. Contradictions that still exist on many of the questions discussed in this interesting and valuable pamphlet are frankly indicated. Owing to the limitation of space the discussion has obviously to be rather dogmatic but where there are differences of opinion attention is usually called to this fact. For example (on page 59) the Committee on Genito-Urinary Tumors states as regards kidney neoplasms that there is no value in preoperative treatment and recommends post-operative irradiation, but a footnote calls attention to the fact that there is a well marked division of opinion on the subject and that some believe that preoperative treatment only delays surgery. One member is quoted as saying "We have ample evidence of the value of preoperative radiation. It is not unusual to see an operable malignancy entirely done away with so that the operation itself becomes unnecessary." However, the committee adds that "it is hoped that in time sufficient statistical end-result evidence will be available to settle these questions." It is well to acknowledge that there are still many problems in the therapy of cancer which are still not solved and that any dogmatism on the subject is absurd.

This valuable little book should have a very wide circulation among the profession outside California as well as in it, and other state medical organizations might well learn a lesson from what has been done in California.

Le tonus cardio vasculaire et l'épreuve amphotrope sino carotidienne.
Par D. Danielopolu professeur de clinique médicale à la Faculté de
médecine de Bucarest. D'après les recherches faites en collaboration
avec MM. I. Marcou, A. Aslan, G. G. Proca et E. Manescu. Paper
Price 40 francs Pp 212 with 78 illustrations Paris Masson &
Cie 1935

This excellent monograph deals with a clinical study of the effects of pressure on the carotid sinus and of occlusion of the common carotid artery in a large series of normal persons and persons suffering from a variety of functional and organic cardiovascular diseases. After a brief outline of the history of the subject, the author discusses the mechanism of the nervous regulation of the heart and blood vessels in which field he himself has done some of the best pioneer work. He presents the view that there is both a humoral and a nervous control of the blood vessels and the heart. The nervous control is a dual one. In part it is mediated by afferent impulses from various parts of the body, acting primarily for the local control of the vessels, the stimuli are metabolic products, and the nerve pathway goes through the central nervous system. In part it is mediated by impulses from the carotid sinus and the root of the aorta, "the blood pressure regulators." The author develops this view in some detail and brings into line the hypothalamic and cortical control. The blood pressure regulators, he emphasizes, act both as pressors and as depressors. He discards as unfounded the simplification of the nervous control, which some workers have maintained exists. While the concept presented may not be accepted by all authorities in all its details, it has the distinct advantage of provoking further investigation.

In the next section the author describes in detail the manner of carrying out the tests of the excitability of the carotid sinus and of its tonic action. He has used the electrocardiogram and the Pachon-Vaquez method of recording blood pressure as measures of the effects. This is followed by a section deal-

ing with the responses obtained in various conditions. He points out that the carotid sinus reflex is normally tonically depressor in character. The response to stimulation in normal individuals may be pressor, depressor, biphasic or dissociated (i.e., pressor on some functions and depressor on others). An intense degree of stimulation is required in order to obtain a response. In pathologic conditions, the response obtained depends on the relative tone of the parasympathetic and sympathetic systems and on the presence or absence of myocardial lesions. Stimulation of the carotid sinus brings out latent abnormalities in cardiac function, therein lies its great prognostic and diagnostic value. While some of the facts presented are not in accord with concepts generally held, the method used and the analysis made are extremely valuable because they open up a new line of studying in man the correlative functions of the circulatory system in relation to its nervous regulation.

The section dealing with the author's theory of hypertension is particularly valuable. The author conceives of hypertension as being a specific involvement of the vascular system in which the local pressor mechanisms, presumably operating by way of afferent nerves, are overactive. The carotid sinus reflex in clinical hypertension, he finds, is decreased but, contrary to views previously expressed, is never absent. In fact, when there is organic heart involvement, it is actually hyperactive. He leaves the impression that the blood pressure regulators cannot combat the effects of the disturbance set up by the other nerve mechanism. The monograph must be referred to for other interesting details.

The illustrations present the electrocardiographic and blood pressure tracings on which the interpretations are based, together with several correlative diagrams. There are many case reports with tabulated summaries of data to illustrate the various points.

This monograph is highly recommended for the internist and the "cardiovascular" specialist as an excellent, stimulating summary of the author's views. The reader will be well repaid for the time spent in perusing it despite the fact that many of the views require further investigation for their confirmation.

My Life and Work. The Search for a Missing Glove. By Dr. Adolf Lorenz, Hofrath and Professor of Orthopaedic Surgery, University of Vienna. Cloth Price \$3.50 Pp 362 with 19 illustrations New York & London Charles Scribner's Sons 1936

This autobiography is a Horatio Alger type of story of a young Austrian peasant boy whose ambition and determination to become a gentleman were realized by his rise from poverty to fame and fortune. Fate and circumstances prevented him from doing aseptic surgery but he became a manipulator of bones and joints and popularized the art of what he called "bloodless surgery." His success, egotism, and a certain royal arrogance aroused the antagonism of his medical colleagues in Vienna. Obstacles of all kinds were thrown in his pathway but he refused to be discouraged. In his first visit to America he was received with enthusiasm by members of the medical profession and by the social and political leaders of the country. Few men have received the acclaim that was bestowed on him. The personality and superb showmanship of this "dry" surgeon delighted the imagination of the masses and made excellent newspaper copy. His name was in every newspaper and on the lips of most of the American people. Lorenz had become the famous gentleman of his childhood dreams. He had "found the other glove." During the war he dropped out of sight as far as this country was concerned. The large fortune which he had built up, much of which had come from wealthy patients in the United States, was lost. At the close of the war this man who had so loved the spotlight of world acclaim was "alt, krank und arm, dass Gott erbarm" (old, sick and poor, God have mercy). "To be old, sick and poor is the most terrible tragedy to befall a man." The headings of the chapters such as "Imported by America" and "Reconquering America" give a glimpse of his egocentric personality. The story of his trials when he returned to this country after the war to try to regain his wealth and position arouses a feeling of sympathy. He was ignored by the members of the medical profession, and few of his former admirers came to renew their friendship. A chapter entitled "Dimples and Indemnity Suits" relates with honesty and without apparent bitterness how he paid for some of his

errors of judgment or skill. Physicians and surgeons may read this book with mixed feelings of interest and distaste. The procedures which Lorenz called "bloodless surgery" are merely simple manipulations which are of value in a few types of conditions, but they are no longer surrounded by the veil of mystery which led a gullible public to believe them to be miracles. The lay reader may again be dazzled by the personality of Dr. Lorenz, and every one who loves the romance of success will find the book fascinating. Those who condemn the author for his love of the spotlight of public acclaim, his continual playing to the gallery or his mercenary attitude or who may be subconsciously jealous of him because of the financial success and world popularity which he achieved should be honest enough to admit after reading this book that some of the credit for the prominence of and interest in orthopedic surgery as a specialty belongs to Dr. Adolf Lorenz.

Differentialdiagnose in der Inneren Medizin. Von Prof. Dr. med. O. Naegeli, Direktor der medizinischen Universitätsklinik Zürich. Lieferung 1. Paper. Price 9.60 marks. Pp. 216 with 61 illustrations. Leipzig: Georg Thieme, 1936.

This is a highly condensed summary of the significant points in differential diagnosis. It is printed clearly on excellent paper and the illustrations, many of which are diagrammatic drawings, are ample and well chosen. The color plates, especially those depicting blood smears, are of the usual excellence associated with German printing. The book is the first volume of a three volume work (the second and third volumes to appear during 1936-1937) and includes discussion of the differential diagnosis of the anemias, hemorrhagic diatheses, leukemias, myeloid diseases, mediastinal and lymph node disorders, the common throat infections and diseases of the spleen, liver and gallbladder. It is presumed that the other fields of internal medicine will be considered in the succeeding volumes. Naegeli, a master of medicine, is unusually precise and brief. There is great stress placed on the chemical and morphologic changes of the blood and perhaps somewhat too little emphasis of the whole composite picture of the disease and especially of the important role assumed by the "history" of the patient. The trend toward overemphasis of laboratory data is more manifest in Germany than here. The immense value of laboratory diagnostic information is unquestioned and constant advances in technique and method of physiologic study of patients has added greatly to increasing accuracy in diagnosis, but clinical evaluation of such data must consider the patient as a whole and as the very core of diagnosis and treatment. In this work there is the suggestion of considering the patient as a loosely correlated collection of systems rather than as a finely integrated whole. Naegeli's discussion of the differential diagnosis of icterus, however, is particularly well done. The volume can be recommended as a concise and accurate consideration of the diagnostic problem in the field considered.

Anthrax Silicosis Among Hard Coal Miners. From the Office of Industrial Hygiene and Sanitation. Surg. R. R. Sayers, Medical Officer in Charge. Engineering Studies by J. J. Bloomfield, Sanitary Engineer and J. M. Della Valle, Assistant Sanitary Engineer. Medical Studies by R. R. Jones and Waldemar C. Dreessen. Statistical Analysis by Dean E. Brundage, Statistician and Rollo H. Britten, Senior Statistician. With Sections on Autopsy Material by J. W. Miller, Acting Assistant Surgeon and on Silica in the Urine and in Lung Specimens by F. H. Goldman, Associate Chemist. U. S. Public Health Service. Prepared by Direction of the Surgeon General. U. S. Treasury Department. Public Health Service. Public Health Bulletin No. 221. December 1935. Paper. Price, 25 cents. Pp. 114 with 75 illustrations. Washington, D. C.: Supt. of Doc. Government Printing Office, 1936.

Under an agreement with the mine operators the mine workers and the state of Pennsylvania the Public Health Service selected for detailed study a group of mines in the anthracite district. This bulletin gives a report of the investigation. The study of the dust exposure of the men included the nature of the dust, the size of the dust particles and the dust concentration in the different parts of the mines. The dust exposure correlated with each occupation resulted in an estimation of the exposure of the men 'per week, per month, or per year'.

Occupations which were dust producing and lead to severe exposures included 53 per cent of the men. Among men who did the drilling, especially the rock drillers the silica content of the material rose as high as 43 per cent of quartz. The greatest exposure underground was experienced by the regular

miners and rock drillers, while above ground the coal breakers and slate pickers experienced the highest exposure.

The physical condition of the men was determined by a routine examination including the occupational history, past medical history, history of present complaints or illness, and physical and roentgenologic examination. The group studied included 2,711 workers, of whom 361 with little or no dust exposure were considered as "normal." The remainder of the 2,711 men were examined in order to find those suffering from anthracosilicosis. A group of 135 disabled ex-miners were studied as a basis of "control."

In the 616 men found to be suffering from anthracosilicosis, special information was obtained. It was found that this group was subject to more attacks of pleurisy, pneumothorax and severe colds than the normals. They complained of more of the cardinal symptoms of the disease than the normal group. The physical manifestations of the disease were more prevalent and more pronounced in this group than among the normals.

Correlation of the physical appearances with the dust exposure disclosed that the incidence of anthracosilicosis was more pronounced in the dry mines than in those using wet drilling. Anthracosilicosis increased with increased dustiness, with higher quartz content of the rock worked and with longer years in the specific occupation and in the mining industry. A presumptive "threshold dosage" for the different exposures was suggested. When the quartz content was less than 5 per cent, the number of cases of anthracosilicosis was negligible if the dust counts were kept below 50 million particles per cubic foot of air. When the quartz content rose to about 13 per cent, the safe limit appeared to be from 10 to 15 million particles per cubic foot of air. In the case of those men exposed to quartz content as high as 35 per cent, the limit was set at from 5 to 10 million particles per cubic foot of air. These figures do not represent an unattainable level, as there were mines in which control measures had reduced the dust hazard below these figures.

The bulletin contains a section of reproductions of roentgenograms of the disease in different stages, which is a fine collection and a worthy adjunct to the report.

Terapéutica clínica. I. Agentes terapéuticos. II. Técnicas terapéuticas. III. Tratamiento de los síntomas. IV. Tratamiento de las enfermedades. Por el Dr. Alfredo Martinet. Con la colaboración de Desfossez et al. Tercera edición española corregida por el Prof. Dr. Lullier y traducida con notas y adiciones por el Dr. Angel Ortega y Díez. Prólogo del Dr. Teófilo Hernando, catedrático de la Facultad de medicina de Madrid. Paper. Pp. 1515 with 352 illustrations. Madrid: Casa Editorial Bailly Baillière, S. A., 1935.

In the third Spanish edition of this voluminous French manual of clinical therapeutics several supplements have been furnished by Ortega y Díez, the translator, and additional notes written by Lullier to adapt the book to the needs of Spanish practitioners; for instance, a list of spas and isothermic and isobaric zones in Spain, and rules regulating the dispensing of toxic substances in that country. Chapters on bacteriophage, vitamins, high frequency currents, asthma and insulin have been brought down to date. New additions discuss barbiturate poisoning, endocrine extracts, intravenous injections of alcohol in acute pulmonary processes, and pyretotherapy of dementia paralytica. The book is divided into four parts. The first, consisting of 481 pages, deals with therapeutic agents of various kinds: pharmaceutical, physical, dietetic, psychic. The second part describes the customary technical procedures such as cauterization, application of carbon dioxide snow, venesection, blood transfusion, gastric lavage and spinal puncture. The third part is devoted to symptomatic therapy. The causes of symptoms are arranged in alphabetical order. The author deplors this mode of treatment and realizes the fact that a scientifically minded physician bases his curative efforts on the recognition of etiology, pathogenesis and correct diagnosis of the underlying causes. It is questionable whether an extensive description of symptomatic methods of treatment does not enhance the condemnable practice of treating coughing, bleeding or pain without attempting to arrive at a diagnosis. The last part of the book describes the treatment of common diseases. It is evident that in view of such an arrangement of the work repetitions are unavoidable. The style is rather dry, no rhetorical

efforts have been made. The book contains a wealth of material and compares favorably with similar books in English. Being so voluminous, it may be considered rather as a reference book than a textbook on therapeutics.

Lectures on Diseases of Children. By Robert Hutchison M.D. LL.D. F.R.C.P. Consulting Physician to the London Hospital. Seventh edition. Cloth. Price £8 7s. 1p. 462, with 106 illustrations. Baltimore: William Wood & Company 1930.

In this edition the type has been reset and the chapter on chronic constipation in infancy and childhood and the chapter on infantile scurvy and pink disease have been rewritten. This volume of collected lectures is intended not so much as a textbook as a clinical approach to common pediatric conditions which, as the author states, are not usually dealt with in systematic lectures on medicine. The contents of the book are probably more suited to British readers than to students in this country, as the majority of subjects are well stressed in medical curriculums on this side of the Atlantic. It seems strange that neither under the discussion of the vitamins nor in the new chapter on scurvy does the author mention the discovery of the chemical nature of vitamin C. The treatment recommended for congenital syphilis is very conservative. The author favors mercury. He recommends neoarsphenamine with hesitation and he fails to mention sulfarsphenamine, bismuth or acetarsone. In his discussion on tuberculosis the student could hardly acquire the modern concept of the primary complex and the childhood type of this disease. The chapters on rheumatism and rheumatic carditis are well treated, and the chapters on the nervous diseases are comprehensive and well illustrated. The chapters on blood diseases and splenomegaly might have been brought more nearly down to date during the revision of this edition had such entities as Cooley's anemia and Niemann Pick's disease been included. The type is easily readable and the illustrations are excellent.

Insulin: Its Production, Purification and Physiological Action. By Douglas W. Hill B.Sc. Ph.D. Lecturer in Chemistry, University College, Exeter and Frederick O. Howitt M.Sc. Ph.D. F.I.C. Foreword by Professor E. C. Dodds. Cloth. Price 12s. 6d. Pp. 212 with 6 illustrations. London: Hutchinson & Co. Ltd. 1936.

A vast amount of literature is presented in this book in a systematized, condensed form and is thus made available to the many interested in the field of carbohydrate metabolism who are unable to follow the extensive literature as fully as they may desire. The subject is considered from both the chemical and the physiologic point of view. The historical background to the final isolation of insulin is well presented. The methods of preparation and purification of insulin are then described and finally various evidence bearing on the mode of action of insulin is discussed. The preface relates that the monograph is not intended to be used as a textbook but should be regarded more in the nature of a set of notes and that the authors purposely refrain from drawing what sometimes at least appear to be obvious conclusions. They merely collect and sift the evidence. That this has been a task of magnitude is indicated by the bibliography, which contains more than 1600 references. Author and subject indexes add to the value of the work as a book of reference.

Second Symposium on Silicosis. An Unofficial Transcript of the Second Silicosis Symposium Held in Connection with the Trudeau School of Tuberculosis at Saranac Lake, N. Y. June 3 to 7 1935. Edited by B. E. Kuehse, Claims Manager, Employers Mutuals, Wausau, Wis. Paper. Price \$3. Pp. 104. Wausau, Wis. 1935.

It is inevitable that these papers contain some repetition of the 1934 symposium material, as it is unlikely that the general subject of silicosis or even of its specialized divisions changes or develops greatly in the course of one year. The papers are valuable because they give in a rather informal way a review of opinions and facts as of June 1935.

R. R. Sayers presented the etiology of silicosis. D. E. Cummings talked on the estimation of dustiness, the taking of occupational histories, and the administrative control of silicosis. L. U. Gardner presented the pathology of silicosis. W. S. McCann gave the physiology of silicosis and discussed his procedure for estimating disability. A. R. Riddell and H. H. Kessler both talked on the clinical aspects of silicosis. D. M. Brumfield discussed the survey the Saranac Laboratories is conducting to determine the number of cases in sanatoriums and

the results of treating such patients. E. P. Pendergrass and H. L. Sampson both discussed the roentgen diagnosis of silicosis, presenting a large number of illustrations. Philip Drinker discussed the engineering control of silicosis, and the symposium closed with a discussion of silicosis as a social problem, by A. J. Lauza.

A considerable group of physicians and engineers attended both the 1934 and 1935 meetings, many of them coming both years. The meetings were all interesting and the discussions lively, in marked contrast to the conventionally dull affairs one encounters at most technical meetings. The papers are an annual report on silicosis and the meetings a forum at which to debate controversial matters. It is understood that the symposium cannot be held this summer but it is to be hoped that Dr. Gardner will arrange for another meeting in 1937.

The Early Diagnosis of Malignant Disease for the Use of General Practitioners. By Malcolm Donaldson F.R.C.S. M.B. B.Ch. Physician Accoucheur and Director of Cancer Dept. St. Bartholomew's Hospital. Stanford Code F.R.C.S. Surgeon to Out Patients Westminster Hospital. William Douglas Horner M.A. M.C. F.R.C.S. Consulting Surgeon. Thurot Dept. St. Bartholomew's Hospital. R. Ogler Ward M.Ch. F.R.C.S. Assistant Surgeon St. Peter's Hospital and Arthur Tudor Edwards M.A. M.D. M.Ch. Surgeon Westminster Hospital. Cloth. Price \$3. Pp. 168. New York & London: Oxford University Press 1936.

It has been said that the ultimate fate of the cancer patient lies in the hands of the first physician consulted, who in the great majority of cases is a general practitioner. The author in his introduction states that it is with the object of helping general practitioners to suspect, exclude and diagnose malignant or premalignant conditions that he and his colleagues have compiled this small book. There are twelve chapters, eight of which are written by Stanford Cade, one of the leading English authorities on the subject of cancer. The book is well written and covers the subject in a concise but thorough manner. With regard to biopsy Dr. Cade says "In my opinion the danger of biopsy is purely theoretical and entirely unsupported by practice." One of the best chapters in the book is on the early diagnosis of cancer of the breast. In this the author writes "early diagnosis of mammary cancer should be made with the mind's eye first, with the microscope next, and with the hands, eyes and nose last, if ever." This small book is unique and we know of no other that covers this subject. Contrary to the usual custom of textbooks it deals with signs and symptoms that are really early ones, rather than with the classic picture, which is usually one of advanced cancer. This book should be read by every practitioner of medicine and it is recommended as a textbook for senior medical students.

Monographien aus dem Gesamtgebiete der Physiologie der Pflanzen und der Tiere. Herausgegeben von M. Gildemeister, R. Goldschmidt, R. Kuhn, J. Parnas, W. Ruhland und K. Thomas. Band XXXIV. Physiologie des Menschen im Flugzeug. Von Dr. Gustav Schubert. Privatdozent an der Deutschen Universität Prag. Paper. Price 14.80 marks. Pp. 206 with 27 illustrations. Berlin: Julius Springer 1935.

This is the most complete treatise on the physiology of flying yet published. Each chapter deals with a separate system of the body wherein the stresses imposed and the tolerances found are fully discussed. A considerable portion of the work is devoted to a determination of the type and magnitude of the stresses developed during various aircraft gyrations, and this constitutes the greatest original contribution of the author. It is obvious from an examination of this book that much research remains to be done both to fill gaps in our knowledge and also to check a considerable amount of the previous work, which appears in many instances to be inaccurate or inconclusive. Each chapter contains several graphs and charts and is followed by a comprehensive bibliography.

The Early Diagnosis of the Acute Abdomen. By Zachary Cope, B.A. M.D. M.S. Surgeon to St. Mary's Hospital, Paddington. Seventh edition. Cloth. Price \$3 7s. Pp. 254 with 33 illustrations. New York & London: Oxford University Press 1935.

This monograph first appeared in 1921. The fact that a seventh edition has become necessary attests its popularity. The facts presented are familiar to every practitioner but seldom used in everyday practice. The author has added some new observations particularly with regard to the use of the x-rays. The work is of value to all surgeons who have fallen into a slight rut and reminds them of some of the things they learned long ago.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Evidence Admissibility of Opinion of Expert Witness Based on Roentgenogram Not in Evidence—The courts of Missouri have hesitated, said the St. Louis court of appeals to hold that roentgenograms are not themselves the best evidence of what they show yet there is reason for such a holding. Differing from ordinary photographs, which in most instances can be fully understood and appreciated by the ordinary person who views them, roentgenograms in their very nature must necessarily be interpreted by an expert, else they are of no value to the jury. While a jury is entitled to have offered to it the best evidence of a fact which it is capable of passing on in the case of roentgenograms, so far as the jury is concerned the best evidence of what they disclose, at least from a practical standpoint, is the interpretation given them by the experts who examine them and who testify in as plain language as possible as to what their findings have been. In the present case, the deposition of an expert witness was admitted by the trial court setting forth the expert's interpretation of a roentgenogram. At the time the deposition was taken, the witness did not have the roentgenogram before him but based his testimony on a memorandum he had previously made. The admission of this testimony, said the St. Louis court of appeals, did not constitute error particularly in view of the fact that the witness stated that the roentgenogram was at his office and was made readily accessible for use by the defendant who objected to the admission of the testimony—*Arnold v Metropolitan Life Ins Co (Mo)* 89 S W (2d) 81

Malpractice Fragment of Needle Left in Chest After Thoracentesis—The defendant a physician, in treating the plaintiff for pleurisy with effusion, inserted an 18-gage hypodermic needle posteriorly between the seventh and eighth ribs. Owing to a sudden movement of the patient, the end of the needle broke off inside the thoracic cavity. A roentgenogram showed the fragment to be lodged in such a position that its removal was inadvisable, if not impossible. The patient recovered from the pleurisy, but the fragment of the needle caused him considerable pain and some disability. Eventually he sued the defendant. At the close of the plaintiff's evidence the trial court directed a verdict for the physician, and the plaintiff appealed to the Supreme Court of Minnesota.

The plaintiff contended that certain statements allegedly made by the physician immediately following the accident constituted an admission of malpractice, namely, that "he broke the needle" that he "should have used a stronger needle," that he "shouldn't have done it" and would "never try it again," and that the accident "couldn't be helped" because of "the handicap" under which he was working. The contention that the defendant himself admitted lack of the requisite skill to perform the operation, said the Supreme Court, lacks substantiating evidence. There was no evidence that he ever made any such admission expressly, and reasonable implication cannot make over into such an admission any words ascribed to him. It may be assumed, said the court that the jury could have concluded that the defendant himself believed that if he had used a stronger needle or had taken greater precautions to prevent the patient's moving during the operation the needle would not have broken. Regardless however, of whatever the defendant himself thought of the matter if in fact he conducted the operation according to the accepted standard of his profession, he cannot be held guilty of malpractice. Even assuming the truth of all the alleged admissions it does not follow that the defendant was guilty of malpractice. There was in the opinion of the court still no evidence from which the jury could have found reasonably that the defendant failed to perform the operation according to an accepted standard of his profession. The test is not whether the physician used his own best skill and ability. No one is always at his best. In the

absence of special agreement, one employing a physician has only a right to expect the ordinary skill and ability of his profession. If he lacks that, it is no defense that he did his best. If an individual physician possesses greater than the average skill, he is still not liable for malpractice so long as he uses the degree of skill and care of the average member of his profession. If the rule were otherwise, it would always be necessary to establish the particular physician's endowments of skill and ability, and there could be no fixed standard as to the ability which a patient would have a right to expect.

The Supreme Court concluded that even admitting the truth of the alleged admissions, a prima facie case for the plaintiff was not made out. The judgment refusing the plaintiff a new trial was affirmed—*Quickstad v Tavenner (Minn)* 264 N W 436

Medical Practice Acts Mandamus to Compel Issuance of License Refused—The state board of health of Missouri revoked the license of Dr. Lewis C. Schneider to practice medicine, on a charge of dealing illegally in narcotics. The medical practice act provides that any person whose license has been revoked shall have the right to have the proceedings reviewed, on a writ of certiorari, by the circuit court of the county in which the board held its meeting when the license was revoked. Dr. Schneider did not apply for a writ of certiorari, but, about two years after the license was revoked, he petitioned the circuit court for a writ of mandamus to compel the board to issue him a license. The circuit court gave judgment for Dr. Schneider and the board appealed to the Supreme Court of Missouri.

The board contended that Dr. Schneider had an adequate remedy by certiorari to review the board's action in revoking his license and that therefore mandamus would not lie. With this contention, the Supreme Court agreed. Mandamus, said the court, is an extraordinary remedy and will be granted only where there is no other legal remedy. Since the medical practice act expressly provides that the action of the board in revoking a license may be reviewed by certiorari, the writ of mandamus is not available. Accordingly, the Supreme Court reversed the judgment of the circuit court.—*State ex rel Schneider v Bourke (Mo)* 89 S W (2d) 31

Workmen's Compensation Act Compensability of Medical Disability Due to Silicosis—The employee, Borowski, had been exposed to silica dust for eight years. At the time of his discharge, July 31, 1932, he admittedly had silicosis. He later applied to the industrial commission for compensation. An award of compensation was affirmed by the circuit court, Dane County, Wis., and the employer and its insurer appealed to the Supreme Court of Wisconsin.

That the applicant sustained a medical disability during the course of his employment was conceded, but medical disability, said the Supreme Court, does not in the absence of an actual wage loss entitle an employee to compensation. No serious effort was made in the present case to show that the employee had actually sustained a wage loss resulting from his inability to perform his work because of silicosis. In the absence of any showing of wage loss, the employee was not entitled to compensation under the provisions of the workmen's compensation act. The judgment of the circuit court affirming the award, was therefore reversed—*Cham Belt Co v Industrial Commission (Wis)*, 264 N W 502

Society Proceedings

COMING MEETINGS

Idaho State Medical Association Boise Aug. 31 Sept. 4 Dr. Harold V. Stone 105 North Eighth St. Boise Secretary
National Medical Association Philadelphia Aug. 16-22 Dr. W. Harry Barnes 1315 North 15th St. Philadelphia Acting Secretary
Northern Minnesota Medical Association Fergus Falls Aug. 31 Sept. 1 Dr. Oscar O. Larsen Detroit Lakes Secretary
Washington State Medical Association Yakima Aug. 31 Sept. 2 Dr. Vernon W. Spickard 1303 Fourth Avenue Seattle Secretary
Wyoming State Medical Society Cody Aug. 24-25 Dr. Earl Whedon 50 North Main Street Sheridan Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

11:385-512 (April) 1936

Pulse Wave Velocity and Arterial Elasticity in Arterial Hypertension, Arteriosclerosis and Related Conditions. Florence W. Hynes, L. B. Ellis and Soma Weiss. Boston.—p. 385.

Relation of Arterial Pulse Pressure to Hemodynamics of Arterial Hypertension. Soma Weiss, Florence W. Hynes and Rose Shore. Boston.—p. 402.

Some Cases of Slow Pulse Associated with Electrocardiographic Changes in Cardiac Patients After Maximal Work on Krogh Ergometer. E. Biering, K. Larsen and E. Nielsen. Copenhagen, Denmark.—p. 416.

Aerocytoosis. Study of Circulatory Fault. A. H. Elliot, R. D. Evans and C. S. Stone. Santa Barbara, Calif.—p. 431.

*Double Aortic Arch with Total Persistence of Right and Isthmus Stenosis of Left Arch. New Clinical and X-Ray Picture. Report of Six Cases in Adults. A. Arkin. Chicago.—p. 444.

*Velocity of Blood Flow in Therapeutic Hyperpyrexia. I. Kopp. Boston.—p. 475.

Unusual T Wave in an Electrocardiogram. R. H. Halsey. New York.—p. 489.

Electrocardiographic Changes in Trichinosis. E. H. Cushing. Cleveland.—p. 494.

Double Aortic Arch—Arkin reports six cases of a clinically new aortic anomaly, two with postmortem observations. This consists of a total persistence of the right aortic arch, combined with a persistence of the left aortic arch in the form of the left subclavian artery, an isthmus stenosis and a diverticulum of the aortic arch (left descending dorsal aortic root), that is, a persistence of both aortic arches as in reptiles. The right arch lies behind the esophagus and the left arch in front of the trachea. The cases presented the following characteristic roentgen observations: 1. A shadow to the right of the sternum ran upward to the head of the right clavicle with a distinct systolic pulsation. 2. There was slight displacement of the trachea and definite displacement of the esophagus to the left. 3. The normal aortic knob on the left side was absent or there was only a small shadow of the descending arch on the left side, in some cases there were two aortic knobs, one on each side. 4. In the right oblique position the aortic knob was lying behind the trachea and esophagus, both of which were displaced forward and to the left (most characteristic of all was the circular forward displacement of the esophagus by the arch of the aorta). 5. There was a shadow of the diverticulum either in the retro esophageal knob or of the descending arch on the left side. 6. In the left oblique position a wide shadow of the ascending aorta was seen to the right of the trachea with evidence that the aortic arch ran behind the esophagus to reach the left side. The following clinical signs were found in the six cases: (1) dullness to the right of the sternum, (2) visible systolic pulsation in the second and third right intercostal spaces, (3) palpable, strong pulsation in the right supraclavicular fossa, (4) maximal intensity of the aortic sounds in the region of the head of the right clavicle, (5) slight displacement of the trachea to the left, (6) tracheal tug and (7) delay in the passage of the stomach tube at the level of the third dorsal vertebra, with transmitted pulsation from the arch of the aorta. Attention is called to the presence of aortic anomalies without any cardiac malformations and in many cases without clinical symptoms.

Velocity of Blood Flow in Therapeutic Hyperpyrexia—Kopp induced therapeutic fever in two patients with dementia paralytica, one apparently free from heart disease, the second with syphilitic aortic regurgitation and cardiac hypertrophy. The arm to tongue velocity time was determined by the decholin method. During the second half of the fever treatments of the

patient with an apparently normal heart an increase in the basal velocity of flow occurred and was accompanied by an increase in the pulse rate. The basal velocity of blood flow of the patient with syphilitic heart disease tended also to increase as fever therapy was continued but was accompanied by a slowing in the pulse rate. It is suggested that the changes in the basal velocity of blood flow and pulse rates of both patients are due to the beneficial effects of therapeutic fever on the myocardium, the changes in the patient with syphilitic heart disease resembling those characteristic of digitalis therapy. Therapeutic fever caused an increase in the velocity of the blood flow in both patients, but no absolute quantitative relationship was found between the percentage increases in the velocity of flow and the degree of temperature rise. The increases in the velocity of flow were least marked during typhoid vaccine fever. Based on average values for nearly similar rises in body temperature in diathermy fever, the increase in the velocity of the blood flow of the patient with syphilitic heart disease was much greater than that of the patient with an apparently normal heart. The response of the cardiovascular system to induced fever is proposed as a new test of cardiac function and reserve.

American J. Obstetrics and Gynecology, St. Louis

31:731-910 (May) 1936

Blood Chemistry and Renal Function in Abruptio Placentae. W. J. Dieckmann. Chicago.—p. 734.

Late Results in Treatment of Leukoplakic Vulvitis and Cancer of Vulva. F. J. Taussig. St. Louis.—p. 746.

Etiology, Diagnosis and Treatment of Evisceration Following Laparotomy. E. von Graff, Des Moines, Iowa.—p. 754.

*Hormone Studies with Ovipositor Lengthening Reaction of Japanese Bitterling. A. E. Kanter, C. P. Bauer and A. H. Klawans. Chicago.—p. 764.

Mechanics of Uterine Support and Position. I. Factors Influencing Uterine Support (Experimental Study). W. F. Mengert. Iowa City.—p. 775.

Syndrome Suggestive of Estrogenic Deficiency. Clinical Study. P. T. Schneider. Evanston, Ill.—p. 782.

Effects of X-Ray and Radium on Cancer of Cervix. E. S. Auer. Denver.—p. 790.

Technic of Successful Removal of the Septum of Uterus Septum and Subsequent Deliveries at Term. R. Lunkart. Omaha.—p. 797.

Premature Separation of Placenta and Circulatory Collapse Associated with Pericardial Effusion. H. E. Harvey. Lincoln, Neb.—p. 803.

*Action of Ovarian Follicular Hormone in Menopause as Indicated by Vaginal Smears. G. N. Papanicolaou and E. Shorr. New York.—p. 806.

The Mild Toxemias of Late Pregnancy. Their Relation to Cardiovascular and Renal Disease. W. W. Herrick and A. J. B. Tillman with collaboration of Lucile Grebene. New York.—p. 832.

Is Superfetation Possible in the Human Being? W. E. Studdiford. New York.—p. 845.

Toxemias of Pregnancy. IV. Carbohydrate Metabolism. A. W. Rowe, Mary A. McManus and A. J. Plummer. Boston.—p. 856.

Behavioral Consequences of Cerebral Birth Lesions. E. A. Doll. Vine-land, N. J.—p. 866.

Neonatal Mortality. Review of Four Hundred and Twenty Eight Deaths. C. T. O'Connor. Boston.—p. 872.

Surgical Complications in Pregnancy. F. O. Priest. Chicago.—p. 878.

Influence of Medical Diseases on Obstetric and Fetal Mortality. E. Allen and C. P. Bauer, Chicago.—p. 885.

Postoperative Embolus. Unusual Case. J. J. Madden. Brooklyn.—p. 891.

Clinical Study of Effect of Camphor in Oil on Lactation. M. D. Klein. New York.—p. 894.

Hormone Studies with Ovipositor Lengthening Reaction of Japanese Bitterling—In their interpretation of some 1000 tests Kanter and his associates observed that the bitterling should be standardized if consistent results with the minimum of error are desired. In testing with commercial hormone products they found that estrogenic preparations gave uniformly positive results, the amount of hormone in rat units necessary to produce a positive test varying with the various products. The authors feel that in conjunction with one of the other biologic tests, the test on the bitterling will prove of value as an aid in diagnosis when ectopic pregnancy, incomplete abortion, missed abortion, placental polyp or any other condition in which the death of the fetus is suspected. Only when one is familiar with all the facts in any clinical problem can the test be applied as a diagnostic aid in pregnancy conditions. The authors' work shows that only those preparations containing estrogenic substance can influence ovipositor lengthening. Pregnancy urine from nonpregnant women at certain stages in the menstrual cycle, urine from sexually

active males, urine from women with cystic mastitis and extracts of some tumors give positive tests. The activating hormone is heat stable and apparently ether soluble.

Action of Estrogenic Substance in Menopause—Papanicolaou and Shorr describe the changes that take place in the vaginal secretion during the administration of estrogenic substance in two cases. With adequate amounts of the preparation there occurred a transformation of the vaginal smear from the menopausal to a type with large flat cells, largely cornified, with small pyknotic nuclei. This is the type of smear which is found normally during the follicular phase of the menstrual cycle just prior to ovulation. This change in the smear was generally associated with relief of the menopausal symptoms. With cessation of treatment or diminution of dosage, the smears gradually regressed and symptoms reappeared. A short period of bleeding usually followed, which is regarded as analogous to postovulatory bleeding. Biopsies of the vaginal wall at various stages during treatment showed a close correlation between the changes in the vaginal epithelium and in the vaginal fluid. As a result of treatment, the vaginal epithelium became hypertrophic with the more superficial cells showing cornification and small pyknotic nuclei. The outer basal zone was better differentiated and showed nuclear enlargement and mitoses. The daily dose required to induce complete changes in the smear and disappearance of symptoms varied from 250 to 3,000 rat units. Oral administration required a minimum of fifteen to twenty times the hypodermic dose. The vaginal smear test furnishes a simple objective guide for the treatment of the menopausal syndrome with estrogenic substance.

American Journal of Physiology, Baltimore

115 497-730 (May 1) 1936 Partial Index

- Studies on Secretion of Oral and Pharyngeal Mucus. Mary F. Montgomery and J. S. Stuart. San Francisco—p. 497.
Respiratory Center. V. E. Henderson and E. H. Craigie. Toronto—p. 520.
Gas Equilibria in Lungs at High Altitudes. D. B. Dill, E. H. Christensen and H. T. Edwards. Boston and Copenhagen, Denmark—p. 530.
Excretion of Skatol, Diiodrast and Hippuran by Dog. K. A. Elsom, P. A. Bott and E. H. Shiels. Philadelphia—p. 548.
Skeletal Changes in Rat Induced by Ration Extremely Poor in Inorganic Salts. Miriam F. Clarke, A. L. Bassin and A. H. Smith. New Haven, Conn.—p. 556.
Action of Nitrogenous Bases of Gastric Juice on Blood Pressure. Pancreatic Secretion and Flow of Bile. S. A. Komarov. Montreal—p. 604.
Relation of Adrenal Cortex to Reproduction and Lactation. S. W. Britton and R. F. Kline. Charlottesville, Va.—p. 627.
Velocity of Blood Flow in Arteries in Animals. T. E. Machella. Philadelphia—p. 632.
Control Basal Diets in Anemic Dogs. Method Factors and Hemoglobin Production. G. H. Whipple and F. S. Robscheit-Robbins. Rochester, N. Y.—p. 651.
Insensible Water Loss in Relation to Water Ingestion in Man. J. F. Hall Jr. and G. S. McClure. Rochester, N. Y.—p. 670.
Effect of Oxygen Lack Variations in Carbon Dioxide Content of Inspired Air and Hyperpnea on Visual Intensity Discrimination. F. Gellhorn. Chicago—p. 679.
Periodic Micturition in Cat After Section of Sacral Nerves. O. R. Langworthy and F. H. Hesser. Baltimore—p. 685.
Experimental Study of Micturition Released from Cerebral Control. O. R. Langworthy and F. H. Hesser. Baltimore—p. 694.
Influence of Irradiation Ergosterol and Parathyroid Extract on Rate of Disappearance of Intravenously Injected Calcium Chloride. S. Freeman. Chicago—p. 701.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

20 231-346 (May) 1936

- A Hilltop on the Syphilis of Marine Sinews of War and Some Salients of the Front. J. H. Stokes. Philadelphia—p. 231.
Direct Cost of Syphilis in Representative American City. W. C. Thompson. Baltimore, W. A. Brumfield. Albany, N. Y. and Lucille Caldwell. Baltimore—p. 243.
Extragenital Chancres. Clinical Study. N. Tobias. St. Louis—p. 266.
Intravenous Use of Acetarsone in Congenital Syphilis. T. B. Givan and G. Villa. Brooklyn—p. 275.
*General Paresis. Treatment by Tryparsamide—Induced Fever Sequence. H. C. Solomon and S. H. Epstein. Boston—p. 281.

Treatment of Dementia Paralytica with Tryparsamide and Induced Fever—Solomon and Epstein treated nineteen cases of dementia paralytica and two cases of congenital neurosyphilis with tryparsamide and subsequent fever therapy. These

twenty-one patients were chosen for fever treatment from a series of eighty-one cases treated with tryparsamide because their response was not satisfactory. The results obtained after fever were good, both clinically and serologically, in every case. In almost every instance the cerebrospinal fluid became negative, and in the majority of cases the spinal fluid response following malaria was much quicker than is to be expected in cases treated from the outset with fever. The authors conclude that a considerable number of preliminary injections of tryparsamide greatly enhance the probabilities of therapeutic success in the treatment of dementia paralytica with fever, and the improvement of the spinal fluid observations occurs more rapidly following fever if the patient has first been prepared by treatment with tryparsamide.

Anatomical Record, Philadelphia

65:1-130 (April 25) 1936

- Glomerular Basement Membrane of Hypertension in Experimentally Produced Hyperpituitarism. R. F. Blount. Minneapolis—p. 1.
Monstrosities Produced by Injection of Selenium Salts Into Hens Eggs. K. W. Franke, A. L. Moxon, W. E. Poley and W. C. Tully—p. 11.
Spleen Studies. I. Microscopic Observations of the Circulatory System of Living Unstimulated Mammalian Spleens. M. H. Knusely. Chicago—p. 23.
Some Notes on the Coloration of Baboon Skin. J. Forbes. New York—p. 51.
An Anomalous Arteria Bronchialis Dextra from the Arteria Subclara Dextra, Secondarily Connected to the Aorta Thoracalis. J. F. Menke. Baltimore—p. 55.
Thermal Effect on Rate and Duration of Embryonic Heart Beat of Gallus Domesticus. A. L. Romanoff and M. Sochen. Ithaca, N. Y.—p. 59.
Comparative Study of Thyroid Glands of Hypophysectomized Mice After Treatment with Anterior Pituitary, Thyroid and Iodine. A. Elizabeth Adams and Beatrice Gray. South Hadley, Mass.—p. 69.
Inherited Polymastia in Chimpanzee. Report of Case. J. H. Elder. New Haven, Conn.—p. 83.
*New Method for Staining Nerve Fibers and Nerve Endings in Mounted Paraffin Sections. D. Bodian. Chicago—p. 89.
The Structure of Capillaries and Unmyogenic Character of Rouget Cells (Pericytes) in the Omentum of Rabbits and in the Web of Living Frogs. N. A. Michels. Philadelphia—p. 99.

Method for Staining Nerve Fibers—Bodian found that paraffin sections could be impregnated with strong protein silver and the silver reduced with hydroquinone, to give selective and sharp staining of nervous elements, only provided that a small amount of metallic copper or mercury was added to the silver bath. This method has been found invariably successful in demonstrating, in properly fixed material, myelinated fibers and the finest unmyelinated fibers of central and peripheral nervous systems, the end feet of Held, neurofibrillae and other nervous elements. It can be used successfully on brain, spinal cord, peripheral nerve, old formaldehyde-fixed human material and sections stained previously with toluidine blue. Briefly the method is as follows: 1. For serial paraffin sections of whole brains, fixation by perfusion with 80 per cent alcohol is most satisfactory. 2. The paraffin may be removed with xylene and sections run through absolute alcohol and 95 per cent alcohol to distilled water. 3. The sections may be placed in a solution of 1 per cent strong protein silver containing from 4 to 6 Gm. of metallic copper per hundred cubic centimeters of solution, for from twelve to forty-eight hours at 37 C., and are washed in distilled water. The silver can be used only once. 4. The section is placed in a reducing solution of 1 Gm. of hydroquinone, 5 Gm. of sodium sulfite and 100 cc. of distilled water for ten minutes and then washed thoroughly in distilled water. 5. Gold is toned in by placing the section for five minutes in a solution of 1 per cent gold chloride containing 3 drops of glacial acetic acid per hundred cubic centimeters of solution, and washing it in distilled water. If sections do not have a light purple color they are placed in a 2 per cent solution of oxalic acid until the entire section has a definite purplish tinge and then washed in distilled water. The residual silver salts are removed with a solution of 5 per cent sodium thiosulfate in from five to ten minutes. 6. The sections are washed thoroughly in distilled water, dehydrated and mounted in balsam. The author used the method to stain, simultaneously by means of a rack, about 600 paraffin sections of the opossum brain with uniformly brilliant impregnation throughout and no objectionable precipitate on either sections or slides.

Annals of Surgery, Philadelphia

103:641-862 (May) 1936

- The Master Surgeon and the Layman R I Payne Norfolk, Va.—p 641
- Brain Abscess J E J King New York—p 647
- Surgical Treatment of Epileptiform Seizures I Davis and W Droegemuehl Chicago—p 669
- Carcinoma of the Breast Study of the Five Year End Results W P Nicolson Atlanta Ga and M D Bernarr Jackson Miss—p 683
- Ultimate Phase of Life as It Relates to Wounds of the Heart W O Bullock Lexington Ky—p 696
- Suppurative Pericarditis Late Results and Methods of Drainage A M Shipley Baltimore—p 698
- Development of Selective Extrapleural Thoracoplasty for Pulmonary Tuberculosis F S Johns Richmond Va—p 701
- Technic of Thoracoplasty for Pulmonary Tuberculosis B N Carter, Cincinnati—p 711
- Surgical Treatment of Congenital Tracheo-Esophageal Fistula in the New Born M Cope and A Ochsner New Orleans—p 725
- Ulcer of Pyloric Sphincter J S Horsley Richmond Va—p 738
- Neckel's Diverticulum with Peptic Ulcer D B Cobb Coldsboro, N C—p 747
- Obstruction of Small Intestine Due to Food Products F W Griffith Asheville N C—p 769
- *Shoulder and Clavicular Pain in Appendicitis F V Mastin St Louis—p 773
- Serious Complications Following Neglected Cholelithiasis F W Bailey St Louis—p 781
- Treatment of Amebic Abscess of Liver H A Ryster H B Haywood and W W Stanfield, Raleigh N C—p 794
- Abdominal Gas Bacillus Catastrophes R I Rhodes Augusta Ga—p 804
- Inguinal Hernia R A Woolsey St Louis—p 812
- Surgical Treatment of Giant Cell Tumor B I Coley and N L Higinbotham New York—p 821
- Some of the Hazards of Irradiation J S Davis Baltimore—p 836
- Tumors of Kidney G R Livermore Memphis Tenn—p 846
- Attraumatic Removal of Needle from Hand Under Fluoroscope Control W H Prolean Charleston, S C—p 854

Surgical Treatment of Epileptiform Seizures—Davis and Droegemuehl studied all their patients having intracranial tumors in an effort to determine whether the attacks were more frequent after operation remained the same were less frequent or did not recur. Of the patients with glioblastomas, 10 per cent of those having attacks prior to operation had none after operation up until the time of death and 32 per cent had fewer and less severe attacks following operation. Of the astrocytoma group, 31 per cent were judged to be unimproved as far as their convulsions were concerned. 50 per cent had fewer and less severe attacks and two (6 per cent) had no attacks following operation over an interval of three and six years, respectively. These figures approximately represent the condition that exists in the other tumors in the glioma group. Of the meningioma group three patients were definitely worse following operation and finally had to be placed on bromide or phenobarbital therapy. Eight patients had fewer attacks which were less severe but were not entirely free in spite of the fact that their tumors had been removed completely. The remaining five patients who had convulsions before operation had no further convulsions following removal of their tumor and have been without bromide or phenobarbital therapy. It becomes apparent that although these tumors have been removed completely, certain changes must have been produced within the brain which continue to act as irritative foci releasing a convulsive discharge. These changes may be and probably are microscopic in nature, and further surgical procedures under such circumstances are illogical and contraindicated. Particularly is this true when these attacks can be so well controlled by judicious medicinal therapy. In general the removal of an intracranial tumor is followed in the majority of patients by definite improvement in the frequency and severity of the convulsive seizures. It cannot be guaranteed however, that the attacks will completely disappear. It is now the authors' custom to begin bromide or phenobarbital therapy preoperatively on those patients who give a history of convulsive attacks and to continue that therapy after operation. By maintaining a constant bromine level in the blood the patient's attacks can be stopped and the dosage of bromides reduced gradually.

Ulcer of Pyloric Sphincter—In eleven years Horsley operated on twelve patients with peptic ulcer either solely (nine) or partly within the pyloric ring. A partial gastrectomy, a modification of the first method of Billroth was done

That partial gastrectomy is the proper treatment for this type of ulcer seems to be supported by a consideration of the clinical and pathologic features of the lesion. A true ulcer of the pyloric sphincter always has a background of pyloric (gastric) mucosa, because this mucosa normally lines the pyloric sphincter. An ulcer of the pyloric ring, then, is a gastric ulcer the symptoms of which are usually accentuated. The average age of these patients was 46.6 years. Two of them were women and ten were men. The average duration of symptoms was ten and three-fourths years, the duration of the symptoms varying from three months to twenty years. Several of the patients gave a long standing history of indigestion, but the severe symptoms were of only recent date. There was severe pain in nine cases, mild pain in one case, and two patients complained of no actual pain. In the latter two cases there was vomiting of much blood, and there was some bleeding in one other case. In nine cases there was a history of vomiting. A gastric analysis was done in ten of these cases. The average value for free hydrochloric acid was 32.9 units. The highest average value of free hydrochloric acid in any one case was 75. In two cases there was no free hydrochloric acid. In ten cases a roentgenologic examination was made, and in three obstruction was present after twenty-four hours.

Shoulder and Clavicular Pain in Appendicitis—In 1923, Mastin's attention was called to a case of appendicitis in which pain was referred to the region of the shoulder and clavicle. The second case was seen eleven years later. Recently he sent out 485 questionnaires relative to this subject. In the 351 answers received, three instances were reported. A complete review of American and foreign literature from 1920 to 1935 revealed six additional cases, bringing the total to eleven. Relief of the pain in the upper chest and shoulder region in his two cases following appendectomy indicates that the pain was caused by inflammation of the appendix, consequently it was referred pain. Since the area to which the pain was referred is supplied by the third, fourth and fifth cervical nerves, the afferent impulses arising at the site of the inflammation must have entered the spinal cord in the corresponding cervical segments. The only nerve connected with this segment of the spinal cord, which includes afferent fibers that reach the abdomen, is the phrenic. Consequently these must be regarded as cases in which the pain was referred by way of the phrenic nerve. A possible explanation of this symptom complex is offered by an anatomic diagram showing a communication between the phrenic nerve and the terminal branches of the superior mesenteric plexus. Distribution of phrenic fibers to the appendix must be regarded as anomalous, otherwise this symptom complex would occur more frequently.

Archives of Neurology and Psychiatry, Chicago

35 937-1174 (May) 1936

- Polynuritis Clinical and Pathologic Study of a Special Group of Cases Frequently Referred to as Instances of Neuritis S F Gilpin F P Moersch and J W Kernohan Rochester Minn—p 937
- *Sympathetic Nervous System in Migraine Negative Effect of Ergotamine Tartrate on Electrical Resistance of Skin During Relief of Migraine Headache P Solomon Boston—p 964
- *Calvarial Hyperostosis and the Accompanying Symptom Complex S Moore St Louis—p 975
- *Neuropsychiatric Syndromes Associated with Hyperostosis Frontalis Interna Preliminary Report A D Carr St Louis—p 982
- Encephalography Review of Eight Hundred Encephalograms with Especial Reference to Subdural Air F Lemere and C H Barnacle Denver—p 990
- Response of Cerebral Blood Vessels to Electric Stimulation of Thalamus and Hypothalamic Regions G W Stavaky Montreal—p 1002
- Experience of Body Self in Schizophrenia A Angyal Worcester Mass—p 1029
- *Experimental Studies on Headache Observations on Headache Produced by Histamine D Clark Heloise Hough and H G Wolff New York—p 1054

The Sympathetic Nervous System in Migraine—Solomon discusses the need for an accurate means of continuously measuring the activity of the sympathetic nervous system in the study of migraine. The method of utilizing the electrical resistance of the skin is presented for the purpose. In seven patients with migraine the electrical resistance of the skin was measured continuously during the period of relief from a characteristic headache obtained by the use of ergotamine. There was no significant change in any instance, indicating

that the relief from the headache was not accompanied by a change in the activity of the sympathetic nervous system as a whole. In one case a similar lack of change was observed during the spontaneous disappearance and reappearance of the headache. In another, a "march" of neurologic symptoms during a typical headache was likewise unaccompanied by any change in the electrical resistance of the skin. In four control patients without headache, ergotamine caused no change in the electrical resistance of the skin.

Calvarial Hyperostosis and the Accompanying Symptom Complex—Moore states that reexamination of the roentgenograms of 6,650 human skulls disclosed four types of thickening of the calvaria: internal frontal hyperostosis, frontal nebula, diffuse calvarial hyperostosis and frontoparietal hyperostosis. The type of thickening which is most characteristic and which led to the study involves the frontal bone, which has on its inner table deposits of new bone with occasional extensions to other bones in the base of the skull. This overgrowth or deposit of cancellous bone lies on the inner table and is covered on its intracranial aspect by a smooth lamella of compact bone. This deposit of bone is increased in density, as seen in roentgenograms. Increase of density progresses from the inner table outwardly through the diploe. The hyperostotic deposit is progressive, and roentgenographically it can be divided into degrees of development. Morphologically, it may be either nodular or sessile. In all the hyperostoses there is bilateral symmetry, both in extent and in degree, of the osseous changes. There is no change in the outer table of the skull, which remains regular and smooth. The skull does not increase in size, so that the increased volume of the bone has to be accommodated at the expense of the capacity of the cranial cavity. The incidence of all types was 35 per cent. The fact that the hyperostoses coexist in the same persons and that the skulls are generally thickened in cases of all types sustains the view that, though morphologically distinct, all types have the same fundamental etiology. The symptoms described in the case histories are a combination, more or less constant, of headache (often disabling and in patients with internal frontal hyperostosis frequently referred to the forehead with occasional tenderness and a feeling of pressure), obesity, muscular weakness, easy fatigue, "nervousness," depression, dimness of vision and occasional diplopia, epileptiform seizures, mental slowness, dizziness, and disturbance of equilibrium and gait. The symptom complex and the roentgen evidence are so characteristic that, when the one is observed, the appearance of the other may be foretold in a substantial proportion of the cases. Probably the symptoms antedate the osseous changes. The differential diagnosis of the disorder has to be made first from osseous dystrophies. The unequal incidence in the two sexes (98 per cent in women) separates these conditions from other osseous dystrophies, practically all of which occur with approximately the same frequency in the two sexes. The condition is one of rather late adult life. The evidence is that the condition is a metabolic disease in which, as far as is known at present, only fat and calcium metabolism is at fault. The patients sooner or later come under the observation of the neurologist or neurologic surgeon. Unquestionably the psychic manifestations, if progressive, terminate in dementia. In cases of internal frontal hyperostosis it appears that much good might be accomplished by turning down a frontal bone flap. Failure of vision might be helped by decompression of the optic nerves. It is useless to administer antisyphilitic treatment in the belief that the disorder is cerebrospinal syphilis. The administration of thyroid on the theory that thyroid insufficiency is a part of the disease seems out of place in these cases unless hypothyroidism is a known complication of the disorder.

Neuropsychiatric Syndromes Associated with Frontal Internal Hyperostosis—Carr has observed seventeen cases of hyperostosis of the internal tables of the frontal bones. The observations concur with Moore's opinion that there is a symptom complex or syndrome associated with these changes in the bones of the skull. The importance of the recognition of hyperostosis of the frontal bones of the skull lies in the fact that it assists in more accurately classifying cases of this condition, in many of which the changes in the frontal bones have masqueraded as tumor of the brain or as reactions asso-

ciated with chronic invalidism. The changes in the frontal bones of the skull could not possibly account for the composite picture or the pictures presented by individual patients. These changes must be considered purely roentgenologic evidence of an entity that is probably metabolic in origin. Menstrual disturbances of various kinds occurred in thirteen of the seven teen patients. There has been some fluctuation in symptomatology, but headache, weakness, dizziness and defective memory were consistent complaints. The psychiatric changes varied widely but were predominantly a confusional state of greater or less duration with marked irritability and memory defects. An attempt has been made to treat a group of these patients with aminoacetic acid by feeding large quantities of gelatin daily. Aminoacetic acid therapy was originally used in an attempt to relieve the marked weakness complained of by one of the patients. The change in the entire picture was so striking that its use has been continued. Several patients have been studied from the point of view of creatine-creatinine metabolism. These patients showed creatinuria, which disappeared under therapy with aminoacetic acid.

Experimental Studies on Headache—Clark and his colleagues suggest that the headache following the injection of histamine is the result of a discrepancy between the behavior of the blood vessels inside the head as compared with those elsewhere. The rise of the systemic blood pressure after its fall indicates that at least a portion of the total vascular bed is constricting. However, the cerebral vessels remain dilated for a short time, and the cerebral blood flow is increased. In fact, with the rise in systemic blood pressure the cerebral arteries are still further dilated and bear the brunt of heightened intramural pressure with each cardiac systole. Moreover, the ability of the now hypotonic walls of the vessels to absorb pressure changes is much reduced and the pressure variations within the vessels are thus more directly transmitted to sensory end-organs in and about their walls and to the subarachnoid space. It is suggested that the combination of these two factors causes headache through the stretching effects on the walls and perivascular tissues of the larger dural and pial vessels, chiefly the arteries. The walls of these vessels are the sites of origin of the afferent impulses interpreted as pain.

Archives of Ophthalmology, Chicago

15: 803-974 (May) 1936

- Degeneration of Cornea Calcareous (?) and Fatty R. E. Wright Madras, India—p. 803
- Roentgenographic Diagnosis of Retinoblastoma R. L. Pfeiffer New York—p. 811
- Free Cyst Floating in Anterior Chamber Report of Case. W. H. Evans Youngstown, Ohio—p. 822
- *Neoparsphenamine in Treatment of Nonsyphilitic Inflammations of Uveal Tract H. Lucic Cheyenne, Wyo.—p. 826
- Kinetic Test for Stereoscopic Vision F. H. Verboeff Boston—p. 833
- Hypertensive Fundus Oculi After Resection of Splanchnic Sympathetic Nerves Preliminary Report F. B. Fralick and M. M. Peet, Ann Arbor, Mich.—p. 840
- Histology of Extra Ocular Muscles S. R. Irvine Boston—p. 847
- The Problem of Crystalline Lens B. L. Gordon Atlantic City, N. J.—p. 859
- Ocular Dominance Its Independence of Retinal Events Z. J. Schoen and S. R. Wallace Jr. University, Va.—p. 890

Neoparsphenamine in Treatment of Nonsyphilitic Inflammations of Uveal Tract—Having obtained gratifying results in an apparently hopeless case of sympathetic ophthalmia with the use of neoparsphenamine, Lucic considered it worth while to try this drug in the treatment of other types of nonsyphilitic uveitis. He found neoparsphenamine of definite value in the treatment of acute and chronic iridocyclitis of doubtful etiology and of that due to focal infection. Neoparsphenamine is administered by the intravenous route and the individual dosage is that recommended by syphilologists for the patient with syphilis. It is rarely necessary to give more than four injections in the treatment of acute iritis. In the treatment of chronic uveitis and of sympathetic ophthalmia it is essential to administer several intermittent injections. In each case one is guided by the reaction caused and the clinical results obtained. It is well to remember that in a majority of the cases the drug is being administered in the presence of a focus of infection and that complications may arise. Whenever possible the administration of arsphenamines should be undertaken only by one versed in this specialty.

Bulletin of Neurol Inst of New York, New York

1 535 728 (April) 1936

- The Sense of Smell VII Localization of Tumors of Frontal Lobe of the Brain by Quantitative Olfactory Tests C A Elsberg New York —p 535
- Id VIII Summation of Olfactory Impulses from Two Olfactory Membranes and Its Physiologic Significance C A Elsberg New York —p 544
- Some Observations Concerning Relation of Handedness to Language Mechanism E C Chesher New York —p 556
- Quantitative Measures in Studying Development of Behavior Patterns (Erect Locomotion) Myrtle B McGraw and A P Weinbach New York —p 563
- *Remarks on Effects of Roentgen Therapy on Gliomas L M Deery, New York —p 572
- The Metabolism of Brain Tissue V Vitamins and Enzymes in Brain Tissue S B Worris New York —p 588
- Concerning Immunologic Specificity of Choblastoma Multiforme J H Sims New York —p 597
- Pneumocephalographic Diagnosis of Tumors of Corpus Callosum C G Dyke and L M Davidoff New York —p 602
- Effects of High Fat Diet of Inanition of Injection of Acetone Alone or with Fluids of Varying Osmotic Pressure on Experimental Convulsions in Cats Sarah R Riedman New York —p 624
- *Changes in Blood Esterase Associated with Changes in Activity in Multiple Sclerosis R M Brickner T Watters D Wexler and S E Soltz New York —p 656
- A Critique of Therapy in Multiple Sclerosis R M Brickner New York —p 665
- Changes in Physical Signs and Symptoms in Cerebellopontile Angle Tumors Following Lumbar Puncture and Removal of Fluid L M Hefter New York —p 699
- Notes and Impressions from Recent Literature on Fever Therapy Preliminary Study Gladys C Terry New York —p 707

Effects of Roentgen Therapy on Gliomas—Deery studied a group of fifty gliomas to determine the effect of irradiation. Only cases were chosen in which both preradiation and postradiation specimens of the tumors were available. The preradiation specimen was obtained when the tumor was first attacked surgically and the postradiation specimen from a second operation or at necropsy. The types comprising the bulk of the series were medulloblastomas, glioblastomas and astrocytomas. Some of the tumors of each type showed striking histopathologic changes which it seemed reasonable to credit to the radiation received. The histopathologic changes considered to be due to irradiation seemed primarily to affect the tumor cells themselves. Manifestations of cell injury were found often which, when severe, resulted in death of the cell. There was an increase of necrosis and often an appreciable reduction in cellularity of the growth as determined by actual cell counts. Mitotic figures in general were less frequent following irradiation. Postradiation specimens sometimes showed the appearance of or increase in giant cell forms. It is the author's impression that the blood vessel and connective tissue phenomena commonly seen in postradiation material are secondary and essentially incidental changes. Histopathologic changes, apparently caused by roentgen therapy were encountered not only in tumors of a lower order of differentiation such as the medulloblastoma, but also in tumors of a high degree of maturity, such as astrocytomas. Exact information on the reactions of gliomas to irradiation must await the acceptance and adoption of clearly defined standardizations of certain factors which directly affect the statistics of the problem. Chief among such factors are a more exact description of the location and size of the tumor, more exact statements as to the operative procedure carried out on the tumor itself, standardization of the pathologist's evaluations of the degree of malignancy of a given tumor, and finally a general acceptance of what constitutes adequate radiation dosage as well as comparable roentgen therapy technic.

Changes in Blood Esterase in Multiple Sclerosis—Brickner and his associates examined serum esterase of eighty-nine cases of multiple sclerosis and 617 controls (100 medical students and 517 patients suffering from conditions other than multiple sclerosis). Until now it has been necessary to refer to the blood factors investigated as 'lipolytic agents' or even 'lipolytic conditions'. It has not been definitely shown whether they were of enzymic character or not. The lipolytic factor of the present investigation satisfies the thermolability requirements for enzymes. The tests have been made by measuring the degree to which serum can cause the breakdown of an ester (methyl butyrate) into fatty acids. For these reasons the active

agent in the blood is referred to as an esterase. The esterase values are not distinctive for multiple sclerosis as such, but in the scale of values determined for a large number of cases of all kinds it was found that, during the active stage of multiple sclerosis, the spontaneous values are low and, in the inactive, high. Probably although final statement cannot be made at present, the values are highest at the beginning of inactivity.

Canadian Medical Association Journal, Montreal

34: 487 608 (May) 1936

- Clinical and Other Observations on Canadian Eskimos in the Eastern Arctic I M Rabinowitch Montreal —p 487
- *Primary Aplastic Anemia Case with Apparent Recovery E B Astwood Montreal —p 501
- *Tulip Fingers Ragweed Dermatitis A H W Caulfield Toronto —p 506
- Solitary Myeloma of the Ilium C Liebman and S E Goldmao Montreal —p 511
- Schizoid Trends in Children C A Cleland Brockville Ont —p 514
- The Problem of Maternal Mortality K M Wilson Rochester N Y —p 518
- Maternal Deaths R E Wodehouse Ottawa, Ont —p 525
- Calcium and Protein Studies in Malignant Disease R O Bowman H C Pitts P H Mitchell and Elsie Ewertz Providence R I —p 527
- Blood Lipids in Polycythemia Vera E M Boyd Kingston Ont —p 532
- Mortality in Surgery of the Gallbladder W O Stevenson Hamilton Ont —p 534
- Pernicious Anemia with Uric Acid Deposits in the Kidneys Case H B Burrell Toronto —p 540
- Aneurysm of Aorta with Rupture and Hemorrhage into Mediastinum and Partial Dissection of Left Parietal Pleura Case S R Townsend Montreal —p 542

Primary Aplastic Anemia—Recovery—Astwood's case with complete recovery presented the characteristics of primary aplastic anemia. Whether or not this recovery will be permanent only time can tell. To what extent the different remedies used (citrate blood, liver extract, ferric ammonium citrate, brewers' yeast, raw bone marrow, epinephrine, ephedrine) influenced the outcome it is difficult to say, but the author is certain that the patient would have died promptly but for the transfusions, of which there were eight, of about 400 cc. average, given at weekly intervals. The rise in reticulocytes and the gradual improvement which followed the use of ephedrine suggest that it may have exerted some beneficial action on blood regeneration. It is probable, however, that the recovery was spontaneous and that the absence of any heroic measures, the supportive effect of the transfusions and the prevention of infection by good nursing allowed recovery to take place. The concept of complete bone marrow aplasia as necessary to the diagnosis of aplastic anemia is probably false. As spontaneous recovery may occur in some cases, prolonged supportive treatment with repeated blood transfusions is justified.

Ragweed Dermatitis—Caulfield believes that the profession in general does not appreciate that definite types of dermatitis may follow the inhalation of substances normally in the air. The results of his investigation of a case of "tulip fingers" have shown the ether-soluble portion of the tulip bulb to be the cause of the dermatitis. The intramuscular injection of this fraction taken up in corn oil prevented the outbreak of a severe dermatitis for the first time in a seasonal exposure of a duration of five years. This ether-soluble fraction in oil gave a less pronounced patch test with another individual who experienced mild symptoms on his seasonal exposure to tulip bulbs. A case of ragweed dermatitis is added to the list of cases already reported. The exciting factor was found to reside in the ether-soluble portion. The attacks occurred for a period of ten years during the early growth of the weed and before the pollen content of the air had appeared in any considerable quantities. During the height of the pollen air content the dermatitis had subsided without the advent of any symptoms of an allergic character. A case of urticaria-like skin and mucous membrane eruption, of a strictly seasonal character, was found to give positive scratch tests to different pollens, but more particularly to ragweed pollen that corresponded to the seasonal air content of the pollens giving positive tests. A positive Prausnitz-Kustner reaction was obtained with a solution of ragweed pollen whereas patch tests with all fractions of ragweed pollen were negative. A table based on the scratch

and patch tests and the Prausnitz-Kustner reaction attempts to give in graphic fashion the fundamental differences between cases of contact dermatitis and the prevalent conception of allergic or atopic dermatitis

Canadian Public Health Journal, Toronto

27 209 260 (May) 1936

- Survey of Illness Among the Unemployed in Winnipeg (March 1934 to February 1935, Inclusive) M R Elliott, Erickson Manit.—p 209
The Health of Animals Branch and Its Relation to Public Health A E Cameron, Ottawa, Ont.—p 218
Standardization of Laboratory Methods Useful in Controlling the Quality of Dairy Products R S Breed Geneva N Y.—p 222
The Role of Nonfecal Bacteria in Water Supplied to Creameries D B Shutt Guelph, Ont.—p 226
Applied Aspects of Venereal Disease Legislation of Ontario L A Pequegnat Toronto.—p 228

Georgia Medical Association Journal, Atlanta

25 113 146 (April) 1936

- Acute Appendicitis Factors Influencing the Mortality D C Elkin and W Glenn Atlanta.—p 113
Septic Peritonitis Following Appendicitis E Boling and M Mitchell Atlanta.—p 116
Irradiation versus Surgery in Breast Lesions W P Nicolson Jr Atlanta.—p 120
Malignant Tumors of Bone E L Bishop Atlanta.—p 124
The Psychology of Prejudice and Mob Action in Tribes and Nations S Kahn Atlanta.—p 130

Iowa State Medical Society Journal, Des Moines

26: 231 278 (May) 1936

- Treatment of Diabetes with Protamine Insulin E B Winnett Des Moines.—p 231
Advances in Internal Medicine in 1935 J S McQuiston, Cedar Rapids.—p 237
Hematuria L E Pierson Sioux City.—p 241
Concentration Test as Practical Means of Determining Kidney Insufficiency J L Kestel Waterloo.—p 242
Surgical Treatment of the Stoneless Gallbladder L E Shafer, Davenport.—p 243
Colloid Carcinoma of the Bladder Report of Case H P Lee Iowa City.—p 246
Significance of Jaundice in Biliary Tract Disease H L Beye Iowa City.—p 249
Functional Disorders of Gastro-Intestinal Tract W H Rendleman Davenport.—p 253
Divericulosis of the Co'on A W Ershine Cedar Rapids.—p 255

Johns Hopkins Hospital Bulletin, Baltimore

58: 267 332 (April) 1936

- Monocytic Leukemia C W Wainwright and G L Duff Baltimore.—p 267
*Experimental Production of Whooping Cough in Chimpanzees A R Rich P H Long J H Brown Eleanor A Bliss and L E Holt Jr Baltimore.—p 286
Diagnosis of Obscure Fever II Diagnosis of Unexplained High Fever L Hamman and C W Wainwright Baltimore.—p 307

Experimental Whooping Cough in Chimpanzees—Rich and his co-workers produced a condition similar in all respects to whooping cough characterized by convulsion followed by a protracted, paroxysmal cough typical of that of pertussis, associated with lymphocytosis and the development of positive complement fixation toward the Bordet-Gengou bacillus, in the chimpanzee by the oral inoculation of unfiltered tracheal exudate from human pertussis. Bordet-Gengou bacilli were recovered on cough plates at the height of the cough. A precisely similar condition has been produced in the chimpanzee by oral inoculation with pure cultures of Bordet-Gengou bacilli. The inoculation of apes with bacteriologically sterile blood and filtered respiratory secretions obtained from each of four cases of pertussis early in the disease was followed by the appearance of a catarrh of the upper respiratory tract without cough. In the one instance in which an attempt was made to transfer the agent from one ape to another by means of a bacteriologically sterile filtrate of the nasopharyngeal secretions the attempt was successful. The nature of this filtrable agent is discussed, but the authors limited data do not permit them to conclude that it is a specific filtrable virus that acts to increase susceptibility to infection with the Bordet Gengou bacillus analogous to the action of the filtrable virus of swine influenza or canine distemper. Its relation to pertussis is undetermined. At present one can say only that the Bordet-Gengou bacillus acting alone, is capable of producing the characteristic clinical manifestations of whooping cough in the ape.

Kentucky Medical Journal, Bowling Green

34: 169 224 (May) 1936

- *Quinine Amblyopia J H Simpson Louisville.—p 173
Laboratory Aspects of Anemia W H Allen Louisville.—p 177
Anemia Clinical Aspects A T Hurst Louisville.—p 180
Treatment of Anemia E C Humphrey, Louisville.—p 183
Modern Trends in Treatment of Pylitis L Coleman Richmond.—p 190
Social Trends in Medicine J D Northcutt Covington.—p 193
Modern Treatment of Breast Tumors J D Hancock, Louisville.—p 200
To the Medical from the Legal Profession E Hamilton Louisville.—p 208
How Do Drugs Really Act? C W Reynolds Covington.—p 212
Public Health Work and Its Relationship to the General Practice of Medicine W M Chapman Glasgow.—p 213
Otolaryngology for the General Practitioner H G Stambaugh, Ashland.—p 216

Quinine Amblyopia—Simpson reports a case of quinine amblyopia. The patient's normal sense of light has not returned in almost five years and she has difficulty in getting around at night. The diagnosis of the condition depends on the history of quinine ingestion and the following five points set forth by Ball: 1 Vision is lost completely, almost suddenly. 2. There are attenuated retinal vessels and white papillae, and often there is a remarkable recovery of function. 3 Central vision returns first, while peripheral vision is restored slowly and seldom if ever completely. 4 The color sense is often damaged, if it returns at all, it does so first at the center and then extends peripherally. 5 Diminution of the light sense, with resultant night blindness, is a frequent sequence of quinine poisoning. Though the prognosis is favorable to the restoration of good central vision, no doubt in certain cases good central vision is not regained. In the prevention of this disease, when a large amount of the drug or a long continued dosage of a smaller amount is contemplated, the history of an idiosyncrasy is a warning, which may be elicited by Baer's skin test as recommended by Rucker using a 10 per cent solution of quinine bisulfate.

Ohio State Medical Journal, Columbus

32: 385-492 (May 1) 1936

- Clinical Significance of Jaundice L Schiff Cincinnati.—p 401
Study of One Hundred and Fifty Eight Consecutive Cases of Breast Malignancy G P Sims and C S Hamilton Columbus.—p 406
Observations on Ovarian and Pituitary Endocrinopathies with Especial Reference to Basophil Adenoma M Douglass Cleveland.—p 411
Neurologic Complications of Acute and Chronic Mastoiditis C H Bayha Toledo.—p 417
Menopause Syndrome C W Sawyer Marion.—p 421
Observations on Cataract Extraction R S Binkley Dayton.—p 425
*Has the Use of Acetylsalicylic Acid Been a Factor in Increase in Fatal Heart Disease? H C Temple Alliance.—p 429
The Asthmatic Child Methods of Study and Results of Treatment J A Rudolph Cleveland.—p 430
Psychologic Approach to Reading Disabilities B Crider Cleveland.—p 434
Acute Middle Ear Disease J R Dowling Massillon.—p 436
Fractures Form or Function? B J Hein Toledo.—p 440
Case Record Presenting Clinical Problems An Atypical Influenza R I Fried and H L Reinhart Columbus.—p 441

Acetylsalicylic Acid as a Factor in Heart Disease—Temple believes that the general increase or excessive use of drugs is at least in part responsible for the increase in fatal heart disease. It has become a common practice among many people to make free and unlimited use of acetylsalicylic acid as a cure-all for every ache or pain to which human flesh is heir. The drug is classified in the general group of coal tar derivatives, among which are acetanilid, antipyrine, acetophenetidin and other well known heart depressants. The physiologic action of any of this general group or class of drugs is to reduce arterial tension and weaken the contractility or elasticity of the muscular fibers of the heart. By the excessive and continuous use of acetylsalicylic acid the heart muscles become soft and flabby, the heart valves relax and lose their power to perform their normal function properly and, by degrees, the blood begins to regurgitate with each heart pulsation back into the blood vessels thus gradually resulting in a valvular heart lesion which, when once established, is never cured but continues to grow worse and worse until death results. Acetylsalicylic acid is potentially a dangerous drug and its use as a

home remedy is a menace to the good health of the people. Its indiscriminate use, as urged in advertisements of all types as a harmless and innocent drug is inimical to public health and should be discouraged. The question is to what extent the excessive use of acetylsalicylic acid has influenced the rapid increase of fatal heart disease among the people since 1900 should command the attention of health authorities.

Western J Surg, Obst & Gynecology, Portland, Ore 11: 255-312 (May) 1936

- *Surgical Treatment of 105 Cases of Diaphragmatic Hernia S W Harrington Rochester Minn—p 255
Ureteral Diverticula A Brown Omaha—p 270
Postural Prevention of Peritonitis After Operation on Biliary Tract W T Coughlin St Louis—p 279
Congenital Arteriovenous Communication W J Carson Milwaukee—p 283
Irradiation versus Surgery in Treatment of Certain Surgical Conditions Including Operable Malignant Tumors Comparison of Results P Campiche San Francisco—p 287
Inguinal Thyroid Comprehensive Review Division VI M L Montgomery San Francisco—p 303

Surgical Treatment of Diaphragmatic Hernia—Harrington believes that operative replacement of the herniated viscera in the abdomen, with repair of the abnormal opening in the diaphragm, is the only treatment that ensures complete relief of symptoms. The hernial opening is best repaired through an abdominal approach, with the use of fascia lata and interrupted linen sutures. Temporary or permanent interruption of the phrenic nerve is of value as a procedure preliminary to radical closure of large openings, particularly when there is deficiency or loss of structure of the diaphragm. Radical repair of the hernia was carried out in ninety-seven cases. There were ninety-eight patients who recovered from operation. Of the eight treated palliatively by interruption of the phrenic nerve one has since died of angina pectoris, two died of causes not definitely ascertained, but which apparently were attributable to cardiac conditions, for they had had myocardial degeneration at the time of the operations, and the remaining five have obtained partial relief of symptoms. Ninety patients recovered from radical operative repair of the hernia; eighty-eight patients have been completely relieved of symptoms and two have had a return of symptoms following recurrence of the hernia. In one of the cases, recurrence developed following an influenzal type of pneumonia three months after operation; the recurrence being caused by the severe strain of coughing. In the other case there is no known cause for the recurrence. All patients have been examined roentgenologically every six months to a year after operation. There are no serious physiologic effects from repair of these defects in the diaphragm. The diaphragm which has been operated on functions normally after repair unless the phrenic nerve or some of its branches have been destroyed, paralyzing that portion of the diaphragm supplied by them.

Prevention of Peritonitis After Operation on Biliary Tract—Coughlin points out that in the prevention of peritonitis the falciform ligament becomes a structure of great value for the prevention of adhesions between the raw surface of the liver and the adjacent stomach and duodenum if it is properly utilized, its free edge sewed to the peritoneum covering the common duct, then skirting the duodenum and catching the gastrocolic omentum below. If with the drain reaching from the foramen of Winslow to the surface by the shortest route, which is out through the upper end of the wound, the patient is turned on the left side, all secretions from the region of the site of operation will flow down hill. They cannot spread to the left because of the falciform ligament and the use that has been made of it, and they will not accumulate round the site of operation and spread, carrying virulent bacteria perhaps to all quarters of the peritoneal cavity. In twenty-four hours the area will have become "walled off." For drainage after operations on the biliary tract the patient is turned on the left side. The abdomen is turned slightly toward the bed and this position is maintained at least for the first twelve hours and by preference for twenty-four. The author has been using this method since 1912. He has records of 287 cases that required drainage, with only one patient who died of peritonitis and this patient would not remain in a position to favor drainage.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

48: 173-220 (April) 1936

- *Streptococcal Dermatitis J Kinnear—p 173
Hemorrhagic Telangiectasia of the Osler Type—Telangiectatic Dysplasia. Isolated Case with Discussion on Multiple Pulsating Stellate Telangiectases and Other Striking Hemangiectatic Conditions F P Weber—p 182

Streptococcal Dermatitis—Kinnear asserts that until recently the streptococci causing impetigo and streptococcal dermatitis have not been differentiated, and in view of the marked differences between the clinical appearances of these diseases this has led many to reject the streptococcal origin of the latter. The active stage of streptococcal dermatitis is characteristic. The red, glazed area with its abundant exudation of serum from the whole surface is quite easily distinguished from both eczema and other forms of dermatitis. The less active phase of the disease, streptococcal pityriasis, is also characteristic. The scaling is a fine lamellar exfoliation and may be profuse. Occasionally this stage of pityriasis is the primary stage of the disease without a preceding dermatitis, frequently when the scalp is acutely involved, patches of dry pityriasis are found on the body, but it is most commonly found as the active stage is passing and is almost invariably at the margins of an acute lesion, especially in the scalp above an intertrigo behind the ear. All gradations between these two phases may be found, frequently in the same patient in different parts of the lesion. Streptococcal dermatitis attacks the folds of the skin and spreads from the folds to the neighboring skin and, as the disease is brought under control, it gradually contracts till again the folds alone are affected. Impetigo has not the same tendency to affect the folds. The lesions of impetigo are comparatively small and, when a large area is affected, one can see that it is by numerous distinct elements. On the other hand, the continuity of the lesion in streptococcal dermatitis is evident. Vesicle formation such as occurs in impetigo is absent in streptococcal dermatitis. As a rule it is not difficult to distinguish streptococcal from other forms of intertrigo. The extent of this streptococcal infection may vary from a tiny lesion at the upper end of the retro-auricular fold to a generalized involvement of the whole surface of the body. It may disappear spontaneously in a few days or last for years. For treatment during the acute stage a nonirritating antiseptic in solution is best. In the less active stage coal tar is invaluable. The causal organisms of impetigo and of streptococcal dermatitis are entirely different types of streptococci. The author found that one could isolate from impetigo a hemolytic streptococcus, whereas from streptococcal dermatitis an anhemolytic streptococcus was obtained. In cases of a mixed type both streptococci were found.

British Journal of Radiology, London

B: 215-286 (April) 1936

- Measurements of Low Voltage X Rays (Chaulou Technique) W V Mayneord—p 215
Developmental Abnormalities of Skeleton J F Brailsford—p 239
Evaluation in Roentgens of Barium Platinocyanide Pastille Dose for X Rays and Gamma Rays G W C Kaye and W Binks—p 272
Bilateral Sesamoids Near External Lateral Ligament of the Ankle A H Gregson—p 281

British Journal of Tuberculosis, London

30: 53-108 (April) 1936

- *When Should Refills Be Stopped? J C Dundee—p 55
Tuberculosis in Egypt E Zimmerli—p 62
Remarks on Clinical Estimation of Resistance in Pulmonary Tuberculosis D P Marais—p 72
Small Localized Artificial Pneumothorax B Hudson and F L Wollaston—p 81
Erythema Nodosum and Cervical Gland Tuberculosis Three Illustrative Cases B C Thompson—p 84

When Should Refills Be Stopped?—Dundee believes that the extent and nature of the original lesion is the most important factor in the decision as to when treatment should be

stopped. The smaller the original lesion, the more confidence can one have regarding expansion. Patients who continue to have intermittent positive sputums ought to have their treatment continued indefinitely. A complete roentgen serial of each case should be in the hands of the current operator. When the patient leaves a sanatorium or changes doctors, all his roentgenograms should be transferred with him. The most important change to look for roentgenographically in lung reexpansion is a reappearance of excavation, for such an occurrence warrants an immediate reversal of treatment, with closure of the cavity. Lesions that have undergone little resolution during treatment, contain little or no calcium and have made little or no attempt at stellar formation or fibrosis, and yet have no perifocal exudate, should be considered carefully before reexpansion is resorted to. Such innocent-looking lesions, if large, undoubtedly contain tubercle bacilli. If these lesions have not healed under pneumothorax, they certainly will not do so after reexpansion, and they may go on to central caseation, followed by liquefaction and excavation, if collapse is not maintained. The development of a serous effusion toward the end of artificial pneumothorax treatment should be prevented from interfering with the desired degree of collapse by performing frequent aspirations and necessary air replacements. The younger the patient, the more inclined is the author to prolong pneumothorax treatment. Relapses following reexpansion are more common during the years from 15 to 30 than later. The patients who have to return to hard manual labor should have pneumothorax treatment continued considerably longer than other patients, and a larger proportion of this group than of any other should have pneumothorax continued indefinitely. The more contacts there are to any particular pneumothorax case, the more careful one has to be about terminating the treatment. A considerable number of relapses occur in women after reexpansion probably because of pregnancy and the care of the child. When there has been a great deal of original lung destruction, pregnancy is not advisable. When the involvement has been less and the economic and home conditions are satisfactory, pregnancy may be considered safe, provided pneumothorax is continued for at least one year after full term. This applies to patients in whom pneumothorax has been satisfactory and who have had a negative sputum for three years.

British Medical Journal, London

1: 737 780 (April 11) 1936

- Technic of Gastroscopy H C Edwards—p 737
 *Latent Adolescent Pulmonary Tuberculosis R C Wingfield and A Margaret C. Macpherson—p 741
 Organic Basis of Psychosis Report of Case N M Dott and W M C Harrowes—p 744
 Agranulocytic Angina Case of Relapsing Type A D Briscoe—p 746
 *Some Experiments with Protamine Insulinate R D Lawrence and Nora Archer—p 747

Latent Adolescent Pulmonary Tuberculosis—Wingfield and Macpherson observed that in taking histories of recently diagnosed adult cases there is often a suggestion of a definite period of ill health in adolescence which might be ascribed to active pulmonary tuberculosis but which had not been recognized as such. As examples they mention pleurisy, atypical pneumonia or bronchitis, anemia and nervous breakdown for no known cause. Perhaps the extensive lesions of adult disease are really in many cases deposited during adolescence with the accompaniment of slight or unexplained constitutional disturbance that these lesions are carried unrecognized, perhaps extending slowly and without symptoms until they make their presence known in adult life either by reason of their spread past a definite point or because some environmental cause has allowed of their reactivation. If this hypothesis were true, the roentgen examination of a sufficiently large unselected sample of the adolescent working-class population in normal health should reveal a proportion of cases with definite lesions. Further, the incidence of these lesion carriers should closely approximate the incidence of clinically manifest tuberculosis in the adult working-class population between the ages of 21 and 40. Scholars in all the county secondary schools were approached and in this way 1,350 cases of both sexes between the ages of 14 and 18 years were examined. Employers of adolescent labor were interviewed and 1,031 more cases were

obtained of the adolescent, urban and semiurban working-class population between the ages of 14 and 21. These adolescents were, so far as the authors knew, in normal health. The authors considered positive those roentgenograms in which there were unmistakably abnormal shadows, indicating definite pathologic changes in the lung parenchyma, having the appearance that was compatible with, and usually associated with, tuberculous lesions of the adult type. In the 2,381 roentgenograms there were fifteen (0.65 per cent) positives. In addition there were eighteen abnormal roentgenograms, and ten of these showed shadows probably due to tuberculous lesions. Therefore a definite incidence of 0.65 per cent was found and a possible incidence of 1.08 per cent. Similar investigations undertaken by workers in other countries revealed a much higher incidence of latent lesions. Such lesions are always liable to spread and to intensify, even though they remain stationary and symptomless for long periods. A proportion of these adolescents with their latent lesions will sooner or later exhibit clinical disease. The incidence of these latent lesions among adolescents approximates closely the estimated incidence of clinical disease among adults. If these adolescent carriers can be detected it is comparatively easy to handle them so that they will never develop clinical disease or so that the development in them of clinical disease will be postponed until much later in life—every year of postponement making such development less likely.

Experiments with Protamine Insulinate—On the basis of their studies, Lawrence and Archer conclude that protamine insulinate acts more slowly and for a much longer period than ordinary insulin and that a large dose can act for more than two days. It is much weaker in dealing with carbohydrate food and usually cannot prevent hyperglycemia after meals. In contrast, its action on endogenous sugar is nearly as rapid and good as ordinary insulin. It causes less symptoms of hypoglycemia than ordinary insulin, even at the same blood sugar concentration. Protamine insulinate is certainly absorbed more slowly from the subcutaneous tissues. It therefore has qualities which promise great use in severe cases of diabetes with oscillating blood sugars and rapidly recurrent ketosis. On the other hand, it is not strong enough in its action to control ingested carbohydrate, so that the use of ordinary insulin before carbohydrate meals and protamine insulinate in the evening has been advocated and is necessary to obtain full control of the diabetic condition. Another insulin preparation combining the qualities of ordinary and protamine insulinate would obviously be more useful than either. Protamine insulinate, great though its advantage may be in some cases, is not generally obtainable for clinical use in England and is indeed still in the experimental stage.

Glasgow Medical Journal

7 153 200 (April) 1936

- Nutritional Anemia in Infancy and Childhood W T W Paxton—p 153
 Puerperal Jaundice J Grant and J H Miller—p 165

Journal of State Medicine, London

4: 187 248 (April) 1936

- Our Mechanistic Age T Oliver—p 191
 Public Health Administration in Bermondsey (Past and Present) D M Connan—p 199
 Some Common Diseases of Ear, Nose and Throat M O Regan—p 210

Lancet, London

1: 823 876 (April 11) 1936

- Medical Problems in Mineral Metabolism R A McCance—p 823
 Differential Diagnosis of Diseases of Colon (Dysentery and Colitis) P Manson Bahr—p 830
 *Neuritis in Pregnancy Successfully Treated with Vitamin B₁ G W Theobald—p 834
 Male Hormones and the Question of Accessory Substances Note R Deanesly and A S Parkes—p 837

Treatment of Neuritis in Pregnancy with Vitamin B₁—Theobald successfully treated five cases of neuritis of pregnancy by dietetic measures, four of them solely by the administration of vitamin B₁ (2,250 units) concentrate. All the patients complained of numbness, tingling, pins-and-needles and with the exception of one, of pain which was worse by night. The arms and hands were affected in all the cases, and one side

more than the other. Two of these patients suffered in addition from deficiency of vitamin D in their diets. It is impossible to say whether these symptoms represent an early stage of the "toxic neuritis" of pregnancy. Pregnancy offers opportunities for studying the effects of vitamin and other deficiencies in the diet with the precision of a laboratory experiment. The results reported may be held to support the dietetic deficiency hypothesis of the toxemias of pregnancy.

1 877 930 (April 18) 1936

Malignancy with Illustrations from Pathology of Mamma R Muir —p 877

Vitamins in Human Nutrition. Excretion of Vitamin B₁ in Human Urine and Its Dependence on Dietary Intake I J Harris and P C Leong —p 886

Glycosuria and Acetonuria in Subarachnoid Hemorrhage. Report of Four Cases E J S Woolley —p 894

Glycosuria and Acetonuria in Subarachnoid Hemorrhage—Woolley reports four cases of hemorrhage into the subarachnoid, in which acetone and sugar were found in the urine, and one presented a clinical picture which resembled in some respects that of hyperglycemic coma. Apart from the fact that sugar and acetone were demonstrated in the urine and that all four illnesses were fatal, these cases had little in common. In the three in which a postmortem examination was made the only common observations were extensive destruction of brain substance and the presence of blood or deeply blood stained fluid in the cerebral ventricles, the site of the hemorrhage was different in each case. In cases 2, 3 and 4 there was no emesis before admission, and in two of them the urine was examined within three hours of the ictus. In case 3 a large meal had recently been taken. It seems, therefore, that the ketonuria is not the result of starvation. The possibility that these patients were the subjects of undiagnosed diabetes mellitus cannot be excluded. There is no evidence in support of such a conjecture, except for the history of lassitude in case 3. It is known that the urine in case 1 had been sugar free a few weeks before the final illness. The mechanism whereby ketonuria is produced in these cases is obscure. It seems that the hyperglycemia following either puncture or pathologic cerebral injury is the result of sympathetic stimulation. It is possible that the ketonuria is the result of a massive increase in the secretion of epinephrine. An alternative theory involves the assumption that there is pancreatic dysfunction as the result of deranged nervous control. It has been shown by Clark that the islets of Langerhans normally receive inhibitory stimuli through the vagi. If the centers of origin of such stimuli were themselves stimulated as the result of hemorrhage, a true diabetes might result. Be the explanation of the ketonuria what it may, it is in the difficulty of diagnosis to which it may give rise that the real interest lies. The coma following intracranial hemorrhage may, in the absence of signs directing the attention to the central nervous system simulate the coma of hyperglycemia so closely that differentiation of the two conditions may be extremely difficult. It is unusual for the odor of acetone to appear in the breath following subarachnoid hemorrhage, but its presence has been described. In none of the cases recorded has altered intra-ocular tension been found. A negative ferric chloride test is common in these cases and, since it must be extremely rare in hyperglycemic coma, it is valuable in differentiating the two conditions.

Medical Journal of Australia, Sydney

1: 417 450 (March 28) 1936

Acquired Active Immunity in the Ox to *Cysticercus Bovis* W J Penfold H B Penfold and Mary Phillips —p 417

Progress in Psychiatry 1910-1935 W S Dawson —p 423

Treatment of Pink Disease G B Sweet —p 430

1 451-488 (April 4) 1936

Medical Survey in Papua. Report of First Expedition by the School of Public Health and Tropical Medicine to Papua F W Clements —p 451

Treatment of Plumbism. Note F F Pincus —p 463

Cone Shell Mollusk Poisoning. Report of Fatal Case H Flecker —p 464

Use of Gentian Violet (Aqueous Solution) in Skin Diseases F C Florance —p 466

Relationship Between Dental Infection and Nasal Sinuses N M Cuthbert —p 467

Archives de Médecine des Enfants, Paris

39: 265 328 (May) 1936

Motor Disorders in Normal and Abnormal Child G Heuyer and J Roudinesco —p 265

*Immunization Against Measles by Placental Blood J Salazar de Souza —p 282

Hypochloremia Azotemia and Osmotic Regulation D Moritz —p 296

Immunization Against Measles—Salazar de Souza states that a mild epidemic of measles in Lisbon between June 1934 and May 1935 allowed him to continue his investigations of immunization in measles by means of placental blood. Between June and September he immunized forty-eight patients, some of them with recent placental blood, others with stock blood, and of this number obtained 77 per cent immunization. Further observation of measles developing in those immunized by this means persuaded him to change his technique of preparation of the placental blood. He used sodium ethylmercurithiosalicylate in treating the blood instead of solution of formaldehyde, since he found that the immunizing properties of the serum were less affected by the former. The dose used in this epidemic was from 4 to 5 cc in the first 104 cases and from 6 to 6.5 cc in the last eleven. In the last group, with the higher dosages he obtained 100 per cent immunization while in the first group he had only 75.9 per cent immunization, i. e., twenty-five cases of measles. As a result of these studies he believes that, when large enough doses of properly treated placental blood are used in immunization, the method will furnish a high percentage of good results.

Paris Médical

1: 361 396 (May 2) 1936

Heart Diseases in 1936. Annual Review P Harvier and R Boucomont —p 361

General Sensations of Humoral Disturbances in Course of Permanent Arterial Hypertension G Carrière and C Huriez —p 371

Daily and Prolonged Intravenous Injections of Ouabain E Benhamou —p 375

Severe Cardiovascular Collapse in Course of Pulmonary Embolism P Soulié —p 381

*Acute Venous Thromboses Simulating Arterial Embolism of Limbs M Audier —p 384

Venous Thrombosis Simulating Arterial Embolism—According to Audier, the differential diagnosis between venous thrombosis and arterial embolism of the limbs, while often difficult, is important from the standpoint of treatment and prognosis. A positive diagnosis is based on a group of symptoms resting on the conception that an arterial spasm occurs during the course of acute venous thrombosis. The resultant pain is severe and intense. In the lower limb it involves Scarpa's triangle and radiates along the course of the arteries. It is followed by rapidly developing cyanosis of the foot and lower part of the leg. This cyanosis may precede the development of lividity. The coldness of the limb occurs later and inconstantly. Edema is practically constant and more or less intense but develops rapidly and progressively. The presence of early edema of sudden onset and progressive evolution strongly suggests acute venous thrombosis rather than embolism. After acute thrombosis has been determined with reasonable definiteness it is important to institute treatment rapidly, aimed at the arterial spasm. The most commonly employed method of accomplishing this end is injection of acetylcholine, hyper-elevation of the foot, immobilization, and warming of the involved limb.

Presse Médicale, Paris

44 729 744 (May 2) 1936

Treatment of Gastric Allergies and Erosive Gastritis H Thiers and R Chevallier —p 729

*Treatment of Bronchial Asthma by Insulin Shocks J Wegierko —p 731

Treatment of Bronchial Asthma by Insulin Shocks—About forty patients suffering from bronchial asthma and treated by means of insulin shock have been observed by Wegierko for more than a year. His procedure was to inject 40 units of insulin subcutaneously before breakfast or six or seven hours after the last meal. This was done preferably during an attack of dyspnea from the asthma. Usually sugar was given to the patient as soon as the dyspnea had entirely

disappeared. In less severe cases the shocks were spaced every three to five days. If the dyspneic attacks were more frequent, more frequent shocks were given. In the most severe cases, shocks were given daily and sometimes twice a day until considerable improvement was noted. No bad effects have been observed, but the author has not employed this method of treatment in patients past the age of 70 in those having marked circulatory insufficiency or in cases of pulmonary tuberculosis. From the cases observed it appears that insulin shock stops the attack of dyspnea due to bronchial asthma and that after a number of shocks the character of the bronchial asthma is changed, the attacks of dyspnea are diminished in intensity, and in some cases they disappear completely. The mechanism of action, according to the author, is by means of bronchial dilatation. He believes that the method of treatment may be employed in other disorders characterized by smooth muscle contractions, such as hepatic colic, nephritic colic, migraine and analogous conditions. It may also be useful in allergic disorders. This method of treatment offers a wide field for research.

Revue Méd-Chir des Maladies du Foie, Paris

11 97 176 (March-April) 1936

Roentgenologic Diagnosis of Intrahepatic Biliary Lithiasis. P. Mallet, Guy R. Froment and M. Dames—p. 97

*Allergic Disorders of Gastro-Intestinal Tract. Liver and Gallbladder. E. Urbach—p. 116

Hepatic Insufficiency Demonstrated by Galactosuria Test in Contraceptive Bacillary Polyserositis. R. Picard, P. Perrin, Charbonel and Le Seach—p. 145

Spleen in Mediterranean Kala Azar. Clinical, Anatomic and Therapeutic Study. P. Giraud—p. 157

Allergic Disorders of the Gastro-Intestinal Tract.—Urbach states that the disorders which have the character of an intestinal allergy are those in which intestinal, gallbladder or stomach symptoms are produced by allergenic substances. Sensitization may be produced by the oral introduction of the allergen, sensitization of the digestive organs from an allergen introduced parenterally or sensitization from an allergen itself developed in the intestinal canal. Investigation of such disorders involves the taking of a careful history, the relief of the pain or spasm by an injection of epinephrine, and alimentary tests with the suspected allergens. Treatment may be divided into specific, metaspecific or symptomatic specific therapy. Specific therapy may be instituted by the administration of slowly increasing quantities of the known allergen or by desensitization immediately before the meal. Metaspecific desensitization consists in the production of an anaphylactic shock by means of horse serum and in many instances leads to recovery. The symptomatic treatment utilizes preparations of epinephrine in attempting to avoid acute attacks and sometimes favorable results have been obtained by colonic lavage.

Pensiero Medico, Milano

25: 89 120 (April) 1936

*Phagocytic Power of Free Cells in Pleuritic Exudates. G. B. Audo-Gianotti—p. 91

Placental Extracts in Hypogalactia. G. Parmeggiani—p. 97

Clinical Value of Dilution Test as Functional Test of Liver. T. Guido—p. 103

Phagocytic Power of Free Cells in Pleuritic Exudates.—Audo-Gianotti studied the phagocytic power of free cells in pleuritic exudates by means of injections of 1 cc. of a 10 per cent aqueous solution of India ink into the fluid of the pleuritic effusion. The determinations were made in ten patients suffering from exudative pleuritis of varying etiology. The author concludes that certain free cells in pleuritic exudates have phagocytic power, which depends on the type, evolutionary stage and age (phase of degeneration) of the cells. Phagocytosis is intense by cells of a histoid origin (those originated in a reaction of the connective subpleural tissues to the local inflammation) less intense by mesothelial monocytoïd and granulocytoïd cells (those originated in the local reaction of the serous membranes and other pleural structures) and absent in lymphocytoïd cells (those originated in blood and inflammatory cells). The failure of free cells to phagocytose the granules of inert colored substances previously injected into the fluid depends on the presence of lymphocytosis which is a characteristic of exudates of tuberculous pleuritis. The lack of phagocytosis is of diag-

nostic value in tuberculous pleuritis, when the exudates are already formed and have remained in the pleura for a certain time. In these cases the exudates are lymphocytic. Early in the development of tuberculous pleuritis, as well as in acute forms of the disease, however, phagocytosis in the exudates is intense, owing to the fact that the latter are in the period of formation during which the pleura reacts to the inflammatory process with the production of histoid and granular cells. It is only later, on the evolution of tuberculous pleuritis, that the phagocytic power of the exudates disappears through modifications of the cytologic structure of the exudates.

Policlinico, Rome

43 911 954 (May 18) 1936 Practical Section

Embolism of Pulmonary Artery Cured by Embolotomy. Case. P. Valdoni—p. 911

*Acute Polyarthritis in Course of Primary Malaria. Developed near Florence. Case. A. Terzani and Lia Torelli—p. 918

Modern Trends in Therapy of Cardiac Diseases. G. Galli—p. 974

Polyarthritis and Primary Malaria.—Terzani and Torelli state that there is a type of malarial pseudorheumatism which develops in the course of either a primary or a recurrent attack of malaria, early or during convalescence. Arthritis, appearing early in certain forms of malaria with a type of nearly continuous fever, does not modify the febrile curve, which changes to the intermittent type regardless of the presence of arthritis. The polyarthritic symptoms are so predominant that a diagnosis of malaria is overlooked, especially in cases of primary infection with a febrile curve of nearly continuous type. The articular symptoms are different from those of acute articular rheumatism: there is no history of angina, the knee joints are not primarily involved and the joint or joints involved are affected all through the disease. Endocarditis complicates the disease only in exceptional cases. Salicylates fail to relieve the patients. The nature of the disease is determined by the results of the treatment both on the malarial and the articular symptoms rather than by the articular picture which is different from that of malarial neuritis, myositis, osteomyelitis and osteitis. The sojourn of the patients in thermomineral spas is not indispensable to obtain complete recovery, which is obtained, however, in a short time by the administration of an intensive quinine treatment either by itself or in association with salicylates, sulfur or iodine. A case is reported in a man aged 63 who lived in a nonmalarial zone near Florence. The metatarsophalangeal joints were primarily involved and the shoulder joint was intensively and constantly affected all through the disease.

Riforma Medica, Naples

52: 601 636 (May 2) 1936

*Contraction of Spleen by Intravenous Injections of Epinephrine in Purpura Haemorrhagica. P. Riolo—p. 603

Metastasis of Vagina from Renal Cancer. Case. G. Manzoni—p. 606.

Contraction of Spleen in Treatment of Hemorrhagic Purpura.—Riolo reports two cases of hemorrhagic purpura with splenomegaly and thrombopenia in which a permanent cure was obtained by repeated contraction of the spleen produced by daily intravenous injections of increasing doses of from 0.01 to 0.1 mg. of epinephrine. The last dose was repeated for twenty consecutive days. After that the blood picture returned to normal and the spleen to its physiologic limits and the patients were permanently cured as proved by follow-up examinations for a period of a year and a half. The author believes that the favorable results of the treatment are due to the fact that it controls both thrombopenia and the lack of tonus of the capillaries of vagal origin which are the two pathogenic factors of hemorrhagic purpura. Epinephrine regulates the functions of the spleen until they return to normal. By means of contraction the organ is forced to expel into the blood stream a greater number of platelets. Epinephrine decreases the lytic activity of the spleen on blood platelets (which is increased in hemorrhagic purpura), stimulates the bone marrow to the formation of a larger number of blood cells and increases the vascular tonus through the sympathetic. The author believes that the treatment is especially indicated in hemorrhagic purpura associated with splenomegaly.

Prensa Médica Argentina, Buenos Aires

23:1967-1024 (April 15) 1936 Partial Index

- Thoracoplasty Finocchetto's Paradoxical Incision R Finocchetto — p 967
Metatarsotarsal Luxation Case V C Girardi and A R Isola — p 972
*Counting of Platelets in Gastric Cancer V A Franco p 977
Humoral Theory of Origin of Diseases J Moreno p 988
Diffuse Peritonitis Treatment W Benthin — p 1004

Counting of Platelets in Gastric Cancer—Franco counted the platelets in eighteen patients suffering from gastric cancer. In all the cases the number of platelets per cubic millimeter of blood was normal. The clinical diagnosis of gastric cancer was confirmed in all cases by the evolution of the disease and by the performance of either an operation or a necropsy. On the basis of his results and of the fact that thrombocytopenia is a constant blood alteration in patients suffering from pernicious anemia, the author ascribes value to the counting of platelets in the differential diagnosis of pernicious anemia and gastric cancer and advises further work in this field for verification of his statement.

23:1025-1082 (April 22) 1936

- Primary Chorio-Epithelioma of Fallopian Tube Case O L Bottaro O E Arrillaga and A Bianchi — p 1025
*Treatment of Gastroduodenal Ulcer by Intravenous Injections of Sodium Benzoate (Bazzano's Method) J J Beretervide D Di Benedetto and D Barrios — p 1035
Pneumococcal Peritonitis O I de Goycochea — p 1041
Fontanels in the New Born F Ugarte — p 1055
Pathology of Meckel's Diverticulum Diverticulum in Child Case I Diaz Bobillo — p 1061

Injections of Sodium Benzoate in Treatment of Gastroduodenal Ulcer—The work of Beretervide and his collaborators was to verify the value of the intravenous injections of sodium benzoate (Bazzano's method) in the treatment of gastroduodenal ulcers. The authors' patients were placed in two groups, in which the action of sodium benzoate on the gastric secretion and the clinical evolution of patients treated by the injections were investigated. In the first group of patients (ten) the action of the drug on the gastric secretion was investigated by determining the acidity of the gastric secretion obtained by fractional catheterization before and after administration of an intravenous injection of 2 cc of a 25 per cent solution of sodium benzoate. Free and total chlorhydric acidity rose early after the injection in five of the patients, late in two and diminished in three. The second group (sixteen patients) were treated by the administration of a daily intravenous injection of 2 cc of a 25 per cent sodium benzoate solution, varying between twenty and thirty injections. Fourteen patients in this group were suffering from either gastric or duodenal ulcers and two from hyperchlorhydria associated with gastritis. The results of the treatment were negative in eleven patients out of the group of the fourteen with ulcer and favorable in one, and the two other patients disappeared from observation. The treatment gave satisfactory results in one of the cases of hyperchlorhydria and gastritis and failed in the other one. The authors conclude that the intravenous injections of sodium benzoate are not efficient in the treatment of gastric and duodenal ulcers.

Archiv für Gynäkologie, Berlin

160:447-624 (April 2) 1936 Partial Index

- *Thyroid and Pregnancy A Pohl — p 447
Hypophyseal Tumor and Pregnancy R Reckmann — p 454
*Deaminating Function of Human Placenta J Botella Llusá — p 467
Functional Test of Ovaries Several Years After Hysterectomy H Siegmund — p 472
*Adrenal Cortex and Sexuality H O Neumann — p 481
Mucous Membrane Changes (Metaplasia) of Uterus in Continuous Administration of Estrogenic Preparations P Grumbrecht — p 525

Thyroid and Pregnancy—According to Pohl the functional activity of the thyroid is slightly increased during pregnancy. The changes in the thyroid characteristic for pregnancy can be produced experimentally by small amounts of the thyrotropic hormone of the anterior hypophysis. Large doses of pregnancy serum produced an effect on the thyroid in experimental animals. Pregnancy causes no thyrotoxic changes. An existing exophthalmic goiter becomes exacerbated by pregnancy in about half of the cases and terminates fatally

in about 6 per cent. Some authors have even observed improvements in thyrotoxicosis during pregnancy. The author emphasizes that the increased thyroid activity during pregnancy is not a pathologic condition but is rather advantageous for the organism, it does not require compensation by other endocrines but helps in the undisturbed development of the growth processes of pregnancy. He stresses that it is inadvisable to refer to the increased thyroid action of pregnancy as a form of hyperthyroidism, for hyperthyroidism indicates a pathologic process.

Deaminating Function of Human Placenta—Botella Llusá shows that the placenta has the capacity to decompose amino acids and to form ammonia and urea. This capacity is found in mature as well as in immature placentas, but its peak is reached during the seventh month of pregnancy. This activity does not necessarily have to be regarded as a vital characteristic at any rate, it is of great interest in the explanation of metabolic disturbances during pregnancy.

Adrenal Cortex and Sexuality—Neumann shows that insufficiency of the adrenal cortex is followed by a reduction of the sexual functions which finally results in gonadal atrophy and, in women, in amenorrhea. He cites the case of a woman with Addison's disease in whom the cyclic sexual function was disturbed. The uterine mucosa was atrophic as in a woman at the onset of the menopause. After treatment with adrenal cortex extract and with *l*-ascorbic acid the menstruation was once more regulated. In addition to an improvement in the general condition there was also a decrease in the brownish discoloration. Hyperfunction of the adrenal cortex may produce premature puberty in children, and virilism (interrenalism) may result in girls of pubertal age. In male persons a change in the sex characteristics is rare. The author describes three cases of hypernephroid blastomas of the adrenal cortex which he observed. In one case he observed a decided virilism which, however, disappeared again following surgical removal of the adrenocortical tumor. Subsequently the woman became pregnant and gave birth to a living child. The author discusses hypernephroid blastomas in the region of the female genital organs and cites three cases. In one the urine produced in infantile mice anterior pituitary reactions I, II and III, but after the operation the elimination of the anterior pituitary hormone decreased because only reaction I was elicitable with the urine. In discussing the manner in which a hyperfunction of the adrenal cortex effects a change in the sex characters, the author suggests that the adrenocortical hormones act on the genital apparatus by way of the hypophysis.

Deutsche medizinische Wochenschrift, Leipzig

62:717-756 (May 1) 1936 Partial Index

- Hormones and Cancer H Druckrey — p 717
Testing of New Cho'agogue Substance with Duodenal Tube W Hoefding — p 721
Action of Short Wave Irradiation G Wetzel and A. Kiesselbach — p 725
*Presence in Serum of Cancer Patients of Substance That Binds Melanophore Hormone W Rodewald — p 726
Early and Erroneous Diagnosis of Atrophy of Optic Nerve I Partial Atrophies of Optic Nerve L Heine — p 727
*Function and Functional Disturbances of Pancreas Z von Bernáth — p 730

Substance in Serum of Cancer Patients That Binds Melanophore Hormone—Rodewald points out that Trendelenburg and other investigators found that the serum of pregnant women contains a substance which counteracts the melanin diffusing component of the posterior lobe of the hypophysis in its action on the skin of the frog. Further investigations revealed that this inactivation is the result of a binding of the melanophore hormone to a high molecular protein substance. The author observed in experiments that the serum of cancer patients produces an even greater inactivation than does the serum of pregnant women, for, whereas frogs kept on a white ground assumed a somewhat darker shade after a mixture of normal or pregnant serum and extract of posterior pituitary had been injected, the frogs retained an almost unchanged light color when cancer serum was used in the test. Moreover, whereas the inactivating substance in the blood of some normal and of pregnancy bloods can be destroyed by heat (thirty minutes at 55 C), the inactivating substance in

the serum of cancer patients is not destroyed by this treatment. The author tested the inactivation of the melanophore hormone on 385 serum specimens and gives a tabular report of the results. Of the serums from 109 cancer patients, all but four exerted a pronounced inactivating effect. The serum of patients with skin cancers, however, exerted no influence on the melanophore hormone. Among the serums of the 276 patients who had various other disorders but no cancer, seventeen reacted like cancer serums.

Functional Disturbances of Pancreas—Von Bernáth investigated the external and internal secretion of the pancreas in fifty patients with various internal diseases. He examined the external secretion by determining the trypsin and diastase content of the duodenal juice and the lipase content of the blood and urine. To determine the condition of the internal secretion, he studied the course of the alimentary hyperglycemic reaction. He gives the normal values of the various pancreatic ferments and then states his observations on the pancreatic function in various disorders. He found that the pancreatic function was not noticeably impaired in patients with exophthalmic goiter. In diseases of the gallbladder he noted hypofunction of the pancreas. Chronic gastritis is followed by a disturbance of the pancreatic secretion, particularly in the cases in which the gastritis changes into achylia. The studies revealed also that the disturbances in the external and internal secretions of the pancreas are entirely independent from one another.

Deutsche Zeitschrift für Chirurgie, Berlin

246 641 784 (April 22) 1936 Partial Index

- *Spondylitis (Spondylitis) Deformans of Cervical Vertebrae G. Ober—p. 666
- *Dupuytren's Palmar Fascia Contracture and Its Treatment G. Maurer—p. 685
- Operation for Dupuytren Contracture. H. von Seeman.—p. 693
- Effect of Operative Trauma on Pulmonary Respiration Capillary Gas Exchange and the Circulating Blood Volume E. Derra.—p. 697
- Pulmonary Tension Atelectasis and Lung Shrinkage K. Strass—p. 715

Spondylitis Deformans of Cervical Vertebrae—According to Ober, the occurrence of spondylitic alterations in the cervical vertebrae is quite common. The lesions increase with age both in numbers and in severity. A predilection for the male sex was not noted. Three stages of the process are recognizable: (1) isolated calcification of the anterior ligament of a vertebra, (2) deposition of osteophytes at the point of insertion of the anterior ligament and (3) deformity of an individual vertebra. The interdependence of the three stages can be best observed in vertebrae the seat of an advanced lesion. Here one can see as a rule, the three types of lesions with intermediary transitional stages. A vocational predisposition to the disease cannot be established. On the other hand, an etiologic relationship to infections such as furunculosis, gonorrhea, abscessed teeth, osteomyelitis or tonsillitis appears quite probable. The author found no relationship between the severity of the objectively demonstrable anatomic lesions and the objective clinical symptoms and the subjective complaints. The painful subjective manifestations of the disease arising from purely mechanical causes are to be attributed to a superimposed inflammatory process. In the absence of an inflammatory process, most advanced lesions may exist without clinical manifestations. The favorable response to irradiation is explainable on no other than the inflammatory genesis of the clinical manifestations.

Treatment of Dupuytren's Contracture—Maurer presents a study of 200 cases of palmar fascia contracture observed at the Lexer clinic (Munich) during the last decade and among the inmates of the large Munich homes for the aged. He concludes from a review of the literature that of the many etiologic causes advanced trauma and heredity are the ones to be considered. The condition is much more common in men than in women. In his material there were 143 male patients (71.5 per cent) and fifty-seven female (28.5 per cent). The greatest incidence is in people past the age of 50. Chronic occupational traumatization of the palm of the hand is undoubtedly the principal etiologic factor in the causation of this disease. The author found that 55 per cent of his patients were engaged in occupations which exposed their palms to severe chronic trauma of various types such as pulling, pressing or

squeezing, 38 per cent were in occupations exposing the palms to ordinary trauma and 7 per cent were in occupations in which injury to the palmar surface was accidental. Both palms were involved in 107, the right alone in fifty-two and the left alone in forty-one cases. The frequent association with rheumatism, sciatica and gout is probably a coincidence rather than the result of a common "rheumatic or uratic diathesis." The claims made for the hereditary origin could not be verified in the author's material. He could trace this influence in only 10 per cent. He feels that Dupuytren's contracture should be classified as an occupational disease. The most successful treatment is that developed by Lexer, in which the entire palmar fascia with its apparently uninvolved prolongations is removed together with the overlying skin. The defect is repaired either by a free skin transplant or through the use of a pedicled attached flap fashioned out of the skin of the abdomen.

Klinische Wochenschrift, Berlin

15 593 624 (April 25) 1936 Partial Index

- Supplying Nursing with Vitamin C K. Wachholder—p. 593
- Experimental Studies on Refractory Period in Intestine W. Catel and H. Mengel—p. 597
- *Observations on Behavior of White Blood Picture in Pernicious Anemia D. Hoffmann.—p. 598
- *Occurrence of Melanogen in Lung and Melanin Formation by Enzymatic Reaction T. Sjöstrand and F. Sjöstrand—p. 598
- Genesis of Embryonal Cardiac Activity on Basis of Hydraulic Phenomenon I. Marcu—p. 600
- Action of Musculature on Elasticity of Living Arterial Wall L. Böger and K. Wexler—p. 605

The White Blood Picture in Pernicious Anemia—Hoffmann reports observations on the white blood picture of fifty-seven patients with pernicious anemia. Some of the cases date back to the time before liver therapy was used, but in forty-one cases liver preparations were given. The total number of leukocytes was usually greatly decreased (from 2,000 to 3,500), but an increase in the hemoglobin content was usually accompanied by an increase in the number of leukocytes. In some instances the leukocytes reached highest values after the first administration of liver, but the number usually decreased again with the same rapidity and after that increased slowly simultaneously with the hemoglobin content. Whenever there was no blood crisis or remission, the leukocytes sank to extremely low values. In patients who were not treated with liver there was no increase in leukocytes except immediately after blood transfusions, whereas in those receiving liver therapy increased values were detected in about half of the cases, especially at the onset of a blood crisis. The author discusses the behavior of the various types of white cells with and without liver therapy. His observations indicate that the liver therapy of pernicious anemia exerts a practically specific action not only on the erythropoietic but also on the leukopoietic system. The action of liver preparations on the leukopoietic system is noticeable in all patients in whom the erythropoietic system is likewise improved, but in about 50 per cent of the cases it occurs later than the improvement in the red blood picture. In these cases the leukopenia deviation to the right, lymphocytosis and monocytopenia are not compensated until the red blood picture has become partly or completely normal. The usually rapid increase in eosinophiles which sets in a few days after onset of the liver therapy, is an exception to this rule. In the other half of the cases, a deviation to the left appears soon after onset of the liver therapy and thus proves the prognostic value of the white blood picture. In the latter cases the specific action of liver therapy extends to the white blood picture from the beginning.

Melanogen in Lung and Melanin Formation by Enzymatic Reaction—The Sjöstrands showed that the lungs of mammals and birds contain a type of cell characterized by its iron content and profuse granules, which consist of at least three different substances which partly seem to change into one another. In the course of this transformation, which is dependent on the accumulation of blood in sinuous vessels, there develops a product which under the influence of certain aldehydes by an enzymatic reaction, may be changed into a substance showing the behavior of the natural melanins. This substance can be obtained from the lungs in considerable quantities.

Wiener klinische Wochenschrift, Vienna

49: 545-576 (May 1) 1936 Partial Index

- Origin of Hermaphroditism I Moszkowicz—p 545
- Experimental Studies on Aujeszky's Disease (Pseudohydrophobia)
F Gerlach and F Schweinburg—p 551
- Surgical Treatment of Tuberculosis of Bones Joints and Lymph Nodes
Indications and Contraindications M Jerusalem—p 557
- Autoregulatory Processes in Nitrogen Metabolism S Leites and
T Wolpian'skaja—p 559
- *Nature and Prevention of Traumatic Pneumonia H Reinberg and
A Kaplan—p 560

Studies on Aujeszky's Diseases (Pseudohydrophobia)

—Gerlach and Schweinburg describe experimental studies on pseudohydrophobia, which revealed that the virus of Aujeszky's disease is a latent neurotropic, filtrable virus. It is related to the virus of hydrophobia but differs from it fundamentally in many points. It seemed to be somewhat less resistant than the virus of hydrophobia to drying and chemical agents. The eight strains of virus of Aujeszky's disease which the authors examined differed considerably as regards virulence and incubation, but they all produced the clinical aspects of Aujeszky's disease. It proved possible to transmit the virus to experimental animals by all known modes of infection. Oral infection succeeded only in exceptional cases. In some cases the disease was transmitted by mere contact and occasionally by biting. After the disease has become manifest, the virus is always found in the brain and quite frequently also in the parenchymatous organs and in the blood. The virus was not demonstrable in the urine and in the stool, but in one case the disease was transmitted by means of the saliva of an infected cow. In rabbit passages the virus of Aujeszky's disease was constant but successive passages in guinea-pigs and in rats reduced the virulence and a subsequent rabbit passage increased the virulence again to the original degree. The immunization of healthy animals against Aujeszky's disease did not succeed entirely. Animals that have had an attack of the disease have a considerable immunity, which persists for at least nine months and perhaps longer. The virucidal action of the serum of these animals is only slight, but they tolerate subcutaneous and interperitoneal immunization quite successfully and thus aid in the production of highly virucidal serums. The animals thus treated have an immunity also against cerebral infection with the virus of Aujeszky's disease, but they are not in the least immune to hydrophobia. The virucidal serums are strictly specific in that they destroy even the strongest virus concentrations of Aujeszky's disease, but they do not neutralize even attenuated solutions of hydrophobia viruses. On the other hand animals that are immune to hydrophobia are not immune to Aujeszky's disease.

Traumatic Pneumonia—Reinberg and Kaplan are of the opinion that all pneumonias develop on the basis of an obstructive pulmonary collapse. After a bronchial lumen has been obstructed, the air in the corresponding pulmonary lobe is completely absorbed by the passing blood in about two hours. The authors mention the various factors that may cause obstruction of the bronchial lumen and then discuss the pulmonary mechanisms that aid in opening the bronchial lumen. They show that vigorous functional activity is of great importance in the prevention of pneumonia and that this is accomplished best by respiratory gymnastics in the sitting position and by carbon dioxide inhalation. They say that in this manner they were able to reduce the incidence of postoperative pneumonia as well as the pulmonary complications of typhus. In discussing traumatic pneumonia, the authors point out that in rib fractures, for example, the great pain at the sites of fracture leads to restriction of the functional activity and thus to deflation of the lung. During this state of deflation a small quantity of bronchial secretion readily obstructs the lumen and since coughing is suppressed on account of pain the secretion quickly accumulates. The authors realized that in order to facilitate respiration it was necessary to counteract the pain. They did this by injecting from 10 to 15 Gm of a 1 per cent solution of procaine hydrochloride at the site of the fracture. This measure has a prompt effect. The existing cyanosis disappears and the patient is able to expel the secretion by

coughing and to breathe properly. The authors employed this treatment in about forty patients with thoracic injuries, and in this manner they were able to prevent pneumonia.

49: 577-608 (May 8) 1936 Partial Index

- Prophylaxis and Therapy of Postoperative Infection of Knee Joint
F Mandl—p 577
- *Further Experiments with Specific Treatment of Erysipelas E Neuber
p 581
- *Relations Between True Arterial Hypertension and Thyroid Function
M Schur—p 589
- Coronary Insufficiency in Anemia F Mainzer—p 592
- Magnesium Sulfate in Strophanthin Intoxication L Zwilling—p 594
- Prophylaxis and Suppression of Pneumonia by Ephedrin and Similar
Substances E. Lowy—p 595

Specific Treatment of Erysipelas—Neuber gives his attention chiefly to the use of convalescent serum. He found it advisable to give polyvalent convalescent serum, that is a mixed serum from six or eight patients. Since the active substances in the convalescent serum quickly lose their efficacy at room temperature as well as in the iccbox, he considers storage in the frozen condition advisable. He administers the convalescent serum by intragluteal injection. The serum is given at intervals of two or three days and in increasing doses. At the first injection between 40 and 80 cc is administered. The author found that after the larger doses (from 60 to 80 cc.) the fever subsides more rapidly than after smaller doses (30 or 40 cc). He observed also that the serums from patients who had not been given convalescent serum were more effective than those of other patients. Because of this he restricts the treatment with convalescent serum to the severe cases and uses as donors the patients who have the milder forms. He admits that mild relapses appear occasionally after treatment with convalescent serum however, they usually disappear again spontaneously in a comparatively short time, but in order to avoid them he considers it advisable to give a few additional serum injections after the first attack has subsided. If the supply of convalescent serum is exhausted, after-treatment with chemotherapeutic substances (arsphenamine, quinine and so on) is advisable.

Arterial Hypertension and Thyroid Function—Schur discusses the theories of the pathogenesis of hypertensive tachycardia. He shows that the majority of cases are accompanied by a considerable increase in the erythrocytes with vital granules. Tachycardia as well as the number of these erythrocytes usually decreases following the administration of di-iodotyrosine and increases again after this medication is discontinued. The author thinks that these observations are a further argument in favor of a hyperfunction of the thyroid in these cases. He agrees with J Bauer who assumes that an increased blood perfusion of the thyroid is responsible for this hyperfunction.

Wiener medizinische Wochenschrift, Vienna

86: 509-536 (May 9) 1936 Partial Index

- *Experimental Cancer Immunity A Besredka and L. Gross—p 509
- Significance of Milk for Nutrition of Child J Siegl—p 512
- Treatment of Static Dynamic Decomposition by Pelvic Lever (Scissors Lever Principle) M Jungmann—p 514
- *Rehabilitation of House Fly H Pach—p 517

Experimental Cancer Immunity—Besredka and Gross review some of the literature on this problem and describe their own experiments on rabbits. They reach the conclusion that rabbits are readily immunized against epithelioma. In order to produce this immunity it is sufficient to give an intracutaneous injection with a freshly prepared tumor suspension. The intracutaneous tumor that is produced in this manner soon becomes resorbed and the animal becomes immunized against epithelioma. This immunity is specific, solid and permanent, but it is not transmissible, that is, it is of a cellular nature.

Flies and Transmission of Typhoid—Pach directs attention to a former report in which he gave evidence to the effect that the theory according to which the house fly (*Musca domestica*) transmits typhoid is no longer tenable because it contradicts the biology of the house fly and the epidemiology of typhoid. In this report he cites additional studies that were carried out under the supervision of the Hungarian hygiene institute and which he thinks are likewise evidence against the widely accepted theory of the carrier function of the house fly in the transmission of typhoid.

Vestnik Khirurgii, Leningrad

43 1184 (No 119) 1936 Partial Index

- *Leech Therapy of Embolic Processes N. L. Blumental—p. 3
 Transfusion of Conserved Defibrinated Blood A. N. Filatov—p. 11
 Numerical Estimation of Qualitative Alterations in Leukocytes Associated with Transfusion of Heterogenous Blood (Shock Therapy) B. A. Bogdanov—p. 19
 *Treatment of Tetanus with Intraspinal Injections of a Mixture of a Solution of Phenol and Small Doses of Antitetanic Serum T. A. Grasmik—p. 30
 Enterostomy in Mechanical and in Paralytic Ileus Z. B. Ogloblina—p. 38

Leech Therapy of Embolic Processes—According to Blumental, the leech therapy of thrombophlebitis was proposed by Termier in 1922. In 1884 Haycroft found a substance in the secretion of the buccal glands of a leech to which Jacoby gave the name "hirudin." Experiments *in vitro* demonstrated that hirudin retards coagulation of the blood and that this effect is caused by its antithrombin action. It destroys the fibrin ferment without affecting the fibrinogen. Straaten believes that this effect is due not only to the anticoagulant action of hirudin but to prolongation of the bleeding time as well. Slowing of coagulation begins to take place from six to eight hours after the application of the leech, reaches its maximum in about thirty hours, and returns to normal in from forty-eight to fifty hours. The effect of hirudin is limited to a relatively small area in the vicinity of the applied leech. The rapid disappearance of edema following the application of leeches in acute thrombophlebitis is believed to be due to its lymphogenic action (Straaten). In addition, it possesses a bactericidal action which explains the rarity of infections after application of leeches to a skin not treated by antiseptics. A leech is capable of sucking from 15 to 20 cc. of blood. The puncture wound, after the leech has fallen off, continues to bleed for several hours. The amount of blood thus lost amounts to from 50 to 75 cc. The author sums up the effect of leech therapy on a thrombophlebitic process as follows: 1. Extension of the thrombotic process is arrested by the anticoagulant and absorbing action of hirudin. 2. The associated edema rapidly diminishes and disappears because of a lymphogenic action of hirudin. 3. The process is further favorably influenced by leukocytic and bactericidal properties of hirudin. As a result, the inflammatory process is aborted, the pain subsides and the infiltration is rapidly absorbed. The method to be followed in treating thrombophlebitis is to apply leeches in pairs alongside the inflamed vein about 2 cm. away from it on both sides of the vessel at intervals of from 4 to 6 cm. From six to ten leeches may be applied. Hirudinization may be repeated every forty-eight to sixty hours. Two or three treatments are, as a rule, sufficient, but in exceptional cases from five to six may be required. The author treated thirty-two cases of acute thrombophlebitis, seven of which developed after an operation and two after delivery, three followed an infection, ten developed on a basis of varicose dilatation of veins; in five the process was an acute flare-up of a chronic thrombophlebitis, three were cases of acute inflammation of hemorrhoidal nodes and three were cases of acute thrombophlebitis of undetermined cause. The results were gratifying in all cases. The author concludes that hirudinization is the most effective treatment for thrombophlebitic processes.

Treatment of Tetanus—Grasmik treated three cases of tetanus by intraspinal injections of from 4 to 5 cc. of a 3 per cent solution of phenol and noted good results. Two of the patients survived and one died. In the next six cases he injected the same amount of phenol together with 1,500 units of antitetanic serum. All patients recovered. The difficulty of the intraspinal method in the presence of opisthotonos is met by a preliminary administration of morphine and local anesthesia. Objective improvement was noted several hours after the injection. From his animal experiments the author concluded that treatment of tetanus with injections of phenol alone is not permissible. The antitetanic serum is effective only when introduced into the spinal canal. The combination of phenol with small doses of the antitoxin gives good results. The role of phenol is that of a nonspecific irritant of the central nervous system while the antitoxin exerts its specific influence. Thus the combination therapy renders it unnecessary to employ large doses of the antitetanic serum.

43 195 317 (No 120) 1936 Partial Index

- Problems of Clinical Medicine and Experimental Endocrinology A. Z. Kozdoba—p. 195
 Traumatic Asphyxia A. N. Zebold and S. P. Feldman—p. 266
 Experimental Observations on Effect of Transfusion of Partly Coagulated Blood After Removal of the Coagula I. P. Petrov and G. Kasumov—p. 214
 Pulmonary Suppuration V. V. Lavrov—p. 230
 *Embolism of Superior Mesenteric Artery N. S. Okun—p. 240

Embolism of Superior Mesenteric Artery—Okun reports eleven cases of embolism of the superior mesenteric artery. There were eight instances of this condition among 230 necropsies. The condition was not diagnosed in a single case before the operation or necropsy. The etiologic factors in nine cases were acute, recurring, ulcerative, vegetative and chronic endocarditis and atheromatosis of the aorta. While the diagnosis is difficult, the presence of pathologic alterations in the cardiovascular system constitutes a valuable aid in the diagnosis of the condition. The pathologic alteration in the intestine is that of a hemorrhagic infarct and only rarely that of an anemic infarct. The clinical manifestations are those of diarrhea, ileus, or a combination of the two. Three of the author's cases were characterized by diarrhea, three presented a picture of intestinal obstruction, one presented symptoms of both diarrhea and ileus, while the rest presented a vague symptomatology. All patients died. An early operation with resection of the involved intestine is the only method offering a possibility of cure.

Bibliotek for Læger, Copenhagen

128 83 102 (April) 1936

- *Number and Percent Apportionment of White Blood Corpuscles in Suppurative Coloproctitis O. Moltke—p. 83
 Clinical Investigations into Action of Protamine Insulinate. A. B. Krarup—p. 97

White Blood Corpuscles in Suppurative Coloproctitis—Of the twenty cases of suppurative coloproctitis examined by Moltke, seven proved fatal. In these leukocytosis was sometimes found, but there was a constant considerable, sometimes exceptionally high, increase in the immature neutrophil cell elements, both relatively and absolutely. In eleven cases of more or less grave disorders, none fatal, the values could rarely be designated as leukocytosis, in most cases there were slight shiftings to the left. Two patients, examined during periods of remission, showed neither leukocytosis nor shifting to the left. The author consequently considers constant more marked shifting to the left (i. e., relative values above 25 per cent and absolute count of more than 2,000) an important and grave prognostic sign. Reduction in shifting to the left is observed coincident with clinical improvement. A relative and absolute leukopenia occasionally appears in grave cases, it is apparently affectable by blood transfusion. Eosinophilia may occur, but it is not a constant phenomenon in suppurative coloproctitis.

Finska Lakaresällskapets Handlingar, Helsingfors

79: 295 390 (April) 1936

- *Orogenic Meningitis with Especial Regard to Pathology of Disorder H. Björk—p. 304

Orogenic Meningitis—Of Björk's twenty-nine cases of orogenic meningitis in acute otitis in which treatment was administered from 1930 to 1935, sixteen represented primary and thirteen secondary meningitis. Of the former, thirteen were tympanogenic (four fatal) and three labyrinthogenic (two fatal). Of the latter, eleven resulted from sinus thrombosis (six fatal) and two from brain abscess (both fatal). Two of the fourteen deaths were caused by other complications, and the mortality from meningitis was thus 44.4 per cent. The nine cases in which there were bacteria (streptococci) in the cerebrospinal fluid were all fatal. The author concludes that meningitis in connection with acute otitis originates equally often from primary and from secondary infections. The great majority of cases are due to a tympanogenic or a sinusogenic infection. Disturbances in development play an important part in the progression of the disorder to the meninges. In twenty-six of his twenty-nine cases there was an abnormally wide or an obstructed pneumatization.

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TRENDS IN AMERICAN OBSTETRICS DURING THE FIRST THIRD OF THIS CENTURY

CHAIRMAN'S ADDRESS

LYLE G McNEILE, M D
LOS ANGELES

Although many notable advances and changes have been made in the practice of general medicine and surgery during the present century in no specialty have there been more drastic changes than in obstetrics.

In order to obtain a clear conception of the evolutionary changes and tendencies in obstetrics one must first glance at the conditions that existed at the end of the nineteenth century. It must also be fully realized that much of the progress made in the present century is the direct result of the pioneer work of Cederschjold, Holmes, Semmelweis, Pasteur, Lister, Smellie, Tarnier and many others. The assembled facts from the many traditions and observations of these pioneers have in many instances been "rediscovered" and reapplied.

At the beginning of the century the overwhelming majority of women in the United States and other countries were delivered by midwives, in the home. The rich could command the services of one of the few specialist obstetricians who gave some antepartum care but usually delivered the patient at home, the labor, nevertheless, being allowed to follow its natural course. For the indigent, there were in several large cities, lying-in hospitals, usually maintained for the purpose of providing clinical material for a teaching institution. Brodhead¹ records that the pregnant women in the Sloane Maternity Hospital in New York were systematically examined and that pelvimetry was a routine procedure. Vaginal examinations were freely made preceding and during labor. No sterile gowns or gloves were used.

Bill² states that in Cleveland twenty-five years ago there was no physician who limited his practice entirely to obstetrics, and there was very little obstetric hospitalization. Most of the deliveries were done by midwives, the physician being called only when the midwife encountered unusual difficulty. This should be compared with records of the same city in 1930, when 55.7 per cent of the babies were born in hospitals and approximately 45 per cent of the deliveries were made by specialists or under their supervision. During the past ten years the number of deliveries done by midwives has been reduced to less than 6 per cent.

Thus, at the beginning of this century every general practitioner had perforce to be an obstetrician, but at this time the new fledged doctor obtained his diploma to practice with little or no actual experience in clinical obstetrics. There were at this time not more than a half dozen medical schools that maintained lying-in hospitals in which medical students could witness deliveries, and the student who had actually delivered one or two women before he was graduated was considered very lucky.

Even with this, thirty-five years ago it was considered that there was but little room for improvement in the art of obstetrics. Versions, forceps operations and maneuvers for the correction of malpositions were well known to and practiced by experienced physicians, but in those days it was more generally recognized than at present that even difficult labors very often ended in spontaneous delivery if the woman was allowed a sufficiently long labor.

THE DAWN OF NEW OBSTETRICS

However, several things were happening that were destined to alter the course of obstetrics. The development of asepsis and the perfection of surgical technic in Germany had, even before 1900, made cesarean section a much more frequent operation than formerly. Norris³ in 1899 pointed out that the successful obstetrician of that day must be a thorough surgeon and a competent gynecologist, because cesarean section and other obstetric operations were being performed with almost startling frequency. The conception of Krong in 1894 and of Williams in 1898 that the vagina of every pregnant woman who had not been examined vaginally was sterile was new, as also was the general recognition that so-called puerperal fever was puerperal infection by the streptococcus. There occurred at the beginning of the century another innovation, the introduction of the use of rubber gloves for vaginal examinations and during delivery. A spirit was being aroused to do something actively to relieve the pain and the dangers of childbirth and to safeguard the child, as compared with the old laissez-faire policy of letting nature take its course. This was the fundamental spirit of the new tendency in obstetrics about the beginning of the twentieth century.

CAUSES THAT CONTRIBUTED TO THE CHANGED TENDENCIES IN OBSTETRICS

The principal causes that acted as contributing factors to bring about a change in the practice of obstetrics were first, the scientific advances in medicine and surgery, second, and very important, the demands of the American woman, third, propaganda by surgeons and by those interested in making obstetrics a specialty, and, fourth, social, economic and biologic factors.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

¹ Brodhead G. L. Modern Obstetric Technic Compared with the Technic of Twenty Years Ago, *Am J Obst* 78:305, 1918.

² Bill A. H. The New Obstetrics, *Am J Obst & Gynec* 23:155 (Feb) 1932.

³ Norris R. C. *Obstetrics Prog Med* 3:323-422, 1899.

In regard to the first, the great impetus to surgery through the development of asepsis vastly extended its field and was bound to have its reflex in cesarean section and other operative procedures connected with obstetrics. Symphysiotomy, pubiotomy and episiotomy were among such procedures which were early popularized. From the medical field came the development of several important drugs, such as solution of posterior pituitary, which was much more rapid in its action and more reliable in producing good uterine contractions than was the ergot of the day. It was not until hundreds of ruptured uteri had been reported, however, that the danger of pituitary preparations was recognized, and their real value, the control of hemorrhage after delivery, generally accepted. From the medical group also came the rapid development of methods of analgesia and anesthesia, the former to control pain during labor, the latter to render operative procedures painless. Steinbuechel introduced the method of so-called twilight sleep into German obstetric practice in 1902. Although in its original form it was dangerous and did not survive for long, it had a very definite influence on the development of the more acceptable present-day methods.

The second factor, the demands of the American woman, is one that has not been sufficiently stressed by those who criticize modern obstetrics and its results. The American woman was educated by lay propaganda to know that scientific medicine could spare her the pangs of labor without sacrificing her child. Even if physically as well as or better able to bear pregnancy and labor than generations before her, she demanded and has continued to demand and to insist that childbirth be accomplished without pain. She does not want the old method of letting nature take its course. Moreover, if she is told that the newer methods are accompanied by an increased morbidity and mortality both for herself and for her child, she ignores such possibilities and accepts all risks of anesthesia and operative procedures provided she remains in oblivion throughout the ordeal. The old generation of women looked with fear and terror to the time of labor. Today a primipara, secure in the knowledge that she will receive anesthesia and analgesia, merely looks on childbirth as an incident. If this present-day attitude is abnormal, I believe that the fault lies with the obstetric profession, which has allowed lay propaganda to be broadcast for more than twenty years and yet has not, except in one or two instances, attempted to educate the public through its own medium, the lay press.

The third factor—propaganda by surgeons and specialists in obstetrics—was a logical consequence. Women demanded a rapid, painless labor. Anesthesia and analgesia caused uterine inertia, which in turn required some type of operative intervention. To execute these procedures properly, men specially trained in operative obstetrics were necessary and answered the call. These men very naturally raised their voices in favor of their own procedures, and today it is a controversial question as to whether or not they were not, at least to some extent, right. The rational use of anesthesia and instrumentation, entirely apart from the demand for it by prospective mothers, may be the better obstetric procedure. In any case the old-fashioned practitioner who patiently sat by the bedside for long hours was ruthlessly pushed aside and his methods were scouted by the profession and the public alike.

The social, economic and biologic factors tending toward changes in American obstetrics were many. There was the great extension in urban communities of the flat or small apartment, which made hospitalization of the woman at term a necessity. Again, hospital delivery began to be looked on by women as the correct style, there is social etiquette even in obstetrics. Economically, for a large percentage of the people, free dispensaries, even free hospital service, free public health welfare clinics and many other organizations literally pushed the pregnant woman into the newer methods rather than to allow her to remain at home and call the midwife at the onset of labor. Biologic factors, such as voluntary birth control, affected obstetrics only by reducing the birth rate. But a biologic factor such as the tendency toward fewer babies and the limitation of progeny even by abortions, self induced or otherwise, must have a very definite effect on obstetrics. This, however, is an important phase which time will not permit me to enlarge on here. Another biologic obstetric factor in the United States is the mixture of races. It is well known that pelvic measurements vary in different races and that such studies as have been made of fetal head measurements show that they too manifest similar variations. Furthermore, statistics prove that in races having smaller pelvises the head measurements too are proportionately smaller. This accounts for the frequency of dystocia due to disproportion in mixed marriages with women having smaller pelvises and may be important in explaining the increased incidence of dystocia in America.

De Lee⁴ puts the whole matter of the new tendencies in obstetrics very succinctly:

The woman nowadays demands a safe labor, freedom from unnecessary pain, a reasonable length of labor, and when she arises from confinement a complete *restitutio ad integrum*. She also demands a healthy baby, undamaged by conditions affecting it during pregnancy and free from the effects of traumatism during labor. Modern obstetrics can give the woman nearly all of these things and people are willing to pay for them.

TRENDS OF THE NEW OBSTETRICS

The outstanding trends in American obstetrics since the beginning of the century would doubtless be seen in a different light by each obstetrician who paused to consider them. To me they may be placed under five headings: first, the changing ideals in obstetric education, second, to regard pregnancy and labor as pathologic rather than physiologic processes, third, to make parturition easier for the mother, fourth, to make obstetrics easy for the obstetrician, and, fifth, to eliminate the midwife.

OBSTETRIC EDUCATION

It is impossible to think of the development of the scientific background of obstetrics during the first quarter of the twentieth century without thinking of the late John Whitridge Williams. Professor Williams realized that real knowledge of the physiology and pathology underlying all the phases of reproduction was absolutely essential before obstetrics could ever hope for a place among the recognized specialties. Slemmons⁵ says: "Research, teaching, and the care of the sick were effectively blended in [his] department

⁴ De Lee J. B. *Progress Toward Ideal Obstetrics*. Am. J. Obst. 73: 407 (March) 1916.
⁵ Slemmons J. M. *The Academic Career of John Whitridge Williams*. West. J. Surg. 44: 47 (Jan.) 100 (Feb.) 1936.

through the chief's inherent talent for organization, and it is not easy to say in which of these fields he was most gifted."

During the same period, Cragin, Burton Cooke Hirst, Edgar and several other outstanding teachers of obstetrics developed the first specially constructed maternity hospitals and clinics in the United States and instituted the form of clinical teaching that is generally used today. There was a definite trend toward adequate obstetric education.

Never in the history of American obstetrics had there ever been a real attempt made to pause and to take stock of the real status of obstetric education until the third White House Conference, called by ex-President Hoover to meet in 1930. While previous White House conferences had been held, they were concerned chiefly with the problems of the dependent child, the social and economic status of the child, supplemented by its health and that of its mother. Under the able leadership of Fred L. Adair, who was assisted by the outstanding leaders in obstetric education and many other subjects which are directly or indirectly related to maternal welfare, the 1930 White House Conference assembled tangible facts which showed the unenviable state of obstetric education, the high maternal mortality in this country, and many other facts which were destined to lower snug satisfaction with the existing conditions. The conclusions of the committee were not destructive, however, for they pointed out causes in many instances and suggested very definite remedies. In obstetric education the necessity of combining the departments of obstetrics and gynecology was stressed, and this is being accomplished in the medical schools. The necessity of providing adequate clinical material in obstetrics for undergraduates and for careful supervision of clinical teaching was shown. The value of additional facilities for furnishing postgraduate obstetric education was emphasized, particularly in its relation to infant and maternal mortality. The development of the motion picture as a means of teaching clinical obstetrics was pointed out as a thoroughly satisfactory method of providing teaching material in those schools which lacked adequate clinical material. The use of films, properly edited and directed, presents such great possibilities that I am inclined to regard their development as a teaching method as a reasonably well established trend.

The report of the subcommittee on Factors and Causes of Fetal, Newly Born, and Maternal Morbidity and Mortality has led to a definite trend which may have the greatest influence in the reduction of morbidity and mortality. I refer to the various investigations of the local problems relating to obstetrics, a consideration of their causes and their treatment, undertaken by many medical societies, health departments and allied agencies. The problem of maternal mortality in the United States had occupied a major position in the program of the Children's Bureau since its organization, and numerous studies had previously been made by interested agencies. No general interest had been shown, however, until the report of the Committee on Maternal Mortality of the New York Academy of Medicine was released to the daily newspapers in abstract form under the title "Why Women Die in Childbirth," Nov. 20, 1933. This report brought forth a storm of protest from the medical profession, but the disinterested observer would be inclined to believe that the protests arose from the manner of its

publication rather than from its major conclusions. A very definite trend was created, i. e., the investigation of each obstetric death and the responsibility for its occurrence by local and sectional societies, health departments and others in many large sections of the United States. On the West Coast, the Pacific Coast Society of Obstetrics and Gynecology is investigating every such death occurring in Washington, Oregon and California. The paper of Dr. William Benbow Thompson⁶ on "Caesarean Section in Los Angeles County" is a good example of the scope of such a report. It is inconceivable to me that such investigations can fail during the next two decades to exert a favorable influence on both morbidity and mortality.

The report of the subcommittee on Basic Sciences and Their Relation to Maternal and Fetal Problems stated: "The entire fund of present information concerning what is desirable in safeguarding the health of mother and child rests, with a few exceptions, upon definite underlying principles rather than upon empiric procedure." There is definite evidence of a trend in medical schools and among research workers toward research in the problems peculiar to obstetrics. The greatest progress, however, seems to have been made in the study of the endocrines and in the development of certain drugs such as anesthetics, analgesics, oxytocics and antiseptics, because, in these fields, money has often been made available by commercial companies in the understandable expectation of profiting by the research.

IS PREGNANCY A DISEASE OF NINE MONTHS' DURATION?

There are apparently two well developed schools of thought in regard to the question: Is pregnancy a disease of nine months' duration? Williams in 1926 stated: "I am inclined to suppose that many practitioners in urban communities have been led astray by the teachings of those who regard labor as a pathologic rather than a physiologic process, with the result that interference upon insufficient indications is frequently undertaken by those who do not fully appreciate the risk involved." De Lee said in 1927: "Can a function so perilous that, in spite of the best care, it kills thousands of women every year, that leaves at least a quarter of the women more or less invalided, and a majority with permanent anatomic changes of structure, that is always attended by severe pain and tearing of tissues, and that kills 3 to 5 per cent of children—can such a function be called normal?" The conservative or old school consider pregnancy and labor as natural and normal and not as a general rule to be interfered with, the new tendency regards pregnancy and labor as subjects for therapeutic measures from onset to termination, any method, surgical or otherwise, that will eliminate the discomfort, pain and/or danger of these processes is justified.

The trend during the past fifteen years has been very definitely toward increased operative intervention. Whether or not this trend will continue is debatable.

TREND TOWARD MAKING OBSTETRICS EASIER FOR PATIENT AND PHYSICIAN

These trends have been characterized by a number of procedures which may be summed up in a few words as shortening the time of labor by instrumental or operative delivery under anesthesia.

⁶ Thompson W. B. Caesarean Section in Los Angeles County read before the section May 15 and to be published in THE JOURNAL.

Here, of course, I am not speaking of therapeutic abortion but of what is commonly accepted as labor at or near full term. The present operative furor in obstetrics began with the introduction of the obstetric forceps and the substitution of the physician for the midwife in obstetrics. It has gained impetus with every generation. In the first two decades of this century there was a tremendous increase in forceps delivery, delivery by internal podalic version, by abdominal cesarean section, by low so-called prophylactic forceps with episiotomy, by low cervical cesarean section, and more recently the routine induction of labor by artificial rupture of the membranes at estimated full term.

So far back as 1899 Norris³ wrote "The radical tendency (to perform cesarean section) which has recently been manifested by articles on this subject by men high in the profession I cannot but regret, and I can see in this a dangerous teaching which will be exceedingly apt to lead to unhappy results." The unhappy results are strikingly shown by Plass⁷ whose figures in 1931 showed an increasing year-by-year incidence of cesarean sections in representative American hospitals and who presented mortality figures for cesarean operations in large sections of the population, which varied from a low of 4.2 per cent to a high of 16.1 per cent.

In 1920, at the meeting of the American Gynecological Society, De Lee⁸ described his "prophylactic forceps" operation, in which he recommended, particularly in primiparas, that, when distention of the perineum was evident, episiotomy be performed and the patients delivered with forceps. In spite of very pronounced opposition, his method has had a very strong following.

Available statistics would indicate that the maternal mortality from forceps operations is low.⁹ Maternal morbidity, as well as fetal morbidity and mortality after forceps, has been shown rather definitely to be increased.

Internal podalic version received an extraordinary impetus in 1920, when Potter¹⁰ of Buffalo introduced some modifications and expressed the opinion that every obstetric patient should be delivered by this method at the end of the first stage of labor if feasible so as to avoid the discomfort of the second stage. Williams¹¹ tritely remarked that possibly Potter was right and the rest of the obstetric world was wrong, and Polak¹² said regarding Potter's report of 1,113 labors with 920 versions and eighty cesarean sections, with a fetal mortality of 6.7 per cent "His operative incidence is so much greater than has been shown to be necessary, and his fetal mortality so much higher, that I cannot see on what ground he claims endorsement for his procedure." These innovations, however, in spite of the condemnation which they have received, already have had some distinctly beneficial effects. Today forceps are used more frequently than formerly, and yet far more safely. The high forceps operation has

been abandoned in favor of version or of low cervical cesarean section. The use of low forceps has become very common, and its advocates have been able to show real benefit when proper conditions are present and good technic is used. Potter's technic has resulted in vastly improved results in the treatment of breech presentations in my clinic, and his advocacy of podalic version has been an important factor in the elimination of the high forceps operation, it having been definitely proved that podalic version is a far safer procedure than high forceps.

The obstetric operative incidence in hospital practice in the United States is said to vary from 10 to 30 per cent of all deliveries as compared with 4 per cent in European and other countries in which midwife delivery is the common practice. Epstein and Fleischer¹³ found that the morbidity risk in operative obstetrics, as compared with nonoperative, was in the ratio of 5 to 1 and that the maternal mortality risk was 30 to 1. For the year 1929 Holmes¹⁴ found that 445 hospitals with 221,859 deliveries reported 46,946 operative terminations of pregnancy or labor.

It has been noted that the present trend toward operative intervention in obstetrics began with the introduction of the obstetric forceps and the elimination of the midwife and has gained impetus with each succeeding generation.

I shall quote the opinion written by Francis H. Ramsbotham of the Royal College of Physicians, London, England, in 1841 and compare it with the opinion of E. D. Plass, written in 1931, regarding this operative furor.

Ramsbotham said

Although in skilful, and especially discriminating hands, obstetric instruments must be regarded as great blessings to the suffering sex, yet it is a question with some practical men, whether by their unnecessary use they have not produced on the whole more injury than good. During the long reign of barbarous surgery, there is ample evidence to prove that operative interference was often most unjustifiedly had recourse to, and there is good reason to fear that many women have dragged out a wretched existence to the end of their days, the miserable victims of impatience, ignorance, or violence. In no few instances, the child, if not the mother's life has been sacrificed, when patience, perseverance, and a proper reliance on the natural powers, were the only obstetric auxiliaries required.

I would not have it thought, by these observations, that I am unable to appreciate the advantages sometimes resulting from instrumental aid, or that I would draw an argument against a valuable measure from the possibility of its abuse. I know too well that nature sometimes fails, and occasionally both the mother and her offspring would be overwhelmed in one common fate unless art stepped in. But I would endeavor to impress deeply upon the mind of the young practitioner, that urgent necessity alone will warrant him in taking an obstetric instrument in hand and that, when a choice is allowed him, he should leave nature to accomplish her own purpose, provided, indeed, that he can with safety trust her.

In his practice he will find it much more difficult to determine the time when instrumental aid may have become necessary, than to administer that aid, and unfortunately he will find the most deadly means most easy of application. Many times also, he may almost be persuaded, against his own opinion to the adoption of these means, by the urgent and unceasing solicitations of the patient. I would entreat him neither to allow these considerations to weigh with his judgment

⁷ Plass E. D. The Relation of Forceps and Cesarean Section to Maternal and Infant Morbidity and Mortality. *Am J Obst. & Gynec.* 22: 176 (Aug.) 1931.

⁸ De Lee J. B. The Prophylactic Forceps Operation. *Tr. Am. Gynec. Soc.* 45: 66, 1920.

⁹ Plass E. D. Maternal Mortality in Fifteen States. Children's Bureau Publication 223, 1934, p. 64.

¹⁰ Potter I. W. Version. *Am J Obst. & Gynec.* 1: 560 (March) 1921.

¹¹ Williams J. W. A Criticism of Certain Tendencies in American Obstetrics. *New York State J. Med.* 22: 493 (Nov.) 1922.

¹² Polak, Y. O. Forced Labor. Its Status in Obstetrical Teaching. *Am J Obst.* 2: 237 (Sept.) 1921.

¹³ Epstein H. J. and Fleischer A. J. Sane Obstetrics. *J. A. M. A.* 97: 219 (July 25) 1931.

¹⁴ Holmes R. W. Institutional Obstetrics in the United States in 1929. *Tr. Am. Gynec. Soc.* 59: 321, 1934.

ment, nor to let that less worthy motive, a wish to take advantage of the éclat likely to result from a successful operation, tempt him to act contrary to his own feelings of propriety

Nearly 100 years later, Plass¹ said

The marked increase in forceps deliveries in this country is accounted for largely by the performance of "convenience" operations. Although they have been dignified by the name of "prophylactic forceps," there is no good evidence that they prevent anything but loss of time on the part of the operator. The increased use of cesarean section is merely part of the modern operative furor, but from the standpoint of maternal mortality probably the most important since by conservative estimate the death rate is between 5 and 10 per cent

Thus two men, both well qualified to speak on the subject but living in widely separated countries and writing a hundred years apart, give the same advice. But in spite of the unanimity of opinion on the part of those who are best qualified to express the facts, and in spite of the commonly accepted obstetric axiom that any intervention with normal labor carries a definite risk, neither the operative incidence nor obstetric mortality is being lowered

In spite of this gloomy picture of radical obstetrics during the first third of the century, several trends in favor of conservative obstetrics are apparent. The very great extension of the antepartum care of the pregnant woman has been outstanding. This has been in great part due to the efforts of the Children's Bureau. Such antepartum care not only has resulted in stricter supervision of the hygiene of pregnancy but also has stimulated the early recognition of toxemias of pregnancy, deformed pelvis, and many medical complications of pregnancy which were formerly unrecognized. In eclampsia, particularly, a very definite trend away from radical measures, such as routine cesarean section in favor of conservative measures, is very apparent. The discovery of insulin has completely changed the prognosis for the diabetic patient who becomes pregnant, the management of cardiac patients during pregnancy has undergone great changes, and the introduction of blood transfusions in the treatment of the obstetric hemorrhages has been of incalculable benefit.

Efforts to treat obstetric complications as such, rather than to terminate the pregnancy, are continually increasing.

THE ELIMINATION OF THE MIDWIFE

The fourth trend in American obstetrics during this century has been to eliminate the midwife as a factor in obstetrics. De Lee,¹⁵ whose great influence on American obstetrics is acknowledged by all, has been consistently opposed to her.

In 1902 Hirst¹⁶ recommended "that the average obstetrical case be entrusted to a highly trained, well informed, skilful, and experienced nurse, the physician being called to repair the injuries of childbirth, to deal with any complications or abnormalities that might arise, to make perhaps routine visits, and above all to make the final examination at the end of puerperal convalescence." Hirst probably was thinking of the maternal mortality in Holland and the Scandinavian countries, where the maternal death rate is the lowest in the world. In these countries 85 per cent of the deliveries are done by midwives who do not use forceps

or other instruments and who are instructed and supervised by physicians. He was also thinking of home deliveries and did not, of course, visualize the vast increase in the number of hospital deliveries.

Figures can be given¹⁷ that show the relatively high and the relatively low maternal mortality in cases attended by midwives, but such figures are not at all conclusive. The Medical Advisory Committee of the Children's Bureau in commenting on maternal mortality in fifteen states says "Figures given in the report would indicate that, although the midwives played a part in the mortality, they could not have been responsible for any large proportion of the deaths because they attended a relatively small proportion of the cases."

Regardless of arguments for or against the midwives, they are being eliminated in by far the greater portion of this country. It seems probable to me that the real reason for this lies in the general recognition of their lack of training, as well as to the already mentioned demand of the American woman for a short and painless labor.

APPARENT TRENDS CHARACTERIZING OBSTETRICS IN PRESENT CENTURY

Can any lesson be drawn from a consideration of the apparent trends which have characterized obstetrics in the United States during the present century? Bill² says

It would seem that the most marked feature of present-day obstetrics is the fact that there is a distinct spirit of activity, of being ever alert to do something to relieve the patient and to safeguard her and her baby from the dangers which are ever associated with labor, as against the older policy so often expressed of letting nature take its course.

The new school of obstetrics is without doubt here to stay. There seems to be a feeling of skepticism on the part of many obstetricians, who, while admitting the advantages to the patient of such methods when properly carried out, doubt the wisdom of approving them because such procedures are not within the capabilities of the profession as a whole.

Of the rather definite trends that I have discussed, the trend toward increased operative intervention, with its resultant effect on maternal and infant mortality, alone seems to demand concerted effort in an attempt to change or modify its undesirable features. I can find no record in the literature in which any trend which has existed for more than a hundred years and which shows a constantly increasing acceleration has been checked by the warnings of medical leaders or by similar propaganda. It seems inconceivable to me that any good can come of the present propaganda that is appearing in one of the women's magazines and in certain newspapers, and it appears possible that such articles can actually produce harm. If this is true there can be but one possible solution, i. e., radical changes in obstetric education. The chief adverse criticism of the new obstetrics is on the ground that the profession in general cannot carry out such methods. This is obviously true, for physicians untrained in obstetrics have no place in the new school, just as the physician untrained in surgery should not attempt to do major surgery.

Undergraduate obstetric education is receiving increased attention from the administrative officers of all schools that maintain medical departments, as well as from all of the three leading national societies.

¹⁵ De Lee J. B. Several Everyday Obstetrical Problems. *Am. J. Obst.* 76:15 (July) 1917.

¹⁶ Hirst B. C. The Future of Obstetrics as a Specialty in America. *Am. Med.* 3: 815 1902.

¹⁷ McCord James cited by Skemp A. A. General Practitioner's Response to Challenge of Obstetrics. *Wisconsin M. J.* 31: 527 (Aug) 1932.

The helpful efforts of the Council on Medical Education and Hospitals have been outstanding. Adair,¹⁸ in discussing this subject before the thirty-second Annual Congress on Medical Education in February 1936 summed it up perfectly when he stated "Obstetric teaching of undergraduates requires adequate proportionate time, ample facilities and capable instructors. It is important to carry out this program in all schools as quickly as possible, because even after they are accomplished it will still be ten or fifteen years before the results are generally realized by the public."

Postgraduate obstetric education is, and will continue to be during the next twenty or twenty-five years, the most important factor in molding the new obstetricians. In many hospitals which provide rotating services for interns, a service in obstetrics is not provided for all interns, in spite of the fact that it has been shown that 35 per cent of the average physician's practice during the two years following graduation is in obstetrics. The number of institutions providing adequate residencies in obstetrics is increasing, but the facilities are still too limited. To provide adequate training, I believe in the home delivery service, because it is impossible for the young practitioner to apply what he has learned of the management of labor under the favorable conditions in the hospital to the much less favorable conditions of the patient's own home, unless he has had definite and specific instructions in a specialized technic for the conduct of labor under such conditions and has applied these instructions in a practical way. The training must include a service of not less than six months in obstetric and gynecologic pathology, because without such experience the young obstetrician can never expect to understand the basic processes underlying the conditions which he is attempting to treat. His hospital service can be adequate only if the staff is properly trained and is genuinely interested in teaching.

The recently formed American Board of Obstetrics and Gynecology, whose function it is to supervise, but not to control, obstetric practice to encourage the study of obstetrics and to grant certificates of special knowledge in obstetrics to those who are properly qualified, has already had a pronounced influence in checking radical tendencies, in stabilizing the practice of obstetrics and in setting definite standards which should be met before the practitioner would be justified in claiming that he or she was a "specialist."

The most important phase of postgraduate obstetric education now, and for the next twenty-five years, is the education of the great bulk of practitioners whose undergraduate education may or may not have been inadequate, whose hospital training was often sketchy and who, because of the exigencies of their practice or because of their locations away from medical centers or for other reasons have not been able to keep up with the changes that have occurred during their professional lifetime. There is a very definite duty on the part of all governmental agencies, medical schools, societies and allied agencies interested in maternal welfare to provide systematic instruction for until recently, the forgotten man who is in fact, delivering most of the babies in the United States.

The Children's Bureau, under the Social Security Act, title V part 1 acting with the state health agency,

and always in cooperation with state and local medical groups and organizations, has approved and is fostering extension courses in obstetrics for groups of local practitioners. It is hoped that this phase of each state plan will be as enthusiastically received by the local profession as have similar plans under the auspices of state universities and/or state health departments, in cooperation with the state and local medical societies in California, Florida, Georgia, Iowa, Kansas, Kentucky, Maryland, New York, Oklahoma and Wisconsin.

CONCLUSION

It is a well known fact that the better trained in obstetrics a physician is, the fewer major operative procedures he finds it necessary to perform. While rather drastic changes in the practice of obstetrics have occurred during the present century, I cannot help feeling that obstetrics today is in a transitional stage and that, as obstetric practice gradually comes into the hands of those who have received adequate training many of the present-day trends may be modified and then utilized to make pregnancy safer and easier for the American woman.

523 West Sixth Street.

PERICARDITIS EPISTENOCARDICA

FRANK BILLINGS LECTURE

GEORGE BLUMER, M.D.

NEW HAVEN, CONN.

To one who for many years enjoyed the privilege of friendship with Frank Billings, and who admired both his character as a man and his acumen as a clinician, it is a source of gratification to be invited to deliver this annual lecture which perpetuates his name. It is natural, I think, in such circumstances, to cast around for some subject in which Frank Billings himself was interested, and among the many topics on which he wrote was pericarditis.¹ For this reason I have chosen to speak today on a particular type of this disease, namely, the so-called pericarditis epistenenocardica.

DEFINITION OF THE TERM

I would remind you, first of all, that it is only in recent years that we have been able to differentiate the angina pectoris of effort from coronary occlusion, and I would point out that, in the past, both conditions were described in the literature of English-speaking physicians as angina pectoris. The term angina pectoris, introduced by William Heberden Sr. in the eighteenth century, has never been generally approved by physicians on the continent of Europe, who have preferred the term stenocardia, first introduced by Brera² in 1813. Their objection to the designation "angina pectoris" lies in the fact that it merely describes a symptom and gives no idea of the pathologic changes underlying the syndrome. On the other hand "stenocardia," derived from two Greek words meaning "narrowing" and "heart," is really no better unless one assumes that by narrowing of the heart continental physicians really mean narrowing of the coronary vessels. In any event it is clear

¹⁸ Adair, F. L. Undergraduate Obstetric Education. J. A. M. A. 106:1-41 1442 (April 25) 1936.

The seventh Frank Billings Lecture read before the Section on Practice of Medicine at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

¹ Billings, Frank. Clinical Observations in Pericarditis. J. A. M. A. 37:1503 (Dec. 7) 1901.

² Brera, V. L. Jahrb. d. deutsch. Med. u. Chir. 2:36 1813.

that pericarditis epistenocardica signifies the type of pericarditis which accompanies the syndrome of stenocardia or angina pectoris

FROM THE HISTORICAL POINT OF VIEW

The historical aspects of pericarditis epistenocardica are not without interest. A survey of the postmortem records of patients who died with a clinical diagnosis of angina pectoris, particularly those who suffered from the so-called status anginosus, clearly shows that pathologists appreciated the significance of coronary occlusion long before clinicians were fully alive to its import. Weigert in 1880 called attention to the relationship between coronary sclerosis, coronary thrombosis and cardiac infarction, and Cohnheim and von Schulthess-Rechberg confirmed his views by their experimental work on dogs. Huber also in 1882 supported Weigert's position and showed that he had a clear insight into the pathology of coronary thrombosis, including its relation to cardiac aneurysm. Furthermore, compilations of autopsies on patients dead of angina pectoris, such as that of Huchard,³ show many with either fresh or organized pericarditis and there are many reports in the literature of small groups or isolated patients with similar pathologic changes.⁴

On the clinical side, the noteworthy historical fact is that pericarditis epistenocardica was undoubtedly described long before its significance was grasped. As early as 1872 Christian Bäumler, then one of the physicians to the German Hospital in Dalston, published in the *Transactions of the Clinical Society of London* a paper entitled "Cases of Partial and General Idiopathic Pericarditis." Three of the patients therein described presented the classic picture of coronary closure with recovery. One of these was Bäumler himself, who had his attack at the early age of 25, the presence of localized pericarditis being observed by his colleagues Denninger and Kussmaul. Bäumler finally died three years ago at the age of 97. Those of his conclusions which are germane to the subject are as follows:

Pericarditis may occur on a very limited part of the pericardial surface. Such partial pericarditis generally passes off in a few days, well marked symptoms being only present for a short time. The chief symptoms of such cases are pain in the precordial region, difficulty in breathing through the pericardial pain, and irradiated pains in the throat, neck, left shoulder and left arm. The heart's action is accelerated, and becomes much more easily affected than in health by even slight muscular action, the temperature of the body is only slightly raised, there is well marked pericardial friction sound, giving evidence of roughness of the membrane, and probably of some fibrinous exudation, but there are no signs of a fluid effusion, of which probably, if any, a very small amount only is present.

When one considers that this description was written before the days of blood pressure estimations and leucocyte counts, it must surely be regarded as an extraordinarily accurate account of coronary occlusion with pericarditis.

Byrom Bramwell⁴ and Pawinski⁵ also reported cases of pericarditis epistenocardica, though they entirely missed their significance. Bramwell surmised that the attack of angina pectoris from which his patient suffered was due to the pericarditis, and the title of

Pawinski's paper, "Concerning the Influence of Dry Pericarditis on the Origin of Stenocardia and Cardiac Asthma," indicates that he held a similar view.

The first writer on pericarditis epistenocardica who fully realized its relationship to coronary occlusion appears to have been Kernig.⁶ In a brief report on the treatment of angina pectoris, which was presented before the Association of Saint Petersburg Physicians in 1892, he stated that "the severe, hours long attacks of angina pectoris are probably caused by thrombotic or embolic processes in the coronary arteries." He calls attention to the pericarditis, which occurs in some cases during the days following the onset of the attack, and explains this as being due to the area of cardiac infarction reaching the pericardial surface. In a later article, published in 1905, he⁷ pointed out how little there was at that time in medical literature about the cardiac changes after an attack of angina pectoris. He contrasted the brief duration of attacks of angina of effort with the so-called status anginosus, called attention to the presence of fever in the latter group of cases, and thought that they also showed enlargement of the heart.

In 1910 Maximilian Sternberg⁸ reported two cases of pericarditis accompanying coronary occlusion and suggested the name "pericarditis epistenocardica." He pointed out that the anginal attack was unusually severe and prolonged, that fever generally appeared on the second day and that a pericardial friction was generally demonstrable on the second, third or fourth day. He stated that the pericardial rub occurred in a circumscribed area and was to be heard only over a period measured by hours. He stated that the fever was not very high and lasted, as a rule, only a few days. He noted that in acute cases there was recent obstruction of a coronary branch with the formation of a necrotic infarct with overlying pericarditis, while in old cases there was evidence of old obstruction in a coronary branch with scar tissue at the site of the former infarct and, not infrequently, cardiac aneurysm. He stressed the noninfectious nature of the pericarditis.

Following Sternberg's paper, numerous references to pericarditis epistenocardica appeared in general reports on the symptomatology of coronary occlusion,⁹ and special papers on this particular sign have been published by Gorham,¹⁰ Adlersberg,¹¹ Loewenberg,¹² Halbron and Lichtwitz¹³ and several others.

It is clear, then, that pericarditis epistenocardica was described as early as 1872 but that its significance has been fully understood only since 1910.

PATHOLOGIC CONSIDERATIONS

A brief consideration of the pathologic changes of pericarditis epistenocardica is necessary in order to understand not only why it is present in some patients but also why it is absent in others. The discussion of the history of the condition has already made it clear that cardiac infarction, resulting from sudden blocking of a branch of one of the coronary arteries, produces localized pericarditis when the necrotic process in the heart wall involves the visceral pericardium. Either the

3 Huchard H. *Traité clinique des maladies du cœur et de l'aorte* ed 3 Paris Octave Doin 2 522 1899

4 Cauchois Gaz d hop 43:138 1870 Sibson F Reynolds *Syst. of Medicine* 1877 Bramwell Byrom *Diseases of the Heart* Edinburgh, Pentland 1884 p 310

5 Pawinski J. *Deutsches Arch f klin Med* 58 565 1897

6 Kernig Vladimir. *St Petersburg med Wehnschr* 17 177 1892.

7 Kernig Vladimir. *Berl klin Wehnschr* 42:10 1905

8 Sternberg Maximilian. *Wien med Wehnschr* 60 14 1910

9 Osler William. *Lancet* 1 697, 1910 Herrick J B. *Clinical Features of Sudden Obstruction of the Coronary Arteries* J A M A. 59 2015 (Dec. 7) 1912

10 Gorham L. W. *Albany M Ann* 41 109 (April) 1920

11 Adlersberg D. *Wien med Wehnschr* 72 270 1922

12 Loewenberg R. D. *Deutsches Arch f klin Med* 142 189 (April) 1923

13 Halbron P. and Lichtwitz A. *Bull et mem Soc med. d hop de Paris* 52 195 (Feb 16) 1928

coronary trunk or its branches may be involved, but most cardiac infarcts are found in the lower third of the anterior surface of the left ventricle in the neighborhood of the apex, because the descending branch of the left coronary artery is most often the site of advanced arteriosclerosis.

A study of autopsies collected by various authors furnishes information as to the frequency and character of the pericardial changes in coronary occlusion. In Huchard's series of 185 postmortem examinations¹⁴ there are thirty-one in which there is clear evidence of recent coronary occlusion and in seven of these, or 37 per cent, acute, usually localized, pericarditis was present. Parkinson and Bedford¹⁴ report eighty-three autopsies on patients dead of coronary occlusion with pericarditis in eleven, or 13 per cent. Wearn¹⁵ found pericarditis in four out of nineteen autopsies, i. e., in 20 per cent. Wolff and White¹⁶ found pericarditis in 48 per cent of their autopsies. A combination of the four series gives 21 per cent with evidence of pericarditis.

These figures show a marked variation in the incidence of pericarditis with cardiac infarct, a result which is, no doubt, partly due to inadequate observation in some of the earlier series, but mainly due to the fact that the number of hearts which were studied is not nearly large enough to furnish a satisfactory basis for statistical evaluation. The important fact that the figures bring out is that the clinician cannot expect to find evidences of pericarditis in every patient with coronary occlusion.

The main reason for the absence of pericarditis in many hearts that are the site of coronary occlusion is doubtless, as Parkinson and Bedford state, the fact that "infarction usually involves the endocardial aspect of the heart and is often separated from the pericardium by a layer of muscle which obtains a blood supply from the epicardial vascular network." As the same writers observe, another factor which may prevent spread of the lesion to the pericardial surface is adiposis of the visceral layer.

While these anatomic facts explain the infrequency with which the clinician detects pericardial friction in his patients with coronary occlusion, they do not tell the whole story. Sometimes a friction rub is absent because a patient has had a previous attack which has led to obliteration of the pericardial sac. More frequently the failure to detect pericarditis is due to the brief duration of the friction rub, which may be present for only a few hours. Nor should it be forgotten that even widespread pericarditis is frequently overlooked by the clinician. Some patients, of course, do not live long enough for signs of pericarditis to develop.

The type of exudate is usually described as fibrinous, and it is only in occasional patients that effusion, sufficient in amount to be detected clinically, is present. Several observers note that the exudate is free from bacteria.

CLINICAL FEATURES

It is difficult to judge of the frequency with which pericarditis may be recognized by the clinician in patients with coronary occlusion. Parkinson and Bedford recognized it only seven times in a hundred patients, but there are many reports on small groups of patients in whom it was discovered much more fre-

quently than this. In 109 patients whom I saw at some period during the ten days immediately following an acute coronary occlusion, thirty-two, or 22 per cent, showed pericarditis. As many of these patients were seen but once it would seem as though this was a conservative figure, but when one considers that a consultant is apt to see the more serious cases it may be too high. The clinical reports, like the pathologic reports, do not, as yet, cover a number of cases sufficiently large for statistical purposes.

The day of the disease on which pericarditis is first likely to be noticed is obviously of diagnostic importance. In none of my thirty-two positive cases was pericarditis originally detected after the tenth day. In twenty-nine of the thirty-two positive cases it occurred on the first to the fourth day. In the remaining three patients it was noted on the fifth, the eighth and the tenth day. In only three patients was pericarditis recognized within twenty-four hours of the onset of the attack, so that in 81 per cent of the positive cases it occurred on the second, third or fourth days, twelve times on the second day, eight times on the third day, and six times on the fourth day. The cases reported in the literature show approximately the same distribution.

The location of the friction rub was, as might be expected from the pathology of the condition, most frequently in the region of the lower portion of the left ventricle. In five patients the pericardial rub was heard in the apical region, usually to the median side, in twelve it was described as being over the lower end of the sternum, usually on both sides of the median line but occasionally to the right or the left of it. In only three patients was the friction rub limited to the basal region.

The extent of the friction rub was almost always limited. Usually it was heard over an area not more than 5 or 6 cm in diameter. In a few patients the area of friction enlarged somewhat as the disease progressed, and in one patient, with only a small area involved, the sound of the friction was transmitted to both axillae and to the back. There was one patient in whom the friction was heard all over the left side of the heart and one in whom, at its period of maximum intensity, it was audible from nipple to nipple and from the episternal notch to the xiphoid cartilage.

The duration of the friction rub was usually transitory, as is generally stated by other observers. In patients seen on successive days a loud friction rub often disappeared between the first and the second examination. However, there was one patient in whom the friction persisted for four days, one in whom it lasted five days, three in whom it was present for eight days, and one who showed friction continuously for two weeks.

No patients with demonstrable pericardial effusion were observed by me, but such cases occur at times and have been described by Master and Jaffe¹⁷ and by others.

It is not possible to state definitely whether pericarditis accompanying coronary occlusion has any bearing on the prognosis of the disease. Of my thirty-two patients with pericarditis episthenocardica, thirteen died and nineteen recovered. This would seem to indicate that the presence of pericarditis is not necessarily of evil omen, but the number of cases reported is altogether too small to permit of positive conclusions.

¹⁴ Parkinson J. and Bedford D. E. *Lancet* 1: 4 (Jan 7) 1928.
¹⁵ Wearn, J. T. *Am J Vi Sc* 165: 250 (Feb) 1923.
¹⁶ Wolff L. and White P. D. *Boston M. & S J* 195: 13 (July 1) 1926.

¹⁷ Master, A. M. and Jaffe H. L. *Coronary Artery Thrombosis with Pericardial Effusion* J. A. M. A. 104: 1212 (April 6) 1935.

My experience does not permit me to pass judgment on the claim of Barnes¹⁸ that a characteristic electrocardiographic pattern is found in patients with coronary occlusion and pericarditis. Barnes describes the typical electrocardiographic record in such patients as showing elevation or upward rounding of the RST segment in all leads and states that this may be followed by inversion of the T wave in all leads.

CONCLUSIONS

1 A usually localized and usually transitory pericarditis is clinically demonstrable in a certain proportion of patients with coronary occlusion, possibly in a third of them.

2 Occasionally much more widespread pericarditis is present, which may involve the entire pericardial sac and eventually lead to its obliteration.

3 In some patients the signs of pericarditis persist for as long as two weeks.

4 When present in a patient suspected of having coronary occlusion, a localized pericarditis is of great diagnostic value, its prognostic value cannot be determined until a large series of cases is available for analysis.

195 Church Street

WOUNDS OF THE THORACIC VISCERA

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The danger from chest wounds is in a large measure due to the narrow margin of safety under which the thoracic viscera work. A rapid change of pressure relationships within the thorax affects the aeration of the blood, the filling and emptying of the heart, and the circulation not only in the thorax but also of the whole body. A knowledge of certain fundamentals of the mechanics of respiration is therefore a necessary prerequisite for the surgery of this field.

Wounds of the thorax are common in civil practice as well as in war surgery. In the past five years (1931 to 1935 inclusive) 553 patients have been treated at the Emory University Division (colored) of the Grady Hospital (municipal) for penetrating chest wounds. That the number of such cases is increasing is shown by the fact that, in the nine years previous to 1931, 511 similar cases were treated in the same hospital.

Thoracic injuries in civil life are different from those seen in war injuries and are less severe. In the former a knife, ice pick, or pistol bullet are the usual weapons, and large sucking wounds, such as are made by shrapnel, are less frequently seen. The lodgment of clothes, ribs and shell, giving rise to serious infection, is therefore more rarely a complicating factor.

The most common weapon is the "switch blade" knife (354 cases), with a long, thin, 4 inch blade. It usually causes a small external opening, which immediately closes, occasionally when pulled out in an intercostal space it produces a large sucking wound. Next to the knife, the ice pick (ninety-three cases) is the weapon most commonly used. It rarely produces a sucking

wound and the injury produced by it is not severe unless the heart is penetrated, which happened once in this series. Of decreasing frequency are the pistol (eighty-four cases) and shotgun wounds (eighteen cases), accidental injuries from nails and splinters, and crushing injuries from automobile accidents.

Pleuropulmonary lesions may be divided into those having (1) open wounds of the thoracic wall and (2) those having closed wounds. Open wounds are by far the more dangerous, the degree of danger depending on the size of the wound, the amount of foreign material carried into the chest, and the injury to the viscera. If the opening is smaller than the larynx, the lung collapses, but on inspiration partial expansion occurs and respiration is only slightly embarrassed. If the opening is larger than the larynx, air will enter more freely than through the trachea and mediastinal flutter will occur. This subjects the heart and great vessels to varying degrees of pressure, and some air passes from one lung to the other in useless exchange. The clinical picture is one of terror, air hunger, and eventual asphyxiation. The first principle in the treatment of any sucking wound is the immediate closure of the opening. In this series forty patients had sucking wounds and were so treated.

Pleuropulmonary lesions with a closed wound are more common and far less dangerous. They are usually caused by a knife or ice pick, and the external wound has closed spontaneously or has been converted into a closed lesion by suture. The main problem in the treatment of thoracic injuries in civil life is therefore concerned largely with closed wounds and the conditions arising from injury to the thoracic viscera. In this series treatment was always dependent on the symptoms exhibited by the individual patient rather than by a set rule. In the main the treatment was conservative and nonoperative, although operation was carried out for heart wounds, for large lacerated wounds of the lung, for hemorrhage from an intercostal or internal mammary vessel, or for compression pneumothorax.

The most frequent conditions encountered were hemothorax, pneumothorax, hemopneumothorax and subcutaneous emphysema. The general symptoms of dyspnea, painful respiration and hemoptysis were the most common.

HEMOTHORAX

Hemothorax occurred in 209, or 37 per cent of the patients, and varied from a small amount of blood as disclosed by roentgenogram to an amount filling one pleural cavity. Its source is from a wound in the lung, the heart, or an internal mammary or intercostal vessel. When there is evidence of a rapidly increasing hemorrhage or of a heart wound, immediate operation should be carried out, but as a rule wounds of the lung will stop bleeding as the lung is compressed. Many methods of treating hemothorax have been advocated, and until the past three years the method in this service has consisted of bed rest, morphine for relief of pain, and frequent aspiration of any bloody fluid. Having shown by animal experiments¹ that blood and clots were rapidly and completely absorbed with few pleural adhesions, we began less frequent aspiration in the human cases. The results in the past three years seem to justify the present plan of treatment, namely, aspiration only for pain and dyspnea. In those patients requiring aspiration the average amount removed was

18 Barnes A. R. *Am Heart J* 9: 734 (Aug.) 1934.
From the Department of Surgery, Emory University School of Medicine.

Read before the Section on Surgery, General and Abdominal at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

1 Sandison J. C., and Elkin D. C. *Penetrating Wounds of the Chest*. *J Thoracic Surg* 2: 453 (June) 1933.

600 cc. In one case 1,400 cc. was removed on the first day, 1,400 cc. on the second day and 3,400 cc. on the fourth day. This patient recovered and was discharged from the hospital on the eleventh day. The amount of fluid removed from the chest was as great in stab wounds as in those caused by bullets.

The mortality for patients with hemothorax treated by conservative methods was 6 per cent. The deaths were as frequent in stab wounds as in those produced by bullets. Patients with hemothorax usually have an elevation of temperature for several days, if this continues for a week, aspiration for culture should be done.

PNEUMOTHORAX

Pneumothorax occurred in 133, or 24 per cent, of these cases. This condition, unless associated with some other injury, rarely required treatment other than rest and morphine. The presence of air, collapsing and splinting the lung, in itself aids healing, and as the air is absorbed the lung readily reexpands. Lung expanding exercises, as with blow bottles, can do no possible good in closed pneumothorax and may cause harm. If dyspnea is distressing, the aspiration of a portion of the air will give great relief but should be done with great care lest the wound in the expanding lung be reopened. Bilateral pneumothorax may be produced by a wound of both lungs, as occurred twice in this series, or by sudden compression of the chest without an external wound. The latter was seen on one occasion as a result of an automobile accident in which the patient was thrown suddenly against the steering wheel, probably rupturing both lungs without a penetrating wound. If dyspnea is marked, bilateral aspiration or water-seal drainage of both lungs should be done.

Compression pneumothorax, caused by a valvelike action of a wound in the lung or bronchus, requires immediate treatment. The symptoms are those of rapidly increasing air hunger and cyanosis, with displacement of the mediastinum toward the uninjured lung. With each inspiration air enters the pleural cavity but cannot escape on expiration. Thus the intrathoracic pressure is gradually increased, compressing the venae cavae and interfering with the circulation. Treatment consists of removal of the air by suction or by the introduction of a water-sealed intercostal tube of sufficient size to allow its escape.

HEMOPNEUMOTHORAX

Hemopneumothorax occurred in 200, or 36 per cent, of the cases. In general the symptoms are similar to those in which hemothorax or pneumothorax was present and the treatment was essentially the same. As in hemothorax and pneumothorax, the mortality was the same (approximately 6 per cent).

SUBCUTANEOUS EMPHYSEMA

Subcutaneous emphysema occurred in 40 per cent of the cases. As a rule the area was small and rapidly absorbed and it required no special treatment. Occasionally the subcutaneous air spreads over the whole body and may cause pressure on the trachea and interfere with breathing. In one instance an ice pick wound at the angle of the scapula produced such a lesion. It was successfully treated by introducing a needle into the pleural cavity and aspirating the air by suction. Such lesions are probably caused by a laceration of the lung or bronchus, which produces a valvelike wound and allows air to escape into the subcutaneous tissues with

each inspiration. Mediastinal emphysema occurs when pleural air escapes directly into the mediastinum and spreads upward into the neck and over the body. This condition is dangerous because of pressure on the trachea and should be treated by incisions in the supra-sternal space. It occurred in one instance in this series, on the twelfth day after operation for a stab wound of the heart. Aspiration of the air from the pleura was attempted, but the patient died two days later from tracheal compression.

INJURY OF THE HEART

Crushing injuries of the chest are frequently seen as a result of automobile accidents. Many are immediately fatal and are due to rupture of the heart, lungs or great vessels as a result of compression, or penetration of the viscera by sternum or broken ribs. Little attention has been paid to nonpenetrating heart lesions which are not fatal. Three instances have been previously reported by me² and it probably occurs more frequently than is supposed. Certainly there is no reason to believe that the heart, situated as it is between the sternum and the spine, is not subject to contusions of considerable severity and from which recovery takes place in the majority of instances. The most common cause of such an injury is one in which the driver is suddenly thrown forward against the steering wheel, and the sudden compression may injure the heart without fracturing the sternum or ribs. Any patient who is struck in the chest should be suspected of such an injury, particularly if symptoms of precordial pain, dyspnea and tachycardia are present. Persistence of these symptoms, together with irregularity of the heart, cyanosis and a peculiar "tick-tick" quality of heart sounds, makes the diagnosis almost certain. The treatment is entirely symptomatic. The chief reliance is to be placed on morphine and sedatives for rest, and on oxygen for dyspnea and cyanosis. The patient should be confined to bed until all symptoms have subsided.

Eleven patients, or 2 per cent, in this series had stab wounds of the heart and were treated by operation. All except one survived the operation, and six recovered. Five died from pneumonia or pericarditis, and one from mediastinal emphysema on the fourteenth day. The diagnosis of a wound of the heart is not difficult if the injury is suspected, as it should be in all lacerations of the chest. There is usually a history of freedom from any symptoms for several minutes, this is followed by collapse. External bleeding is profuse at first, but, with the stage of collapse, is checked. Both the collapse and the stopping of the hemorrhage are due to tamponade of the heart. The pulse is weak or absent, and the arterial pressure low or unobtainable. The venous pressure is raised, as may be determined by the manometer and as is evidenced by prominent struted external jugular veins. Fluoroscopic examination is of aid, since in tamponade there is practically no cardiac movement.

INFECTION

Contrary to general opinion, infection of the pleura and of the thoracic viscera rarely follows penetrating wounds. Infection of the pleura in the form of empyema or infected hemothorax occurred in eight instances, or 1.4 per cent, of all cases. Knife and bullet wounds were equally responsible. Five followed hemothorax and three followed hemopneumothorax. Seven

² Elkin, D. C. Traumatic Lesions of the Thorax, South. M. J. 28:4 (Jan.) 1935.

of the eight patients recovered after rib resection and open drainage. One patient with bilateral chest wounds, produced with an ice pick, developed an abscess of the lung, which healed spontaneously. Ten patients died of bronchopneumonia, which was attributed to direct lung injury, although this complication occurs with such frequency after any operation that not all deaths can be said to be due to trauma, but they were so considered in estimating the mortality percentage.

CAUSE OF DEATH

Thirty-three patients or 6 per cent died as a direct result of thoracic injury or of complications resulting from the injury. The most common cause was shock and hemorrhage, which occurred in eighteen instances. Next in frequency was pneumonia (ten cases), infection (four cases) and mediastinal emphysema (one case). Of the four patients with infection two died of pericarditis following operations on the heart, one of empyema and one of bacteremia.

Twenty-six patients with multiple injuries apparently died from causes other than those resulting from thoracic trauma and are not included in the mortality percentage. These included eighteen cases of peritonitis or hemorrhage from the abdominal viscera, two patients with hemiplegia from spinal cord wounds, three with massive hemorrhage from the neck or extremities, and one with a gunshot wound of the brain.

COMMENT

In this series of 553 cases of thoracic wounds, treatment was attempted by conservative methods. Except in wounds of the heart, operative procedures have been rarely carried out. Aspiration of blood or air has been practiced only in those patients having pain and dyspnea. With these methods the mortality was 6 per cent. One hundred and forty-eight patients were in shock and most of them had hemothorax or pneumothorax on entrance to the hospital. Treatment of this class of patient presented the most difficult problem and eighteen of them died, usually within the first twenty-four hours after admission, without reacting from shock. Some of that number might have been saved by operation. This would have necessitated open thoracotomy and lung suture. Had this method been carried out on a large number of patients, it is doubtful whether the mortality would have been as low as 6 per cent. Thoracotomy with exteriorization and extrapleurization of the lacerated lung has been advocated and practiced by Connors and Stenbuck.³ By this procedure they have unquestionably saved a number of lives, but their mortality in a small series of thirty-two cases was 12.5 per cent.

478 Peachtree Street

ABSTRACT OF DISCUSSION

DR. FREDERICK CHRISTOPHER, Evanston Ill. Dr. Elkin's results have not to my knowledge been equaled. In a series of 553 cases treated by conservative methods the mortality has been only 6 per cent. Efforts to reduce this exceptionally low mortality will be centered on a study of indications for operative intervention. Dr. Elkin has employed surgical treatment in (a) the open sucking wounds, (b) compression or tension pneumothorax, (c) widespread subcutaneous emphysema with tracheal pressure, (d) mediastinal emphysema (e) stab wounds of the heart, (f) large lacerated wounds of the lung (g) severe hemorrhage from intercostal vessels, and (h) residual empyemas. In hemothorax only aspiration is employed for the relief of

pain and dyspnea. When there is a possibility of a traumatic diaphragmatic hernia, elective intervention should be carried out later if the symptoms do not demand immediate operation. Bettman states that, in cases which are not immediately fatal, hemorrhage usually occurs from a bleeding intercostal artery. When this bleeding threatens to be serious, Bettman does a thoracotomy and checks the bleeding by a ligature which encircles the rib, thus compressing the vessel. Increasing hemorrhage may also come from a laceration of the lung. In traumatic hemothorax the advice of Foster and Prey is of interest. These workers contend that they have reduced the hospital stay 50 per cent by aspiration followed by artificial pneumothorax. Hedblom called attention to the fact that a traumatic empyema is of more serious import from the standpoint of both prognosis and treatment than the ordinary postpneumonic type. He said that complicating a pneumothorax with complete collapse of the lung results in infection involving the whole pleural cavity, thus rendering toxic absorption correspondingly greater. Contusion of the heart has been carefully studied by Beck, who called attention to the value of electrocardiograms in the diagnosis. The occurrence of ileus as a complication of rib fracture has been mentioned by Bettman and by myself. The autotransfusion of the patient's blood in heart wounds, as suggested by the Watsons, should be a valuable addition to the operative treatment. These authors stated in a paper published in *THE JOURNAL* that they removed the fluid blood from the pleural cavity by means of laparotomy pads, which they wrung out in 2 per cent solution of sodium citrate, and injected the blood into the patient by the intravenous method. Perhaps in no other injury is there the need for alert watchfulness that there is in thoracic injuries. Not only must there be careful observation, but a definite plan must be well in hand for taking care of the urgent sequelae. The man in general surgical practice will do well to keep in mind (a) the need of immediate closure of sucking wounds, (b) the ease of aspirating air from a tension pneumothorax when there is not excessive bleeding, and (c) that thoracotomy can be readily carried out with the ordinary modern gas machine and an intelligent anesthetist.

DR. L. WALLACE FRANK, Louisville, Ky. The primary treatment of pleuropulmonary wounds resolves itself into the treatment of hemorrhage or the closure of sucking wounds of the chest wall and the relief of tension pneumothorax. Fortunately, the latter two conditions are infrequent, otherwise the mortality would be much higher. Most sucking wounds are larger than the opening of the larynx and trachea and hence immediate total collapse of the lung occurs and not infrequently mediastinal flutter with resultant marked circulatory distress. Such wounds must be closed at the earliest possible moment. Occasionally one observes a small oblique wound of the chest wall through which, as a result of a valvelike action, air is sucked into the pleural space with each inspiratory effort and at expiration the wound becomes closed. The pressure within the thorax mounts rapidly, the heart and mediastinal structures become displaced, circulatory and respiratory embarrassment soon become evident, and death rapidly supervenes unless the air is removed. In such cases the insertion of a moderate sized aspiration needle into the chest may be life saving. The treatment of hemorrhage in cases of pleuropulmonary injuries is seldom necessary. In hemorrhage from intercostal or internal mammary arteries, operative intervention is required. In many cases, a watchful waiting policy may be pursued. Should symptoms of marked intrathoracic pressure develop, some of the fluid may be aspirated. As a rule the increasing pressure stops the hemorrhage, this is particularly true when the bleeding comes from injury to the lung. Here conservative treatment may be followed. In such cases, however, frequent blood counts should be made and transfusion employed when indicated. At the end of ten days or two weeks, if the quantity of blood within the chest is large, as determined by x-ray studies, I remove the fluid by aspiration. I have seen empyema occur in cases of hemothorax as late as six months after the injury. Operative procedures for this condition may be prevented by early aspiration. When the hemothorax is small I prefer to wait for the possible absorption of the fluid. Should this not occur after a reasonable length of time, I remove the bloody fluid by aspiration. During the past two years, thirteen patients

³ Connors, J. F. and Stenbuck, J. B. Penetrating Stab Wounds and Bullet Wounds of the Chest. *Ann. Surg.* 97: 258 (April) 1933.

with heart wounds were admitted to the Louisville City Hospital and ten of the cases were diagnosed. Eight patients were operated on and five lived. Two patients treated conservatively likewise made a satisfactory recovery. The indications for operative intervention in cardiac wounds are bleeding or cardiac tamponade. Before the Southern Medical Association last November, Bigger discussed heart wounds and emphasized an important point in the diagnosis of cardiac tamponade, namely, the absence of cardiac movement when the patient is studied fluoroscopically, this could probably best be demonstrated by roentgenkymography. This is more important than the size of the cardiac shadow. Tamponade is treated by pericardiectomy with the evacuation of the blood and suture of the wound, followed by closure of the incision without drainage.

TUMORS OF THE SPINAL CORD AND THEIR RELATION TO MEDICINE AND SURGERY

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Diseases of the central nervous system no longer carry the discouraging prognosis with which they formerly were associated. The two important factors responsible for this are the identification of certain lesions of the central nervous system with constitutional disorders, and the development of neurologic surgery.

The recognition of the neurologic aspects of certain systemic diseases and infections has been followed by a more specific type of therapy, which has proved both preventive and curative.

The advances that have been made in the treatment of syphilis, neurosyphilis, and the various infections that involve the central system, either primarily or secondarily have increased the therapeutic armamentarium of the neurologist. A clearer conception of the toxemias and their neurologic phases, pernicious anemia and its treatment, diabetes, and other glandular dysfunctions has clarified many problems in neurologic therapy.

The first successful removal of a tumor of the spinal cord, by Horsley¹ opened a new field of therapy for neurologic disorders that affect the spinal cord and exerted a profound influence on neurology, and on medicine in general. Following Gowers' diagnosis and Horsley's operation, a captain of the British army was transformed from a long suffering, helpless individual to an active person free from disability and pain. Following this epochal operation two facts were impressed on the medical profession: first, that operable tumors really do exist and can be found, if looked for; second, that the early surgical removal of these tumors is followed by relief of paralysis, numbness and pain.

Tumors of the spinal cord are not rare, and as the years have passed since the first one was removed the number of these tumors that have been diagnosed and removed has increased. Similar to other pathologic conditions the number of these tumors is increasing, not because the tumors are more prevalent than they were formerly, but because they are being recognized earlier and are being removed before the prognosis is hopeless.

The symptoms of tumors of the spinal cord are extremely interesting, while they may conform to a

definite pattern, their protean manifestations make them an important factor in general diagnosis. Intraspinal tumors may masquerade for many years as syphilis, pernicious anemia, multiple sclerosis, syringomyelia, sciatica, arthritis, myositis or neuritis. These tumors may produce pain that is referred to the abdomen, pelvis and extremities. They may simulate appendicitis, cholecystitis, the twisted pedicle of an ovarian cyst, and fibromyomas, and they may produce such deformities as scoliosis, spasticity and paralysis.

Oppenheim² has described the symptoms of tumors of the spinal cord in a general way and has divided the clinical course into three stages. The first and longest stage is characterized by pain, which also is the earliest and most common symptom. In more than 300 cases in which the diagnosis of tumor of the spinal cord was proved at the Mayo Clinic, pain was present in approximately 80 per cent. The average duration of this symptom was considerably more than two years. The pain may be in the spinal column, at the site of the tumor. It may be referred to the lower extremities, even in cases in which the tumor is situated high in the spinal canal, but it usually is referred along the distribution of the posterior root of the spinal nerves and is known as "root" pain. It is the peripheral extension of root pain and its various qualities, such as aching, squeezing and piercing, that so frequently suggest disease of the pericardium, pleura, biliary, urinary, and gastro-intestinal tracts, peripheral nerves, muscles or bones. If pain is the first symptom, there may be an interval before any sensory or motor changes take place. This aids in making the diagnosis. One of the most important characteristics of the pain is that it may be worse on coughing or sneezing, it usually becomes worse at night, and the patient often will arise at an early hour in the morning and sleep in a chair.

The second stage in the development of the symptoms of tumors of the spinal cord has to do with the changes in motion and sensation. Numbness or peculiar sensory feelings may call the patient's attention to the sensory changes. This may be the initial symptom or may follow the pain. Sensory changes usually go hand in hand with motor changes. The classic Brown-Sequard syndrome may be present. This consists of diminution of power on one side of the body and sensory changes on the other. As the compression of the spinal cord persists and increases, the third or final stage develops. This consists of complete paralysis.

DIFFICULTIES OF DIAGNOSIS

In reviewing the records of patients who have been relieved of disabling symptoms by surgical removal of tumors of the spinal cord, at the clinic, it was extremely interesting to note the many problems that involved general medicine and surgery and continually presented themselves during the development of the symptoms and before a correct diagnosis could be made.

One of the most important considerations is that the lesion may be associated with a constitutional disorder, and for this reason a complete examination should be made. This, of course, should include the usual examination of the blood and urine, and the Wassermann reaction of the blood, and other serologic tests, if they are indicated. Roentgenograms have been of value in localizing tumors of the spinal cord in about 60 per cent of the cases, and for this reason good roentgenograms

From the Section on Neurologic Surgery, the Mayo Clinic.
Read before the Section on Surgery, General and Abdominal at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.
¹ Gowers, W. R., and Horsley, Victor. A Case of Tumour of the Spinal Cord. Removal. Recovery. *M. Chir. Tr.* 71: 377-428, 1888.

² Oppenheim, Hermann. Weitere Beiträge zur Diagnose und Differentialdiagnose des Tumors medullae spinalis. *Monatsschr. f. Psychiat. u. Neuro.* 33: 451-493, 1913.

of the spinal column and thorax should be made. A complete neurologic examination is necessary for some small and apparently insignificant change in motor, sensory or reflex power may be of extreme importance in making a differential diagnosis. The examination of the cerebrospinal fluid is imperative, for not only are the physical characteristics important but the chemical and serologic changes may be the one clue to the correct diagnosis. Increase in the amount of protein, increase in the number of cells, a yellow color, changes in pressure and response to changes of intracranial pressure especially to compression of the jugular veins, should all be noted.

The examination of the cerebrospinal fluid is especially important whenever there is a question of syphilis, as there so frequently is in the majority of cases. I have been impressed by the number of cases in which a diagnosis of syphilis had been made and treatment started without conclusive evidence of the presence of this disease. Even in the face of a positive Wassermann reaction on the blood, the underlying cause of the symptoms sometimes may be a tumor of the spinal cord. The following case illustrates some of the diagnostic difficulties.

A man who came to the clinic had had slight stiffness in his legs for twenty years. Three years previously he had begun to drag his left leg and three months later the right leg had become involved. About the same time he had begun to have cutting pains across the lower part of the abdomen, which had come on suddenly, had remained for about half an hour, and then had disappeared. His clumsiness and inability to walk had become so severe that, within a year, it had become necessary for him to use a wheelchair. This condition had continued until he came to the clinic. He also had had some difficulty in emptying his bladder.

The Wassermann reaction of the blood was strongly positive, and the reaction of the spinal fluid was negative. Roentgenologic examination of the spinal column did not reveal any abnormality. Neurologic examination revealed an almost complete paralysis of the lower extremities, with a loss of pain, temperature and tactile sensation below the level of the tenth thoracic segment. There was a complete loss of vibration and joint sensibility of the lower extremities. The lower extremities were found to be very spastic. During spinal puncture it was noted that the column of fluid in the manometer did not change position when the jugular veins were compressed, this denoted complete subarachnoid block. The progressive paralysis of the lower extremities, which had been present for two years and which had been associated with girdle pains, and the subarachnoid block had suggested a lesion of the spinal cord which had been diagnosed and treated as syphilis because of the positive Wassermann reaction of the blood and in spite of the negative reaction of the cerebrospinal fluid.

A large extradural hemangioma was removed through a laminectomy, which consisted of the removal of the spines and laminae of the sixth, seventh eighth and ninth thoracic vertebrae. The tumor measured about 4 cm in length, 2 cm in width and 1 cm in thickness. The patient made an uneventful convalescence and returned home without much improvement, except in vesical control. Two years later he returned to the clinic, at that time he was walking with only a slight amount of spasticity of the lower extremities and the Wassermann reaction on the blood was only slightly positive.

The striking features in this case were the onset of motor and sensory changes, which appeared before the pain, the positive Wassermann reaction of the blood, which indicated syphilitic infection, the negative Wassermann reaction of the cerebrospinal fluid, which made the diagnosis of syphilis questionable, and the marked improvement in all symptoms following removal of the tumor.

SYMPTOMS OF PERNICIOUS ANEMIA

Pernicious anemia is seldom confused with tumors of the spinal cord, however, Woltman³ found that in approximately 127 per cent of cases of pernicious anemia that were seen at the clinic the patients came to the clinic for the express purpose of seeking relief from symptoms directly attributable to involvement of the nervous system. Chief among these symptoms were paresthesias, especially numbness and tingling of the hands and feet, which were present in about 80 per cent of all the cases of pernicious anemia, regardless of whether or not involvement of the nervous system could be demonstrated objectively. Occasionally a patient complained of a girdle pain (28 per cent) or the sensation of a tight band around the knees (17 per cent). A number of patients presented themselves for examination because of inability to control the arms and legs properly. Cramping of the calves occasionally proved to be the source of great discomfort. A patient may die of pernicious anemia without ever presenting any evidence of involvement of the central nervous system. On the other hand, the appearance of nervous symptoms may precede the onset of the anemia, this was true in 14 per cent of the cases seen at the clinic. The symptoms that preceded the anemia usually were paresthesias. The following case demonstrates how a tumor of the spinal cord may be mistaken for pernicious anemia.

A woman, aged 47, came to the clinic complaining of numbness and tingling in the toes, which gradually had extended to the legs and up to the thighs and had been getting progressively worse for two years. When the numbness first appeared she had been examined by her family physician, who found that she had a relative anemia and who made a diagnosis of pernicious anemia. He had administered hydrochloric acid and liver extract, which had improved the condition. In view of the fact that the condition had been diagnosed as pernicious anemia, with involvement of the central nervous system, a poor prognosis was given, and the patient and her husband had accepted this diagnosis and had become resigned to what seemed the inevitable outcome. However, as time progressed and the general condition of the patient had improved without any change in the numbness, the physician referred her to the clinic for diagnosis. A more detailed history revealed that about two months after the onset of the numbness and tingling she had noticed some difficulty in walking in the dark, and as the condition had progressed she had been unable to feel the floor with her feet. Occasionally she had fallen down. The legs gradually had become stiff, and she had noticed that she could not walk as fast or move as quickly. The patient's condition had become steadily worse during the previous four months, and at the time of her examination she was afraid to go out alone. She never had had any pain or incontinence of urine or feces.

Examination of her blood revealed that the value for the hemoglobin was 89 per cent and that there were 4,290,000 erythrocytes and 7,500 leukocytes in each cubic millimeter of blood. The gastric acidity was within normal limits. The roentgenologic examination of the thoracolumbar portion of the spinal column revealed slight thinning and flattening of the pedicles of the sixth and seventh thoracic vertebrae, on the left side. The rest of the general examination did not reveal any abnormality.

Neurologic examination revealed almost complete loss of pain tactile and temperature sensation up to the level of the eighth thoracic segment. There was a loss of vibration and joint sense in the lower extremities. There was mild loss of strength in the lower extremities and there was some spasticity. Ankle clonus was found bilaterally, but there was a loss of epigastric, midabdominal and hypogastric reflexes. Chaddock's and Rossolimo's reflexes were present on both sides. Examination

³ Woltman H. W. The Nervous Symptoms in Pernicious Anemia. *Minnesota Med* 2: 306-310 (Aug.) 1919.

of the spinal fluid revealed 160 mg of total protein per hundred cubic centimeters of spinal fluid, a positive globulin test, and 3 small lymphocytes per cubic millimeter of spinal fluid. There was a definite delay in the rise and fall of the fluid in the manometer following compression of the jugular veins. Because of the anesthetic level, the roentgenologic changes and the partial subarachnoid block, a diagnosis of tumor of the spinal cord was made. Operation revealed a large meningioma, which measured 25 by 15 by 15 cm., situated opposite the sixth thoracic segment. The tumor was removed completely, with its base. Following the operation the patient had an uneventful convalescence, and at the time of her dismissal from the clinic there was marked improvement in her sensation and a lessening of the spasticity. A letter received from the patient six months after she had returned home revealed a loss of all disability and complete return of normal sensation and function of the lower extremities. When she was examined two years later there was no evidence of any previous trouble.

There is no physiologic reason why certain constitutional diseases cannot occur simultaneously with the development of the symptoms of a tumor of the spinal cord, but the foregoing case has been presented to show how difficult a differential diagnosis can be when the symptoms of the tumor are so atypical that they simulate the neurologic manifestations of another disease.

PRESENCE OF TUBERCULOSIS

Tuberculosis of the central nervous system usually is preceded by a demonstrable focus in some other part of the body, or, if it involves the spinal cord, there usually are associated bony changes which are demonstrable in the roentgenograms. Further, if the tuberculous lesions are within the meninges or involve the nervous tissue, the prognosis is very bad. However, tuberculomas of the spinal cord may be present without any evident focus elsewhere in the body. They may be removed surgically and all symptoms may be relieved when they are extradural and the dura remains intact during the removal. The following case emphasizes the justification of operation following a rapid course, and in the face of a poor prognosis. Further, it proves that tuberculosis encountered early in the operation should not deter an attempt to remove all granulomatous tissue, and the fact that the patient was well six years after operation indicates that a cure had been effected.

A youth, aged 19 years, came to the clinic complaining of paralysis of the lower extremities. He had had pneumonia two years previously, and after recovery he had been perfectly well until six months previous to his registration at the clinic, when he had influenza associated with a cough and pains in the thorax, and some elevation of temperature. He had recovered in about a month and had been perfectly well until four weeks previous to his registration at the clinic, when a dull pain had developed in the upper part of his thorax and back. This had been associated with a dry cough, which had increased the pain. Two weeks later, after the pains in the thorax had decreased, he had noticed numbness in his legs which had extended up to his knees. This had been very slight at first but gradually had become worse and in three days it had extended to his hips. With the subjective numbness he had lost all sensation and all ability to move his legs, this loss of function had become complete in four days. In one week following the onset of his symptoms he had become completely paralyzed below the waist, the paralysis had been associated with a complete anesthesia. Some difficulty in voiding also had developed. Roentgenologic examination of the thorax showed some small localized infiltrations which were thought to be the result of localized bronchiectasis. Examination of the thoracic vertebrae did not disclose any abnormality. Neurologic examination revealed a complete paralysis of the muscles below the level of the eighth and ninth thoracic segments and a complete loss of sensation vibration and joint sensibility below the sixth and seventh thoracic segments. The cerebrospinal fluid proved to be yellow and it coagulated immediately. There was no

response to jugular compression. A diagnosis of transverse myelitis was made, and because of the age of the patient and the sudden onset a laminectomy was advised, in spite of a very poor prognosis. In the course of the operation an inflammatory lesion of the muscles was encountered, microscopic examination revealed that this lesion was tuberculous. The epidural space was found to be filled with a granulomatous mass, which seemed to encircle the spinal cord, although the largest portion was compressing the cord from the posterior aspect. The entire inflammatory mass was removed, and the wound was closed. The patient had an uneventful convalescence. The wound healed by primary intention, but there was little or no return of function of the lower extremities, although the function of the sphincters had improved definitely. The patient returned home and remained in a wheelchair for six months, at this time he was able to be up and about on crutches. At the end of a year he was able to walk without any difficulty. He returned to the clinic for reexamination six years later, in 1936, at which time he was perfectly well. Roentgenologic examination of the spinal column did not reveal any further involvement with tuberculosis, and he had made a splendid recovery.

MALIGNANT TUMORS

The foregoing case and the next case have a short history in common, and yet they are so different that they illustrate many points in contrast. The rapid development of symptoms of tumors of the spinal cord always raises the question of malignancy and, surprisingly enough, both primary and secondary malignant tumors of the spinal cord occur so infrequently that, even in the presence of malignant changes elsewhere in the body, experience has shown that surgical exposure of the tumor to make a differential diagnosis is justified. In the following case, the diagnosis of syphilis also had been made on account of a positive Wassermann reaction of the blood, and there had been a questionable diagnosis of metastasis of carcinoma of the breast, which had been removed four years previously. To confuse the diagnosis further, the patient responded temporarily to antisyphilitic treatment, which is difficult to explain in the light of the tumor that was found at operation.

A woman, aged 55, came to the clinic complaining of coldness of the lower extremities, loss of sensation, difficulty in voiding, and shooting pains in the thorax. She had undergone a radical mastectomy four years previously for carcinoma of the breast. Three months before her registration at the clinic she had noticed a numbness and dead feeling in both feet. Two or three weeks before she was examined, she had had difficulty in voiding. A roentgenogram of the spinal column did not reveal any abnormality. The Wassermann reaction of the blood was markedly positive, but that of the spinal fluid was negative. The neurologic examination revealed a weakness of the lower abdominal muscles and the muscles of the lower extremities, a decreased sensibility to pain and temperature over the lower extremities, and a decrease in joint and vibration sensibility. Because of the positive Wassermann reaction of the blood and because of the previous carcinoma of the breast, a diagnosis of myelitis that was the result of one or the other condition was made, and the patient was allowed to return to her home, after antisyphilitic treatment had been advised. She received treatment at home, and while she was being treated the numbness improved and she was able to drive a car and walk. This treatment was continued for eight weeks. Two weeks after the treatment was discontinued, the numbness of the legs increased and it became difficult for her to walk. Her condition gradually became worse until she was confined to her bed and was unable to move even her toes. She returned to the clinic for reexamination, at this time there was almost complete paralysis of the lower extremities, and a definite sensory level could be demonstrated corresponding to the sixth thoracic segment. Examination of the spinal fluid proved that the Wassermann reaction was negative, there was a positive subarachnoid block. Roentgenologic examination of the spinal column did not reveal any evidence of metastasis. Laminectomy

tomy was performed, a large meningioma was found opposite the fourth interspace. It was attached to the right side of the spinal cord, which was compressed to about a fifth of its normal size. The tumor, which was removed with its dural base, measured 3 by 2.5 by 1 cm. An uneventful convalescence followed, and there was a gradual restoration of both sensory and motor functions of the lower extremities, at the expiration of seven months the patient was walking about.

Like metastatic lesions of the spinal cord, primary malignant tumors of the spinal column and contiguous tissues are infrequent, and even if there is evidence of destruction of the bone in the roentgenograms it sometimes is advisable to operate and remove as much of the tumor as is possible and then employ radiation therapy in an attempt to relieve the compression of the spinal cord and to control the growth of the tumor. Following this type of procedure, the results are sometimes more than gratifying, as illustrated by the following case.

A youth, aged 20 years, came to the clinic complaining of difficulty in walking, which had been present for the previous year and a half. At the onset of his trouble he first had noticed pain just under the left scapula. The situation and level of the pain had remained constant. The pain had extended anteriorly as far as the anterior border of the axilla. It had been worse at night than it had been during the day, and it had become more severe when he coughed or sneezed. The pain had continued without change for one year, when he had noted stiffness about the hips, and a periodic dragging of the left leg, which had been associated with numbness. One month previous to his examination at the clinic his legs had become very stiff and weak, and he had been unable to get up and about. Roentgenologic examination of the spinal column revealed slight scoliosis of the upper thoracic vertebrae, an irregular mass which involved the left side of the lamina of the third thoracic vertebra, and destruction and proliferative changes, which caused a diagnosis of questionable osteochondroma to be made. The neurologic examination revealed weakness of the muscles of the back and lower extremities below the eighth and ninth thoracic segments, an increase in reflexes of the lower extremities, and the presence of ankle clonus. Babinski's reflex was present on both sides and there was evidence of marked incoordination and spasticity. There was almost complete loss of sensation below the level of the second thoracic segment, and there was loss of vibration and joint sensibility in the lower extremities. Lumbar puncture did not reveal any change in the pressure of the cerebrospinal fluid, following compression of the jugular veins. Because of the subarachnoid block and the localizing level, laminectomy was performed. This revealed a bony mass between the spinous processes of the third and fourth thoracic vertebrae. Microscopic examination revealed that the tumor was an osteogenic sarcoma. The laminectomy was completed by removing the spines and laminae of the third and fourth thoracic vertebrae. A discrete mass could be seen lying on the left side and compressing the cord opposite the intervening interspace. The entire mass was removed, although the adjacent bone was involved in the process. Following the healing of the wound, the patient was given one course of high voltage roentgen therapy in four treatments. He returned to the clinic six weeks later for a second course of roentgen therapy. At that time there was subjective and objective evidence of definite improvement. He was able to walk, but some spasticity still was present and he still complained of pain which was induced by coughing or sneezing. He again returned to the clinic six weeks later, at that time it was found that the improvement had continued and that the loss of sensation extended only to the level of the hips. Vibration and sensibility had begun to return, and the spasticity had decreased. He was given a third course of high voltage roentgen therapy. When he returned to the clinic seven months later, examination revealed that his condition had returned to normal. At this time roentgenologic examination of the spinal column revealed some proliferation about the left lateral margin of the laminectomy wound, but there was no evidence of a tumor.

SYMPTOMS OF ARTHRITIS

Among the more common general conditions with which tumors of the spinal cord may be confused is arthritis. In many cases in which a tumor of the spinal cord is suspected, the only demonstrable lesion in the roentgenograms of the spinal column consists of hypertrophic changes in the vertebrae. Sciatica and pain in the lower part of the back sometimes constitute the only symptoms for a long time, and the diagnosis can be made only after very careful study. Hench⁴ has called attention to the fact that, in any case of arthritis in which morphine or codeine is required to relieve the pain, a tumor of the spinal cord should be suspected.

A woman, aged 45, came to the clinic complaining of pains, which were situated over both sacro-iliac regions and which extended down to the ankles. She had had acute rheumatic fever at the age of 8 years, and four years before her examination at the clinic she had had an attack of arthritis, which had involved the knees, wrists and fingers. Two years previous to her examination she had had an attack of severe pain over the sacro-iliac joints, since that time she had had periodic attacks of pain, which had extended to the buttocks, groins and pelvis. There also had been some pain in both ankles. These attacks had lasted two weeks and then had disappeared. The attacks, however, had become more frequent and had appeared closer together, the last attack had kept her awake for three nights.

Roentgenologic examination of the spinal column revealed some hypertrophic changes about the sacro-iliac joints. The neurologic examination did not reveal any abnormality. She was hospitalized to be treated for arthritis but, because the pain became so great when she was in bed, a spinal puncture was done to rule out the possibility of a tumor of the spinal cord. The cerebrospinal fluid was yellow and there was a complete subarachnoid block. Following the spinal puncture there still were no localizing signs, and for that reason, 5 cc of iodized poppy-seed oil was injected into the subarachnoid space through the posterior cistern. Roentgenoscopic examination revealed that the iodized oil had descended to the level of the twelfth thoracic and first lumbar vertebrae. The column of oil was divided, and in the subsequent roentgenogram a definite tumor could be outlined. For that reason a laminectomy was performed. This involved the twelfth thoracic and the first, second and third lumbar vertebrae. Large multiple neurofibromas were found attached to the second lumbar root. Following the operation the patient made an uneventful convalescence and the pain was completely relieved.

PAIN

Of extreme interest to general surgeons should be the painful syndrome of tumors of the spinal cord, because it is in this phase of development of these tumors that the patients usually insist on having something done to relieve the pain. The gallbladder or appendix always is suspected of causing pain that extends to the upper or lower right quadrant of the abdomen, and pain that extends to the pelvis may be associated with an ovarian cyst or a fibroid, but after the suspected lesion is removed, pain is still present. What really emphasized this feature of tumors of the spinal cord was the following case.

A man came to the clinic because of pain, which extended to the region of the gallbladder. A diagnosis of cholecystitis was made in the face of negative results of the general and neurologic examinations. This was based on the distress after eating and on the positive roentgenologic evidence of disease of the gallbladder. The pain persisted following cholecystectomy, and no explanation could be found for the persistence of the pain. When he returned to the clinic six months later, there was an unmistakable Brown-Sequard syndrome, which

⁴ Rynearson, E. H., and Hench, P. S. Rheumatism That Requires Morphine. *M. Clin. North America* 15: 153-161 (July) 1931.

indicated that the trouble was within the spinal canal. A large intradural extramedullary neurofibroma was removed, and there was complete cessation of symptoms.

It was interesting to note that 10 per cent of the patients who have been subjected to operation for tumors of the spinal cord had been operated on previously for the relief of the pain or disability. To emphasize this point further, two cases are presented briefly, as they both have been reported previously.

The first case does not differ in many respects from countless others in which pain extends to a region in which examination reveals a local lesion. In the absence of any neurologic signs, there was little reason to suspect a tumor of the spinal cord in this case, except that the pain was relieved by exercise.

A woman, aged 37, came to the clinic complaining of an intermittent drawing pain, which was situated in the left lower part of the thorax and in the abdomen and had been present for two years. The pain had been increasing in severity, it had not responded to any type of treatment but it had been relieved by exercise. Six months after onset of the pain, examination had revealed the presence of an ovarian tumor and laparotomy had been performed for relief of the pain. Because the pain had been projected at times to the right side of the abdomen, not only a left cystic ovary and the corresponding fallopian tube had been removed but the appendix also had been removed. In the course of convalescence the pain had returned with the same severity. No obvious cause could be found for the pain, but about six months after operation the patient had noticed a drawing pain in her left leg and some weakness of the muscles of both legs. Examination at the clinic two years after the onset of pain and a year and a half after operation revealed sensory and motor changes corresponding to disturbance of the right thoracic segment. Removal of an endothelioma of the spinal cord relieved the weakness, anesthesia and pain.

Tumors that affect the lumbar portion of the spinal cord are the most difficult to diagnose and localize. In this region a tumor may produce pain, weakness, atrophy or all three, for a long time, with no other objective evidence. When a tumor of the spinal cord is not suspected, restorative measures are sometimes carried out.

A man, aged 43, came to the clinic complaining of an aching distress in the sacro-iliac region which had extended down the left thigh and had been present for three years. Six months after the onset of pain, atrophy had developed in the left thigh and leg; this had resulted in marked weakness and disability of the parts affected. The pain had persisted, had been variable in nature, and had been intermittent. Two and a half years after the onset, the pain had proved of little consequence in comparison to his disability, for which he sought relief. In spite of the pain a diagnosis of residual poliomyelitis was made and a tendon transplantation was done. This operation seemed to cause gradual increase in severity of the pain, until the patient was unable to sleep in bed. It was necessary for him to sleep in a chair. Examination which was conducted six months after operation, revealed marked weakness below the gluteal muscles on the left side and some weakness on the right side. The patellar and the achilles reflexes were absent on both sides. There was loss of pain temperature and tactile sense over the left calf. The cerebrospinal fluid was yellow and there was no change in pressure following compression of the jugular veins. At operation multiple neurofibromas, which extended from the first to the fifth lumbar vertebra, were removed. This operation caused the symptoms to disappear.

COMMENT AND SUMMARY

Tumors of the spinal cord may simulate other neurologic lesions or the neurologic manifestations of constitutional diseases or infection. The painful syndrome, which is present in 80 per cent of the cases, may persist

for months or years and may simulate diseases of the pericardium and pleura, diseases of the biliary, urinary and gastro-intestinal tracts, and diseases of the peripheral nerves, muscles and bones. The majority of tumors of the spinal cord are benign and operable. If tumors of the spinal cord are removed before they produce irreparable damage to the spinal cord, a restoration of function almost always follows. Operation for the removal of tumor of the spinal cord is attended with a mortality of less than 4 per cent.

ABSTRACT OF DISCUSSION

DR. ERNEST SACHS, St. Louis. Dr. Craig has emphasized the early diagnosis and has pointed out and given striking examples of cases that were readily confused with some other type of condition. In going over our series of spinal cord tumor cases with this particular idea in view, I noted that whereas in the typical spinal cord tumor case pain is one of the earliest symptoms, there were a number of cases in which pain was not the initial symptom. Many of these patients gave a history that after seeing their physicians and obtaining no relief they had gone to quacks, osteopaths or chiropractors. The first symptom that these patients complained of was a peculiar paresis or anesthesia. However, owing to the fact that the general physician doesn't devote much time to a careful neurologic examination, the slight changes in the nervous system had not been noted. One patient, the brother of a physician, presented himself with the symptom of painful urination and difficulty in emptying the bladder. The physician concluded that the difficulty was due to some prostate trouble and removed his prostate without any relief. I saw the patient shortly afterward and at that time he had almost complete retention. The only neurologic symptom he had other than the bladder disturbance was saddle anesthesia. In an ordinary physical examination this can be readily missed. The patient had a large extradural fibroma of the lower portion of the spinal cord. On removal of the tumor the patient's symptoms completely cleared up. Another patient was a woman who complained for over a year that she could not take a cold bath and that whenever she got any cold water on her abdomen it produced excruciating pain; this was considered a neurosis. I saw her repeatedly and made sensory examinations suspecting a spinal cord tumor, but I wasn't able to arrive at any definite decision until instead of making sensory examinations with cotton and a sharp needle I used a piece of ice, when it was perfectly easy to establish a definite line of changed sensation on one side of her abdomen. She had a neurofibroma growing from one root. With its removal these paresthesias disappeared. There is no relationship between prolonged neurologic symptoms, compression of the cord, and the possibility of the spinal cord recovering after long compression. All have seen cases in which a spinal cord has been compressed for a long time and was almost ribbon-like in character, yet such a patient might recover completely, while other patients who have comparatively slight compression of the cord may not recover their motor or sensory functions to any extent.

[DR. WINCHELL MCK. CRAIG, Rochester, Minn., showed moving pictures of a patient before and after operation, presenting the classic symptoms of tumors of the spinal cord. The picture showed preoperative examination, drawings of the operation, and postoperative examination showing partial recovery after an interval of twenty-one days. Complete recovery was shown after an interval of three months.]

Body Fat—A superfluity of food leads either to indigestion or to undue fatness—sometimes to both. Too meager a food intake depletes the body of such stores of fat as it should normally carry. Body fat has important functions: it constitutes a reserve supply of fuel, it serves as a support for some of the internal organs, notably the kidneys, and it may at times be of great service in protecting parts of the body from bruises or from cold.—Sherman, H. C. *Food and Health*, New York, Macmillan Company, 1934.

BASAL MENINGITIS

SOME CONSIDERATIONS AND A PROPOSED
MANAGEMENT

FERRIS SMITH, MD

GRAND RAPIDS, MICH

I have been impressed, during a period of many years, with the variation of the postmortem picture at the base and on the cortex after meningeal death. All physicians have noted many times the well organized exudate at the base of the brain and the thin, flocculent purulent exudate that covers the pia in the sulci and on the surface of the brain. It was certainly twenty-five years ago that I was first struck with this observation, but it has only been within recent years that I have been impressed with the significance of it.

This well organized exudate represents the point of entrance of the infection and nature's effort to confine it. It is the sign post pointing to the field which is to be considered here. The floor of this involved area is the roof of the posterior ethmoidal cells, the sphenoid sinuses and the basilar process of the sphenoid bone.

The essential anatomy of this region must be carefully reviewed, some teachings in relation to it discarded, and a mental picture of the circulation of the area acquired in order that the sequence of events which lead to a meningitis may be fully appreciated.

It has been taught that the principal blood supply of the sphenoid sinus comes from branches of the vessels supplying the pharyngeal mucosa as this structure follows pneumatization to line the cavity. Physicians have further been led to believe until recent years that there was no connection between this blood supply of the cavity lining and the intracranial structures. Nothing can be further from the truth (fig 1).

Breschet in 1837 fully demonstrated the circulation of the base and of the vertebra. If the occipital and sphenoidal bones may be regarded as the first two segments of the vertebra, there will be no difficulty in picturing its blood supply. The arrangement is apparently identical with that of the vertebral segments. There is free communication between the vessels of the sphenoidal lining and the haversian systems of the basilar process and between these systems and the dura, which dips through the cortex of the bone to connect with parts of this arrangement in the marrow. Logan Turner¹ clearly demonstrates this in his studies of the pathways of infection. There are numerous fine veins which terminate in the dura or join the basilar veins and do not traverse the arachnoid to the pia mater. There are other veins which pass either directly or indirectly to the latter structure. Secondly, there is direct vascular communication between the cortical bone on the roof of the sphenoid and its dural covering. Thirdly, there is free communication between the veins of the sphenoid lining and the basal venous pools both directly and through the pterygoid plexus and its branches connecting with the cavernous sinus. These venous lakes at the base of the brain, that is, the cavernous sinus, the circular sinus, the basilar plexus, the inferior petrosal veins and so on are all parts of one system which have been variously named.

The perilymphatic sheaths of the arteries at the base are arachnoid prolongations which follow them to their terminations.

The consideration of the cisterns at the base is essential. These again are variously named but are in fact interconnecting and intimately related. The basal cistern is the space between the arachnoid and the pia mater resulting from failure of the arachnoid mater to follow the surface of the brain across the base from one temporal lobe to the other. Included in this is the pontine cistern, which is a similar space just anterior to the pons, also the chiasmal cistern resulting from a similar failure of the arachnoid to follow the surfaces of the branches of the optic chiasm. This basal cistern connects posteriorly with the cerebellomedullary cistern or the cisterna magna. It is in the area of this so-called basal cistern that one notes the old, well organized exudate in the fatal meningitis case of basal origin. This is obviously the point of entrance of the infection.

Pickworth² has demonstrated organisms in the sphenoid lining and similar organisms in the haversian veins, in the bone cortex, in the dura, in the capsule and substance of the pituitary gland, in the perilymphatic sheaths of the arteries, in the artery walls and in the perineural sheaths of the base.



Fig 1—Injection of the sphenopalatine artery illustrating the absence of demonstrable branches supplying the sphenoidal sinus lining. (Preparation made by Dr. William C. MeLOY while a member of the author's staff.)

With this definite picture of the modes of entrance of infection in mind, one has only to consider the physiologic and pathologic processes that follow an extension of infection from the sphenoidal cavity in order to complete the picture. The organisms may extend by continuity, on the one hand, or be carried through the veins by a process of thrombophlebitis, on the other. There may be presented an osteoporosis, an osteitis or an osteomyelitis in the early stages. Either of these invasions may continue until the veins of the dura and the basilar plexus are included in the process. It is at this point that the physiologic action of the pia arachnoid produces a barrier more or less temporary, depending on the virulence of the infection to the further extension of the disease process. Eagleton³ points out that "this frame work is not only a barrier, but also contains a protective mechanism, so that any infection which may pass the barrier of the

¹ Turner A. L., and Reynolds F. E. *J. Laryng. & Otol.* 41:7386 (Feb.) 442-453 (July) 717-731 (Nov.) 1936. 43:34-41 (Jan.) 565-573 (Aug.) 1928.

² Pickworth F. A. *Chronic Nasal Sinusitis and Its Relation to Mental Disorder.* London: H. K. Lewis, 1935.

³ Eagleton W. P. *The Philosophy of Meningitis.* *Laryngoscope* 30:627 (Oct.) 1929.

dural covering or which may be brought to the brain by the circulatory blood, will be instantly counteracted, digested and removed." He states further that "if we are to understand meningitis, we must understand this framework, this barrier, this protective mechanism, this phagocytic membrane not only in its gross anatomy, but also in its microscopical physiology and especially its reactions in the presence of an irritant via trauma, cold or micro-organisms."



Fig. 2—X-ray study of the base showing an early osteomyelitis involving the basilar process and the occipital articulation. There is beginning bone absorption and rarefaction. There is marked opacity in the sphenoid sinus.

well organized exudate at the base is found. It is only when the infection involves the veins or follows the arterial sheaths traversing the pia that the barrier is broken down and that the infection produces a fatal leptomeningitis.

The interest of the physician centers in the events from the moment of initial infection to a time prior to the extension of the infection beyond this circumscribed area. There is a period, depending on the virulence of the invading organism or from one to forty days in which to recognize the situation and carry out its management.



Fig. 3—Illustrating conditions present in figure 2 and the position of the burr in draining the pontine cistern.

The clinical picture is definite and typical. It is frequently ushered in by a feeling of malaise, a dull, heavy sensation behind the eyes, or an orbital neuralgia. There may also be pain in the supra-orbital, malar and mandibular regions. As the disease progresses, the patient lies on his back with his eyes closed in a state of semicomatose from which he is easily aroused. He may or may not complain of pain in the neck but does

not have stiffness of the neck until the cisterna magna becomes involved. Repeated examination reveals an intermittent, recurrent, vertical nystagmus and occasionally similar behavior in the horizontal plane. There may be paresis or paralysis of the sixth nerve. There is a slight elevation of temperature and a moderate leukocytosis. The spinal fluid is under slightly increased pressure, is usually cloudy and presents an increased cell count. There may or may not be bacteria in the fluid at this stage.

It becomes apparent that during this distinct phase of the disease any management which will afford free drainage and the restoration of normal circulation offers the possibility of saving many lives which are now almost invariably lost. The requirements will consist of drainage of the basilar process of the sphenoid or of such drainage, plus drainage of the basal cistern, according to the extent of the disease.

I present for consideration two methods of approaching this problem and the outcome of three such surgical attempts.

CASE 1—E. M., a woman, aged 33, an anesthetist, who entered the hospital May 24, 1933, had pansinusitis over a period of fifteen years. There were twelve operative pro-

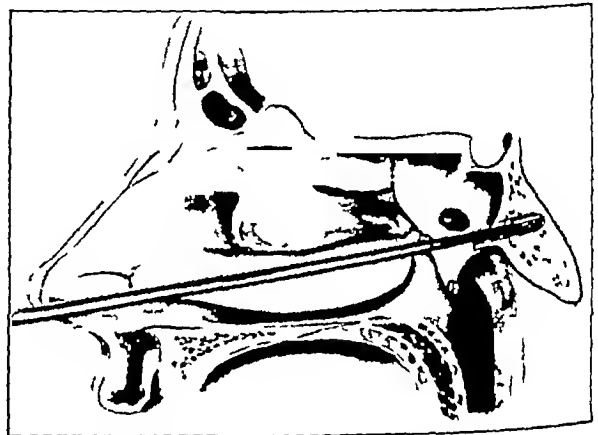


Fig. 4—Position and direction of the burr for drainage of the pontine cistern. See figure 3.

cedures for relief of empyema, frontal abscess and exacerbations of osteomyelitis during this period.

The present condition began with a coryza ten days previously. The first complaint was headache of a mild character. This was soon complicated by several days of intermittent "aching" and pain behind the eyes, lassitude and malaise. The retrobulbar pain increased in intensity until it could not be controlled by opiate, and tribrom-ethanol was required for the patient's rest.

There was a temperature from 97 to 99.5 F., with a pulse rate of 100. The patient remained flat on her back. She was drowsy but easily aroused and she complained of pain in the occipital and upper cervical region. She preferred a darkened room because of a mild photophobia. She presented an intermittent spontaneous vertical nystagmus. The spinal fluid was under slight pressure, slightly cloudy and contained 1800 cells. The leukocytes numbered 17,250 with 91 per cent polymorphonuclears, 7 per cent large lymphocytes and 1 transitional cell.

The involvement of the sphenoid sinus, the basilar process of the sphenoid and the articular process of the occipital bone is illustrated in x-ray studies shown in figures 2 and 3.

The rapid development of the symptoms and the fluid changes demanded immediate action if any were to be taken. A choice had to be made between two long contemplated approaches.

An intranasal trans-sphenoidal route was selected because of the chronicity of the history, the fact that the opposite cavity had been the site of complete surgical operation for chronic disease and the apparently old pathologic condition in this sphenoidal cavity which demanded removal as well as an adequate drainage of the basilar process and basilar cistern.

The sphenoidal cavity and the bony floor were treated as previously described.⁴ A burr of three-sixteenths inch diameter was introduced in the midline at an angle directed toward the middle third of the pons (fig 4). The burr was driven into the bone for three eighths inch and then exchanged for a slightly smaller one. This provided a stop for a tube to be introduced after the dura had been opened.

The smaller drill was driven through the medullary and superior cortical bone to the dura. The drill was removed and

The drilling and subsequent procedure are carried out as described in case 1. There is much less danger of injury to the internal carotid arteries in this approach than in the trans-sphenoidal one. The operation is concluded by closure of the velum with horsehair sutures.

CASE 2—P. E., a boy, aged 6, admitted Jan. 21, 1934, had an infection of the upper respiratory tract eighteen days before admission. Acute suppurative otitis media developed three days later. Intermittent drainage occurred from the ear and, later, spontaneous drainage through an old mastoidectomy scar. The patient was very irritable and complained of frontal and occipital headache with stiffness of the neck.

There were increased muscle tonus in both upper and lower extremities, hyperactive biceps, triceps, knee and achilles reflexes, positive Kernig's sign, stiffness of the neck with pain on motion, normal extra-ocular muscle and pupillary action, acute suppurative otitis media and suppurative mastoiditis (left). The spinal fluid was under normal pressure and was cloudy, it contained 1440 cells, the phenol test was + + +, Nonne-Apel't tests were + + + and + +, with no organisms on smear and culture. The temperature was 103, pulse 118. Leukocytes numbered 15,150, with 88 per cent polymorphonuclears. Blood culture was negative. The urine had a specific gravity of 1.024, albumin +, leukocytes 25. Culture from the ear yielded *Staphylococcus aureus*.

I saw this patient in consultation with Dr. Lee Grant twenty-four hours later. The clinical picture was only slightly changed. There were marked photophobia, no rigidity of the neck, a spinal fluid cell count of 630 and no bacteria. X-ray examination of the mastoid that had been operated on revealed the presence of cells over the entire mastoid and in the root of the zygoma. The operative note of Dr. Grant on this date stated that considerable necrosis had occurred in the area of the middle ear and the mastoid antrum. Infection was present throughout the mastoid, with areas of sclerosis. Marked regeneration of cells followed the previous operation.

There was a slight remission in fever, cessation of drainage and some general improvement for a few days following this operation.

I again saw the patient in consultation seven days later. He complained of pain behind the eyes and photophobia. He presented both a spontaneous horizontal and vertical nystagmus, no

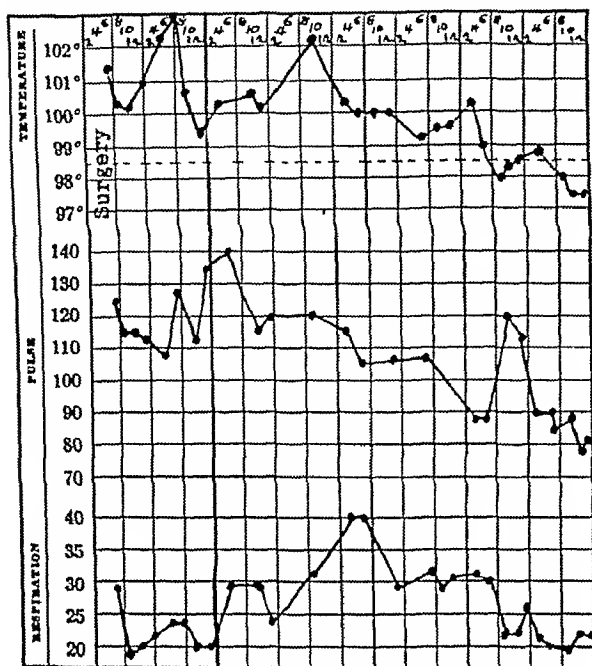


Fig 5—Temperature, pulse and respiration in case 1

the dura opened. A soft tube having the same diameter as the initial drill (three sixteenths inch), was passed through the nose and into the drill hole. This was clamped external to the nostril.

The sudden loss of fluid when the dura was opened plus the local trauma, caused an immediate marked disturbance of respiration and pulse. This corrected itself shortly after the clamping of the tube and stimulation by carbon dioxide.

There was a sharp increase in the temperature, pulse and respiration a few hours after the operation and a gradual decline to normal during the subsequent three days. These variations probably resulted from the trauma and the presence of a small quantity of free blood (fig 5). The blood pressure showed little variation (118/68). The patient was very restless and complained of intense general headache for forty-eight hours. The pain about the left eye disappeared during the first twenty hours. She was nauseated and continued to complain of pain in the vertex and occiput for several days. She was discharged on the tenth day.

In the following cases drainage was accomplished through a transoral approach (fig 6). This is less technical (less time consuming) and should meet the requirements of most cases. The velum is incised from the posterior margin of the palate bones to the base of the uvula. The proximal end of this incision is continued laterally on both sides along the edge of the palate bones to the hamular processes. Retraction of the incised velum exposes the vault of the nasopharynx—the basilar process of the sphenoid bone and its occipital articulation. A T shaped incision is made in the midline and the soft coverings are separated to expose the bone just posterior to the rostrum of the vomer (fig 7). The sphenoid cavity is opened from below.

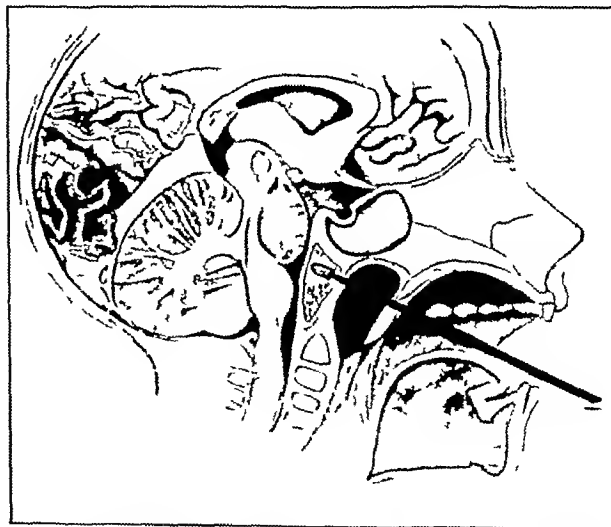


Fig 6—Position and direction of the burr for the transoral drainage of the pontine cistern

weakness of the extra-ocular muscles, slight stiffness of the neck and a positive Kernig's sign. The leukocytes numbered 28,650, with 88 per cent polymorphonuclears. The spinal fluid was under slightly increased pressure, was cloudy and contained 1920 cells. The sediment presented a very occasional pair of gram-positive cocci. There was no growth on the culture at the end of twenty-four hours and a few colonies of hemolytic streptococci at the end of forty-eight hours. I advised further

⁴ Smith, Ferris. Management of Chronic Sinus Disease. Arch. Otolaryng. 10: 157-171 (Feb.) 1934.

exploration of the mastoid and drainage of the basal cistern. Soft bone was removed from the tip, the sinus plate, the root of the zygoma and the depth of Trautman's triangle. The base of the petrous bone was normal. A liberal area of dura about the petrous bone was exposed and found negative.

The cavity of the sphenoid, its basilar process and the pontine cistern were drained as described.

The temperature and pulse variation during the first four postoperative days is graphically depicted in figure 8. Compare with case 1, figure 5. The fluid cleared of staphylococci under

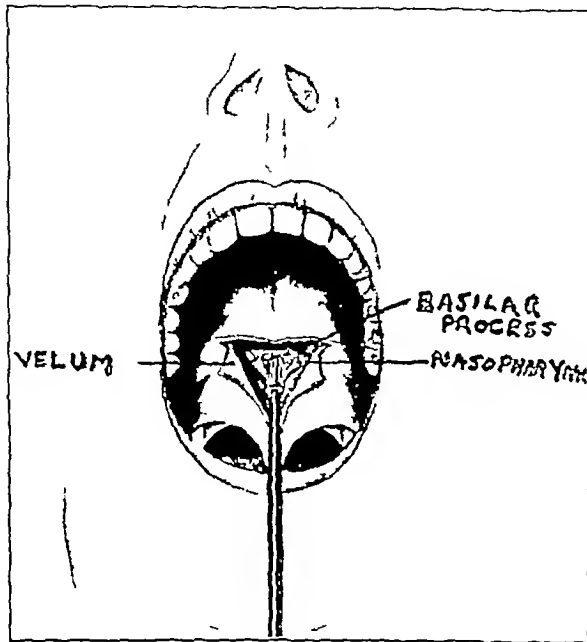


Fig. 7—Opening of the velum and of the nasopharyngeal soft parts to expose the basilar process of the sphenoid.

direct treatment with bacteriophage but streptococci remained in the sediment. The patient's subjective symptoms largely disappeared during these four days and there was marked improvement in the objective signs. The temperature and pulse rose rapidly on the fifth postoperative day and the child died suddenly in a convulsive attack.

The autopsy report is partly as follows: About the brain stem at the base there was a purulent exudate. The entire area of this was not more than 5 cm in diameter. This area centered in the region of the lower pons and here there had been extensive exudate organization. There was marked obstruction to the circulation of spinal fluid in the region of the fourth ventricle and its foramen which in turn produced an extensive obstructive internal hydrocephalus, all of the higher ventricles being tremendously distended by a slightly cloudy fluid. The anatomic diagnosis was acute meningitis, localized acute obstructive internal hydrocephalus.

Microscopic examination of sections of the cord, pons and medulla showed marked inflammation. The extent of this tissue reaction was such as to point to the fact that this inflammation had been present for some time. There were areas which showed necrosis of abscess formation. There was some reaction in the superficial layers of the brain tissue characterized by a perivascular infiltrate extending along the lymph spaces of the blood vessels into the pons and medulla. The condition found indicated an attempt at localization of the infection. The degree of organization changes pointed to infection being present for some time.

The clinical picture in case 2 contrasts strongly with case 1. The stiffness of the neck and the presence of a positive Kernig's sign, evidence involvement of the cisterna magna. The marked irritability, headache and hyperactive reflexes suggest vascular extension of the infection. The infection is no longer walled off at the site of invasion. The patient should have been operated on earlier.

The third patient was a poor surgical risk. The case serves to emphasize the necessity of early diagnosis and immediate drainage.

CASE 3—G. M., a woman, aged 28, a nurse, entered the hospital Jan. 18, 1934, complaining of constant frontal and vertex headache and pain in the left side of the neck, the occipital region and the left ear canal, chronic sore throat, a nasopharyngeal purulent drainage, polyarthritis and diabetes. She had had sinus disease for fourteen years. Numerous sinus operations failed to give relief. Tonsillectomy and appendectomy had been performed. She had had diabetes for several years.

Physical examination was negative, except for the upper respiratory tract. The nose and the nasopharynx contained thick mucus. The right ethmoid labyrinth had been completely exenterated. There were some ethmoid cell remnants and small polyps on the left side. Both antral cavities were open into the nose (Caldwell-Luc). Both frontal ducts were widely open. The anterior walls and part of the floor of both sphenoidal cavities had been removed. There were deep pterygoid pneumatizations on both sides and several small cavities in the basilar process, which could be explored with a probe. A thick, pyogenic membrane covered the remnant of the sphenoidal cavity. There was a spontaneous nystagmus in every plane. The horizontal nystagmus was most marked and that in the vertical plane was mixed in type.

X-ray study of the base presented only a very dense picture and little useful information.

The temperature was 98, pulse 80, respiration 20. The spinal fluid was cloudy and contained 190 cells. The phenol test was ++. Nonne-Apel't tests were +++ and 2 +++ with no bacteria. Leukocytes numbered 7,500. The urine was acid, with a specific gravity of 1.027, there was a slight trace of sugar. Tests for acetone and diacetic acid were negative.

The operative management was the same as described in case 2. The drill opened two cavities containing pus in the marrow of the basilar process. The effect on the temperature, pulse and respiration is shown in figure 9.

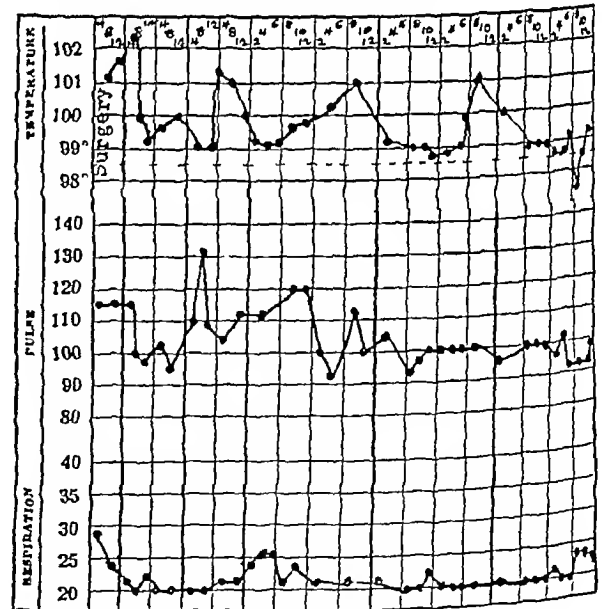


Fig. 8—Temperature, pulse and respiration in case 2 during the first four days after operation.

The characteristic pain diminished during the first few postoperative days and the patient was definitely improved. Sugar, acetone and diacetic acid were present in the urine on the second postoperative day and continued in varying amounts for eleven days. The bowel condition was difficult to manage. These two facts suggested involvement of the pituitary gland and a definite diagnostic point for consideration.

The temperature varied from 1 to 1.5 degrees daily for seventeen days. There was slight variation in the leukocyte count until the eighth day, at which time they increased to 12,000.

with a polymorphonuclear count of 92 per cent. The count increased to 29,400 on the twelfth postoperative day. The spinal fluid remained practically the same as originally noted except that on two occasions isolated colonies of staphylococci were reported as probable contaminations.

The patient was about her room from the fifth to the tenth postoperative day. She constantly complained of increasing occipital headache, to which was later added bitemporal pain.

The clinical picture changed suddenly on the nineteenth postoperative day. There were several indications of cerebral extension. The patient became stuporous on the following day and died on the twenty-third postoperative day.

On postmortem examination the pia-arachnoid and dura were very adherent and thickened in the region about the pons and medulla. Adhesions were so dense in this area that the brain was dissected free by the knife only. The ventricles were not distended. The deeper brain structures showed no important pathologic changes. The endosteum was very much thickened over the base of the skull and there was an accumulation of pus over the bone above the orbital plate particularly on the right side. The inflammation and tissue reaction emanated from the sphenoid bone. The surgical drainage area was demonstrated in the middle of the sphenoid which lay adjacent to a point corresponding to the lower third of the pons. The sphenoid bone was explored. There were several cavities within this bone containing pus and showing bone necrosis. The density and the age of the inflammatory reaction in the tissues adjacent to the sphenoid bone implied that this inflammation had been present for a long period and that there was superimposed on the older process an acute pyogenic inflammation.

Microscopic examination of sections of bone from the sphenoid region showed an extensive old osteitis with areas of bone proliferation and areas of bone destruction. Sections of brain from the base showed an old meningeal productive inflammation of low grade, showing marked proliferation with fibroblasts and thickening of the arachnoid and pia accompanied by proliferation of blood vessels. Superimposed on this process there was an acute pyogenic meningitis with areas of necrosis and accumulation of abundant fat. The nervous tissue lying beneath the process described showed a mild glial proliferation and accumulation of inflammatory wandering cells about the blood vessels.

The diagnosis was chronic osteitis of the sphenoid bone, chronic leptomeningitis with superimposed acute pyogenic meningitis.

These three cases present distinct phases of the same process. The clinical picture in the first case resulted from early inflammation with congestion, without the demonstrable presence of organisms, involving the veins and the dura of the middle fossa and the anterior portion of the posterior cistern.

It is my impression that the "aching" and retrobulbar pain depend on venous congestion. The relief is too rapid for a subsiding inflammation. The same rapid disappearance of these symptoms is frequently noted after a complete mastoidectomy. The pain in the neck results from superficial inflammation of the brain stem. Confinement of the process to this limited area by adhesion of the pia arachnoid had occurred in the first case.

The disease process in the second case had already passed this protective barrier when the patient was hospitalized. The cisterna magna was already invaded and the infection was already following the vessels into the brain substance, as evidenced by the symptoms noted. The rapidity of this invasion depended on the virulence of the organisms and other obvious factors, but it is highly probable that there was a definite period during which characteristic signs and symptoms indicated confinement of the invasion to an area that may be drained. The early appearance of a suppurative otitis might divert attention from the true picture.

The chronicity of the disease in the third case, as indicated by the history and the microscopic examination, is positive proof of the ability of the pia-arachnoid to confine infection for varying periods of time to the

area noted. There was obviously a time in the progress of this case when the bone and the pontine cistern could have been drained with probable success.

CONSIDERATIONS

1 An early diagnosis is obviously essential. One might draw a parallel with the diagnosis of appendicitis. The recognition of the early signs and symptoms and prompt intervention before the peritoneal barrier is passed has practically reversed the mortality rate.

2 Intratracheal anesthesia is advisable. It permits not only protection of the respiratory tract during operation but also immediate stimulation, if required.

3 It is my belief that this is the ideal method of draining infections extending from the petrous tip, as well as those originating in the sphenoid sinus. It is not only much simpler than the other approaches described but also provides dependent drainage.

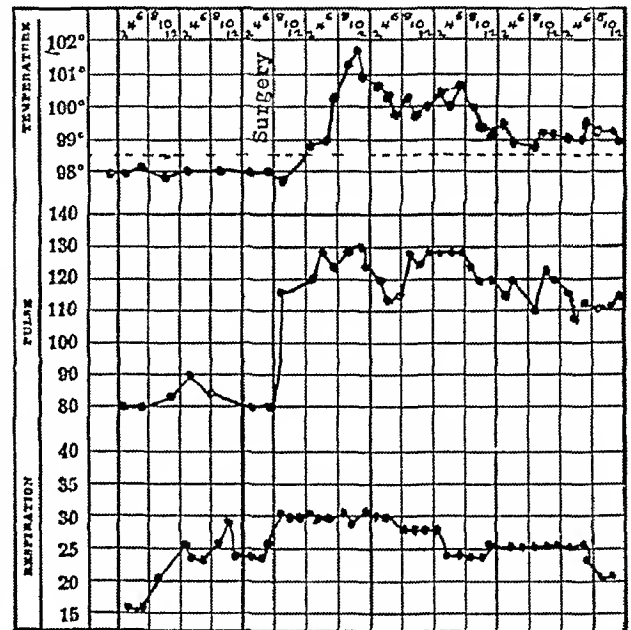


Fig 9—Temperature pulse and respiration in case 3

Eagleton⁵ states that "infection of the petrous apex—from caries—enters directly into the pontine cisterna, in which area it is readily limited and to which it may be confined for a considerable time."

4 There is a considerable sudden loss of spinal fluid, despite the fact that the tube is in position for rapid introduction on removal of the instrument from the bone opening.

5 The dangers of this sudden loss of fluid are

- (a) A sudden disturbance in the equilibrium between the intracranial and the intermedullary capillary pressures, which may result in an ischemia of vital centers sufficient to cause death.
- (b) Embarrassment of respiration of varying degree. Preparation for stimulation and artificial respiration should be at hand.

6 It is my belief that the fluid should be slowly withdrawn until the drainage is complete. This will relieve local congestion and aid in putting the area at rest. It will also permit greater collapse of the space and more complete "walling off."

⁵ Eagleton W. P. The Cerebrospinal Fluid. J. Laryng. & Otol. 44: 660 (Oct.) 1929.

7 Treatment

A Operative

- 1 The involved sinus mucosa and bone must be drained. This may be adequate for a cure in early cases. Such a result is frequently noted in cases of mastoiditis.
- 2 The basal cistern must be drained when the indications are present.

B Postoperative

- 1 Direct intra-arachnoid medication is dangerous. It produces collapse and suspends respiration.
- 2 I have used bacteriophage at body temperature with a striking result.
- 3 Eagleton⁵ states that irritating antiseptics paralyze respiration, solutions which are not isotonic cause a rise of temperature to 105 or over, that temperature below that of the body suspends respiration, and that free blood in the cistern produces all the clinical manifestations of meningitis. There is a slight amount of free blood immediately following incision of the dura but the fluid rapidly becomes free of it.

It is my hope that these considerations will awaken sufficient interest in accumulating an experience in this field to produce a standard management. This should result in saving many lives.

Blodgett Medical Building

THE TREATMENT OF EARLY SYPHILIS WITH ELECTROPYREXIA

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THEODORE K LAWLESS MD

AND

S L OSBORNE BPE

CHICAGO

Medical history is replete with stories of the resurrection of ancient formulas and therapies. From time to time the most modern researches have extracted the essence from gleanings of empirical therapeutic methods, superstitions and medieval nostrums. Such reanimated knowledge has often given a new impetus to the entire field of therapeutics. It is as if the dust of ages were shaken from the golden threads of a fine garment, and these threads then respun into a glittering vestment to serve present needs.

The empirical treatment of syphilis by means of heat harks back to the beginning of the sixteenth century, when this disease had been spread over much of Europe. During this period, this scourge was fought with various forms of heat. Sometimes thick blankets and hot baths were used alone, more often these were employed in conjunction with drugs, especially mercury. As late as 1872 very hot stove-heated rooms were used in Montpellier, France, in which patients suffering from syphilis were confined.¹ Very little, if any other medication was employed and after a number of weeks the patient was discharged apparently cured that is to say, relieved of his acute symptoms. In 1889 Kalashnikoff²

wrote that following the experiments of Borowka under the direction of Tarnowsky at St Petersburg he treated many local manifestations of syphilis with heat. Whenever the lesions were found in the extremities, these were immersed twice daily in a bath at a temperature between 47.2 and 47.7 C (117 and 117.9 F) for thirty minutes. If the lesions were situated in the more inaccessible parts, such as the buttocks, the face or the genitalia, hot fomentations or hot water bottles with temperatures varying from 46.1 to 48.8 C (115 to 119.8 F) were applied twice daily for one hour. The syphilitic lesions treated in this manner disappeared more rapidly than when they were treated with the mercurials then in vogue. If mercury was combined with heat, even a more prompt dissolution of the lesion resulted. Kalashnikoff falsely attributed this action to an increase in circulation but correctly concluded that this local therapy was not a cure of the basic disease. However, he was well aware of the fact that heat in itself destroyed the syphilitic virus.

Lately, many new facts have been established which throw additional light on the effects of heat and fever in the treatment of syphilis. It is now well known that spirochetes found in primary and secondary lesions both of man and of animals are destroyed by heat. Boak, Carpenter and Warren³ established the death point of spirochetes in vitro as 41 C (105.8 F) maintained for one hour. They also stated that even lower temperatures are lethal to this organism if maintained for longer time intervals. Carpenter and Boak⁴ also stated that rabbit syphilis could be cured by febrile temperatures ranging between 41 and 42 C (105.8 and 107.6 F) if several bouts of fever lasting approximately six hours were given. This work was preceded and followed by the investigations of Bessemans and his collaborators. The conclusions of these scientists are of such great importance that we will give a survey of their theories later on and couple them with our own experiences in treating primary and secondary syphilis with hyperpyrexia. Levaditi, de Rothschild,⁵ Audard, Haber, Vaisman and Schoen also admit that there is a direct curative effect of electrically produced fever on both the syphilomas of rabbits and systemic rabbit syphilis.

Bessemans and his collaborators⁶ recognized the importance of local heat for overcoming the infectious potency of chancres and other external and internal syphilitic lesions long before the work of the aforementioned investigators had been begun. The first investigations of Bessemans were published in 1929. Later, Bessemans and Thiry⁷ proved conclusively that spirochetes became immobile and disappeared from the lesions of human syphilis and that the lesions themselves healed after heat had been applied by means of the diathermic current. They also showed that the control lesions on the same patient which were not treated

3 Boak Ruth A, Carpenter C M and Warren S L. Studies on the Physiological Effects of Fever Temperatures. *J Exper Med* 56: 741-750 (Nov.) 1932.

4 Carpenter C M and Boak Ruth A. The Effect of Heat Produced by an Ultra High Frequency Oscillator on Experimental Syphilis in Rabbits. *Am J Syph* 14: 346-365 (July) 1930.

5 Levaditi C and de Rothschild H. Etude expérimentale de la thermothérapie générale par les radiations à ondes courtes. *Ann. Inst. Pasteur* 52: 23-67 (Jan.) 1934.

6 Bessemans A. The Local Application of Heat as an Adjunct in the Social and Individual Prophylaxis of Syphilis. *L'rol & Cutan Rev* 34: 71-91 (Feb.) 1930. Bessemans A, de Potter F and Ilacquaert R. Sur deux formes d'aéro-thermothérapie locale des syphilomes testiculaires primaires du lapin. *Compt rend Soc de biol* 100: 75, 77 (March 15) 1929. Bessemans A, Vercoullie J and Ilacquaert R. Nouvel essai de thermoprophylaxie sociale antisypilitiques. *Traitement aéro-thermique local du chancre primaire*. *Rev belge sc med* 14: 430 (May) 1929.

7 Bessemans A and Thiry U. Nouveaux essais d'application de la thermothérapie locale au traitement de la syphilis primaire et secondaire chez l'homme. *Bruxelles med* 13: 299 (Jan 15) 1933.

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1 Richet, C., Duhleau J and Joly F. Pyreto- et chimiothérapie associées dans la syphilis primaire et secondaire. *Presse méd* 41: 1649-1651 (Oct 25) 1933.

2 Kalashnikoff cited by Bessemans A. Pyretotherapie et pyreto-prophylaxie antisypilitiques sous l'action de moyens thermogènes physiques. *Cong franc de med* 4: 187-283 1934 and Mauriac C. *Traitement de la syphilis*. Paris: Masson & Cie 1896 p 342.

either increased in size or remained stationary. The internal temperature of all these lesions, as recorded by means of a thermocouple inserted into them, varied roughly between 41 and 43 C (105.8 and 109.4 F). These temperatures were maintained between thirteen and eighty minutes by a constant application of the diathermic current. It was therefore established that local syphilitic lesions of man can be healed by heat and that the spirochetes disappear from lesions treated in this manner.

In the course of the earliest researches with hyperpyrexia, and shortly after we⁸ had introduced and originated this therapy, one of us⁹ treated two male patients with chancres. The results were reported in 1932 from data obtained in 1930. One patient made a prompt recovery, while secondary lesions developed in the other in spite of the fact that he had had ten fever treatments with rectal temperatures ranging between 39.7 and 40.8 C (103.5 and 105.5 F) for at least five hours during each treatment. At that time it was ascertained that the intra-urethral temperature of the male is at least 0.55 degree C (1 degree F) lower than the rectal temperature. The temperature of the mucosa of the glans, where the lesions were located, must therefore have been definitely below that supposed to be destructive to the spirochetes of the chancre.

Following these investigations, a third patient suffering from primary syphilis was treated with hyperpyrexia, and again prompt healing of the lesion was observed. Later secondary lesions developed but the rash was confined entirely to the face and scalp, the parts of the body that were uncovered during treatment. The local primary lesion again disappeared, but this did not prevent or materially influence generalized infection. Since syphilis is a systemic disease even in its primary stages, the local cooling of the skin of the face and scalp was believed to be the reason for this failure. In attempting to reconcile these first failures with the theoretical spirocheticidal temperature of 41 C (105.8 F) maintained for one or two hours, our conclusions were as follows. First, the temperature of various parts and organs of the human body varies and the surface of the glans of the penis is at least 1.1 degrees C (2 degrees F) lower than the rectal temperature. This relationship is maintained during fever produced by penetrating heat. Second, the temperature of the exposed surfaces of the skin, especially of the face and scalp, is too cool to be spirocheticidal at body temperatures, i. e. rectal temperatures ranging between 41 and 42 C (105.8 and 107.6 F), the upper limit of safe artificial fever treatment.

Three of our patients afflicted with primary and one patient with primary and secondary syphilis were therefore treated in an entirely different manner. The subject was placed in a hot air cabinet so constructed that he could be rolled in and out while in a horizontal recumbent position. The air temperature of this cabinet could be controlled with ease. A glass headpiece was fitted to the end of the cabinet in such a manner that the subject was bathed in hot air from toe to pate. Besides this diathermic electrodes were adjusted to his back and chest. Thus it was possible to apply varying amounts of external and penetrating heat at will. Furthermore skin temperatures were recorded by

means of thermocouples placed inside small needles which were inserted under the skin of the chest face and scalp. Thus it was possible to maintain at will a definite measured temperature throughout the patient's body. Needless to say this complicated procedure was attended with many technical difficulties but we believed that the possible accomplishment of our goal, the cure of syphilis in its earliest stages, justified our efforts.

We do not recommend this technic to any one. It is highly experimental. Placed in such an environment that the external temperature of the air he breathes is approximately 54.4 C (130 F) with about 65 per cent humidity, every patient reacts with a violent delirium, after the skin temperature has been maintained above 41 C (105.8 F) for an hour or even less. Nevertheless we were able, but only barely able, to maintain skin and rectal, that is to say the external and internal temperatures, at this level or slightly above it for two hours during each treatment. In other words, every part of the patient was actually heated above 41 C (105.8 F) during a two-hour interval.

With this technic one patient was given two treatments, one three treatments and two were given four



Fig 1 (case 1) —Primary lesion (A) before treatment and (B) after three hyperpyrexia treatments totaling twenty seven hours of temperature above 39.9 C (103.5 F) and for twelve hours above 41 C (105.8 F) of this total febrile period.

treatments. As before stated, the external and internal temperatures were kept well above 41 C (105.8 F) for at least two hours, supposedly the lethal temperature for spirochetes. These four patients were then closely observed in the hospital. One of them showed secondaries at the time of admission. These as well as the chancre, disappeared after the second treatment, to recur a week after the fourth and final treatment. The other two patients developed syphilitic rashes six and seven weeks after their final treatments, and the fourth patient developed a syphilitic pharyngitis two months after cessation of treatment. In other words, the syphilitic infection progressed in spite of now theoretically adequate heat treatment.

The inflamed lymph glands of these four patients decreased markedly in size but did not disappear entirely. In one case these glands later enlarged a second time, and finally a generalized adenopathy resulted. An epitroclear gland was removed and found to contain many spirochetes and pus. All chancres healed promptly and were always found to be superficially free from spirochetes twenty-four hours after treatment. No spirochetes were found in them at any

⁸ Neymann C A and Osborne S L. Artificial Fever Produced by High Frequency Currents. Preliminary Report. Illinois M J 56:199-203 (Sept.) 1929. The Treatment of Dementia Paralytica with Hyperpyrexia Produced by Diathermy. J A M A 96:713 (Jan 3) 1931.

⁹ Neymann C A. Hyperpyrexia Produced by Physical Agents in Mock, H E. Pemberton Ralph and Coulter J S. Principles and Practice of Physical Therapy. ed 1 Hagerstown Md W F Prior Company, Inc. 1932 chapter 17.

time after the second treatment, even when sectioned, impregnated with silver and stained. The Wassermann and Kahn reactions, positive in three cases before treatment was started, became more positive but remained negative in the other patient. Judging from these four cases, as well as the three cited previously, it is therefore safe to conclude that hyperpyrexia even when apparently applied in adequate doses and even when the external surface of the skin is heated to a spirocheticidal temperature, is not able to eradicate the syphilitic virus. However we believe that it is also safe to conclude that hyperpyrexia per se influences and partially arrests the progress of the disease.

A lymph gland from each of these four patients treated with hyperpyrexia alone was removed. These glands were sectioned and stained. Fragmented or normal appearing spirochetes were found in three of the glands despite the fact that the sectioned site of the chancre removed at the same time showed no organisms. This seemed very paradoxical until the latest researches of Bessemans, Van Haelst and De Wilde¹⁰ gave some insight into the true state of affairs. According to these investigators the spirochetes found in the



Fig. 2 (case 1)—Spirochetes in a histologic section of a chancre before treatment

inguinal and popliteal lymph glands of syphilitic rabbits and guinea-pigs and in the spleen and brain of syphilitic mice are organisms adapted to more difficult conditions of existence. They are very virulent, one single organism is capable of causing an infection, and they are quite resistant to heat and chemotherapy. In all these attributes they differ from the spirochetes found in primary and other active lesions. These facts definitely ascertained in animal syphilis may well apply to human syphilis. At least we believe they explain the seven failures cited. A similar failure was cited by Boak, Carpenter, Goldstein and Warren.¹¹

Epstein and Cohen¹² treated thirty-three cases of early syphilis with artificial fever ranging between 39 and 40.5 C (102.2 and 104.9 F) maintained for six or seven hours. They gave between two and four treatments in each case and observed that in thirty-one of these thirty-three cases the darkfield was rendered negative by means of hyperpyrexia alone and that the

clinical lesions of early syphilis healed promptly in all cases in which the darkfield examination became negative. The serologic reactions were not reversed from positive to negative in any case, and three clinical recurrences were observed after cessation of treatment. While the temperatures employed by Epstein and Cohen were not high enough or sustained long enough to be definitely spirocheticidal when compared with facts ascertained by *in vitro* and *in vivo* experiments their conclusions that hyperpyrexia alone is not a satisfactory treatment of early syphilis coincide with our own point of view.

Simpson¹³ treated six patients with early syphilis more intensively with fifty hours of sustained fever between 40.5 and 41.1 C (105 and 106 F). Two of these patients relapsed after fever therapy, while the Kahn and Kolmer serologic reactions became less positive in three and more positive in one. Therefore if we combine these experiences of Boak, Carpenter, Goldstein and Warren, of Epstein and Cohen, and finally of Simpson with our own seven cases, we must reiterate the conclusion that artificial fever will not eradicate the syphilitic virus or cure the disease at temperatures not fatal to the patient. The literature now consists of forty-seven cases treated by hyperpyrexia alone. This treatment has failed uniformly.

The next patient in the present series was treated with massive doses of arsphenamine and a bismuth compound immediately after the hyperpyrexia treatments were ended. The Wassermann and Kahn reactions, which had become positive, were reversed to negative one month later, and the patient has remained apparently free from all signs of syphilis during the past eighteen months. He has had no antisyphilitic treatment during this period.

A brief summary of the clinical history follows.

The patient was admitted to the hospital, March 5, 1934. Exposure had occurred six weeks before, and a lesion had been noticed in the sulcus of the penis twelve days before admission. On admission two lesions 2 by 3.5 cm, one on the shaft and one in the sulcus of the penis, were seen. They were definitely circumscribed, elevated, flat topped with saucer shaped erosions which were encrusted and had a serosanguineous discharge. There was an inflammatory areola around these lesions. The inguinal lymph glands were bilaterally enlarged, rubbery in feel and painless on pressure. The darkfield was positive. Wassermann and Kahn reactions were negative. A biopsy of the chancre showed many spirochetes.

The patient was given the first hyperpyrexia treatment March 5. External (skin) and internal (rectal) temperatures were maintained at approximately 41 C (105.8 F) for two and a quarter hours. After the treatment, no spirochetes were seen in the darkfield.

March 8 the Wassermann reaction was +++ and the Kahn reaction ++++. One atypical spirochete was seen in the darkfield and a great number of round and ovoid bodies were observed with curious flagella or whiplike appendages. The primary lesions were decreased to half their size and the right inguinal lymph glands were smaller.

The second hyperpyrexia treatment was given with external and internal temperatures above 41 C (105.8 F) for two and a quarter hours and above 42 C (107.6 F) for one hour.

March 12 the Wassermann reaction was +++ and the Kahn reaction ++++. Biopsy of the ring of the chancre, which was completely healed, showed no spirochetes. The chancre was epithelialized and only a very small ring from the biopsy remained at its former site. The regional lymph glands have further decreased in size.

The third hyperpyrexia treatment was given with external and internal temperatures above 41 C (105.8 F) for two and three quarter hours and above 42 C (107.6 F) for one and a half hours.

10 Bessemans, A., Van Haelst, J. and De Wilde, H. An Experimental Study of the Problem of the Existence of an Invisible Form of the Syphilitic Virus and of Spontaneous Spirochetosis in Rabbits. *Am. J. Syph. & Neurol.* 19: 161-184 (April) 1935.

11 Boak, A., Rath, V., Carpenter, C. M., Goldstein, J. and Warren, S. L. A Study of a Primary Case of Syphilis Subjected to Fever Therapy. *Proc. Fourth Annual Fever Conference*, New York, April 27, 1934, pp. 5-6.

12 Epstein, N. and Cohen, Maurice. The Effects of Hyperpyrexia Produced by Radiant Heat in Early Syphilis. *J. A. M. A.* 104: 843-890 (March 16) 1935.

13 Simpson, W. M. Artificial Fever Therapy of Syphilis. *J. A. M. A.* 105: 2132-2140 (Dec. 28) 1935.

March 15 the Wassermann reaction and the Kahn reaction were +++

March 16 a gland the size of a cherry stone was removed from the left inguinal region. Spirochetes were found in microscopic stained sections of the gland. A transplant into a rabbit's testicle did not produce a syphiloma.

March 19 the inguinal lymph glands were no longer palpable. The site of the operative wounds healed. There were no secondaries.

March 22 the Wassermann reaction was +++ and the Kahn reaction ++++. Neosarsphenamine, 0.45 Gm., was administered.

March 24 bismuth salicylate, 1 grain (0.065 Gm.) was given.

March 28 neosarsphenamine 0.9 Gm. was administered.

March 31, bismuth salicylate 1 grain was given.

April 2 neosarsphenamine 0.9 Gm. was administered.

April 4, bismuth salicylate, 1 grain was given.

cent positive before treatment was begun. Possibly this is due to the sudden death of great numbers of spirochetes, the endotoxins of which are massively liberated and suffused into the body liquids. A further fact of great interest is the presence of spirochetes in microscopic sections of a lymph gland of the patient while the sections of the chancre or original site of infection show no organisms. It is also interesting to note that in this case the lymph gland which contained somewhat atypical appearing spirochetes, did not produce syphilomas when transplanted into rabbit testicles.

Buoyed up by this favorable result, we treated six further cases with combined heat and chemotherapy. The clinical results of these seven cases obtained with combined therapy are summarized in the accompanying

Clinical Results Obtained with Combined Therapy in Seven Cases

| Case | Name | Date Admitted for Treatment | Type of Syphilis | Reaction Before Treatment | Type of Treatment | Number of Days of Treatment | Maximum Reaction During Treatment | Maximum Reaction After Treatment | Clinical Results |
|------|--------|-----------------------------|-----------------------|--------------------------------------|--|-----------------------------|--------------------------------------|--|--|
| 1 | C S | March 5 1934 | Primary | Wassermann negative Kahn negative | Three sessions of hyperpyrexia followed by 4 injections of arsphenamine and 4 injections of bismuth salicylate | 46 | Wassermann +++ Kahn ++++ | Wassermann remains negative Kahn remains negative | No clinical sign of syphilis for 18 mos. after treatment ceased |
| 2 | R L | Oct 8 1934 | Primary | Wassermann negative Kahn ++ | Five sessions of hyperpyrexia with 0.3 Gm. of arsphenamine injected during last session followed by five injections of neosarsphenamine and three injections of bismuth salicylate | 63 | Wassermann ++++ Kahn ++++ | Wassermann remains negative Kahn remains negative | No clinical signs of syphilis 14 months after treatment ceased |
| 3 | R G | Oct 18 1934 | Primary and secondary | Wassermann ++++ Kahn ++++ | Eight sessions of hyperpyrexia followed by six neosarsphenamine injections and three injections of bismuth salicylate | 63 | Wassermann ++++ Kahn ++++ | Wassermann remains negative Kahn remains negative | No clinical signs of syphilis during 14 months since treatment has become negative |
| 4 | J P | Dec. 8 1934 | Early primary | Wassermann negative Kahn negative | Nine sessions of hyperpyrexia interspersed with four injections of neosarsphenamine | 30 | Wassermann negative Kahn negative | Wassermann remains negative Kahn remains negative | No clinical signs of syphilis during 13 months since treatment has become negative |
| 5 | J. McC | July 11 1935 | Primary | Wassermann negative Kahn negative | Three sessions of hyperpyrexia interspersed with and followed with five injections of neosarsphenamine | 18 | Wassermann ++++ Kahn ++++ | Wassermann remains negative Kahn remains negative | No clinical signs of syphilis for 7 months since treatment ceased |
| 6 | C Z. | July 24 1935 | Primary and secondary | Wassermann ++++ Kahn ++++ | Two sessions of hyperpyrexia with 0.3 and 0.4 Gm. of neosarsphenamine given at height of fever followed by 3 injections of bismuth salicylate | 43 | Wassermann ++++ Kahn ++++ | Wassermann remains negative Kahn remains negative | No clinical signs of syphilis for 6 months since treatment ceased |
| 7 | A. G | Sept 22 1935 | Primary and secondary | Wassermann ++++ Kahn ++++ | Three sessions of hyperpyrexia with 0.3 and twice 0.6 Gm. of neosarsphenamine given during these sessions followed by two injections of bismuth salicylate | 23 | Wassermann ++++ Kahn ++++ | Wassermann remains negative Kahn remains negative | No clinical signs of syphilis for 5 months since treatment ceased |

April 6 the Wassermann reaction was ++ and the Kahn reaction was ++.

April 11, neosarsphenamine, 0.9 Gm. was administered.

April 13, the Wassermann reaction was ++ and the Kahn reaction was ++.

April 18 bismuth salicylate, 1 grain, was given.

April 20 the Wassermann reaction was negative and the Kahn reaction was negative.

Following this the patient was given seven injections of neosarsphenamine and ten injections of bismuth salicylate up to Sept 6, 1934. The serologic reactions have remained consistently negative and the patient has shown no further signs of syphilis in the eighteen months since all treatment ceased. He has married and a healthy child has been born. The serologic reactions of the wife and child are negative.

Summarizing this case, we believe that the disease was apparently aborted in forty-six days by the use of combined treatment. It is interesting to note the immediate flare up of the Wassermann and Kahn reactions after the first session of hyperpyrexia. We have noted an increase in the intensity of the serologic tests in almost every case in which such tests were not 100 per

cent positive before treatment was begun. Possibly this is due to the sudden death of great numbers of spirochetes, the endotoxins of which are massively liberated and suffused into the body liquids. A further fact of great interest is the presence of spirochetes in microscopic sections of a lymph gland of the patient while the sections of the chancre or original site of infection show no organisms. It is also interesting to note that in this case the lymph gland which contained somewhat atypical appearing spirochetes, did not produce syphilomas when transplanted into rabbit testicles. Buoyed up by this favorable result, we treated six further cases with combined heat and chemotherapy. The clinical results of these seven cases obtained with combined therapy are summarized in the accompanying table. A survey of this table shows that in every case all symptoms of the disease disappeared shortly after combined therapy was instituted. These seven patients have remained free from all clinical and serologic symptoms for periods ranging from five to eighteen months. The seventh patient showed the usual absence of clinical symptoms after treatment, but the Wassermann and Kahn reactions were still four plus, Oct 8 1935. At this time he left the city against medical advice and could not be contacted again until February 1936. In the interim his serologic tests became negative without further treatment, and no clinical signs of syphilis were present when he was reexamined in February. In 100 per cent of this small series the results have therefore been excellent during the observation period of from five to eighteen months.

What occurred during treatment and in what manner were these results obtained? Four of the seven cases were primary, with negative or practically negative serologic reactions at the time of hospitalization. J P (patient 4) had a very early primary lesion, seven days

old with a moderate enlargement of the regional lymph glands. In this case the Wassermann and Kahn reactions remained negative. Figure 1 shows the primary lesion before treatment and ten days later after three hyperpyrexia treatments totaling twenty-seven hours of temperature above 39.9 C (103.5 F) and above 41 C (105.8 F) for twelve hours of the total febrile period. The action of heat alone on the clinical lesion



Fig. 3 (case 1).—Absence of all spirochetes in the histologic sections of the site of the chancre after two hyperpyrexia treatments. Temperature above 41 C (105.8 F) for four and one half hours and above 42 C (107.6 F) for one hour.

is apparent and typical. At this time the regional lymph glands had decreased in size but could still be palpated as hard, discrete nodules. Judging from our experiences with the first seven cases treated with heat alone, they would have served as foci of infection for the spread of the disease had treatment been discontinued at this point. After the first hyperpyrexia session, repeated darkfield examinations of the serosanguineous fluid obtained from the base of the chancre showed no spirochetes. This is also a typical finding true of all cases treated with this amount of artificial fever.

In the other three primary cases, consisting of case 1, the clinical history of which has already been summarized, and cases 2 and 5, positive or more intensely positive serologic reactions developed after the first fever treatment. This was also true of six of the seven cases treated with fever alone. It is therefore safe to conclude that there is a rapid and intense mobilization of antibodies following fever therapy. We theorize that this is due to a massive destruction of the spirochetes but realize that other factors may play an important role in bringing about this increase of antibody formation. Only the youngest chancres with the least systemic involvement treated by us did not show this immediate change to a more positive serologic reaction.

A biopsy of the chancre in case 1 showed many spirochetes. Figure 2 is the reproduction of a drawing made from a microscopic section of this biopsy. The second biopsy of the site of this chancre after two hyperpyrexia treatments (fig. 3) shows an absence of all spirochetes, a regression of the inflammatory processes and a decrease of the small cell infiltration. A section of an inguinal lymph gland removed four days later after a third session of hyperpyrexia (fig. 4) shows fragmented and intact spirochetes. Such sections are typical of the lymph glands of patients treated with fevers above 41 C (105.8 F) for two or more hours.

Figure 5 shows practically the same changes in a microscopic section of a lymph gland of one of the first seven cases treated with hyperpyrexia alone after three sessions of fever, in which the external and internal temperatures were kept above 41 C (105.8 F) for one hour and above 42 C (107.6 F) for an additional hour during each treatment. Figures 4 and 5 are both representative sections of syphilitic lymph glands after such intense fever treatment.

A biopsy was made of every chancre. All microscopic slides showed changes before and after treatment similar to those seen in figures 2 and 3. Spirochetes were never found in the stained, silver impregnated sections of chancres after two or three sessions of hyperpyrexia. Five lymph glands were removed after intensive fever treatment. All showed the presence of intact or fragmented spirochetes if fever alone was used as a therapeutic agent. We believe that all these microscopic sections clearly demonstrate the destruction of spirochetes by heat alone, particularly in the chancre. However, we must conclude that not all spirochetes, especially those found in the lymph glands, are destroyed by heat. This is even true in cases in which temperatures of 42 C (107.6 F) have been employed for several hours and to temperatures of 41 C (105.8 F) for ten or fifteen hours. The experiments that fix the *in vitro* death point of spirochetes at 41 C (105.8 F) maintained for two hours or 42 C (107.6 F) maintained for one hour, therefore, do not apply to spirochetes found *in vivo* in human beings. Furthermore, the experiments with rabbit syphilis which seemed to demonstrate the possibility of eradicating the disease by means of temperatures similar in intensity to those applied by us, do not apply to human syphilis.

Patients 1 and 3 were treated with arsphenamine and bismuth salicylate after hyperpyrexia. In case 1 it took 3.15 Gm of arsphenamine and 4 grams (0.26 Gm.) of bismuth salicylate to reverse the serologic reactions which had become positive. Later 5.4 Gm of neo-

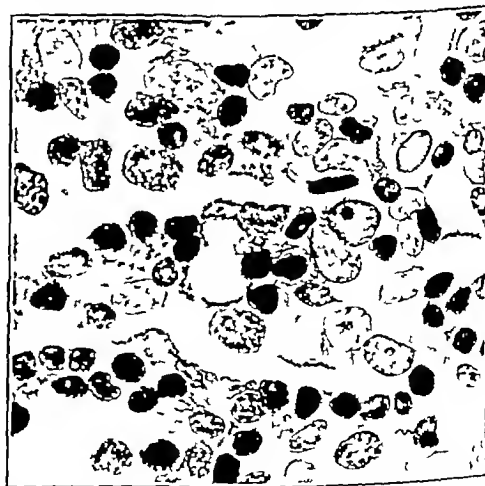


Fig. 4 (case 1).—Fragmented and degenerated spirochetes in a histologic section of an inguinal lymph gland after three sessions of hyperpyrexia at temperatures above 41 C (105.8 F) for more than two hours and above 42 C (107.6 F) for approximately one hour during each session.

arsphenamine and 10 grams (0.65 Gm) of bismuth salicylate were given during the next four and a half months as a precautionary measure against a recurrence of the syphilitic infection which we believed to be under control. It took forty-three days of combined treatment to reverse the serologic reactions after Wassermann and Kahn reactions had become negative. In

case 3, with primary and secondary syphilis, six injections of neoarsphenamine totaling 3.15 Gm and four injections of bismuth salicylate totaling 8 grains (0.52 Gm) were necessary to produce a negative serologic reaction after eight sessions of hyperpyrexia. After this 9 Gm of neoarsphenamine and 38 grains (2.5 Gm) of bismuth salicylate were injected during the following five months as a precautionary measure. Sixty-three days of treatment was necessary to achieve negative serologic reactions. The examination of the spinal fluid of both patients was negative as regards cell count, globulin, Wassermann and colloidal gold reactions at the end of the treatment period.

As our work continued we gradually intensified the treatment by giving neoarsphenamine during the three and four day interims between bouts of fever. This was done in cases 4 and 5. Case 4 has already been partially analyzed. After the first three sessions of fever, which resulted in the healing of the primary lesion, three doses of 0.3 Gm, one of 0.45 Gm and three of 0.6 Gm of neoarsphenamine were given in the intervals between and following seven intensive sessions of hyperpyrexia. Thirty-six days was consumed in treatment. Patient 5 was given three sessions of hyperpyrexia interspersed and followed by five neoarsphenamine injections totaling 2.885 Gm. The first case has remained clinically and serologically negative while the second remains negative after the usual preliminary positive flare up of the serologic tests. Eighteen treatment days was necessary to achieve this result.

We had already experimented with the injection of neoarsphenamine during the height of fever in case 2. We now continued these attempts in cases 6 and 7 and have given up to 0.6 Gm of neoarsphenamine at temperatures of 41°C (105.8°F). It is our belief that the time necessary to achieve a negative serologic reaction is further reduced by this method. Both cases are now clinically and serologically free from all signs of syphilis and have remained free for almost six months. The early and speedy eradication of the disease by this method therefore, seems probable. Patient 6 had only one kidney when treatment was begun. A nephrectomy because of renal tuberculosis had been performed three years previously.

All cases were tested for renal and liver function before and after treatment. The laboratory tests disclosed no signs of liver or kidney involvement after this therapy. It is therefore our belief that neoarsphenamine may be given to robust patients between bouts of fever and at the height of the fever in doses up to 0.6 Gm without damage to the liver or kidneys. Electrocardiograms taken before and after treatment showed no change. Fever produced by electromagnetic induction even when extremely high temperatures are employed is therefore a harmless therapy. It is of course, assumed that this therapy is always under proper clinical control and supervision.

The average time consumed in this treatment was forty-two days. An average of five sessions of fever was given each patient and an average of five injections of neoarsphenamine was given during the treatment period. A small amount of bismuth salicylate was also used. We believe that this combined method of treatment can materially decrease the period of treatment of early syphilis. We believe that the hope of an eradication of the disease in its early stages is brought a step nearer. Furthermore we have shown that heat alone destroys human spirochetes *in vivo* but that there is a difference in their resistance to pyrotherapy dependent on the location in which they vegetate.

SUMMARY

1 Fourteen cases of early syphilis were treated with hyperpyrexia. This therapy was combined with neoarsphenamine and bismuth salicylate in half of this number.

2 All of the seven cases treated with hyperpyrexia alone developed further clinical or serologic signs of syphilis after treatment ceased.

3 All of the seven cases treated with combined therapy became serologically negative and showed no clinical signs of syphilis for periods ranging between five and eighteen months.

4 The average length of the treatment period necessary to obtain a negative serologic reaction can be materially shortened by using this combined therapy. In this series it averaged forty-two days.

5 Neoarsphenamine may be given to robust patients in doses of 0.6 Gm at temperatures of 41°C (105.8°F) if this temperature is produced by penetrating heat, i. e., electromagnetic induction.

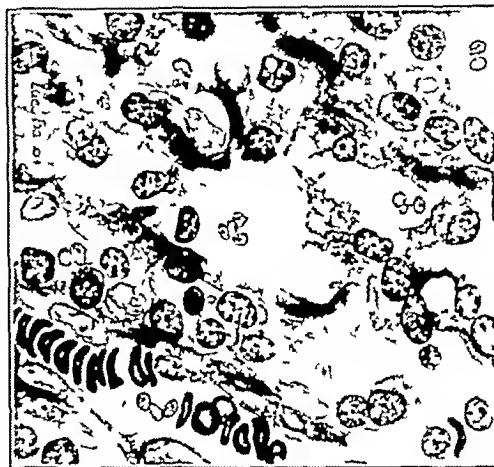


Fig. 5—Fragmented and degenerated spirochetes after three sessions of hyperpyrexia. External (skin) temperatures and internal (rectal) temperatures were maintained above 41°C (105.8°F) for one hour and above 42°C (107.6°F) for an additional hour.

6 *Spirochaeta pallida* found in human syphilitic skin lesions is destroyed by temperatures of 41°C (105.8°F) maintained for two hours. The same organism found in human lymph glands is not destroyed by longer and higher temperatures ranging above 41°C (105.8°F) for five or more hours, and above 42°C (107.6°F) for one of these hours.

7 Such high temperatures alone, or when employed for treatment in conjunction with arsenicals and bismuth compounds, produce no demonstrable evidence of injury to heart, liver or kidney function, provided they are produced by penetrating heat, i. e., electromagnetic induction.

8 If external heat is used especially if the temperature of the entire skin is raised to the same high level equal to that of the internal organs, terrifying states of delirium and dyspnea result.

9 It is probable that the syphilitic virus can be eradicated from all parts of the human body by the simultaneous use of high fever, arsphenamine and bismuth compounds.

10 This entire therapy presupposes an organized expert medical and nursing staff trained in giving hyperpyrexia treatments and the hospitalization of the patient during twenty-four hours for each session of hyperpyrexia.

104 South Michigan Avenue

EPIPERICARDIAL FAT

ITS NONRECOGNITION A COMMON CAUSE OF ERROR
IN X-RAY MEASUREMENT OF HEART SIZE

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AND

PAUL D. WHITE, M.D.

BOSTON

A very important part in the cardiovascular examination of a patient is accurately to determine the size of the heart. In particular, and justifiably, much reliance is placed on x-ray measurement of heart size, provided certain sources of error are recognized and taken into account. The commonest cause of error has been that of distortion of the heart shadow by magnification when the x-ray tube is too close to the heart; this error has been much reduced and largely discounted by obtaining films with the tube from 6 to 7 feet (2 meters) behind the chest, with the front of the chest pressed against the film. This error is thus almost universally avoided, except that it is not yet everywhere appreciated that even the teleroentgenographic ("6 or 7 foot" film) heart shadow is considerably larger than the accurate heart shadow projection or orthodiagram, a statement should always be made as to which method is employed to obtain the heart measurements. A second common cause of error is to fail to take into account the shape and position of the heart when making measurements—two hearts of exactly the same size will vary considerably in area as well as in diameters if one is vertically placed in the thorax with the diaphragm low and the other horizontally placed with the diaphragm high. This cause of error is becoming better recognized although still far too frequent. A third common source of error and one far too little recognized, even on occasion by roentgenologists themselves is the reason for the present note, namely, the presence of a triangle of epipericardial fat at the cardiac apex. Fortunately it is possible easily to avoid this error if one

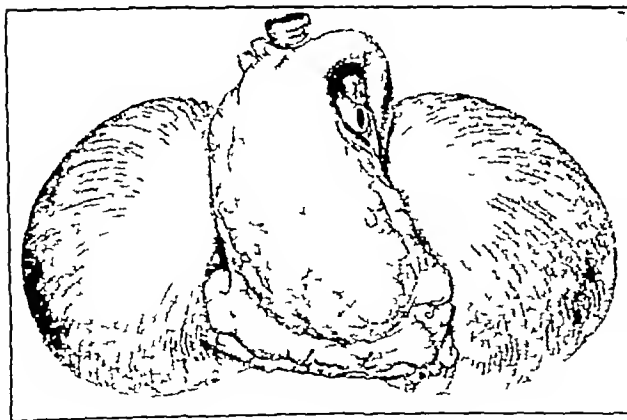


Fig 1—Illustration showing epipericardial fat, taken from the original paper of Schwarz.¹

thinks of it, and furthermore the error does not enter into the measurement of heart size by the old and simple clinical method of palpating the maximal apex impulse which lies well within the apex of the fat triangle.

In many individuals a considerable amount of fat is attached to the outer side of the parietal pericardium and may therefore be called epipericardial fat (fig 1). The accumulation of this fat is greatest at the pericardial attachment to both the right and left leaves of the diaphragm. At postmortem examination, we have seen this fat to be as much as 4 cm in width lying lateral to the apex, 6 cm in thickness, and extending upward on the pericardium for 7 to 8 cm, gradually diminishing in thickness. The proximity of this fat to the heart borders frequently obscures the true margins of the heart as seen by x-rays and may make it extremely difficult to measure the heart without including the surrounding fat.

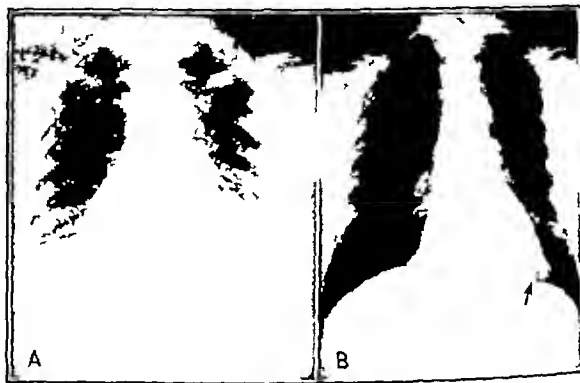


Fig 2—Teleroentgenograms (seven foot heart films) made from patient. A shows obliteration of both cardiophrenic angles due to epipericardial fat during quiet respiration. B is a harder film taken during full inspiration a few minutes later to demonstrate the contrast in position and density between the shadows of the heart and of the epipericardial fat. The arrow indicates the true left cardiac border.

Schwarz¹ in 1910 called attention to the shadow caused by fat at the apex of the heart in x-ray films of the chest, and since that time a few others interested primarily in roentgenology have made similar observations.² Although its occurrence is familiar to many of those who interpret x-ray films, the importance of the recognition of this epipericardial fat by internists and practitioners in general has never been emphasized as it should be.

True enlargement of the x-ray heart shadow should cause considerable concern, as it invariably means either organic heart disease or at least temporary cardiac dilatation or pericardial effusion. Not infrequently when the heart shadow is measured the epipericardial fat is also included and this error sometimes results in the false impression that cardiac enlargement exists; the transverse measurement of the "heart" shadow may exceed half the internal diameter of the chest, increasing abnormally the so-called cardiothoracic ratio, and the area of the cardiac shadow may also be considerably increased. The importance of such an error in the case of a person with a normal heart can hardly be exaggerated.

The size of the patient does not determine whether or not epipericardial fat is present, but the largest accumulations do exist in obese individuals. When such persons are encountered and the roentgenogram shows the heart to be horizontal in position, extreme care must be exercised in locating the points on the heart border to be measured. Not only must the apex and the left cardiac border be carefully scrutinized but also the right border, as fat tabs are often found also at the angle of the right leaf of the diaphragm and the pericardium.

Read before the New England Heart Association Oct 26 1935.

1 Schwarz, G. Ueber einen typischen Röntgenbefund am Herzen Fettelbiger und dessen anatomische Grundlage. Wien. klin. Wchnschr. 23: 1850 1910.

2 The latest special roentgenologic reference to the subject has been very recently published. Kautz, F. G. and Pinner, Max. Extrapericardial Fat Bodies. Am. J. Roentgenol. 35: 40 (Jan.) 1936.

When the pericardial diaphragmatic angle is not clearly outlined and especially if it is obtuse, one may be suspicious of the presence of epipericardial fat. Fluoroscopic examination, particularly when the Bucky diaphragm is used, will show two shadows, the denser one being the heart shadow and the lighter one the epipericardial fat shadow. The differences in density of these two shadows can be demonstrated on teleroentgenograms ("7 foot" chest films) when they are made to give maximum contrast with sufficient penetration. This is well brought out by taking two films of the same case, one that is "soft" and gives little or no contrast between heart and fat shadows and a second that is "hard" and penetrating, causing the fat shadow almost to disappear. The difference in shadows can be further emphasized by taking two films, one during ordinary quiet respiration and one in full inspiration as shown by the accompanying illustration. Figure 2A is a routine teleroentgenogram ("7 foot" heart film) taken during quiet breathing, it gives the impression of cardiac enlargement until one looks at figure 2B. The latter film of the same patient was made during full inspiration and with more penetrating rays to bring out the contrast in the position and the density of the heart shadow and of the triangular areas of fat at both cardiophrenic angles.

Fluoroscopic examination may give further assistance in distinguishing the triangular fat tab at the left cardiophrenic angle. It is sometimes possible to note the pulsation of the apex of the heart inside the left border of density and so within the fat shadow. Moreover, change in respiratory phase alters the position of the epipericardial fat in relation to the heart shadow. In deep inspiration the outer half of the diaphragm is displaced farther downward than is its mesial portion. The epipericardial fat is more lateral than is the cardiac apex, so that in full inspiration it may become more distinctly a separate lobule as it descends farther with the outer part of the diaphragm than does the cardiac apex with the more central portion of the diaphragm. This is easily made evident also in teleroentgenograms.

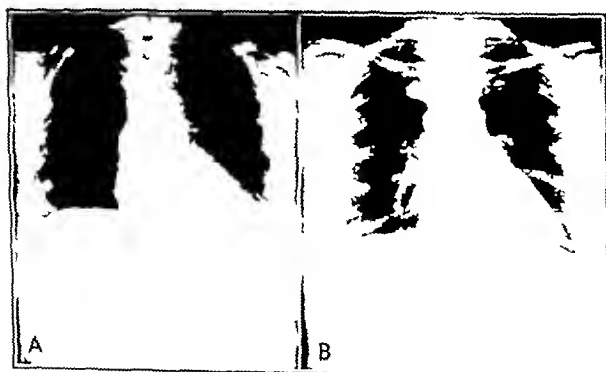


Fig. 3—Teleroentgenogram (seven foot heart films) made from patient Y. A taken during quiet breathing. Internal chest diameter 25 cm and transverse cardiac diameter 14 cm. B taken during inspiration a few minutes later to illustrate the difference in relative position of the heart and fat shadows. Internal chest diameter 27.5 cm and transverse cardiac diameter 12.5 cm. The edge of the fat shadow is 1.5 cm. beyond the cardiac apex.

When the shadows of the heart and of the epipericardial fat can be distinguished, the true outlines of the heart borders are easily located for accurate measurements of the size of the heart. In figure 3A is a routine teleroentgenogram made with the tube at a distance of 7 feet from the heart and taken during

quiet breathing. The heart is in a horizontal position and the left cardiophrenic angle is indistinct. The internal diameter of the chest is 25 cm and the transverse diameter of the heart 14 cm, giving the abnormal cardiothoracic ratio of 14/25, indicative of enlargement of the heart. The cardiac area is 112 cm as measured by a planimeter. Figure 3B is a "7 foot" heart film of the same patient but made in full inspiration. It will be noted that the triangular area of fat at the left cardiophrenic angle can be much more easily distinguished. It has moved downward with the descent of the diaphragm and has consequently changed its position with relationship to the cardiac apex. The edge of the fat shadow extends 1.5 cm, beyond the true cardiac border, and if included in the measurement would still give an abnormal cardiothoracic ratio, indicating cardiac enlargement, especially in this phase of respiration.

SUMMARY

The presence of epipericardial fat at the cardiophrenic angles and especially on the left side just beyond the cardiac apex may be a source of error in measuring the heart shadow on roentgenograms ("7 foot" heart films) and may be misinterpreted as cardiac enlargement. The importance of such an error is obvious.

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GLOMUS TUMOR

REPORT OF A CASE

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AND

CARLO S. SCUDERI, M.D.

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Synonyms that have been used for glomus tumor are angioneuroma, angiosarcoma, Popoff¹ tumors, tumeur glomique, tumeur du glomus neuromyo-arteriel, subcutaneous painful tubercle, angiomyo-neurome, subcutaneous glomae tumor, angioma, perithelioma, false neuroma, glomangiomas and neuromyo-arterial glomus.

The glomus unit is a short cut between the arterial and the venous elements. In reality, a more descriptive term is angioneuroma, since besides the vascular elements it consists also of sympathetic nerve fibers interwoven with the finer vessels. It was first described by Hoyer,² but its histologic structure was made clear by Sucquet.³

The diameter of the glomus varies from 60 to 220 microns, the smaller ones being found in the nail beds.

The function of the glomus was worked out by Lewis and Pickering⁴ and by Grant and Bland,⁵ who demonstrated its importance in temperature regulation. They showed that the glomus served for the maintenance of the temperature of exposed parts and the regulation of loss of heat.

Clinically it is characterized by a bluish discoloration of the skin mounted on the top of a small cutaneous elevation. This area is very painful and, when irritated, produces a most excruciating radiation of pain up and down the extremity. More than 50 per cent of them,

From the Surgical Service, Cook County Hospital and the Department of Surgery, University of Illinois College of Medicine.
1. Popoff, N. W. The Digital Vascular System. Arch. Path. 18: 295 (Sept.) 1934.

2. Hoyer, H. Arch. f. mikr. Anat. 13: 603 1877.

3. Sucquet, J. cited by Popoff.¹

4. Lewis, Thomas, and Pickering, G. W. Heart 16: 33 (Oct.) 1931.

5. Grant, R. T. and Bland, E. F. Heart 15: 385 (July) 1931.

that she is not as susceptible as before because she has not had a cold or other illness since that time. The peripheral blood picture is normal.

Gross Examination—The spleen weighed 450 Gm and measured 12 by 10 by 10 cm. Bulging into the hilus and converting most of its contour from the normal concave to a convex shape was a yellowish, stonelike mass covered only by scattered fibrous strands. Elsewhere the splenic capsule was intact, although over a portion of the lower pole irregularly shaped.

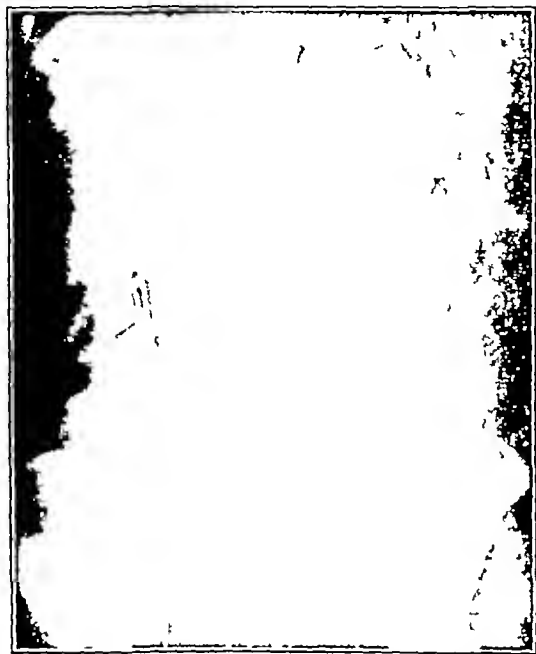


Fig. 1—Density, position and size of the calcified mass in the splenic area after ureteral catheterization and injection of opaque medium through left catheter.

whitish yellow plaques occurred. The main splenic artery and vein were not present but a branch of the former and a tributary of the latter lay in the persisting segment of the hilus near the upper pole. In order to examine the lesion it was necessary to resort to sawing. The mass so revealed proved to be quite discrete, 7.5 cm in diameter and in addition to projecting into the hilus had cupped out a bed in the splenic substance, leaving a triangular fragment of apparently normal tissue at the upper pole and only the capsule elsewhere (fig. 2). At the center of the mass was an irregularly outlined whitish hyaline core. Completely surrounding and filling in all the indentations of this zone was a peripheral layer of yellowish calcified material which however, gave way to a translucent cartilaginous-like substance at the lower pole. In the latter region were scattered brownish specks, occasional blood vessels, small segments of splenic parenchyma adjacent to the capsule and one spicule of calcium.

Microscopic Examination—Sections cut to include the central whitish and adjacent calcified foci showed scattered bits of splenic cells and sinusoidal walls, a fair number of erythrocytes and numerous collapsed or open but always empty arterioles. In the main, however, the parenchyma had been reduced to a hyaline state with nothing more than a faint shadow of the original pattern remaining. Calcium deposition without bony metaplasia had converted parts of the hyaline into a dense and formless matter interrupted by nothing more than clear vacuoles. The translucent lower pole exhibited the same basic change although hyaline degeneration was less pronounced and not infrequently reticulum cells, patent blood-filled sinusoids and remnants of splenic follicles could be made out. The latter were sometimes the seat of hyperemia and of fresh hemorrhages. The follicular arterioles although patent and devoid of subintimal hyaline thickening were for the most part empty. From this prevailing picture there were variations in the direc-

tion of complete hyalinization on the one hand to almost nothing on the other. Deposition of iron-containing pigment was seen. The only deviations from normal in sections cut from the upper pole were subintimal hyaline degeneration of the arterioles and the occurrence of a few eosinophilic polymorphic nuclei. The former is so frequent in the splenic arteries of healthy persons of middle age and beyond that no importance was attached to its presence here. The branch of the splenic artery supplying the upper pole was normal.

The pathologic diagnosis was massive hyaline degeneration and calcification of the spleen, apparently resulting from traumatic injury.

COMMENT

The clear cut history of an accident producing a contusion and accompanied by pain over the spleen area forces one to think seriously of traumatic injury as the cause of the splenic lesion herein described, but the mechanism of its production is a matter of speculation. The pathologic nature of the lesion is such that only a few causes are possible, namely, traumatic rupture of the spleen or its vessels, infarction, infection, or parasitic infestation.

In our experience trauma commonly leads to rupture at one or more points over either the convex or the hilar aspects of the spleen, or both. Usually such tears are transversely directed in relation to the long axis of the organ, often stellate, and affect both the capsule and the parenchyma. Some degree of hemoperitoneum is constant. While we have never encountered an example of such a rupture excepting in the fresh state, it is reasonable to assume that in the event of recovery without splenectomy the organ would be surrounded by a partially or



Fig. 2—View of the spleen after sagittal sectioning. The calcified hyaline mass protrudes into the hilus and over much of its extent is a covering of little more than splenic capsule. The brownish spots in the glassy lower pole are bits of persistent parenchyma. Capping the lesion is a little normal spleen.

wholly organized hematoma and bound to surrounding structures by fibrous bands. Blood pigment deposition, liquefaction or calcification of any unorganized blood would complete the picture. Obviously such a rupture did not take place in our subject for the spleen was free.

Although we have never seen such a thing in a large post mortem service which includes many traumatic deaths, one

must admit the possibility of rupture of the splenic pulp without tearing the capsule and without hemorrhage external to the organ itself. In the event of such an injury a rapidly formed and large hematoma might quickly destroy a portion of the parenchyma and later organize or calcify. Under such circumstances the tissue about the hemorrhage might reasonably be expected to suffer from malnutrition, slowly die and finally become more or less hyalinized, as was the case in our subject. Although admittedly not susceptible to proof, this concept is the best explanation that we can offer for the necrobiotic process present in the spleen.

Infarction, while mentioned is out of the question, for large anemic infarcts of the spleen invariably involve the capsule as well as the parenchyma, total cellular necrosis follows, the dead and entirely avascular area shrinks, a well defined blood pigmented fibrous zone appears between the living and the necrotic segments, and fibrous adhesions form over the surface. All these features are lacking in the case at hand.

With respect to infection, we are unaware of anything other than tuberculosis that could give a picture of this kind, and there is no histologic evidence of its existence. While echinococcus cysts may eventually die and calcify the outline of the chitinous membrane is always left behind to serve as a means of identification, and this too is lacking in our case.

Medical Arts Building

PYELOGRAPHY OF THE SURGICALLY EXPOSED KIDNEY

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CHICAGO

As a result of the accuracy of modern methods of renal diagnosis, exploratory operations on the kidney are rarely performed at the present time. However, in rare instances it may be impossible before operation to obtain all the diagnostic evidence that is desired so that at the operation additional information will be of great value in deciding for or against nephrectomy.

In a recent case a preoperative diagnosis of right renal tuberculosis was made without the benefit of ureteral catheterization or intravenous urography. It was impossible to catheterize the right ureter because of a stricture at the lower end, although two attempts were made. After failure to catheterize the ureter, two sets of intravenous pyelograms were made five days apart. They failed to visualize the right side whereas the left side gave normal results.

At the operation the exposed kidney appeared normal. There was questionable thickening of the ureter, and the question immediately arose as to whether or not the kidney should be removed.

It was decided to obtain a pyelogram of the surgically exposed kidney before proceeding with the nephrectomy. Ten cubic centimeters of diodrast was injected into the unopened pelvis and a roentgenogram was made. This showed some dilatation of the three major calices with a clubbing of the upper and lower calices, the minor calices being very indistinct. The minor calices, from the middle major calix, were destroyed and the medium filled a pocket which was irregular in outline in this region. The changes in this pyelogram resemble those of a tuberculous lesion. The tentative diagnosis of renal tuberculosis was verified and all doubt about the propriety of nephrectomy was removed.

Roentgen examination by fluoroscopy or film during or at the end of operation for kidney stones is routine procedure in all urologic clinics.

Although the necessity for making a pyelogram on the surgically exposed kidney does not arise very often, in rare instances, as in our case in which it confirmed the preoperative diagnosis of renal tuberculosis in spite of the fact that the kidney showed no external signs of tuberculosis, it may yield information that will aid the surgeon in deciding for or against nephrectomy.

REPORT OF CASE

M. E., a man, aged 25, a medical student, admitted to the Presbyterian Hospital, Feb. 19, 1936, complained of pain in the right upper quadrant of the abdomen and an infection of the upper respiratory tract.

The family history and previous illnesses were irrelevant. There was no history of venereal disease.

The patient had had a head cold for the past week, which had kept him in bed, but he had no fever. Three days before, he was suddenly seized with a dull aching pain in the right side of the abdomen both anteriorly and posteriorly. Twenty-four hours before admission to the hospital he had a dull ache in the scrotum, the pain was severe and he was obliged to take medicine to control the pain.

Physical examination was negative except for possible swelling in the upper right quadrant. Rectal examination gave negative results.

Examination of the urine revealed no albumin and no sugar. There were 67 leukocytes and 122 red blood cells per cubic centimeter. Many tubercle bacilli were present in the sediment.

Blood count revealed 4,720,000 red blood cells, 9,400 white blood cells, and 90 per cent hemoglobin.



Drawing of pyelogram made on the surgically exposed kidney

Roentgen examination showed evidence of healed tuberculosis of the lung. The genito-urinary tract was negative for stone.

Cystoscopic examination was negative. The catheter on the right side met an obstruction one inch above the bladder, beyond which it was impossible to advance it, no specimen of urine was obtained. The catheter on the left side passed all the way into the kidney pelvis, urine from the left side was sterile and free of pus, no tubercle bacilli were found. A second attempt to catheterize the right ureter met again the aforementioned obstruction.

Two sets of intravenous pyelograms were made on February 22 and February 26. The first set revealed a normal condition on the left side, there was no visualization on the right side. The second set showed again a normal condition on the left side and no evidence of filling on the right side.

A diagnosis of tuberculosis of the right kidney with a stricture at the vesical end of the ureter was made and operation was advised.

The patient was operated on under ethylene anesthesia, February 28. Because of the normal appearance of the surgically exposed kidney, the question was raised by the patient's physician as to the justification for nephrectomy—as previously mentioned in this paper. An intravenous pyelogram was made and a nephrectomy was done. The diagnosis of renal tuberculosis was verified.

122 South Michigan Avenue.

Special Clinical Article

RECENT ADVANCES IN THE STUDY OF VIRUSES AND VIRAL DISEASES

CLINICAL LECTURE AT KANSAS CITY SESSION

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The word virus means poison, and before the relation of bacteria, fungi, spirochetes and protozoa to disease was recognized it was customary to use it in a non-committal manner to designate the causative agents responsible for certain maladies. As the etiologic agent of one disease after another was discovered, the word virus was still used at times to indicate a known infectious agent, for instance, the expression virus of syphilis is equivalent to *Spirochaeta pallida*. In addition to this new usage, the word was still employed to designate unknown or undiscovered etiologic agents. In view of Koch's postulates, infectious agents that had not been seen and cultivated on lifeless laboratory mediums were considered to be undiscovered or unknown, in spite of the fact that investigators were able to experiment with some of them, e g, the viruses of cowpox and smallpox, and to use them for prophylactic purposes. Thus at one time most workers considered and a few still look on the viral diseases as a heterogeneous group in which all maladies of unknown etiology are placed. To the initiate, however, the term virus is as specific in its designation as is the word bacterium, and the expression *Virus variolae* or virus of smallpox is as definitive as is the expression *Bacillus typhosus* or bacillus of typhoid. Thus, infectious diseases are now divided into groups caused by bacteria, spirochetes, fungi, protozoa, Rickettsia and viruses, respectively, in addition there are those of unknown etiology.

The diseases of man that are known to be caused by or that are strongly suspected of being caused by viruses are measles, German measles, mumps, fever blisters, herpes zoster, varicella, smallpox, vaccinia, rabies, psittacosis, common colds, influenza, the St. Louis type of encephalitis, Japanese type B encephalitis, epidemic encephalitis or Economo's disease, lymphocytic choriomeningitis, poliomyelitis, lymphogranuloma inguinale, foot-and-mouth disease, Australian X disease, louping ill, Rift Valley fever, yellow fever, papataci fever, dengue fever, warts, and molluscum contagiosum. In addition to man, lower animals, insects, plants and even bacteria are subject to viral maladies. In fact, no form of life seems to be exempt from such diseases and, as one examines the list, it becomes obvious that a large number of devastating infections fall into the group. Naturally physicians are interested in these conditions, but a broader interest in them has developed because of the discussion of the nature of viruses which leads one into a consideration, often philosophical, of the nature of living material versus that of inanimate substances.

NATURE OF VIRUSES

It would be futile at this time to attempt a discussion of all the interesting activities in the field of viruses. Consequently, it seems best only to excite curiosity

with regard to the nature¹ of these active agents and then to consider briefly some of the most important recent discoveries in the field that have a direct bearing on the practice of medicine.

With the discovery that minute animals and plants in the form of protozoa, spirochetes, fungi and bacteria, instead of miasmas and the wrath of the gods, are responsible for certain infectious diseases, it became customary to assume that all infectious maladies arise through the action of such agents or their toxins. Even after it was demonstrated that many disease-producing agents are smaller than ordinary bacteria, most investigators still thought that such agents possess the characteristics of bacteria, differing from them only in respect to size. Indeed, for a long time a large part of the activities of investigators was directed toward the cultivation of them on lifeless mediums similar to those used for ordinary bacteria. However, from the time that it was shown that certain infectious agents pass through filters that hold back ordinary bacteria, a few independent thinkers have suggested that these small agents differ from the larger and better known ones, and an occasional worker has been bold enough to state that some viruses are not living organisms but inanimate substances capable of producing disease in one host after another not through autonomous multiplication but through their repeated fabrication in properly stimulated or injured host cells.

Such was the state of affairs until in 1915 and 1917, respectively, Twort and d'Herelle discovered the bacteriophage, whereupon investigators became fairly equally divided into two camps, one set believing the bacteriophage to be a minute living autonomous organism, the other looking on it as an inanimate substance formed by perverted bacteria capable of producing a similar perversion in other susceptible bacteria with which it comes in contact. Although the bacteriophage is not so important epidemiologically and therapeutically as it once was thought to be, its discovery stimulated interest in other viruses, which has resulted in the accumulation of many valuable facts.

Filters of porcelain or diatomaceous earth are useful for the separation of bacteria from viruses, but through the use of them, little or no definite knowledge of the size of viruses can be obtained. Elford appreciated this fact and recently devised a method of preparing collodion membranes with graded pore sizes of sufficient uniformity to be of value in the estimation of the magnitude of viruses. By means of them it has been shown that not all viruses are of the same magnitude, that the size of the infectious units of each virus is remarkably constant, that some viruses, e g, that of vaccinia, are relatively large, possessing diameters of from 125 to 175 millimicrons, and, finally, that other viruses, e g, those of foot-and-mouth disease and poliomyelitis, are very small and with diameters of from 8 to 15 millimicrons approximate the size of certain protein molecules.

The facts that no known virus has been cultivated in the absence of living susceptible cells and that some possess the order of magnitude exhibited by large molecules of protein have induced certain workers to view the host cells as the source of the viruses. The most suggestive work along this line is that of Stanley who

Read in the General Scientific Meetings at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 12, 1936.

1. Rivers T M. *Physiol Rev* 12: 423 (July) 1932. *Am J M Sc* 190: 435 (Oct.) 1935. Dale H H. *Viruses and Heterogeneity: An Old Problem in a New Form*. Huxley Memorial Lecture. London: Macmillan & Company, 1935.
2. Elford W J. *Proc Roy Soc., London*, B 106: 216 (1937).
112: 384 (1933). Baner J H and Hughes T P. *J Gen Physiol* 18: 143 (Nov) 1934.

recently reported³ that he is able regularly to obtain large amounts of crystalline protein from plants infected with tobacco mosaic virus and that this protein has the property of exciting mosaic disease in inoculated plants. He is inclined to believe that the virus with which he is working is not a living organism but an autocatalytic substance arising from the proteins of the plant as the result of infection.

Stanley's experiments are important and his interpretation of the results may be correct, but less obvious explanations should be considered also. For instance, his crystalline protein may not be the virus but a new pathologic protein, serologically specific for the infection, resulting from the activity of the virus on the host, while the apparent infectiousness of his protein may be accounted for on the basis of its being accompanied regularly by the virus, which, in view of its minute size, might well constitute such a small part of the material that its detection by chemical and serologic technics would be difficult or impossible. Indeed, Hughes⁴ has already brought evidence to show that pathologic proteins may arise from a host as the result of an infection and that such proteins may be antigenic in the host giving rise to them.

On the other hand, some viruses seem to be sufficiently large to represent minute living organisms. In infectious material from vaccinia, smallpox, fowl pox, psittacosis, canary pox and infectious ectromelia, numerous oval or round structures, spoken of as elementary bodies, are seen by means of ultraviolet photography or proper mordants and stains. Considerable amounts of the elementary bodies of vaccinia⁵ have been obtained in a state of relative purity, and a chemical analysis⁶ of them has shown that they are composed of water, protein, fat, carbohydrate and ash in quantities compatible with the idea that they are small organisms, provided each elementary body represents only a single infectious unit of the virus.

Sufficient has been said to indicate that no unanimity of opinion exists regarding the nature of viruses. At present three sets of ideas seem to cover the possibilities: (a) The extremely small viruses may be inanimate incitants of disease, (b) the medium sized viruses may represent primitive forms of life unfamiliar to us, (c) the large viruses may be micromicrobes or the midgets in the microbial world. To predicate that all viruses are identical in nature would at least be bold if not foolish.

THE ACTION OF VIRUSES

In order to study the effects of the activities of viruses and to control the diseases caused by them it is not essential to know their exact nature. If that were true, we would still be without vaccination against smallpox and rabies.

Although no virus has been cultivated on ordinary laboratory mediums, many of them have been induced to multiply in vitro in the presence of living susceptible cells, that is, in tissue cultures modified to suit the occasion. Cultures of viruses made in this manner are easy to handle and have yielded valuable information and products suitable for prophylaxis. For instance, it has been demonstrated that once a virus has entered a cell no amount of antiserum brought in contact with

the cell can injure the virus or hinder its activity." Such a phenomenon throws light on the clinical observations that the administration of convalescent or immune serum to an individual in whom the signs and symptoms of a virus disease are already manifest is without value.

It also appears that calf vaccine lymph, the oldest and best instrument of vaccination, can be improved on by vaccine virus cultivated in flasks in the presence of bits of viable chick embryo tissue suspended in Tyrode's solution⁷. This cultured vaccine virus is free from ordinary bacteria and can be administered intradermally to human beings, in whom it produces an immunity to standard calf lymph virus without the formation of disfiguring scars and without marked systemic reactions.

In spite of the fact that the exact nature of the virus of yellow fever is still unknown, Reed and his co-workers⁸ many years ago showed that the virus is in the blood of patients and that it is carried from one person to another by mosquitoes. Within recent years, considerable additional information regarding the malady has been obtained. Stokes, Bauer and Hudson⁹ transmitted it to monkeys. Then Theiler¹⁰ demonstrated that white mice are susceptible and that the repeated passage of the virus through this host alters its pathogenicity for the monkey and man. With this altered virus mixed with immune serum Sawyer and his co-workers¹¹ have developed a safe and effective vaccine for the prevention of yellow fever in man. Furthermore, recent reports state that yellow fever virus grown in vitro in the presence of certain viable tissues becomes altered in such a manner that it is possible to use it for prophylaxis¹² in human beings.

When it was found that mice are susceptible to yellow fever, a neutralization test was devised by Sawyer and his co-workers¹³ by which it is possible to ascertain whether a person has had the disease. By means of the test it has been demonstrated that yellow fever is or has been endemic in parts of the world that previously had been considered free from the malady¹⁴. Furthermore, Soper¹⁵ has definitely found that in South America yellow fever is not always an urban malady but may occur in jungles remote from urban centers in the absence of the accepted vector, the *stegomyia* mosquito. This jungle yellow fever presents new problems regarding the transmission and control of the disease and constitutes a constant menace to urban centers.

- 7 Rivers T M, Haagen E, and Muckenfass R S. *J Exper Med* 50: 673 (Nov.) 1929. Andrews C H. *Brit J Exper Path* 10: 273 (Aug.) 1929. *J Path. & Bact* 33: 301 (April) 1930. Downie A W and McGaughey C A. *ibid* 40: 297 (March) 1935. Sabin A B. *Brit J Exper Path* 16: 84 (Feb.) 1935.
- 8 Rivers T M. *J Exper Med* 54: 453 (Oct.) 1931. Rivers T M and Ward S M. *ibid* 58: 635 (Nov.) 1933. 62: 549 (Oct.) 1935.
- 9 Reed W, Carroll James, Agramonte Aristides and Lazear J W. *Etiology of Yellow Fever: A Preliminary Note, Proceedings of the Twenty Eighth Annual Meeting of the American Public Health Association Indianapolis 1900*. Philadelphia M J. 6: 790 1900. Reed W, Carroll James and Agramonte Aristides. *Tr A Am Physicians* 16: 45 1901.
- 10 Stokes Adrian, Bauer J H and Hudson N P. *The Transmission of Yellow Fever to Macacus Rhesus*. *J A M A* 90: 253 (Jan 28) 1928. *Am J Trop Med* 8: 103 (March) 1928.
- 11 Theiler M. *Ann Trop Med* 24: 249 (July) 1930.
- 12 Sawyer W A, Kitchen S F and Lloyd W. *J Exper Med* 55: 945 (June) 1932.
- 13 Lloyd W, Theiler M and Ricci N I. *Tr Roy Soc Trop Med & Hyg* 29: 481 1936.
- 14 Sawyer W A and Lloyd W. *J Exper Med* 64: 533 (Oct.) 1931. Hughes T P, and Sawyer W A. *Significance of Immunity Tests in Epidemiology as Illustrated in Yellow Fever*. *J A. M. A* 90: 978 (Sept. 17) 1932.
- 15 Sawyer W A. *The Harvey Lectures*. Baltimore, Williams & Wilkins Company 1934 1935 p 66.
- 16 Soper F L, Penna H, Cardoso E, Serafini J Jr, Frohisher M Jr and Pinheiro J. *Am J Hyg* 18: 555 (Nov.) 1933. Soper F L. *Rural and Jungle Yellow Fever—A New Public Health Problem in Colombia*. Bogotá editorial Minerva 1935.

1 Stanley W M. *Science* 81: 644 (June 28) 1935.
 4 Hughes T P. *J Immunol* 25: 275 (Sept.) 1933.
 5 Craigie James. *Brit J Exper Path* 13: 259 (June) 1932.
 6 Parker R F and Rivers T M. *J Exper Med* 62: 65 (July) 1935.
 6 Hughes T P, Parker R F and Rivers T M. *J Exper Med* 62: 349 (Sept.) 1935.

In 1918 a disease called swine influenza, or "hog flu," appeared in this country. Shope¹⁷ has conclusively demonstrated that the malady as it occurs in nature is not caused by a single infectious agent but by the synergistic action of swine influenza virus and a bacillus, *Haemophilus influenzae-suis*. Koch's postulates have induced most investigators to hold the idea that in order to demonstrate the etiologic significance of an infectious agent it is essential to produce experimentally the disease in question by means of pure cultures of that agent. This attitude implies that each infectious disease is caused by one infectious agent. In view of such an attitude the results of Dr. Shope's work take on an added significance, because they clearly indicate that at least one disease as seen in nature can be caused only by the combined action of two infectious agents, a virus and a bacterium. Thus, the inability in the past to discover the cause of certain infectious maladies still classified as diseases of unknown etiology may be due to the fact that workers have been influenced too profoundly by the dictum of Koch.

Following the work on swine influenza begun by Shope in 1931, three British workers, Smith, Andrewes and Laidlaw,¹⁸ succeeded in 1933 in infecting ferrets with a virus found in the nasopharyngeal washings of patients with a disease diagnosed as influenza. Without much difficulty these investigators were able by serial passages to propagate the active agent in this host. Francis¹⁹ in New York has obtained from patients with influenza in Puerto Rico, Philadelphia, New York and Alaska a virus similar to that described by the British workers. Subsequent experiments by Francis¹⁹ and the British workers²⁰ have shown that these viruses collected from widely separated epidemics are serologically identical and that patients without antibodies specific for the virus at the onset of the influenzal attacks develop them during convalescence. Francis,¹⁹ and Andrewes, Laidlaw and Smith²¹ simultaneously demonstrated that white mice are susceptible to the virus, provided a ferret-adapted strain is instilled into the nostrils while the animals are under ether anesthesia. As might be expected, this observation has greatly facilitated work on influenza.²² Although no one has cultivated the virus on ordinary mediums, Francis and Magill²³ have succeeded in obtaining a sustained multiplication of the agent in a medium consisting of bits of viable chick embryo tissue suspended in Tyrode's solution. Furthermore, when the cultured virus is injected subcutaneously into human volunteers with few or no demonstrable neutralizing antibodies, illness similar to influenza does not occur but antibodies specific for the virus promptly appear.²⁴

Swine influenza was unknown before 1918. In view of the fact that the suggestion²⁵ has been made that hogs contracted the malady from man during the pandemic of influenza in 1918, considerable study has been devoted to the relation of the two diseases, which has resulted in the demonstration that the swine virus and the human virus are immunologically related but not identical.²⁶ Furthermore, it has been shown that swine are susceptible to the virus recently isolated from man but that the disease caused by it, although similar in many respects, is not identical with that induced by the swine virus.²⁷ Consequently it is within the realm of possibility that the swine virus represents the pandemic strain of human influenzal virus adapted to hogs.

Kruse²⁸, Foster²⁹ and Olitsky and McCartney³⁰ showed that common colds in man may be caused by a filtrable agent obtained from the nasopharyngeal washings of patients with the disease. Dochez and his co-workers³¹ have amply confirmed these observations and have extended them by demonstrating that apes are susceptible and that the virus is capable of multiplication in a special medium containing viable chick embryo tissue. No one, however, has definitely shown that ferrets and mice are susceptible to the virus of common colds, and the method of its cultivation³ is radically different from that used for cultivation²³ of the influenzal virus previously mentioned. These facts are decidedly in favor of the idea that the two viruses are different, and in the future most investigators in this field will undoubtedly consider them dissimilar unless further work yields conclusive evidence to the contrary.

At this time it is advisable to point out that one should not conclude that all cases of infection clinically diagnosed as influenza are caused by a single virus, i. e., the one recently isolated by the British and American investigators, because the viruses of yellow fever³² and Rift Valley fever³³ a disease of sheep, not infrequently produce in man a malady clinically indistinguishable from influenza. Moreover, Dochez³⁴ has obtained from cases diagnosed as influenza an active agent that tends to produce common colds in inoculated human volunteers. Finally, from many individuals suffering from an infection diagnosed as influenza no virus has been recovered. Although within recent years tremendous strides have been made in the study of common colds and influenza, much work still remains to be done before many of the problems in this field will have been mastered.

Until a few years ago, virus diseases of the central nervous system of man were not considered very common, the recognized ones consisted of rabies, poliomyelitis, Australian X disease, and epidemic encephalitis, or Economo's disease. Although the viruses of rabies

17 Shope R. E. *Science* **73** 214 (Feb. 20) 1931. *J. Exper. Med.* **54** 349 (Sept.) 1931. Lewis P. A. and Shope R. E. *ibid.* **54** 361 (Sept.) 1931. Shope, R. E. *ibid.* **54** 373 (Sept.) 1931. **56** 575 (Oct.) 1932.

18 Smith Wilson, Andrewes C. H. and Laidlaw P. P. *Lancet* **2** 66 (July 8) 1933.

19 Francis Thomas Jr. *Science* **80** 457 (Nov. 16) 1934. *Proc. Soc. Exper. Biol. & Med.* **32** 1172 (April) 1935. Recent Advances in the Study of Influenza. *J. A. M. A.* **105** 251 (July 27) 1935.

20 Laidlaw P. P. *Lancet* **1** 1118 (May 11) 1935. Andrewes C. H., Laidlaw P. P. and Smith Wilson. *Brit. J. Exper. Path.* **16** 566 (Dec.) 1935.

21 Andrewes C. H., Laidlaw P. P. and Smith Wilson. *Lancet* **2**: 859 (Oct. 20) 1934.

22 Laidlaw P. P., Smith Wilson, Andrewes C. H. and Dunkin G. W. *Brit. J. Exper. Path.* **16** 275 (June) 1935. Smith Wilson, Andrewes C. H. and Laidlaw P. P. *ibid.* **16**: 291 (June) 1935. Francis Thomas Jr. and Magill T. P. *J. Exper. Med.* **62** 505 (Oct.) 1935. Francis Thomas Jr. *J. Bact.* **31** 37 (Jan.) 1936.

23 Francis Thomas Jr. and Magill T. P. *Science* **82** 353 (Oct. 5) 1935.

24 Francis Thomas Jr. and Magill T. P. *Proc. Soc. Exper. Biol. & Med.* **33**: 694 (Jan.) 1936.

25 Koen J. S. cited by Dorset M., McBryde C. N. and Nitch W. B. *J. Am. Vet. M. A.* **62** 162 1922-1923.

26 Footnotes 20 and 22.

27 Elkeles G. *Prensa. méd. argent.* **22** 857 (May 1) 1935. Shope R. E. *J. Bact.* **31**: 37 (Jan.) 1936.

28 Kruse W. *Munchen med. Wchnschr.* **61** 1547 1914.

29 Foster G. B. Jr. *J. Infect. Dis.* **21** 451 (Nov.) 1917.

30 Olitsky P. K. and McCartney J. E. *J. Exper. Med.* **38**: 477 (Oct.) 1923.

31 Dochez A. R., Shibley G. S. and Mills K. C. *Proc. Soc. Exper. Biol. & Med.* **26** 562 (April) 1929. *J. Exper. Med.* **52**: 201 (Nov.) 1930.

32 Dochez A. R., Mills K. C. and Kneeland Yale Jr. *Proc. Soc. Exper. Biol. & Med.* **28** 513 (Feb.) 1931. **29** 64 (Oct.) 1931. *J. Exper. Med.* **63** 559 (April) 1936.

33 Soper F. L. and de Andrade A. *Am. J. Hyg.* **18**: 588 (Nov.) 1933.

34 Francis Thomas Jr. and Magill T. P. *J. Exper. Med.* **62**: 433 (Sept.) 1935.

35 Dochez A. R., Mills K. C. and Kneeland Yale Jr. *J. Exper. Med.* **63** 581 (April) 1936.

and poliomyelitis are well known and their activities in experimental animals have been studied extensively, the etiologic agent of epidemic encephalitis is still unknown, and the disease is placed in the virus group only by analogy because of its clinical, epidemiologic and pathologic pictures. The virus of Australian X disease³⁶ produced infection in experimental animals but was lost before its relation to other and better known viruses was established. Within a relatively short period, four more viruses have been shown to attack the central nervous system of man, and at least one of them is capable of causing an epidemic disease.

Two physicians have died of an encephalitis induced by a virus carried by monkeys. This agent, recently discovered and now known as the B virus,³⁷ is said to be related to but not identical with the viruses of herpes simplex and pseudorabies.

Louping ill is a viral disease of sheep in Scotland and the northern part of England. A number of laboratory workers have become infected³⁸ accidentally, some of whom manifested rather severe signs and symptoms of encephalitis, with an increased number of cells in the spinal fluid. So far as is known, no human being has died of the malady.

During the summer of 1933, more than a thousand cases of encephalitis occurred in and around St. Louis. Although it was difficult to differentiate clinically individual cases of this outbreak from individual cases of epidemic encephalitis, or Economo's disease, the epidemic as a whole manifested characteristics distinctly different from those of outbreaks of the latter malady. Muckenfuss, Armstrong and McCordock³⁹ succeeded without much difficulty in transmitting the disease to monkeys, and Webster and his co-workers⁴⁰ readily established it in white mice. Once a suitable experimental animal had been found, it was relatively easy to demonstrate that the infectious agent responsible for the epidemic is a small virus possessing a diameter of from 20 to 30 millimicrons. Furthermore, by means of neutralization tests conducted in mice, it has been shown⁴¹ that individuals at the onset of the malady do not possess antibodies against the virus while they develop them during convalescence that patients recovered from or chronically ill of Economo's encephalitis do not possess neutralizing antibodies against the St. Louis virus, that the St. Louis type of encephalitis was in the United States before 1933, and, finally, that it is still endemic and not restricted to St. Louis and its immediate vicinity.

In Japan, a disease known as summer or type B encephalitis⁴² has been recognized for a number of years. Many physicians and investigators appreciate the fact that epidemics of it are distinctly different from those of Economo's (type A) encephalitis. Furthermore, the clinical, pathologic and epidemiologic

aspects of this disease are in many respects strikingly similar to those of the St. Louis malady. Whether similar or identical viruses are operative in the two diseases remains to be ascertained by future investigations.

While working with material from the epidemic encephalitis in St. Louis, Armstrong and Lillie⁴³ encountered a new virus in monkeys. A report of their observations, in which they designated the active agent as the virus of experimental lymphocytic choriomeningitis, appeared in August 1934. Early in 1935 Traub⁴⁴ reported that he had discovered the same virus in his stock of white mice. Shortly after Traub's communication appeared, Scott and I⁴⁵ recorded the fact that we had recovered the virus from the spinal fluids of two patients who presented the picture of a mild meningitis, that is, they had fever, headache, nausea, vomiting, nuchal rigidity, Kernig's sign and a decided increase in the number of cells, mainly lymphocytes, in the spinal fluid. The infection in the two patients just mentioned was not unique, because recently we have recovered the virus from the spinal fluids of two more individuals with a nonbacterial meningitis, also from the blood of one of the patients the virus was isolated. Moreover, Findlay⁴⁶ in England has recovered the virus from mice and from the spinal fluids of two human beings. All patients from whom the virus has been isolated have made good recoveries.

In 1925 Wallgren⁴⁷ described a clinical entity which he designated as acute aseptic meningitis. Since the cases from which the virus of lymphocytic choriomeningitis has been isolated satisfy the criteria established for the diagnosis of acute aseptic meningitis, certain workers⁴⁸ have suggested that the new virus is the etiologic agent responsible for most if not all of the cases placed in Wallgren's group. The results of the work in my laboratory,⁴⁵ however, clearly indicate that only a few such cases are caused by this virus and that they should not be classified as acute aseptic meningitis but as lymphocytic choriomeningitis. One immediately asks, "What about the other cases placed under the classification of acute aseptic meningitis?" An entirely satisfactory answer is not yet available, but it is safe to say that a few may represent cases of the meningeal form of encephalitis or nonparalytic poliomyelitis, while the remainder are induced by a virus or viruses not yet discovered. In this connection it should be kept in mind that a certain number of patients with mumps also develop a meningitis or a meningo-encephalitis presumably caused by the active agent inducing the parotitis which has been shown by Johnson and Goodpasture⁴⁹ to belong in the viral group.

That affairs regarding the diagnosis of viral diseases of the central nervous system should be in the state indicated by the remarks just made is understandable when the fact is taken into consideration that the nervous system is capable of responding to injury in a limited number of ways. Consequently, it is not sur-

36 Kneebone J. L. and Cleland, J. B. *Australian J. Exper. Biol. & Med. Sc.* 3: 119 (Sept.) 1926. Perdrau J. R. *J. Path. & Bact.* 42: 59 (Jan.) 1936.

37 Sabin A. B. and Wright A. M. *J. Exper. Med.* 59: 115 (Feb.) 1934. Sabin A. B. *Brit. J. Exper. Path.* 15: 248, 268 (Aug.) 321, 372 (Dec.) 1934. Sabin A. B. and Hurst, E. W. *ibid.* 16: 133 (April) 1935.

38 Rivers T. M. and Schwentker F. F. *J. Exper. Med.* 59: 669 (May) 1934.

39 Muckenfuss R. S., Armstrong C. and McCordock, H. A. *Pub. Health Rep.* 48: 1341 (Nov. 3) 1933. Report on the St. Louis Outbreak of Encephalitis. *Pub. Health Bull.* 214, 1935.

40 Webster L. T. and Fife G. L. *Science* 78: 463 (Nov. 17) 1933. *J. Exper. Med.* 61: 103 (Jan.) 411 (March) 1935.

41 Webster L. T., Fife, G. L., Clow A. D. and Muench H. *J. Exper. Med.* 62: 827 (Dec.) 1935. Tucker W. H. *Am. J. Pub. Health* 26: 268 (March) 1936.

42 Hashimoto Hirotsugu, Kudo Masashiro and Uruguchi Kenji. Experiences in the Summer Epidemics of Acute Encephalitis in Tokyo. *J. A. M. A.* 100: 1266 (April 11) 1936.

43 Armstrong Charles and Lillie R. D. *Pub. Health Rep.* 49: 1019 (Aug.) 1934.

44 Traub Erich. *Science* 81: 298 (March 22) 1935. *J. Exper. Med.* 63: 533 (April) 1936.

45 Rivers T. M. and Scott T. F. M. *Science* 81: 439 (May 3) 1935. Scott, T. F. M. and Rivers T. M. *J. Exper. Med.* 63: 397 (March) 1936. Rivers T. M. and Scott T. F. M. *ibid.* 415 (March) 1936.

46 Findlay G. M., Alcock N. S. and Stern R. O. *Lancet* 1: 650 (March 21) 1936.

47 Wallgren A. *Acute paediat.* 4: 158 1925.

48 Armstrong Charles and Dickens P. F. *Pub. Health Rep.* 50: 831 (June 21) 1935.

49 Johnson C. D., and Goodpasture E. W. *J. Exper. Med.* 59: 1 (Jan.) 1934. *Am. J. Hyg.* 21: 46 (Jan.) 1935. Findlay G. M. and Clarke L. P. *Brit. J. Exper. Path.* 15: 309 (Oct.) 1934.

prising that different viruses attacking the central nervous system cause diseases with clinical pictures so similar that a differential diagnosis is difficult or impossible by means of clinical observations alone. This not only is true of viral diseases but also holds in regard to bacterial maladies. For instance, without the microscope and methods of bacterial cultivation, it would still be impossible to differentiate one type of pyogenic meningitis from another with any degree of accuracy.

VACCINES AND SERUMS

Physicians probably would like to know whether there are safe and effective vaccines and immune serums for the prevention and cure, respectively, of viral diseases of the central nervous system of man. Except for vaccines against rabies, there are none that I⁶⁰ would administer to my patients.

Although the use of vaccines and serums at present offers little of value in the prevention and treatment of poliomyelitis, the results of work with agents of another nature seem to present hope that a method of controlling the disease eventually may be evolved. It is now believed that the virus of poliomyelitis enters the brain from the nasal mucous membranes by way of the olfactory nerve. With this idea in mind, a number of workers have conducted experiments with several viruses in more than one host in order to ascertain whether the entrance of a neurotropic virus into the central nervous system can be blocked by the application of simple chemical substances to the mucous membranes of the nose.

In 1934 Olitsky and Cox⁵¹ demonstrated that mice which had received a number of intranasal instillations of tannic acid were temporarily resistant to the action of equine encephalomyelitic virus placed in the nose. In 1935 Armstrong⁵² reported the results of experiments in which he found that a solution of sodium alum produced an effect similar to that of tannic acid, in that local applications of it protected mice subsequently inoculated intranasally with the virus of the St. Louis type of encephalitis. Then Armstrong and Harrison,⁵³ and Sabin, Olitsky and Cox⁵⁴ showed that monkeys following repeated intranasal spraying of alum were resistant to the virus of poliomyelitis implanted on the nasal mucous membranes. Finally, Armstrong and Harrison⁵⁵ and Schultz and Gebhardt⁵⁶ found that a dilute solution of trinitrophenol may be substituted for alum.

From the results of the work just described, one can predict with a degree of certainty that during the coming summer experiments will be made in the field in the hope that progress in the prevention of poliomyelitis in man will be achieved. Let me suggest, however, that this type of experiment should be conducted only by those who have had proper training.

In this discussion it has been necessary to omit mention of many interesting activities and newly discovered facts. The material presented was chosen with the thought that it would illustrate the ascendant ideas in the minds of investigators in the field of viruses and supply information of value in the practice of medicine.

Sixty-Sixth Street and York Avenue.

- ⁵⁰ Rivers T. M. *Am J Pub Health* 26:136 (Feb.) 1936.
⁵¹ Olitsky P. K., and Cox H. R. *Science* 80:566 (Dec. 14) 1934.
⁵² Armstrong Charles. *Pub Health Rep* 50:43 (Jan. 11) 1935.
⁵³ Armstrong Charles and Harrison W. T. *Pub Health Rep* 50:725 (Jan. 31) 1935.
⁵⁴ Sabin A. B., Olitsky P. K., and Cox H. R. *J Bact.* 31:35 (Jan.) 1936. *J Exper. Med.* 63:877 (June) 1936.
⁵⁵ Armstrong Charles and Harrison W. T. *Pub Health Rep* 51:203 (Feb. 28) 1936.
⁵⁶ Schultz E. W. and Gebhardt L. P. *Proc. Soc. Exper Biol & Med.* 34:133 (March) 1936.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

Nomenclature of Endocrine Principles II

THE PRESENT UNSETTLED STATE OF ENDOCRINOLOGIC NOMENCLATURE HAS BEEN THE CAUSE OF INCREASING CONFUSION IN RECENT YEARS. IN AN EFFORT TO REMEDY THIS DEPLORABLE SITUATION THE COUNCIL SOLICITED THE COOPERATION OF A NUMBER OF EXPERTS WHO HAVE MADE FUNDAMENTAL CONTRIBUTIONS TO OLANULAR PHYSIOLOGY. THIS GROUP, TERMED THE ADVISORY COMMITTEE ON THE NOMENCLATURE OF ENDOCRINE PRINCIPLES IS COMPOSED OF THE FOLLOWING: DR. EDWIN ALLEN WILLARD, M. ALLEN, J. B. COLLIP, G. W. CORNER, E. A. DOISY, E. T. ENGLE, H. M. EVANS, R. T. FRANK, F. L. HIRSH, F. C. KOCH, LEO LOEB, G. F. MARRIAN, C. R. MOORE, OSCAR RIDDLE, P. E. SMITH, AND C. W. TURNER. M. S. BIRKING, CORRESPONDING SECRETARY. ON THE RECOMMENDATION OF THIS COMMITTEE, THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT WHICH IS THE SECOND OF A SERIES (THE FIRST ON THE NOMENCLATURE OF THE CORPUS LUTEUM HORMONE APPEARED IN THE JOURNAL, MAY 23, 1936, PAGE 1808). IT IS ANTICIPATED THAT OTHER REPORTS OF RELATED TOPICS WILL BE PUBLISHED IN THE NEAR FUTURE.

THE COUNCIL DESIRES TO EXPRESS ITS SINCERE APPRECIATION TO THE MEMBERS OF THE ADVISORY COMMITTEE FOR THEIR WILLING COOPERATION.
 PAUL NICHOLAS LEECH, Secretary

THE NOMENCLATURE OF "MALE HORMONES"

The first successful preparations of male hormone were obtained by McGee¹ (1927) in the lipid fraction of extracts of bull testes. This crude extract was further refined by Gallagher and Koch² (1929, 1930, 1934, 1935), the extracts proved capable of inducing growth of the capon comb (McGee, Juhn and Domm,³ 1928) and preventing, or repairing, castration damage on the accessory reproductive organs of mammals (Moore and McGee,⁴ 1928, Moore and Gallagher,⁵ 1930, Moore, Hughes and Gallagher,⁶ 1930, Moore, Price and Gallagher,⁷ 1930, Vatna,⁸ 1930, Heller,⁹ 1932). The active principle has been referred to variously as "bull testis extract," "male hormone from testes," "comb-growth-promoting substance" and "the testicular (or testis) hormone."

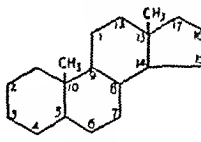
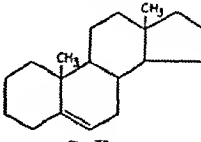
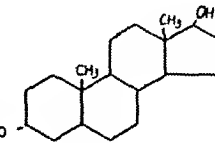
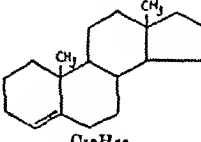
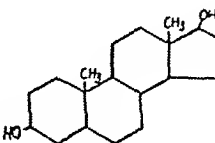
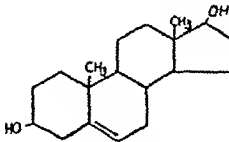
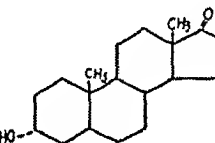
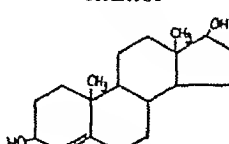
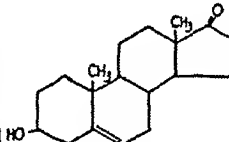
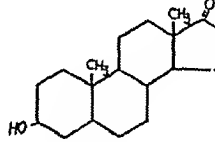
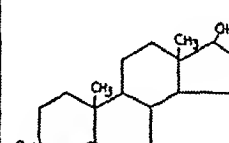
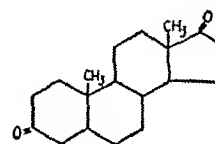
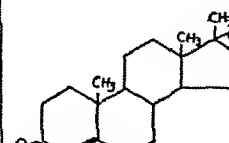
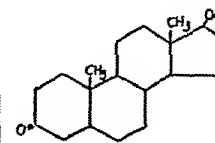
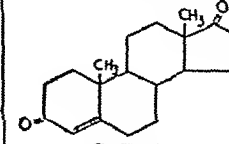
Loewe and Voss¹⁰ (1929) published accounts of extractions of testicular substance and the effects of resultant preparations on mammalian accessory reproductive organs. Their extracts were crude mixtures and the active principle was called "androkinin."

Funk and Harrow¹¹ (1929) obtained crude extracts of male urine that caused growth of the capon comb and designated the active principle in their products "the male hormone."

The active principle in extracts of urine has been studied in many other laboratories and has also been referred to as "male

- 1 McGee, L. C. The Effect of the Injection of a Lipoid Fraction of Bull Testicle in Capons. *Proc. Inst. Med. Chicago* 6:242 (1927).
 2 Gallagher T. F. and Koch F. C. The Testicular Hormone. *J. Biol. Chem.* 84:495 (Nov.) 1929. The Quantitative Assay for the Testicular Hormone by the Comb Growth Reaction. *J. Pharmacol. & Exper. Therap.* 40:327 (Nov.) 1930. The Effect of Alkali on Testicular Hormone. *J. Biol. Chem.* 104:611 (March) 1934. Biochemical Studies on the Male Hormone as Obtained from Urine. *Endocrinology* 18:107 (Jan.) 1934. Assay for Testicular Hormone by the Comb Growth Reaction. *J. Pharmacol. & Exper. Therap.* 45:109 (Jan.) 1934. Communication by the Testicular Hormone. *J. Pharmacol. & Exper. Therap.* 45:109 (Jan.) 1934.
 3 McGee L. C., Juhn, Mary and Domm L. V. The Development of Secondary Sex Characters in Capons by Injections of Extracts of Bull Testes. *Am J Physiol.* 87:406 (Dec.) 1928.
 4 Moore C. R. and McGee L. C. On the Effects of Injecting Lipoid Extracts of Bull Testes into Castrated Guinea Pigs. *Am J Physiol.* 87:436 (Dec.) 1928.
 5 Moore C. R. and Gallagher T. F. Seminal Vesicle and Prostate as a Testis Hormone Indicator. The Electric Ejaculation Test. *Am J Anat.* 45:39 (Jan.) 1930.
 6 Moore C. R., Hughes, Winifred and Gallagher T. F. Rat Seminal Vesicle Cytology as a Testis Hormone Indicator and the Prevention of Castration Changes by Testis-Extract Injections. *Am J Anat.* 45:109 (Jan.) 1930.
 7 Moore C. R., Hughes, Winifred and Gallagher T. F. Rat Prostate Cytology as a Testis Hormone Indicator and the Prevention of Castration Changes by Testis-Extract Injections. *Am J Anat.* 45:71 (Jan.) 1930.
 8 Vatna S. Rat Vas Deferens Cytology as a Testis Hormone Indicator and the Prevention of Castration Changes by Testis Hormone Injections. *Biol. Bull.* 58:322 (June) 1930.
 9 Heller R. E. Cnapper's Gland and Its Reaction to Castration and in Different Sex Hormone Conditions. *Am J Anat.* 50:73 (March) 1932.
 10 Loewe S. and Voss H. E. Gewinnung Eigenschaften und Testierung eines mannlichen Sexualhormons. *Sitz. Akad. Wiss. Viena (Math. Naturw. Kl.) Akad. Anz.* 1929 No. 20.
 11 Funk, Casimir and Harrow B. The Male Hormone. *Proc. Soc. Exper Biol & Med.* 26:325 (Jan.) 1929.

Terminology for Androgens

| Common Name | Structure | Chemical Name* | Common Name | Structure | Chemical Name |
|-------------------------|--|--|--|---|---|
| Androstane |  <chem>C19H33</chem> | Androstane | Androstenes |  <chem>C19H30</chem> | Δ^5 Androstene |
| Dihydro-androsterone |  <chem>C19H32O2</chem> | Androstenediol 3 cis 17 or 3-cis 17-dihydroxy androstane | |  <chem>C19H30</chem> | Δ^4 Androstene |
| Isodihydro-androsterone |  <chem>C19H32O2</chem> | Androstenediol 3 trans 17 or 3 trans 17-dihydroxy androstane | Androstenediols |  <chem>C19H30O2</chem> | Δ^5 Androstenediol 3 trans 17 or 3 trans 17-dihydroxy Δ^5 androstene |
| Androsterone |  <chem>C19H30O2</chem> | Androstanolone 3 cis 17 or 3-cis hydroxy 17 keto androstane | |  <chem>C19H30O2</chem> | Δ^4 Androstenediol- 3 trans 17 or 3 trans 17-dihydroxy Δ^4 androstene |
| | | | Dehydro-androsterone or Dehydro-iso-androsterone |  <chem>C19H28O2</chem> | Δ^5 Androstenolone 3 trans 17 or 3 trans hydroxy 17 keto Δ^5 androstene |
| Iso-androsterone |  <chem>C19H30O2</chem> | Androstanolone- 3 trans 17 or 3 trans hydroxy 17 keto androstane | Testosterones |  <chem>C19H28O2</chem> | Δ^4 Androstenolone 17 3 or 3 keto 17 hydroxy Δ^4 androstene |
| Androstenedione |  <chem>C19H28O2</chem> | Androstenedione 3 17 or 3 17 diketone androstane | Methyl testosterone |  <chem>C20H30O2</chem> | Δ^4 17 methyl andro- stenolone 17 3 or 3 keto 17-methyl hydroxy Δ^4 androstene |
| |  <chem>C19H30O2</chem> | Androstanolone 17 3 or 3 keto 17 hydroxy androstane | Androstenedione |  <chem>C19H28O2</chem> | Δ^4 Androstenedione- 3 17 or 3 17-diketone Δ^4 androstene |

* The chemical nomenclature in this table is given in two forms. The first is the one in almost exclusive use in the literature the second is in accord with the rule in the Definitive Report of the Commission on the Reform of the Nomenclature of Organic Chemistry (J Am Chem Soc. 55 3905 [Oct.] 1933) requiring that only the principal function be expressed in the suffix all others to be designated by appropriate prefixes. The latter method is the one employed in the chemical terminology of the closely related estrogenic compounds for consistency as well as conformity with the aforementioned international agreement. It should be adopted for the androgens as well.

It is obvious that such claims as these are unscientific and exaggerated. The public should be informed that gluten bread is not a proper source for obtaining elements to "build rich blood" or for adequate supplies of vitamins and mineral salts. Gluten bread was originally devised for a means of providing bread without starch. However, experience has shown that gluten bread has no place in the diet of the average diabetic patient.

As has been stated before by the Committee on Foods (THE JOURNAL, Nov 23, 1935) commercially prepared special diabetic foods are of little use to the diabetic patient. In general, the diet of the patient with diabetes should be exactly prescribed by a physician, who, in addition, has insulin at his command.

Furthermore, diabetic foods often run high in protein, which in some cases may be tolerated almost as poorly, if not quite as poorly, as starch in diabetes.

The Committee on Foods has declared, therefore, that Blubaugh's Genuine Gluten Bread is not acceptable for inclusion in the list of accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary

- A 1 JUST RIGHT FLOUR (BLEACHED)
2 SAXONY CHOICE SOFT WHEAT FLOUR (BLEACHED)
3 SOUTHERN BELLE FLOUR (BLEACHED)
B 1 JUST RIGHT FLOUR PHOSPHATE ADDED (BLEACHED)
2 SAXONY CHOICE SOFT WHEAT FLOUR PHOSPHATE ADDED (BLEACHED)
3 SOUTHERN BELLE FLOUR PHOSPHATE ADDED (BLEACHED)
C 1 CHARMER SELF-RISING FLOUR (BLEACHED)
2 JUST RIGHT SELF-RISING FLOUR (BLEACHED)
3 SAXONY SELF-RISING FLOUR (BLEACHED)

Manufacturer—The Saxony Mills, Inc., St. Louis

Descriptions—A 1 Patent flour prepared from hard wheat, bleached. 2 and 3 Patent flour prepared from soft red winter wheat, bleached.

B 1 Patent flour prepared from hard wheat with 0.5 per cent of monocalcium acid phosphate, bleached. 2 and 3 Patent flour prepared from soft red winter wheat with 0.5 per cent of monocalcium acid phosphate, bleached.

C 1 2 and 3 Self-rising flour containing a patent flour of soft winter wheat (bleached), monocalcium acid phosphate, sodium bicarbonate and salt.

Manufacture—A Selected wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended, bleached with nitrogen trichloride (from 2.5 to 3.5 Gm per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (1 part to 50,000 parts of flour).

B Selected wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended, bleached with nitrogen trichloride (from 2.5 to 3.5 Gm per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (one part to 50,000 parts of flour) and finally mixed with 0.5 per cent monocalcium acid phosphate.

C The ingredients are mixed in definite proportions in a batch mixer and automatically sealed in paper and cotton sacks.

CELLU BRAND GREEN CUT ASPARAGUS, WATER PACKED

Distributor—Chicago Dietetic Supply House, Inc., Chicago
Packer—L. H. Schlecht, Rossville, Ill.

Description—Canned green cut asparagus packed in water.

Manufacture—Essentially the same as Cellu Brand Tips of Asparagus, Water Packed (THE JOURNAL, April 25, 1936, p 1473) except that tips are 1½ inches and stems cut in pieces of 1¼ inches.

Analysis (submitted by distributor) —

| | per cent |
|--|----------|
| Moisture | 95.1 |
| Total solids | 4.9 |
| Ash | 0.6 |
| Fat (ether extract) | 0.2 |
| Protein (N × 6.25) | 1.5 |
| Crude fiber | 0.7 |
| Starch (diastase method) | 1.7 |
| Carbohydrates other than crude fiber (by difference) | 1.9 |

Calories—0.2 per gram, 6 per ounce.

Claims of Manufacturer—Choice quality green cut asparagus packed without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

STEPHENS BRAND ORANGE JUICE

Manufacturer—Natural Food Products Company, Orange, Calif.

Description—Canned California Valencia orange juice, retaining in high degree the original vitamin C content.

Manufacture—Same as Stephens Brand Grapefruit Juice (THE JOURNAL, May 16, 1936, p 1735).

Analysis (submitted by manufacturer) —

| | per cent |
|--|----------|
| Moisture | 86.4 |
| Total solids | 13.6 |
| Ash | 0.4 |
| Fat (ether extract) | 0.1 |
| Protein (N × 6.25) | 1.0 |
| Reducing sugars as invert sugar | 5.4 |
| Nonreducing sugars as sucrose | 4.3 |
| Crude fiber | 0.1 |
| Carbohydrates other than crude fiber (by difference) | 11.0 |
| Titratable acidity as citric acid | 1.0 |

Calories—0.5 per gram, 14 per ounce.

Vitamins—Chemical determination (iodine titration) of cevitic acid (ascorbic acid) shows 0.6 mg per cubic centimeter.

Claims of Manufacturer—Practically equivalent to fresh juice in vitamin C. For all table and dietary uses of fresh juice.

SANITARIUM BRAND WATER PACKED PINEAPPLE SLICED AND TID-BITS

Distributor—Battle Creek Food Company, Battle Creek, Mich.

Manufacturer—Hawaiian Pineapple Company, Limited, San Francisco.

Description—Peeled, cored and sliced Hawaiian pineapple, processed and packed in water, same as Dole Brand Hawaiian Pineapple, Water Packed, Sliced and Tid-bits (THE JOURNAL, March 14, 1936, p 923).

Claims of Manufacturer—Fancy grade canned sliced pineapple, representing fruit most uniform in color, flavor, texture and workmanship. Packed in water. The canned product is practically equivalent to the fresh fruit in nutritional values (vitamin C slightly reduced).

FAULTLESS BRAND TOMATO JUICE

Distributor—Nash-Finch Company, Pawhuska, Okla.

Manufacturer—Marshall Canning Company, Marshalltown, Iowa.

Description—Tomato juice seasoned with salt retaining in high degree the natural mineral and vitamin values. The same as Faultless Brand Tomato Juice (THE JOURNAL, April 4, 1936, p 1166).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 18, 1936

BACTERIAL NOMENCLATURE

The confusion in classifications of "genera" and "species" of bacteria has not become materially less in recent years. Indeed, in the opinion of some bacteriologists, the multiplication of new generic names has made confusion worse confounded. The question of bacterial nomenclature will never be settled satisfactorily without some form of international agreement, and little progress has yet been made in this direction. Pending some general agreement by world bacteriologists it would seem desirable to maintain a conservative position, at least with regard to the hasty adoption of new names. Several instances are afforded in recent American practice. The term "Pfeifferella" as a bacterial genus including the glanders bacillus and certain related organisms was proposed some years ago but has not won general acceptance and has been abandoned in the fourth edition of Bergey's Manual of Determinative Bacteriology. A new genus "Listerella" is listed in the fourth edition of Bergey's Manual (1934) but this "genus" seems to have been established without any very extensive cooperative discussion. The sole organism described¹ in this genus, "L. monocytogenes," has apparently not been studied by any considerable number of bacteriologists with a view to determining its affinities and systematic position.

The precise status of Bergey's Manual as an arbiter of bacterial nomenclature has been frequently misunderstood and misinterpreted. Although the classification that it gives has been largely worked out with the aid of a committee of the Society of American Bacteriologists, the classification as a whole or in part has never been the subject of official action by the Society of American Bacteriologists and is not known to represent the matured opinion of even a majority of the members of the society. Although this fact has been frequently stated the nomenclature and classification laid down in the manual have been taken in many quarters to represent a usage recommended by the

society. It is not believed that it is the intention of the society to propose a definitive classification of bacteria irrespective of international usage and agreement.

For the time being it seems reasonable to hold that considerable effort should be directed toward diminishing rather than increasing multiplicity of names. The recent proposal of two experienced and well known American systematists² that the generic name *Bacterium* be retained as a temporary designation for non spore forming, rod shaped bacteria, whose relationships to other bacteria are not clear, will therefore be widely welcomed. For the present, as suggested by these writers, it is probably less confusing for those engaged in bacteriologic studies to use the terms *Bacterium coli*, *Bacterium aerogenes*, *Bacterium violaceum*, *Bacterium amylovorum*, *Bacterium zopfii*, *Bacterium monocytogenes* (not *Listerella monocytogenes*!), *Bacterium pneumoniae* and so on. In a word, until proper generic criteria and accepted names are established by international agreement, it seems wise to refrain from the hasty invention and use of new names. *Salmonella*, *Pasteurella* and *Brucella* have already won wide acceptance, but not *Pfeifferella*, *Listerella* and *Eschenchula*.

THE NEW AMERICAN MEDICAL DIRECTORY

The Fourteenth Edition of the American Medical Directory has been completed and copies are now available for general distribution.

The directory, with nearly twenty-five hundred pages, is a vast storehouse of information. It contains not only the most complete list available of the physicians of the United States and its dependencies and of Canada, but much additional data which hospitals, libraries and various other institutions, as well as individuals, will find useful and readily available. The directory is the only nation-wide register of physicians in which the extensive data on medical education, licensure and society affiliations have been verified.

The 1936 edition contains 183,312 names, or 4,796 more than were in the previous edition issued in 1934. The names of 13,157 physicians have been added and 7,684 names have been removed because of death. More than 70,000 changes of address have been made, in addition to thousands of changes in society affiliations, teaching positions, specialties and office hours.

In this edition, thirty-two states show an increase in the number of physicians, New York leads the list with 1,201, followed by California (369), Pennsylvania (281), New Jersey (262) and Massachusetts (249). A slight decrease in the number of physicians is shown in Missouri, Georgia, Kentucky, Tennessee, Oklahoma, Alabama, Indiana, South Dakota, Maine, Vermont, Mississippi and New Hampshire. When the thousands of changes of location are analyzed they seem to show a noticeable migration of physicians to

¹ Pirie J. H. II. Pub. S. African Inst. M. Research 3 163 (March) 1927.

² Breed R. S. and Conn H. J. J. Bact. 31: 517 (May) 1936.

he larger towns in the South Central states, a trend that was previously present also in some other sections of the country

The first section of 221 pages in the new directory includes the constitution and by-laws of the American Medical Association, the Principles of Medical Ethics, and a list of meeting places of the annual sessions of the Association since the first one in 1847, with the names of the President installed during each meeting. In this section also are lists of the hospitals that are approved for intern training, the medical libraries, the medical journals published in the United States, Canada, the Philippine Islands and Puerto Rico, the names of medical officers of the various government services, the national organizations for the various specialties with the names of their members, the membership of the new examining boards for the specialties, the medical schools in the United States and Canada with a brief history of each, and the members of the National Board of Medical Examiners.

The second section is arranged by states. There is published under each state the medical practice act, the members of the board of medical examiners, members of the state board of health, county and city health officers, and officers of the state, district and county medical societies. Following this is a list of 7,220 hospitals, sanatoriums and related institutions arranged by towns, with the name, location, bed capacity, superintendent, and type of patients treated in each institution. Then, arranged by towns, comes the great list of physicians, giving the year of birth, school, year of graduation and license to practice, membership in the state society and special societies, professorships, and Fellowship in the American Medical Association. The home and office addresses and office hours also are given for physicians in towns of more than 10,000 population.

A new feature in this edition is a key letter showing that a physician has been certified as a specialist by an approved examining board. Several of these boards have been approved by the Council on Medical Education and Hospitals since the directory went to press. The next edition therefore will contain a more complete list of certified specialists. An especially interesting feature of the 1936 edition is the list of American physicians temporarily located in foreign countries.

The third section, of 525 pages, is an alphabetical index of the names of 183,312 physicians, and practically every name is followed by the name of the city and state, thus indicating where in the directory detailed information about the individual physician may be found.

The bringing to completion of the Fourteenth Edition of the American Medical Directory has been a monumental task, in the pursuance of which thousands of individuals, societies, licensing boards, medical colleges and other organizations have cooperated. For their ready cooperation and assistance the American Medical Association is thankful and deeply appreciative.

MILK CONSTITUENTS AND THE EFFECTIVENESS OF VITAMIN D

As was pointed out recently in these columns,¹ milk has become increasingly popular during the last few years as a vehicle for vitamin D as "yeast milk," fortified milk or irradiated milk. Although there is still some question regarding the relative merits of these three forms, current agreement appears to favor the view that vitamin D milk in general is particularly effective as an antirachitic agent. Several explanations of its peculiar efficacy have been proposed: that different forms of vitamin D exist and that the predominating type in milk is especially effective, that the potency of vitamin D from animal origin exceeds that of the substance from plant origin, that the inherent calcium and phosphorus or the cholesterol content of milk is of primary importance.

Recently an attempt has been made² to ascertain the identity of the constituent or constituents of milk concerned in endowing this fluid with added antirachitic potency. Calcium and phosphorus were found to play no part, since the addition of these minerals in amounts consumed in milk to the vitamin D-supplemented ration produced no increase in antirachitic potency over that obtained with the vitamin-supplemented basal ration alone. Likewise, the fact that there is no parallelism between the fat content of milk and its antirachitic activity seemed to minimize the possibility that some lipid constituent of milk was involved. Thus there remained only certain constituents dissolved in or dispersed in the aqueous phase of milk for consideration. Since in earlier work³ the observation had been made that some lipid material bound as a prosthetic group to lactalbumin became antirachitically active when irradiated, a special study was made of the effect on the potency of vitamin D of dispersion in a colloidal suspension of purified lactalbumin. The results were rather striking. A definite increase in the antirachitic activity of "pure" vitamin D was observed following its dispersion in this medium. The increase in potency was particularly marked when specially prepared, lipid-free lactalbumin was employed. Further work seemed to indicate that some type of a firm union between the vitamin preparation and lactalbumin had occurred since, within limits, lactalbumin quantitatively retained all the vitamin D activity of the added material and since the retained antirachitic substance could not be removed by thorough washing. As would be expected, a similar enhancement in the antirachitic potency of vitamin D was obtained when a water-miscible solution of the vitamin was treated with skim milk or whole milk. However, there was little increase in the potency of an oily solution of the vitamin when treated with milk under comparable conditions.

1 Vitamin D Milk, editorial *J A M A* **106** 1664 (May 9) 1936

2 Supplee G C, Ansbacher S, Bender R C and Flanagan G E. The Influence of Milk Constituents on the Effectiveness of Vitamin D. *J Biol Chem* **114** 95 (May) 1936

3 Ansbacher S., and Supplee G C. The Cholesterol Content and the Antirachitic Activation of Milk Constituents *J Biol Chem* **105** 391 (May) 1934

The foregoing results were explained by assuming that vitamin D in aqueous solution reacts chemically with the secondary valencies of purified lactalbumin to form a "symplex," a system containing vitamin D as a lipid prosthetic group attached to the carrier, lactalbumin. The antirachitic potency of vitamin D present in this form is thus greater under the conditions of the experiment than that of uncombined vitamin D. The failure of an increase in antirachitic activity of an oily solution of vitamin D was attributed to the fact that the oil in which the vitamin was dissolved itself combined with some of the secondary valencies of the lactalbumin or perhaps other proteins of the milk, thus preventing the combination with the vitamin and the subsequent augmentation of its antirachitic activity. Although it is difficult to reconcile the foregoing hypothesis with certain other observations in the literature, particularly with the determination that practically all of the antirachitic potency of irradiated milk resides in the cream portion,⁴ the postulate that the peculiar effectiveness of vitamin D in milk is due in part at least to its combination and dispersion with lactalbumin merits further careful experimental study.

Current Comment

BLOOD PLATELETS AFTER SPLENECTOMY

One of the most striking and consistent hematologic changes that occur following the removal of the spleen is an increase in the number of platelets in the blood. This response has been observed both in normal persons in whom the spleen has been removed because of sudden rupture due to trauma and in splenectomized patients with certain diseases. Recently, further confirmatory data have been reported.¹ Splenectomy in three normal boys from 10 to 11 years of age was followed by thrombocytosis, the number of platelets increasing steadily to a maximum between the fifth and twelfth days, and decreasing slowly thereafter toward normal values. In one patient the platelet count increased from a normal level of 500,000 to a maximum of 1,640,000 on the twelfth day and then decreased, returning to the original value after some two months. Variations in the platelet counts of patients following splenectomy also were determined. Operation on twenty children with rheumatic disease was followed by an increase in the number of thrombocytes to values exceeding 1,000,000 in every case. As was found in the normal children, the peak of the rise occurred between the sixth and fourteenth days. A similar thrombocytosis was observed following operation in one case of splenomegaly of undetermined origin, in four cases of congenital hemolytic icterus and, with one exception, in eight cases of hemorrhagic thrombocytopenia. The results in the latter group are of particular interest because of the exceedingly low platelet counts

found in these patients prior to splenectomy. No consistent postoperative rise in platelets was found, however, in eight patients with Cooley's anemia. The degree of the increase in platelets was never as pronounced or as long in duration as those observed in the other conditions. No significant changes in the platelet count were found in control subjects in whom operations other than splenectomy had been performed. These observations add further to the evidence that the spleen is intimately related to the number of thrombocytes circulating in the blood stream. The nature of the regulatory action, however, is not known. Some investigators² have suggested that the spleen may act as a "death house" for platelets or may inhibit their formation and, therefore, that the thrombocytosis following splenectomy may be a result of a decreased thrombolysis or a decreased inhibition of platelet formation or, perhaps, both.

FEAR IN CHILDREN

Fear in children, like pain, according to Weber¹ is a danger signal called into existence to draw to the individual's notice the presence of some threat to his welfare. In its normal form, therefore, it is supposed to have ultimately a protective purpose, with a direct relation to self preservation. As an emergency reaction, however, its continued existence is probably harmful. The condition of body and mind to which it gives rise is injurious to the total well being of the organism. In view of the absolute helplessness of the new born infant, it is not surprising that at the outset of life fear plays little part. Since fear is a danger signal and hence implies some discrimination, this reaction is useless to the new-born infant, which is unable to discriminate. Rapidly, however, the infant is able to develop discrimination to some degree. Then fear becomes in many instances a powerful motivator of behavior. Within certain limits, anything that decreases the sense of security predisposes to fear. In this way a summation of factors may produce a state of terror. Fortunately for the child in whom this state has been produced, his powers of adaptation enable him to unlearn as well as to learn. Recognition of these fundamental facts is important from the point of view both of the physician and of the parent. It brings with it the realization that the child's fear is not cowardice or stupidity but is rather symptomatic of self preservation. A constructive view of such a situation and a more tolerant and understanding attitude of mind not only can lead to proper treatment of the fear but also strongly affects the relation between parent and child. The reaction is a specialized, not a universal, emergency reaction and some species of animals which lack this emotion have other means of defense at their disposal. The fact, however, that many animals also have this type of reaction suggests the possibility of deriving help from a comparative study. Thus many animals, as did primitive man, regard the unknown, often with justice, as a potent cause of fear. There is much reason to

⁴ Haman R. H., and Steenbock, Harry. The Differential Antirachitic Activity of Vitamin D in Milk. *J. Nutrition* 10: 653 (Dec.) 1935.

¹ Wellstein, Martha, and Kreidel, Katherine V. Blood Picture After Splenectomy in Children with Special Reference to Platelets. *Am. J. Dis. Child.* 51: 765 (April) 1936.

² Krumbhaar, E. B. The Changes Produced in the Blood Picture by Removal of the Normal Mammalian Spleen. *Am. J. M. Sc.* 184: 215 (Aug.) 1932.

¹ Weber, Hilda. An Approach to the Problem of Fear in Children. *J. Ment. Sc.* 82: 136 (March) 1936.

believe that some of the fears of childhood represent an atavistic survival of this primitive dread. In any case, incorrect treatment of the fears of childhood often lays the foundation for much unhappiness and even illness in later life. A more satisfactory appreciation of the emotion opens the way to a more wisely tolerant and perceptive view of the frightened child's difficulties. Hence frequently childish doubts and dreads, which if neglected or mismanaged might be dangerous, become the starting point for intelligent management and real progress. Fears wisely dealt with early in life may in fact become a stimulus toward healthy mental development.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Outbreak of Poliomyelitis—Churches were closed in many north Alabama communities, July 12, as a precaution against the spread of an outbreak of infantile paralysis which has caused eight deaths, according to the *Chicago Tribune*. The number of cases was said to be 126, most of them confined to the upstate Tennessee valley counties and those adjoining.

ARKANSAS

Society News—The Washington County Medical Society was addressed June 2, by Drs. Arthur F. Hoge, Fort Smith, on "Surgery in Diabetes," and Leroy Long, Oklahoma City, "Prevention of Postoperative Intestinal Incompetence."—At a meeting of the Mississippi County Medical Society, June 2, Dr. Charles E. Wilson, Blytheville, spoke on "Mitral Insufficiency," and Dr. Thomas F. Hudson, Luxora, "Aortic Regurgitation."—Speakers before the Fifth Councilor District Medical Society in Magnolia, May 26, were Drs. George V. Lewis on "Ruptured Appendix," Silas C. Fulmer, "Treatment of Heart Disease," and Paul L. Mahoney, "Bronchoscopy," all are of Little Rock.—Drs. Lorenzo T. Evans, Batesville, and Paul H. Jeffery, Bethesda, discussed diabetes before the Independence County Medical Society at Batesville, June 8, and Dr. John J. Monfort, Batesville, "Anesthesia with Special Reference to Spinal Anesthesia."—Drs. George B. Fletcher and William T. Wootton, both of Hot Springs National Park, read papers before the Southeast Arkansas Medical Society at McGee, June 15, entitled "Under Water Treatment of Certain Types of Paralysis" and "Is There a Rheumatic Heart?" respectively.—The Eighth Councilor District Medical Society was addressed in Pettit Jean State Park, Morrilton, recently among others, by Dr. Augustus C. Shupp, Little Rock, on "Surgical Treatment of Tuberculosis."

CALIFORNIA

Dr. Porter Becomes Emeritus Professor—Dr. Langley Porter, who has retired as dean of the University of California Medical School, San Francisco, will continue his affiliation with the school 'in an emeritus position as an adviser in administration and research, according to the *San Francisco Chronicle*. For three years before he became dean and professor of medicine in 1927, Dr. Porter was in Rome, studying chiefly scarlet fever and translating works on that subject. Dr. Porter is 66 years old. He has been associated with the University of California since 1918.

Personal—Dr. John C. Decker, Portola, has been appointed health officer of Plumas County, succeeding Dr. Wilbur C. Batson, Greenville.—Dr. William Dock, associate professor of medicine, Stanford University School of Medicine, San Francisco, has been appointed secretary of the San Francisco Heart Committee to succeed Dr. Amos Christie, who has resigned to engage in a two year study at Johns Hopkins University Hospital for the U. S. Children's Bureau.—Dr. Richard D. Husband has been appointed superintendent of Stanislaus County Hospital, Modesto, succeeding the late Mr. Jay A. Rydberg.

CONNECTICUT

Society News—At a meeting of the Litchfield County Public Health Association in Canaan June 1, Dr. Stanley H. Osborn, Hartford, state health commissioner, discussed "Physicians and the Social Security Act," and Dr. Millard Knowlton, Hartford, "Streptococcus Sore Throat and Scarlet Fever."—At a recent meeting of the Yale Medical Society in New Haven, papers were presented by Dr. Robert M. Lewis on "Estrin in the Treatment of Gonorrheal Vaginitis," Daniel Melnick, Ph.D., "Effect of Diet on the Regeneration of Scrum Protein," Dr. Harry M. Zimmerman, George R. Cowgill, Ph.D., James C. Fox Jr. and Marion E. Howard, "Vitamin B₂ Deficiency in Dogs," and Dr. Henry G. Barbour, Jane Trace, B.A., and Paul K. Smith, Ph.D., "Observations on the Effects and Fate of Heavy Water in Mice."

DISTRICT OF COLUMBIA

Society News—Merle A. Tuve, Ph.D., Carnegie Institution department of terrestrial magnetism, Lyman J. Briggs, Ph.D., and Lauriston S. Taylor, A.B., U. S. Bureau of Standards, Dr. George W. McCoy, National Institute of Health, Dr. Edwin A. McRitt and Dr. William J. Mallory, professor of medicine, George Washington University School of Medicine, presented the scientific program of the meeting June 9, of the Academy of Medicine of Washington, D. C., which was organized April 28 (*THE JOURNAL*, June 6 p. 2011). The subject of discussion was "High Energy Particles and Radiations."

FLORIDA

New Bureau of Maternal and Child Health—The establishment of a bureau of maternal and child health in the Florida State Department of Health, Jacksonville, has been announced. Dr. Emile Bryant Woods, assistant professor of obstetrics and gynecology, University of Georgia School of Medicine, Augusta, has been named director. The new bureau will act in an advisory capacity to city, county and district health departments and will sponsor a statewide educational program. It was made possible through funds provided under the Social Security Act.

GEORGIA

Health Officer Honored—Dr. Millard E. Winchester, Brunswick, health officer of Glynn County, was presented in superior court, June 29, with a set of resolutions passed by the grand jury acknowledging his service and that of his staff in achieving national recognition for the county board of health in the contest sponsored by the U. S. Chamber of Commerce and the American Public Health Association.

ILLINOIS

Rabies—A quarantine was placed on dogs in Elmhurst and Naperville early in June, when the deaths of one child and several head of cattle from rabies were reported.

Fifty Years of Medicine—Five members who had completed fifty years in the practice of medicine were honored by the Hancock County Medical Society at a dinner meeting in Carthage July 6. The guests of honor were Drs. Charles L. Ferris, Carthage, who graduated in 1878, Charles A. Runyon, Elvaston, 1884, John A. Miller, Hamilton, 1881, Thomas J. McDanel, Plymouth, 1886 and John R. Bryant, West Point, 1885. The program included a sound motion picture on "Forceps Delivery," lent by Dr. Joseph B. De Lee and a motion picture on the heart, shown by Dr. Clayton J. Lundy, Chicago. Speakers included Drs. Leroy H. Sloan and George De Tarnowsky, both of Chicago.

Society News—Dr. Ernest E. Davis, Avon, addressed the Jo Daviess County Medical Society in Stockton, June 20, on eclampsia, and Dr. George C. McGinnis, Warren, on injection treatment of varicose veins.—Dr. Abraham A. Low, Chicago, conducted a clinic before a joint meeting of the Union County Medical Society and the staff of the Anna State Hospital, Anna, May 14, on mental cases of interest to the general practitioner.—The Whiteside County Medical Society was addressed at Prophetstown June 25, by Dr. M. Herbert Barker, Chicago, on "Treatment of Hypertension with Special Reference to the Cyanates."—Dr. George D. Hauberg, Moline, was named president of the Iowa and Illinois Central District Medical Association at the annual meeting in Davenport, Iowa, in May. Dr. Elmer G. Senty, Davenport, is vice president. Dr. James Dunn, Davenport, secretary, and Dr. Florens E. Bollaert, East Moline, treasurer. The next meeting will be held October 28 at the LeClaire Hotel in Moline.

Chicago

University News—Mr John Bellamy Taylor of the General Electric Company addressed the recent annual meeting of Sigma Xi University of Illinois College of Medicine, on "The Electric Eye and the Human Eye."

Hospital News—A new medical library was dedicated at Ravenswood Hospital, June 24 it is believed to be the first at any hospital in the United States to combine clinical records with the regular medical collection Dr Malcolm T MacEachern was the principal speaker

Dr Christian to Give Billings Lecture—The third Frank Billings Lecture of the Thomas Lewis Gilmer Foundation will be delivered by Dr Henry A Christian, Hersey professor of theory and practice of physic, Harvard University Medical School and the graduate school, October 26, at a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine The topic will be "Edema, Diuretics, Diuresis"

Compulsory Automobile Inspection—Free inspection of automobiles, compulsory on all owners of cars since July 1, is expected to reduce accidents by eliminating mechanical defects, and to lessen noise in the city Every car registered in Chicago will be required to have an inspection twice a year A city wide rally, as a prelude to the inauguration of compulsory inspection, was held in Grant Park, June 30, under the auspices of the Keep Chicago Safe Committee and the Chicago park district

IOWA

New Officers Honored—Dr Edward M Myers, Boone, president-elect of the Iowa State Medical Society, and Dr Earl B Bush, Ames, newly elected councilor of the fifth district, were guests of honor at the annual joint summer meeting of the Boone and Story county medical societies at the Boone Country Club, June 24 Speakers included Drs Walter H Nadler, Chicago, on "Diagnosis and Treatment of Chronic Cholecystitis from a Medical Standpoint," and Waltman Walters, Rochester, Minn, "Surgical Aspects of Lesions of the Biliary Tract with Particular Reference to the Cholecystectomy Syndrome." Music was furnished by Drs Myers, Henry W Bowers, Nevada, and Robert S Shane, Pilot Mound

Society News—At a meeting of the Cerro Gordo County Medical Society in Mason City, May 5, speakers included Drs Bert E Hempstead, Rochester, Minn, "Suppuration of the Petrous Portion of the Temporal Bone," and Channing E Dakin, Mason City, "Shock"—The Clinton County Medical Society was addressed in Clinton, May 7, by Drs James Stuart McQuiston and Morgan J Foster, both of Cedar Rapids, on "Common Neurologic Conditions" and "Intracranial Birth Injuries"—Dr Sterling J Ritchey, Colfax, addressed the Jasper County Medical Society in Newton, May 5, on endometriosis—At a meeting of the Lyon County Medical Society in Rock Rapids, June 12, Dr James W Graham, Sioux City, gave an illustrated lecture on "Scoliosis and Treatment of Fractures of the Spine."—Dr William J McGrath, Elkader, has been elected president of the Austin-Flint Cedar Valley Medical Society—Dr Edward B Hoeven, Ottumwa, secretary-treasurer for five years of the Des Moines Valley Medical Society, was chosen president at the recent annual meeting Dr Elias B Howell, Ottumwa, a former president and secretary of the society, was again elected secretary—Dr Thomas L Vineyard, Dow City, was chosen president of the Twin Lakes District Medical Society at its meeting in Rockwell City, June 11

KANSAS

Graduate Course on Pediatrics and Obstetrics—Graduate work will be offered to physicians throughout the state under a program to be financed with social security funds, the Kansas Medical Society announces A course on pediatrics and obstetrics, the first of a series, was presented from June 22 to July 18. The lecturers are Drs Everett D Plass professor of obstetrics and gynecology, State University of Iowa College of Medicine, Iowa City and Frank C Neff, professor of pediatrics, University of Kansas School of Medicine The course is being conducted in Dodge City, Ness City, Norton, Goodland, Garden City and Liberal

KENTUCKY

Society News—At a meeting of the Fifth District Medical Association in Carrollton papers were presented by Drs William E. Gardner, Louisville, on "Advantageous Neurotic Reactions" Allen Donaldson, Carrollton, Radiation in Regard to

General Practice", Wallace Frank, Louisville, "Cancer of Breast," and Winston U Rutledge, Louisville, "Diagnosis and Treatment of Skin Diseases"

LOUISIANA

Personal—Dr Lloyd A Masterson, Opelousas, for 14 years director of the St Landry Parish Health Unit, has been promoted to director of the bureau of maternity and hygiene of the state board of health Dr Franklin V Burt Lake Providence, succeeds Dr Masterson as health officer

MAINE

Campaign Against Cancer—A state committee has been formed to carry on a campaign against cancer which was recently launched under the auspices of the American Society for the Control of Cancer, the state board of health and the Maine Medical Association The committee, of which Dr Alanus F Ridlon, Bangor, is chairman, will provide free services of a pathologist, a radiologist, a roentgenologist and a surgeon The advisory and executive committee includes Dr Joseph W Scannell, Lewiston, chairman, Dr John Johnson, Bangor, Dr Edward H Risley, Waterville, Dr William Holt, Portland, Dr George H Coombs, Augusta, Mrs Ridlon, Bangor, Mrs Holt, Portland, Dr George G Avenill, Waterville, and Bishop J E McCarthy, Portland A woman's "field army" against cancer has been organized with Mrs Holt as state commander, vice commanders are Mrs B G Cushman, Lewiston, and Mrs Ridlon Clinics have been established at Lewiston, Waterville and Portland

MARYLAND

Personal—Dr William J French, formerly of Ellicott City, since 1932 health director of Howard County, has been appointed to a similar position with Anne Arundel County, succeeding Dr John H Janney Jr, Annapolis

Conference of Health Officers—The annual conference of city and county health officers and boards of health of Maryland was held in Baltimore, May 8, under the direction of the state board of health Speakers included

Dr Thomas Parran Jr, surgeon general, U S Public Health Service, Washington, D C Social Security Act in Its Relation to Public Health
Dr Clifford E Waller, U S Public Health Service, Present Status of Treatment of Pneumonia
Dr Lloyd D Felton, Baltimore Recent Incidence of Epidemic Meningitis
Dr Albert S McCown, Washington Maternal and Child Health in Relation to the Social Security Act

MASSACHUSETTS

Hospital News—During 1935 the Boston Dispensary recorded 130,578 visits to its morning clinics, 68.8 per cent of which were free. In the evening pay clinics for working people of small means, 27,372 visits were recorded, 13.6 per cent of which were free. The diagnostic hospital for clinic and private patients reported 4,797 days' care, 74.6 per cent of which was free, while physicians' visits to homes, free to those unable to pay, totaled 31,527

Mental Hygiene Survey—The Massachusetts Society of Mental Hygiene recently completed a survey of Springfield to determine the need for better mental hygiene facilities for the city and its suburbs More than thirty agencies were studied in addition to the school department and the local divisions of state agencies A report of the survey states that one of the most pressing needs is the training of staff personnel in mental hygiene to enable them better to detect personality and conduct disorders It recommends that psychiatrically trained personnel be included in the staff organization It recommends further that provision be made for additional clinical service for the public school system The report states that the present child guidance clinic at the Springfield Hospital, now operating on a part time basis, should be placed on a full time schedule to give service to both adults and children, and, in addition, extend its activities in the district court to include therapy to selected persons at the clinic The need for continued education of the public is emphasized

MICHIGAN

Hospital News—The second annual convention of the Intern Alumni Association of Providence Hospital Detroit was held at the hospital, June 10-11 Speakers included Drs Francis D Murphy, Milwaukee, on "Significance of Benign and Malignant Hypertension", Max M Peet, Ann Arbor, "Hypertension and Treatment," and Waltman Walters, Rochester, Minn, "Gastric Surgery" Frank Cody, superintendent of Detroit public schools, gave the banquet address

Commission on Welfare and Relief—Governor Frank D. Fitzgerald recently appointed a special commission on welfare and relief, composed of nineteen members. Physicians on the commission include Drs. Charles D. Pullen, Mount Pleasant, Donald M. Morrill, Grand Rapids, and Stanley W. Insley, Detroit, who is the representative of the Michigan State Medical Society. At a meeting with representatives of the state medical society in March, the governor proposed the organization of this commission to outline legislation designed to revamp and coordinate all state relief agencies (THE JOURNAL, May 2, p. 1576).

Grant for Research in Pneumonia Control—The Commonwealth Fund of New York has approved an annual grant of \$16,800 to the Michigan State Department of Health, Lansing, to promote study of antipneumococcus serum production. The fund's grant will be supplemented by an annual state appropriation of \$10,000. The objective of the study is to improve the antipneumococcus serum and to reduce the cost so as to make it available to the person of ordinary means. It will continue three years or longer, if sufficient progress is shown. Five persons will be added to the laboratory staff of the department, and \$2,000 will be available for the purchase of animals. Last year the death rate from pneumonia in Michigan was the highest since 1929.

MINNESOTA

Thirty-Three Years on Health Board—Dr. James F. Lynn resigned as president of the board of health of Waseca, April 14. He was first elected in 1901 and served continuously until the day he resigned, except for the years 1918, when he was in the World War, and 1910, when Dr. Alexander J. Rudolf, now of Milwaukee, held the position. Dr. Lynn graduated from the University College of Medicine, Richmond, in 1896, he is 65 years of age.

Regional Training Center—The University of Minnesota School of Medicine, Minneapolis, has been selected as one of the regional training centers in public health to be subsidized in part by the U. S. Public Health Service out of funds appropriated by the Social Security Act. An introductory course will begin September 28, to continue for three months. The first introductory course was attended by fifty-seven persons. The program is a cooperative one between the university and the state department of health with the added assistance of the local health departments and health agencies of the state. Dr. Harold S. Diehl, dean of the medical school, announces that graduate work on an individual basis may be undertaken at any time.

MISSISSIPPI

Personal—Dr. Jesse E. Brumfield, Tylertown, has been appointed head of the State Colony for the Feeble-minded at Ellisville, succeeding Dr. Romeo R. Halfacre.

Conferences of Local and County Registrars—The second annual conference of the county and district registrars was held at New Albany, May 28. Dr. John Collinson Jr., assistant chief statistician of vital statistics for the bureau of census, Washington, D. C., attended the meeting. Similar conferences were held at Laurel June 2 and Cleveland June 5.

MISSOURI

Refresher Courses—The Missouri State Board of Health will conduct refresher courses in obstetrics and pediatrics beginning this month. A portion of the funds available for maternal and child welfare work under the social security act has been set aside to make these courses available to physicians in rural areas without enrolment or tuition. Dr. Paul F. Fletcher, St. Louis, has been named to conduct the obstetric courses and Dr. Oscar F. Bradford, Kansas City, the pediatric courses. Motion pictures and lantern slides will be used with most of the lectures, followed by informal discussions. Clinical demonstrations will also be held whenever possible. The state has been divided into six districts, each lecture district comprising the counties in about five councilor districts. Each course will consist of eight lectures, one each week in a councilor district on the same day of each week, permitting the lecturer to give the same lecture in five councilor districts each week until the course is complete. The first course in obstetrics will be inaugurated in lecture district D, while the first course in pediatrics will begin in district A. It is expected to devote a full year to presenting these two courses to all counties in the rural areas.

Dr. Leo Loeb to Retire—Dr. Leo Loeb, Edward Mallinckrodt professor of pathology, Washington University School of Medicine, St. Louis, has announced his retirement to be

effective at the end of this year, newspapers report. Dr. Loeb, who is 66 years of age, graduated from the University of Zurich Faculty of Medicine in 1898. He has served at McGill University, the University of Illinois, New York State Pathological Laboratory, Buffalo, and the University of Pennsylvania. He was director of the department of pathology of the Barnard Skin and Cancer Hospital, St. Louis, from 1910 to 1915, serving as professor of comparative pathology at Washington from 1915 to 1924. In the latter year he became professor of pathology. From 1910 to 1912 he was chairman of the Section on Pathology and Physiology of the American Medical Association. He is a member of many scientific societies and was president of the American Association of Pathologists in 1914 and the Society of Cancer Research in 1911. Dr. Loeb's research has included, among other subjects, tissue and tumor growth, physiology of generative organs, pathology of circulation, venom of Heloderma, and analysis of experimental amoebocyte tissue. The Mu chapter of the Phi Beta Pi Medical Fraternity established a lectureship in his honor early this year. The first lecture was delivered by Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard Medical School, Boston. In 1935 Dr. Loeb was awarded the John Phillips Memorial Medal by the American College of Physicians.

NEBRASKA

Personal—Dr. Edward R. Stewart, Blair, was honored at a meeting of the Burt, Washington and Dodge Counties Medical Society, Tekamah, May 26, for his completion of fifty years of medical practice.—Dr. and Mrs. Carroll D. Evans Sr., Columbus, celebrated their golden wedding anniversary May 27.—Dr. Frederick J. Schwertley, Omaha, was recently graduated from the Creighton Law School.—Dr. Floyd H. Kinyoun was recently appointed health officer of Omaha to succeed Dr. Millard Langfield.—The Wahoo Chamber of Commerce sponsored a dinner June 18 in honor of Drs. Charles F. Kirkpatrick, Ashland, and Andrew E. Stuart, Cedar Bluffs, who have practiced fifty years in Saunders County. Drs. George W. Covey, Lincoln, and Donald J. Wilson, Omaha, and Mr. H. E. Kokjer, Wahoo, were speakers.

Society News—Speakers who addressed the Madison-Six County Medical Society at a meeting in Wausa, May 26, were Drs. Joseph E. Dvorak, on "Eye Changes in General Disease"; Ronald F. Martin, "Therapy in the Toxemias of Pregnancy"; and Archibald F. O'Donoghue, "Injuries to the Spine." All are of Sioux City, Iowa.—Dr. John C. Thompson, Lincoln, addressed the Southwestern Nebraska Medical Society, May 24, at Indianola on anemia.—A symposium on fever therapy was presented before the Sixth Councilor District Medical Society, York, May 25, by Drs. Abram E. Bennett, Eugene E. Simmons and Charles A. Owens Jr., all of Omaha.—At a meeting of the Tenth Councilor District Medical Society, Ingleside, May 28, speakers were Drs. Adolph Sachs, Omaha, on "Diabetes"; George W. Covey, Lincoln, "Coronary Occlusion. Some New Thoughts on Restoration of Blood Supply to the Infarcted Heart," and Philip H. Bartholomew, Lincoln, "Public Health Work and the Maternal and Child Health Program in Nebraska."

NEW JERSEY

Dr. Shope Receives Award—Dr. Richard E. Shope of the staff of the Princeton laboratory of the Rockefeller Institute for Medical Research received a prize of \$1,000 awarded by Sigma Xi on the occasion of its semicentennial in June. An observance of the anniversary was held at Cornell University, Ithaca, N. Y., where the scientific honor society was founded, during the annual meeting of the American Association for the Advancement of Science. Dr. Shope is a native of Iowa and a graduate of the State University of Iowa College of Medicine, class of 1924. He joined the Rockefeller Institute in 1925. The Sigma Xi award was in recognition of Dr. Shope's work on swine influenza.

NEW YORK

Hospital News—The White Plains Hospital, White Plains, has recently opened a new service for treatment of cancer in affiliation with Memorial Hospital, New York. A tumor clinic will be established under supervision of Memorial Hospital, the staff of which is to act in an advisory and consultant capacity.

Personal—A portrait of Dr. Augustus B. Wadsworth, Albany, director of the division of laboratories and research of the state department of health, was presented to the division June 3 by the laboratory staff and members of the New York State Association of Public Health Laboratories. The portrait

was painted by Leopold Seyffert, New York.—Dr Dayton L. Kathan, Schenectady, was guest of honor at the semiannual meeting of the Schenectady County Medical Society, June 4, in compliment to his completion of fifty years of practice.

Appointments to State Health Department—Dr Wildridge C. Thompson Jr., who recently received the certificate in public health at Johns Hopkins University, has been appointed full time medical consultant in social hygiene in the New York State Department of Health. Dr Helen H. Owen, Albany, has been provisionally appointed assistant director of the division of maternity, infancy and child hygiene. She was formerly on the staff of the division of laboratories and research. Dr Frank W. Laidlaw, Middletown, formerly a district state health officer, has been provisionally made district health director.

Society News—Dr Carl E. Badgley, Ann Arbor, Mich., addressed the Niagara County Medical Society, Niagara Falls, June 9 on "Common Fractures Met in General Practice."—Dr Ellery G. Allen, Syracuse, addressed the quarterly meeting of the Ontario County Medical Society, in Geneva, July 14, on "Recent Advances in Hematology."—Dr Orren D. Chapman, Syracuse, was elected president of the New York State Association of Public Health Laboratories at the annual meeting in May, and Mary B. Kirkbride, Sc D Albany, reelected secretary.—Dr Richard W. Weiser, Kenmore, was elected president of the New York State Association of School Physicians at the annual meeting in Saratoga Springs, June 22-23.—Dr Floyd Burrows, Syracuse, addressed the Medical Society of the County of Montgomery at its semiannual meeting in Amsterdam in June on collection methods.

New York City

Hospital News—Dr Leon Asher, professor of physiology, University of Berne, Switzerland, gave a lecture at Mount Sinai Hospital, June 11 on "The Thyroid Gland and the Central Nervous System."—Natale Colosi, Ph D, has been appointed general director of the Parkway Hospital.

Memorial Playground—A playground on Seventeenth Street west of Eighth Avenue, known as the Model Playground was recently dedicated and renamed the Dr Gertrude B. Kelly Playground in memory of Dr Kelly, who died in 1934. Mayor La Guardia spoke and a plaque commemorating Dr Kelly, was unveiled by Miss Dorothea Marty, a nurse from the New York Infirmary for Women and Children, with which Dr Kelly was associated for many years.

Gifts to Columbia—The following gifts to Columbia University for medical purposes were recently announced:

- The John and Mary R. Markle Foundation \$5 000 for research in brain tumors in the department of neurology
- The Chemical Foundation \$2 500 to establish a fund for research in brain chemistry
- Trustees of the Anna Fuller Fund \$1 500 for special research in the Institute of Cancer Research.
- Mrs. M. Maxim Steinhach \$300 for the Friedman Tuberculosis Fund in the department of bacteriology
- National Tuberculosis Association \$260 for research in tuberculosis

Report of Library—The library of the Medical Society of the County of Kings reports that in 1935 15 957 readers consulted 67 909 books in the library and took out 13 099 for home use. The first figure was an increase of 12.6 per cent over 1934 the second 9.03 per cent and the third 23.3 per cent. The library added 778 books to its shelves during the year by purchase and gifts. It has on file 1 524 serial publications, 882 in English and 642 in twenty-five other languages. Dr Jacques C. Rushmore is directing librarian and Mr Charles Frankenberger librarian.

Advisers on Hospital Service—The board of directors of the Associated Hospital Service of New York has appointed a group of physicians representing various branches of medicine to serve in an advisory capacity, especially regarding the eligibility of subscribers to services under the hospital plan. They are Drs Conrad Berens for ophthalmology, George W. Kosmak, obstetrics, Adolph G. G. de Sanctis, pediatrics, Matthew Shapiro, internal medicine, Clarence G. Bandler, urology, George A. Blakeslee, neurology, Samuel J. Kopetzky, otolaryngology, Edward J. Davin, gynecology, William Hadden Irish, orthopedics, Rupert Franklin Carter, surgery, Abernethy Benson Cannon, dermatology, and William H. Stewart, radiology.

OHIO

Campaign on Diabetes—The Public Health Federation of Cincinnati has recently formed a special committee on diabetes in cooperation with the Academy of Medicine of Cincinnati with Dr Cecil Striker as chairman. The committee plans to establish an information bureau for physicians and the public

to make a study of the morbidity and mortality of diabetes and to carry on public health education emphasizing early discovery, annual physical examination, adherence to diet and development of a more receptive attitude toward use of insulin.

Dinner to Dr Upham—The Columbus Academy of Medicine sponsored a dinner in honor of Dr John H. J. Upham, Columbus, President-Elect of the American Medical Association, June 5, at the Deshler-Wallick Hotel. More than 200 members of the academy and physicians from other parts of the state attended. Dr Joseph M. Dunn presided and Dr Leslie L. Bigelow was toastmaster. Speakers were Drs Herbert M. Platter, secretary of the Ohio State Medical Board, on "Dr Upham and the State Medical Board", Edwin A. Hamilton, "Dr Upham and the College of Medicine", Benjamin R. McClellan, Xenia, "Dr Upham and the American Medical Association", George V. Sheridan and Don K. Martin, former secretaries, and Charles S. Nelson, present secretary of the Ohio State Medical Association, spoke on "Dr Upham and the State Medical Association."

Society News—At a meeting of the Adams County Medical Society, West Union, June 17, speakers were Drs George W. Chabot, Peebles, on pneumonia, Robert Y. Littleton, Stoeck, fractures in country practice, and Joseph S. Rardin, Portsmouth, cesarean section.—Dr Howard L. Stitt, Cincinnati, addressed the Fayette County Medical Society, Washington Court House, June 4, on "Effect of Diet on Disease of the Nose, Throat and Respiratory Tract."—Dr John E. Greive, Cincinnati, addressed the Warren County Medical Society, Lebanon, June 2, on "The Electrocardiogram and the Coronary Circulation."—Dr Carl D. Hoy, Columbus, discussed treatment of fractures at a meeting of the Muskingum County Academy of Medicine, Zanesville, June 3.—Dr Hugo Roessler, Philadelphia, addressed the Columbus Academy of Medicine, June 1 on "Roentgenologic Considerations of Anatomy and Physiology of the Heart" and "Heart Disease, (a) Diagnostic Value of Inspecting and Palpating the Chest Wall, (b) Recent Progress in Drug Therapy."—Dr Charles F. Bowen, Columbus, addressed the Morrow County Medical Society, Mount Gilead, June 9, on treatment of cancer.—The Carroll County Medical Society was recently reorganized after having been inactive since 1911. Carroll county physicians have been affiliated with the Stark County Medical Society. Drs Charles R. Ziegler and Carl A. Lincke, Carrollton, are president and secretary, respectively.

PENNSYLVANIA

Society News—The Seventh Council District of the Medical Society of the State of Pennsylvania held a meeting at the Williamsport Country Club, July 10, with the following speakers: Drs Alexander H. Colwell, Pittsburgh "Cardiovascular Emergencies in General Practice", Walter F. Donaldson, Pittsburgh, "State Medical Society Problems", James S. Taylor, Altoona, "Obstetrical Hazards", and John O. Bower, Philadelphia, "Appendicitis". Testimonials were presented to Drs William H. Follmer, Williamsport, and James W. Ritter, Jersey Shore, both of whom have practiced more than fifty years.—The Fayette County medical and dental societies held their annual joint picnic at the Uniontown Country Club, July 8.—Dr Nathaniel W. Winkelman, Philadelphia, addressed the Lehigh County Medical Society, Allentown in June, on "Common Neurologic Conditions Met by the General Practitioner."—The Tri-County Medical Association (Dauphin, Lancaster and Lebanon counties) held a dinner meeting, June 20, at the Harrisburg Country Club, with Reed Carty, editor of the Danville Times as guest speaker. A golf tournament preceded the dinner.

Philadelphia

Wistar Institute to Study Nutrition—Plans for establishment of a department of nutrition were recently announced by the Wistar Institute of Anatomy. The new department will devote special study to the food problem not only in animals but also in mankind. One branch will be at the institute and another at the Effingham B. Morris Biological Farm near Bristol.

TENNESSEE

Society News—Drs Eugene Lee Myers and William E. Jost, St. Louis, addressed the Tri-County Medical Society (Carroll, Henry and Weakley counties) June 9 on "A Plea for More Frequent Use of the Bronchoscope in Medical and Surgical Practice" and "Cystoscopic Interpretation of the Dyer Diseases" respectively.—Speakers at a meeting of the Dyer Lake and Crockett Counties Medical Society at Reelfoot Lake, June 3 were Drs William C. Dixon, Nashville, on "Cancer

of the Cervix", Robert Lyle Motley, Memphis, "Treatment of Coronary Thrombosis and Angina Pectoris," and Harrison H. Shoulders, Nashville, "Diagnosis of Acute Abdominal Conditions"—Dr. Jefferson C. Pennington, Nashville, was elected president of the Middle Tennessee Medical Association at its semiannual meeting in Shelbyville, May 21-22.

TEXAS

Society News—The medical societies of Hopkins and Franklin counties recently merged, with Dr. Earl Stirling, Sulphur Springs, as president, and Dr. Zack C. Fuquay, Mount Vernon, secretary.—Drs. Frank H. Newton and Edwin L. Rippey, Dallas, addressed the Dallas County Medical Society, June 25, on "Injuries to the Eyes" and "Physical Constitutional Types and Their Relationship to Disease" respectively.

WEST VIRGINIA

Personal—Dr. William T. Booher Jr., Wellsburg, has been appointed health officer of Brooke County to succeed Dr. Leonard J. Bernstein, who resigned.—Dr. George M. Caldwell, Fairfield, Ala., a 1935 graduate of the University of Virginia Medical Department, has been appointed assistant medical director at the Greenbrier, White Sulphur Springs.

Refresher Courses—A series of graduate courses on pediatrics and child hygiene presented through cooperation of the maternal and child welfare committee of the West Virginia State Medical Association and the state health department was begun June 29 in Romney. Other towns scheduled for this series are Lewisburg, Parkersburg, Wheeling, Elkins, Morgantown, Fairmont and Clarksburg. The course is conducted by Dr. George M. Lyon, Huntington, and lasts five days. It is financed by federal funds.

WISCONSIN

Hospital News—The first Dr. Harry A. Sifton Memorial Lecture was given at the Milwaukee Hospital, May 21, by Dr. William S. Middleton, dean, University of Wisconsin Medical School, Madison, on "The Tools with Which We Work."

Personal—Dr. Albert C. Edwards, Sheboygan, has been appointed epidemiologist for the state board of health.—Dr. William H. Washburn, professor of medicine, emeritus, Marquette University School of Medicine, Milwaukee, recently received a life membership in the Maternity Hospital and Dispensary Association of Milwaukee, as a tribute to "his unfailing service and devotion to humanity."

GENERAL

Exhibit at Science Meeting—The American Association for the Advancement of Science announces that applications are being received for its annual science exhibition in connection with the winter meeting at Atlantic City, December 28-January 1. Information concerning the exhibit may be obtained from Fay C. Brown, Ph.D., Smithsonian Institution, Washington, D. C.

Rocky Mountain Medical Conference—Plans for a conference in Denver in 1937 of the medical societies of the Rocky Mountain states, Colorado, New Mexico, Utah, Montana and Wyoming, have been proposed by the Colorado Medical Society. The plan, which provides that a joint meeting be held every three years with a different state acting as host, was endorsed at the recent state meetings of the Colorado and New Mexico state medical societies.

Guggenheim Foundation Increased—Former Senator and Mrs. Simon Guggenheim, New York, have recently added more than a million dollars to the endowment of the John Simon Guggenheim Foundation, founded in 1925 in memory of their son to provide means for men and women of high ability to further their work. In the eleven years of its existence the foundation has made grants to 525 persons, among whom were fifty-three working in the field of biology, including medicine.

Births and Deaths of Negroes—The U. S. Department of Commerce has compiled births and deaths of Negroes in the United States for 1934, showing 257,106 births and 182,075 deaths. Georgia had the largest number of births, 26,314, as well as of deaths, 16,475. The next largest numbers of births were in Mississippi, 25,478, North Carolina, 24,516, Alabama, 23,937, and South Carolina, 22,415. The same states in different order had the highest numbers of deaths: Alabama, 13,209,

North Carolina, 12,847, Mississippi, 12,390, and South Carolina, 11,809. Vermont reported only one Negro death, South Dakota, seven. Vermont and Idaho reported three births each, South Dakota two. Heart disease was the leading cause of death, with 27,586 fatalities. Other important causes were tuberculosis, 17,713, pneumonia, 15,999, nephritis, 14,822, cerebral hemorrhage and softening, 11,369. Cancer caused 7,849 deaths.

Society News—Dr. Carl W. Maynard, Pueblo, Colo., was chosen president-elect of the American Society of Clinical Pathologists at its annual meeting May 10, and Dr. Roy R. Kracke, Emory University, Ga., was installed as president. Dr. Frederick C. Narr, Kansas City, was made vice president, and Dr. Alfred S. Giordano, South Bend, Ind., was named secretary to serve from 1936 to 1939.—Dr. Joseph C. Beck, Chicago, was elected president of the American Bronchoscopic Society at its annual session May 27, succeeding Dr. Hermon Marshall Taylor, Jacksonville, Fla. Dr. Lyman G. Richards, Boston, was reelected secretary.—Dr. Edward H. Skinner, Kansas City, was chosen president-elect of the American Radium Society at its annual meeting in Kansas City in May. Vice presidents elected were Drs. Charles L. Martin, Dallas, Texas, and Orville N. Meland, Los Angeles, and Dr. William P. Healy, New York secretary. At the annual banquet Dr. Curtis F. Burnam, Baltimore, delivered the Janeway Lecture on "Early Experiences with Radium."—The Seaboard Medical Association of Virginia and North Carolina and of the Virginia Pharmaceutical Association took a cruise to Bermuda June 14-19 on the liner *Reliance*. The program consisted of graduate lectures by Drs. William B. Porter, Richmond, medicine, Hubert A. Royster, Raleigh, N. C., surgery, Alfred R. Shands Jr., Durham, N. C., orthopedics, Gabriel Tucker, Philadelphia, otolaryngology, Julian M. Ruffin, Durham, gastro-enterology, Claude C. Coleman, Richmond, neurology, Robert A. Ross, Durham, obstetrics and gynecology, and James B. Sidbury, Wilmington, N. C., pediatrics.—The Southern Society of Clinical Surgeons held its annual meeting in New York, June 4-5, programs being presented at Presbyterian and New York hospitals. Dr. John M. T. Finney Jr., Baltimore, was elected president, Dr. Isaac A. Bigger, Richmond, vice president, and Dr. William Perrin Nicolson Jr., Atlanta, secretary. The 1937 meeting will be held in Ann Arbor, Mich.

CANADA

Dr. Gallie Appointed Dean at Toronto—Dr. William E. Gallie, professor of surgery at the University of Toronto Faculty of Medicine, has been appointed dean of the faculty to succeed Dr. John G. Fitz Gerald. Dr. Gallie was graduated from the University of Toronto in 1903 and is a fellow of the Royal College of Surgeons of England and of Canada. In 1931 he was president of the American Orthopedic Association. Dr. Fitz Gerald resigned June 30 to take charge of a survey of methods of teaching preventive medicine sponsored by the Rockefeller Foundation.

LATIN AMERICA

Brazilian Orthopedic Society Formed—Announcement is made of the formation of the "Brazilian Society of Orthopedics and Traumatology," with headquarters in São Paulo. Dr. Luis de Rezende Puech, São Paulo, is president and Dr. Renato da Costa Bomfim, São Paulo, general secretary. The society was to hold its first congress in June at São Paulo.

FOREIGN

Bárány Jubilee Fund—Early last spring an appeal was sent out by a special committee to otolaryngologists in all countries asking them to participate in celebration of the birthday of Prof. Robert Bárány, professor of diseases of the ear, nose and throat, University of Upsala, Sweden, and winner of the Nobel Prize in medicine in 1914. They were asked to send a greeting to Professor Barany and a contribution to a Robert Bárány Jubilee Fund to be used according to his decision. Since Professor Bárány died April 8, the committee has decided to send the greetings received to his widow in Upsala and to present the contributions to the university. Interest on this fund will be used to prepare a medal to be awarded every five years by the medical faculty to the author of the best work published during the preceding five years on "The Static Sense," in the widest interpretation of the term. Collection of funds will continue till the end of 1936. Contributions will be received by Dr. Gunnar Holmgren, Sabbatsbergs Sjukhus, Stockholm, postoffice current account No. 150241.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 30, 1936

The League of Nations and Drug Addiction

In a report just published by the League of Nations the number of drug addicts in the world is estimated at 2,000,000, of which 30,000 are in Britain. This number does not include opium smoking, a vice to which millions are addicted. The advisory committee on the opium traffic now sitting, has found that in the last five years the price of illicit morphine has increased from \$10 to \$130 an ounce. This is due to the increased restrictions, which make the drug more difficult to obtain. Traffickers have had to resort to stealing from pharmacists. In China the police are using dogs, which can scent opium when it is cleverly concealed by a smuggler or addict. Mr. Fuller, the United States representative, has suggested to the advisory committee the need for greater restrictions in harbors and in vessels in port.

The Chinese government has appealed to the league for the cooperation of the governments concerned in ending the illicit drug traffic. The investigations undertaken on behalf of the league have shown that the situation in China is partly due to the inadequate penalties imposed by Japan on Japanese drug traffickers. Accordingly the committee of the league noted with satisfaction the measures already taken by the Chinese government for suppressing the clandestine manufacture and illicit traffic. The committee also addressed an earnest appeal to Japan to apply effective penalties. It also recommended all governments to prevent their nationals from engaging in the traffic in China. In the course of the discussion the Japanese delegate referred to the statements by Colonel Sharman of Canada that Japan was the source of smuggled drugs obtained after the arrest of traffickers in Vancouver. He said that for some time the authorities at Kobe had been giving attention to the increased drug traffic with North America. The result was the arrest of twenty-six persons who constituted the center of an organization responsible for many of the cases reported from the Pacific. The Vancouver case was being studied by the Japanese government.

Recognition of Indian Medical Degrees

Some time ago the General Medical Council withdrew recognition of Indian medical degrees because it was not satisfied with the standard of the examinations. In his presidential address to the council, Sir Norman Walker made an important statement on the subject. He said that the council had the duty of ascertaining the sufficiency of the examinations leading to qualification. Before 1920 it accepted for registration the degrees and diploma of the Universities of Bombay, Calcutta, Lucknow, Madras and the Punjab. In 1921 a questionnaire was addressed to these universities and the replies showed that the teaching of midwifery did not except in Madras, reach a standard that would be recognized in the United Kingdom. To solve a difficult question he had accepted an invitation from the secretary of state for India to proceed to that country and discuss the difficulties with the authorities there. In his report made in 1922 he expressed the opinion that each of the universities could bring its regulations sufficiently into accordance with the requirements of the council to enable it to recognize its diploma. He proposed that Col. R. A. Needham, deputy director general of the Indian Medical Service (the medical service of the army in India) should be made medical inspector of the medical teaching in the Indian schools. Acting on his report the council recognized the degrees. On revisiting India in 1926 he found that general improvement had been made

almost everywhere, and not least in obstetrics. In 1933 an act was passed constituting a medical council of India on lines similar to those of the General Medical Council in England. Bombay had in the Ness Wadia Maternity Hospital the best maternity hospital he had seen anywhere, with an even larger number of cases than the Rotunda of Dublin. The Indian Medical Council, which now inspected and visited the Indian universities, had forwarded reports on these. The executive committee of the General Medical Council had resolved that the degrees of M.B., B.S., granted by the Universities of Bombay, Lucknow and Madras, which formerly were registrable, should again be recognized for registration if granted after May 1935.

THE NUMBER OF MEDICAL STUDENTS

The president announced that the number of medical students registered in England in 1935 was 1,363, the second highest on record, twelve less than in the peak year of 1919, and 269 more than last year. Scotland had five fewer at 719 and Ireland eleven fewer at 521.

The Value of Snuff Taking

The practice of snuff taking has declined greatly in England. It was at its height in the eighteenth century and continued down to the middle of the nineteenth, when it fell away. Letters in the *Times* from Sir Buckstone Browne (a retired urologist and a munificent donor to the Royal College of Surgeons) advocating snuff taking as a prophylactic against colds in the head has revived interest in the subject and led to a paper on it, which was read by Dr. J. D. Rolleston before the Society for the Study of Inebriety. He said that the habit, which once was in vogue in court circles, seemed likely at one time to find its last refuge in infirmaries and mental hospitals. He suggested that one reason for its disfavor was the great objection of Queen Victoria to any one sneezing in her presence. Sir Buckstone Browne told the society that his experience with the virtues of snuff dated from his early days in practice when, after operations early in the morning and seeing patients more or less continuously until the afternoon, when he had to start on his carriage visits, very tired, he found snuff refreshing and useful. He attributed his immunity from colds in the head to the action of snuff in stimulating the nasal mucous membrane and producing a flow of mucus. Pepper and other irritants would of course also induce sneezing, but tobacco snuff was more than an irritant. It was agreeable to most people, stimulating at first and then narcotic and astringent to the mucous membrane. His advice to the audience was: "If you think you are sickening for a cold in the head, take a good pinch of snuff before going to bed and you will awake quite well in the morning."

Some Reduction of Road Accidents

The constant adoption of new precautions against road accidents seems to have made some impression, as the figures for 1935 show some reduction in their number. In that year the road accidents numbered 195,892, against 204,710 in 1933. The number of persons killed or injured was 228,228, against 238,946 in the previous year. The number of killed was 6,502, against 7,343. Accidents in London amounted to 50,207, of which 1,077 were fatal. The number of persons killed or injured numbered 56,072.

Precautions Against Air Raids

The extensive nature of the precautions now being taken against air raids is shown by a scheme brought forward by the borough council of Croydon (a populous district on the outskirts of London). It involves the training of 300 volunteer firemen, the appointment of thirty auxiliary turncocks, the purchase of extra fire appliances, extension of the fire alarm system to all hospitals and to future first aid stations, and the acquisition of gas masks and protective clothing. It is also

proposed to mobilize local physicians for duty at first aid and casualty clearing stations. The Red Cross Society and the John Ambulance Brigade will continue their present training of a corps of 500 men and 500 women for specific duties during air attacks. The scheme also includes equipment for the decontamination of people, vehicles and roadways, and for the registration of private vehicles for ambulance and fire brigade service. A register is to be opened of persons willing to act as street wardens to see that every householder is acquainted with the official instructions regarding precautions, and arrangements have been made for rendering one room gas proof.

PARIS

(From Our Regular Correspondent)

June 20, 1936

Relation of Typhoid to Shell-Fish

The relation of typhoid to shell-fish on the southern coast of France was the subject of a paper by one well qualified to discuss it, Teissoniere, at the April 23 meeting of the Academie de médecine of Paris. A law which has been in force since 1923 governing the cultivation of oysters ought to be extended to all shell-fish, especially clams. Since the oyster beds have been subjected to government control, not a single case of typhoid in Nice or Cannes has been found that was due to the ingestion of oysters. On the other hand, thirty-nine cases of typhoid at Nice and twenty at Cannes were traced to the ingestion of clams and similar shell-fish. The bacteriologic test, consisting in determining the number of *B. coli* organisms to 100 cc., cannot be strictly applied to shell-fish. For example, if oysters contain from 100 to 700 *B. coli* organisms per liter of water they are usually regarded as not being safe to eat, yet a large quantity of such oysters were consumed at Cannes without a single case of typhoid developing. In the Netherlands and the United States, according to Teissoniere, a *B. coli* content of 10,000 organisms per quart (liter) is considered safe for oysters, while in England the figure is from 5,000 to 10,000 per quart. These percentages are much higher than hygienists consider safe for drinking water, wherefore no figure has been established in France as yet for all shell-fish. It is far more important from the standpoint of the public health officer to study the topography of the region in which the beds are located and the method of transportation.

In spite of the assertion that it is impossible to obtain edible clams, Teissoniere maintains that this can be done. Such establishments exist along the Mediterranean coast of France. Twenty-six bacteriologic analyses taken Oct. 26, 1935, in one of the beds where clams are cultivated reveal the absence of *B. coli*, whereas specimens taken near Bouzigues, one of the seaports, show 1,000 *B. coli* organisms per liter. The danger of infection arises chiefly in clams, which are obtained by fishermen, because contamination in such cases is difficult to control except in the case of oysters. Clam beds exist all along the shore, so that the limitation to certain areas is not as easily carried out for clams as for oysters, which are limited to certain areas. Clams prefer to grow in water that is not salty and hence prefer water coming from rivers. These are usually near cities, the sewers of which empty into the rivers and thus favor absorption of infected water by the clams. Therefore fishing for clams ought to be prohibited here. In cities such as Cannes and Nice, cases of typhoid from polluted oysters no longer occur, but in other Mediterranean cities such as Toulon and Marseilles, this is not the case. 265 cases of typhoid were reported at Marseilles last year and 118 at Toulon. Of the latter, forty-three were due to the ingestion of infected shell-fish. The crux of the situation is to have better control over the shell-fish, especially clams.

Cardiac Erethism in Adolescents

At the Societe medicale des hopitaux of Paris, April 24, an army surgeon, Bénard, reported his observations of recruits during the past seventeen years. Some young men were unable to march at a rapid pace or do gymnastic exercises without complaining of so much palpitation and dyspnea that they were obliged to cease walking or working in the gymnasium. The question was whether these recruits were malingerers or whether some form of cardiac insufficiency existed. For a long time Bénard was unable to find any cause for this erethism or increased cardiac activity. He was only able to note on the recruits card that he seemed to be truthful in his complaints, that no valvular lesion could be found and that he should be excused from gymnastic exercises. The late Professor Vaquez was the first cardiologist to employ the term "erethism" to characterize "a certain degree of increased cardiac activity, felt as palpitation and heard on auscultation, at times difficult to distinguish from the presystolic purring of a mitral stenosis." Bénard described an average case. "Erethism" is most commonly observed between the ages of 10 and 18 years but can continue to between 22 and 25 years. The most common subjective complaint is dyspnea on exertion, often after having run a distance of 50 yards. The dyspnea and rapid heart action decrease as soon as the physical effort ceases. In others, the chief complaint is of palpitation on exertion. In about half the cases, auscultation reveals a systolic murmur at the base at the level of the second left intercostal space, best heard as a rule when the recruit is lying down, rarely better on standing up. Clinically, one can distinguish an atypical type (form fruste), a typical type, with palpitation and dyspnea and a rare type with decompensation. As objective evidence, Bénard presented the energy of the heart's contraction, murmur over the pulmonary area, increased size of middle portion of aortic arch, absence of enlargement of left auricle in a posterior direction, and certain electrocardiographic changes. He believes that these cases of "erethism" are due to a congenital stenosis of the pulmonary artery. The prognosis is good and no special treatment is indicated. Such cases have often been diagnosed as "war heart" or "irritable heart" and at times as mitral stenosis.

Acute Leukemia After Treatment of Arthritis with Gold Salts

Another one of the potential complications of the use of gold salts in the treatment of such diseases as pulmonary tuberculosis and arthritis was reported by Boulon, Coste, Uhry and Antonelli at the April 24 meeting of the Societe medicale des hopitaux of Paris. A woman, aged 51, was admitted to the hospital Oct. 11, 1934, with the diagnosis of chronic arthritis deformans and an associated psoriasis, for which she had been treated in the outpatient department since 1930. Following a first series of gold salts in 1931 there was a marked improvement of the arthritis. The treatment was resumed in February 1934 but discontinued in May. Several injections of gold salts (chrysalbin) in small amounts were given about Oct. 15, 1934. The blood examination about two and again four weeks later revealed a marked decrease of red and white cells as well as of the polymorphonuclear leukocytes. Two months later the patient had a severe sore throat and a furunculosis of the gluteal and elbow regions complicated by extensive subcutaneous ecchymoses, necrosis and bleeding from the gums. The blood picture at this time was that of an agranulocytosis and later that of an acute leukemia. The patient died Jan. 14, 1935, and the necropsy revealed a glomerulonephritis without involvement of the tubules, and marked cellular infiltration of the liver and of the hematopoietic viscera. The treatment with gold salts was considered to be responsible for the acute leukemia. A similar case was reported by Coste in 1934.

According to the authors of this paper, gold salts should be placed in the same group as roentgen rays, radioactive agents, benzene and tar as giving rise to an acute leukemia

Public Health at the 1937 Paris Exposition

A certain number of daily conferences on public health questions are being arranged for the 1937 Paris Exposition of Arts and Technic in Modern Life. The five subjects chosen for general discussion include clothing, food, transports and physical education (games and sports). An attempt will be made to show that violation of the laws of hygiene favors development of disease, and the various resultant forms of the latter will be the subject of a number of conferences. A public health code will be formulated to which every one engaged in the study of the preservation of the race can refer. Daily conferences are to be arranged on the subjects of maternity and infancy, school hygiene, military medicine and pharmacy, hygiene in the colonies, aviation and merchant marine, urbanism, dwellings and social organization. The journal *Social Hygiene* has assumed the task of organizing these international conferences on public health, to be held July 1-10, 1937. Special tourist rates, lodgings and all other information can be obtained through the secretary, 2 rue Chauchat, Paris. The conference committee is especially anxious to obtain the cooperation of physicians, dentists, druggists, veterinary surgeons, architects, city planners, sanitary engineers, social workers, nurses and industrial organizations.

Rechloridation Treatment of Acute Nephritis

The treatment of all degrees of uremia by the administration of sodium chloride in concentrated solutions has been the subject of a number of papers read during the last two years at meetings of the principal Paris societies. An instance of the value of this treatment was presented by Lemierre and his associates at the March 20 meeting of the Société médicale des hôpitaux. The patient began to vomit about eight days before admission in January 1935. The emesis continued without a free interval for the entire eight days, so that ingestion of solid or liquid food was impossible. No cause could be found for the vomiting. There was a history of an attack of diphtheria in 1924.

On account of the presence of a grayish white exudate on the tonsils, the inner aspect of the cheeks and the soft palate, the patient had been sent to the hospital as having diphtheria, but this diagnosis was discarded because no specific bacilli were found. The vomiting had stopped shortly before admission to the hospital, but the marked stomatitis and fetid strongly ammoniacal odor of the breath led to the suspicion of uremia as the underlying cause. Examination of the blood revealed a urea content of 415 mg per hundred cubic centimeters and a marked hypochloremia but an almost normal carbon dioxide combining power (47.9 volumes per cent). On the third day after admission a generalized scarlatiniform eruption appeared. The urine examination revealed no abnormal elements. January 31 (fourth day), 500 cc of 0.9 per cent solution of sodium chloride was given subcutaneously. This was repeated during the next three days. In addition, 75 cc of a 20 per cent solution of sodium chloride was given intravenously. February 2, 30 cc. of the same hypertonic solution the following day, and 100 cc. of a 10 per cent solution of sodium chloride during the next two days. After February 7, the eruption had disappeared and the general condition improved rapidly. February 22 the blood urea was normal 29 mg per hundred cubic centimeters. Lemierre and associates believed that the pharyngostomatitis and ammoniacal odor of the breath were of uremic origin. Under the influence of the rechloridation treatment the high blood urea content disappeared and the hypochloremia rose to normal. The renal insufficiency and uremia were the direct results of the hypochloremia. Two days after the beginning of

the rechloridation treatment the plasma chlorine rose to 241 mEq and at the same time the evidences of urea retention in the blood receded. The cause of the severe emesis remains obscure. If the high blood urea had been due to a nephritis alone, there would have been a marked fall in the alkali reserve, which in this case was almost normal.

Polyneuritis Produced by Addition of Lactic Acid to Diet

As a result of his experiments, Lecocq has reached the following conclusions:

- 1 The addition of 10 per cent lactic acid in a diet suffices to prevent utilization by pigeons of large doses of vitamin B. The pigeons die presenting symptoms of attacks of polyneuritis as in avitaminosis B.
- 2 Such a polyneuritis occurs whether glucides are given or not, even though the predominant element of the diet is constituted by proteins or lipoids.
- 3 The impregnation of the tissues by the lactic acid, which is the direct effect of the ingestion of such diets, appears to bear an etiologic relation to the polyneuritis attacks.

BERLIN

(From Our Regular Correspondent)

May 11, 1936.

The Problem of Bacterial Mutation

Prof. W. Seiffert, in elucidating some aspects of the question of bacterial mutation, before the Berlin Microbiological Society, said that in dealing with the variability of bacteria distinction must be made between (1) true mutation or qualitative alteration of the genes, (2) changes in the arrangement of the genes (for example, deficiency or excess of a gene through bacterial fusion) and (3) modifications, that is, plasmatically conditioned variations without change in the gene. The existence of true bacterial mutation can be demonstrated in experimentation by means of the rate of mutation. The manifestations of bacterial variants does not bear relationship to the environment but is in proportion to the number of bacteria. The more bacteria developed the greater the number of variants, especially if the cultures are kept in cellophane tubes according to the Gildemeister method (which permits the passing out of the products of metabolism and the passing in of nutrient substances). The type of nutrient medium employed (nutrient bouillon, Ramon's toxin bouillon, synthetic ammonium lactate) is immaterial. Faulty nutrition inhibits growth, hence the appearance of variants. Changes in the arrangement of genes may take place. A paratyphoid B strain, for example, may appear in a nongaseous form. It is possible to breed from this original form whole R and S forms among which a gaseous retromutation never appears. The gene of gas formation thus would seem to be lost. In addition, observations of a Gartner strain that in frequently repeated experiments produced only R forms evidenced that R and S forms propagate in apparently equal numbers.

In studying those modifications which are conditioned by environment, particular interest attaches to the "permanent modification" theory of Jollos, according to which modifications are phenomena of accommodation transferred from one generation to another.

On the basis of his own investigations, Seiffert states that the permanent modifications do not exist. His reasons are: 1. The permanent modifications of bacteria are always connected with natural modifications of bacteria in the vine-leaf shape of colon bacilli on gelatin and are not susceptible to habituation (for example, the normal growth of colon bacilli in the retrotransmission from gelatin to agar). Not the modification itself, then, but the capability of manifesting modification is hereditary. Mutations without specific external cause which bear outward resemblance to a modification are, however, possible. 2. The natural func-

ions of bacteria are not increased by exercise (for example, the formation of hemolysin in staphylococci is not increased by blood agar passage) 3 A stimulation of natural functions of toxin formation of staphylococci by carbon dioxide, for example) is not transferable from generation to generation (demonstrated by experimentation with staphylococci) 4 The reversion in so-called permanent modifications is not a gradual process common to all individuals but rather represents a complete change in certain single persons Reports in the literature of "permanent modifications" frequently mention the processes of selection, which are complicated by the appearance of true mutants

The results of Seiffert's rejection of permanent modifications are of practical importance 1 Since each type possesses its own sharply outlined rate of mutation which keeps it within the bounds of the type character, mutations from type to type are categorically rejected Single characters may vary completely and independently, for example, characters of colon bacilli such as indole formation, gas formation, clotting of milk and decomposition of lactose If typhoid bacilli can be developed from colon bacilli through mutation, then either intermediate stages must exist (namely, typhoid bacilli capable of forming gas or indole or of decomposing lactose), or else superimposed unspecific forms must appear in experimentation, presumably produced by fission of colon bacilli as well as typhoid bacilli However, neither of these conditions eventuates On the other hand, type to type mutations are possible in the Salmonella group, for example, wherein unspecific variants of the R form are actually found, one type overlapping the other The concept of a specialization of differing types from one and the same R form is therefore permissible with regard to this group 2 The hypothesis that by habituation to the animal organism saprophytes may be changed to parasites or avirulent strains to virulent strains is untenable The only value of the animal experiment is that it permits, from a mixture of virulent and avirulent micro-organisms, the virulent ones to be selected and their growth increased 3 There is no hereditary degeneration nor any nutrient medium degeneration Degeneration takes place only in the phenotype, it may be conditioned by the age of the cultures (old gram-negative staphylococci, for example) but may also appear in fresh cultures subjected to unfavorable influences (involution) Since mutability of bacteria is not a degenerative phenomenon, the appearance may be expected of mutants, without being exposed to selection, in any environment which favors growth to the same degree as the nutrient bouillon 4 There are no developmental cycles of bacteria, nor are there any fertilizing processes (if, for example, a gaseous paratyphoid R form and a nongaseous paratyphoid S form are brought together in bouillon, only the original forms will appear in cultures and the gaseous S form will be as regularly absent as the nongaseous R form, both the later types will appear, however, if a fertilization, that is, an interchange of genes, takes place) The Pettenkofer theory is likewise rejected, since the spherical formation appears only in certain variants, when these variants have been obtained from a form entirely free of Pettenkofer's parasites of bacteria It is indicated from thoroughgoing experimentation that bacterial deformations result from a (variable) salt sensitivity alkalis favor cytolysis (according to tests with sodium chloride and lithium chloride) and magnesium inhibits the cell division (filiform growth)

The Physicians' Mutual Insurance Association

The Deutsche Aertzeversicherung auf Gegenseitigkeit has been in existence more than fifty years According to the annual report there were on Dec. 31, 1934, some 20 000 German physicians representing total insurance holdings valued at 327 900 000 reichsmarks The annuity rates of policyholders are based on an amount ten times the yearly premium In

1934, 7,700,000 reichsmarks was collected in premiums due, earned increment on the capital amounted to 3 000,000 reichsmarks, income from other sources to 6,200,000 reichsmarks For disabilities incurred, 4,200,000 reichsmarks was paid out in 1933 and 52,500,000 in 1934 Despite the further decrease, interest on mortgages as authorized by the national government as of Jan 1, 1934, still showed an average yield of 6 per cent on the total capital investment According to the statement of financial condition on Dec 31, 1934, the assets were invested, among other things, 7.3 per cent in real estate, 71.3 per cent in mortgages, 15.6 per cent in securities and loans on securities Costs of administration totaled around 240,000 reichsmarks, that is, 3.1 per cent of the current income from annual premiums This represents a figure about half that of the insurance organization, the administrative expenses of which rank next lowest to that of the Physicians' Insurance It also represents an amount equal to one fourth, at most, of the administrative costs of the great commercial insurance companies

The mortality among the insured was below expectancy and the favorable progress of the disabled was noteworthy

Gas Casualties During the World War

J Wirth, who served during the war as technical adviser on antigas defense and compiler of gas casualties for the Prussian war ministry, recently addressed the Medical Society of Frankfurt-on-Main He gave the following figures for the proportion of gassed patients to the total number of the German wounded

| Period | Percentage of Asphyxia Cases | Number of Asphyxia Cases in Hospital |
|-----------|------------------------------|--------------------------------------|
| 1914-1915 | 0.01 | 87 |
| 1916-1918 | 0.85 | 6 485 |
| 1916-1917 | 2.2 | 17 489 |
| 1917-1918 | 4.6 | 43 609 |

For the French army the corresponding percentage was 17.5 in 1917-1918, and that for the American forces, still following Wirth's statistics, was 31.5 per cent The number of men on the German side gassed during 1918 amounted to 15.6 per thousand Among the British the rate was 57.2 Wirth attributes this noteworthy disparity to the more effective conduct of gas warfare by the Germans as well as to their better defensive measures and drills against gas attack

The mortality among those suffering from war gas asphyxia depends on several factors 1 The nature of the attack, that is, the frequency with which different methods of projection (grenades, projectors, gas mines) were used The latter two methods of gas attack are the more deadly because they permit a greater concentration of gas at the objective of attack 2 The measures taken for protection against gas and the efficacy of discipline in face of surprise attacks in particular 3 On the precise circumstances of the asphyxia and whether or not dichloroethylsulfide (yellow cross or mustard gas) was the principal substance employed Although mustard gas is responsible for the largest number of casualties, especially because of the blistering of the skin that accompanies the asphyxiation, it causes fewer fatalities than certain other gases, "green cross," for example An average of from 6 to 7 per cent of the asphyxia cases terminated fatally Of importance too are the casualties inflicted by carbon monoxide (in concentration of more than 0.05 per cent) which is released in enemy dugouts by the explosion of gas mines, dangerous concentrations are found in shell craters as well

With regard to the importance of casualties due to gas warfare, Senior Staff Surgeon Muntzsch, who has made a special study of the question for the military authorities, calculates that, among all the forces engaged on the Western Front in 1918, gas asphyxia cases accounted for 18 per cent of the total

number of wounded Muntsch's further investigations elicited the noteworthy fact that among the French during the operations in Champagne from Aug 6 to Sept 25, 1918, 42,702 men suffering from gas asphyxia were given treatment on the hospital trains, a number equal to 30 per cent of the total number of wounded received by these trains during the same action

Data are lacking which would help determine the damage caused by gases released in aerial bombardment during the World War, but in any case the bombing of a town depends for its value on the shattering and incendiary effect. The assumption may be made, however, that the effectiveness of the aerial gas attack (like that of the ground attack with projectors or mines) depends largely on two factors: the ability of the raider to surprise the enemy and the amount of concentration at the point of striking. Hence the drilling and protection against gas attacks among the civil population at home should be kept on a level with that practiced by the army in the field.

ITALY

(From Our Regular Correspondent)

May 4, 1936

Society Reunion

The Accademia Medica of Rome met recently under the chairmanship of Professor Alessandri. Professor Penso spoke on a disease of hog herders. The incubation period lasts several weeks and is followed by intestinal disturbances, after which a meningeal syndrome develops. Laboratory investigations have given negative results as yet. Recovery usually occurs.

Professor Baglioni discussed the effects of the administration of gelatin and casein and the results produced by the addition of mineral salts to the administration of proteins. The fact, also noted by Zagami, that fasting stimulates the accumulation of nitrogen substances during readjustment, although it explains the nitrogen metabolism during convalescence from acute diseases, proves that a parallelism between the increase of weight and the retention of nitrogen by the organism does not exist. This fact was verified by the results of Baglioni's experiments on the nitrogen metabolism of rats fed with special proteins.

Professor Testoni reviewed his experiments, which proved that splenectomized animals regain weight by readjustment following fasting more quickly than normal animals.

Professor Testoni studied the passage of certain drugs through the placenta. The passage of thallium from mother to fetus depends on the dose, duration of treatment, period of evolution of pregnancy and species of animal. Cataract and iritis are the only lesions detectable in fetuses from animals chronically intoxicated by thallium acetate. Probably these pathologic conditions found in the fetuses are due to a selective action of thallium on the parathyroids.

Dr. Liberti discussed the cerebrospinal fluid in human tetanus. The tetanus toxin cannot be detected in the fluid, even by resorting to special procedures, such as chloroformization, etherization and production of experimental meningitis. Antitoxin is detectable in the fluid in all cases but especially after provocation by chemical irritation of the meninges.

Drs. Seranni and Lolli discussed the effects of insulin and morphine on glycemia in normal persons and in patients suffering from diabetes mellitus. Morphine given alone causes hyperglycemia which is more marked in diabetic than in normal persons. Morphine when given in association with insulin increases the hypoglycemic action of the latter both in normal persons and in the diabetic.

Dr. Minz studied the action of insulin on provoked alcoholism in seven diabetic patients. Alcoholism in persons with diabetes is not lowered by insulin, although it is lowered by the latter in normal persons.

NETHERLANDS

(From Our Regular Correspondent)

May 12, 1936

Diphtheria in the Netherlands

A report by Dr. Josephus Jitta containing data on the morbidity from diphtheria in the Netherlands has been submitted to the International Bureau of Hygiene.

The following table represents the incidence of diphtheria cases among the total population of some 8,000,000 inhabitants of the kingdom during the five years from 1930 to 1934.

Incidence of Diphtheria in the Netherlands

| | 1930 | 1931 | 1932 | 1933 | 1934 |
|----------------------------------|-------|-------|-------|-------|-------|
| Cases reported | 7 450 | 5 693 | 5,353 | 4,251 | 2,999 |
| Deaths | 439 | 311 | 272 | 193 | 143 |
| Morbidity per 10 000 population | 9.51 | 7.19 | 6.64 | 5.19 | 3.61 |
| Death rate per 10 000 population | 0.56 | 0.39 | 0.34 | 0.24 | 0.17 |
| Percentage of fatal cases | 5.9 | 5.5 | 5.1 | 4.5 | 4.8 |

No official instructions are issued prescribing or recommending antidiphtheritic immunization. The official public health organs, however, carry on propaganda with the tacit approval of the government. In North Holland Province, among a total population of 325,000 residing in fifty communes, not including Amsterdam and Haarlem, 29,200 were inoculated. It may be accepted as a fact that by Jan 1, 1935, 25 per cent of the children of North Holland had been inoculated under the supervision of the official examiner. In Amsterdam from 1929 to Jan 1, 1935, 37,969 children were presented for immunization and 32,162 underwent the complete treatment.

Antivenereal Disease Campaign

In the conduct of an antivenereal disease campaign, each country selects a method in keeping with the national character. This explains why in the Netherlands the organization of this campaign is imbued with a spirit of independence and of hatred for coercive measures. In place of official examinations of the genitalia of prostitutes and the compulsory registration of those infected, a policy based on persuasion and free will has been instituted. This operates through therapeutic stations open during the evening hours. The work of the stations is supplemented by consultation offices and by the cooperating services of women social workers who visit the infected women undergoing treatment. Thus diseased prostitutes, assured that no compulsion is involved, submit voluntarily to treatment. It is the same approach that has been used with notable success in the fight on tuberculosis. In addition, propaganda against the venereal diseases is carried on through lectures, moving pictures, and so on. The results in big cities such as Rotterdam have been most encouraging.

The Number of Physicians

The report of the Limburg Commission on the future of academic graduates has been published. It shows that during the period from 1905 to 1934 the number of general practitioners increased from 2,322 to 3,548, while the number of specialists increased from 347 to 1,241. The total number of physicians in the Netherlands including army and employed civilian physicians, amounts to 5,886. In the Dutch East Indies there are still 1,200 physicians, 700 of whom hold diplomas from the home country. Of more recent graduates 60 per cent have not attained the level of an annual income of 5,000 florins in five years subsequent to receiving their degrees. About 70 per cent of medical students complete their studies. 534 young physicians are seeking employment. In 1934 there was one physician to each 1,720 of population. In 1939 the ratio will be one to each 1,360 of population.

Marriages

WOLFGANG FRITZ JUSTUS VOGEL of Huntingdon, Pa, to DR HELGA ELIZABETH STREITBERG of Leipzig, Germany, April 9

LUTHER F GRANT, Liberty, N Y, to DR SIRKA ELISABETH VUORNOS, Boston, in New York, April 27

JAMES HENDERSON CHERRY, Asheville, N C, to Miss Katherine G Buck of Bald Mountain, April 18

LEO BOYES FREEMAN, Germantown, Pa, to DR RUTH FRAZER HARRAL of Drexel Hill, June 20

BLAKE M LANCASTER, Manatee, Fla, to Mrs Edward Livingston of Bradenton, April 25

ELDON L BOLTON, Biloxi, Miss, to Miss Carolyn McKellar of Memphis, Tenn, May 23

WILLIAM THOMAS BRAUN JR to Miss Marion Helen Brigha, both of Baltimore, May 17

LESTER J GREENBERG to Miss Janet Bogomolny, both of Brooklyn, May 31

THOMAS A ANGLAND to Miss Betty Brush, both of Yakima, Wash, April 25

Deaths

Wells Ferrin Smith, Little Rock, Ark, Beaumont Hospital Medical College, St Louis, 1898, member of the Arkansas Medical Society, president of the Arkansas State Board of Health, past president of the State Medical Board of the Arkansas Medical Society, professor of surgery, University of Arkansas School of Medicine, member of the board of governors and fellow of the American College of Surgeons, member of the surgical staff of the Baptist State Hospital, member of the staff of St Vincent's Infirmary and the Children's Home Hospital, consulting surgeon to the Little Rock General and Veterans' Administration hospitals, and the Working Women's Home, aged 64, district surgeon to the Missouri Pacific Hospital, where he died, May 19, of cerebral hemorrhage

Campbell Palmer Howard, Montreal, Que, McGill University Faculty of Medicine, Montreal, 1901, professor of medicine at his alma mater, at one time head of the department of internal medicine, State University of Iowa College of Medicine Iowa City, member and past president of the Association of American Physicians, member of the American Society of Clinical Investigation and the American Association of Pathologists and Bacteriologists, served with the Canadian Army in the World War director of the department of medicine, Montreal General Hospital, member of the senate of McGill University, contributor to several systems of medicine and to the periodical literature, aged 59, died suddenly, June 3, while in Santa Monica, Calif, of pulmonary embolism following phlebitis

George Andrew Hare of Fresno, Calif, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887, member of the House of Delegates of the American Medical Association, 1912-1915, past president of the American Academy of Medicine and of the Fresno County Medical Society, formerly vice president of the California Medical Association, in 1906 delegate to the International Medical Congress in Lisbon, at one time superintendent of the Washington Sanitarium, Washington, D C formerly associate editor of 'Life and Health', aged 78, died, April 4, of carcinoma of the prostate gland

Wesley Wilbur Beckett of Los Angeles, University of Southern California College of Medicine, Los Angeles, 1888 a practitioner in Los Angeles since 1889, professor of gynecology and surgery and later emeritus professor of surgery at his alma mater, past president of the California Medical Association, Los Angeles County Medical Society, Los Angeles Clinical and Pathological Society and the Southern California Medical Society, formerly member of the city board of health, medical director of the Pacific Mutual Life Insurance Company, aged 79 died, June 3, of cerebral hemorrhage

Melbourne Clements, Seattle, Rush Medical College, Chicago, 1910 at one time a practitioner in Chicago, formerly assistant demonstrator of dermatology, Jefferson Medical College of Philadelphia assistant in surgery (genito urinary) and clinical associate in surgery (genito urinary) at his alma mater, during the World War served as chief medical officer of the

transport *Wilhelmina*, graduated from the Cincinnati Conservatory of Music and was a violinist in the medical society orchestra, aged 51, died, April 26, in the Firland Sanatorium of pulmonary tuberculosis

James Walter Walker, Fayetteville, Ark, Washington University School of Medicine, St Louis, 1915, member of the Arkansas Medical Society, past president and secretary of the Washington County Medical Society, was on the reserve list of the Reserve Officers Training Corps during the World War, fellow of the American College of Surgeons, formerly secretary of the State Medical Board of the Arkansas Medical Society, county health officer, member of the staff of the Fayetteville City Hospital, aged 56, died, May 4

Joseph Norman Fogarty, Daytona Beach, Fla, Columbia University College of Physicians and Surgeons, New York, 1898, member of the Florida Medical Association, formerly secretary of the Monroe County Medical Society, at one time member of the state board of medical examiners, health officer of Key West, mayor of Key West and St Augustine and member of the state legislature, for many years chief surgeon of the Florida East Coast Railroad, aged 60, died, May 5, in the New York Post-Graduate Hospital

Charles Sherman Little, Thiells, N Y, Dartmouth Medical School, Hanover, N H, 1896, past president of the Rockland County Medical Society, member of the Medical Society of the State of New York and the New England Society of Psychiatry, past president of the American Association on Mental Deficiency, since 1910 superintendent of the Letchworth Village, superintendent of the State School for the Feeble-minded, Laconia, N H, from 1902 to 1910, aged 67, died, June 6, of angina pectoris

Archibald Campbell MacLeish of Los Angeles, University of Southern California College of Medicine, Los Angeles, 1908, associate clinical professor of surgery (ophthalmology) at his alma mater, member of the Pacific Coast Oto-Ophthalmological Society, fellow of the American College of Surgeons member of the staff of the Hospital of the Good Samaritan and the Barlow Sanitarium, aged 52, died suddenly, May 3

Hugh MacDougal Hart, Newark, N J, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894, member of the Medical Society of New Jersey, for many years surgeon for the city fire department, aged 63, died, April 24, of congenital polycystic kidneys and cardiovascular renal disease

Joseph Budd Hulett, Middletown, N Y, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1887, member of the Medical Society of the State of New York, for many years member of the board of health, died, April 8, of cerebral hemorrhage and bronchopneumonia

Albert Triplett Horn, Chicago, College of Physicians and Surgeons, Baltimore, 1904, member of the Illinois State Medical Society, formerly assistant in anatomy, Northwestern University Medical School, on the staff of the Auburn Park Hospital, aged 56, died suddenly, April 19, of coronary thrombosis

Alexander Francis Mosher of South Glens Falls, N Y, Albany (N Y) Medical College, 1909, had been health officer of the consolidated health district comprising the town of Moreau and the village of South Glens Falls since 1926, aged 48, died, April 25, of endocarditis and myocarditis

George Washington Gale, Saugus, Mass Berkshire Medical College, Pittsfield, 1861, member of the Massachusetts Medical Society, Civil War veteran, formerly chairman of the board of health and school committee, aged 99, died, April 20, of arteriosclerosis and cerebral hemorrhage

Rodney Hall Richardson, Reno, Nev, University of Pennsylvania Department of Medicine, Philadelphia, 1884, member of the Nevada State Medical Association, at one time superintendent of the Nevada State Hospital for Mental Diseases, aged 75, died, May 1

James Otho Hardy, Las Animas, Colo Marion-Sims College of Medicine, St Louis, 1897, member of the Colorado State Medical Society, for many years county physician and county health officer, served during the World War, aged 68, died, April 18, of angina pectoris

David William Gass, Pickensville, Ala. Birmingham Medical College 1899, member of the Medical Association of the State of Alabama, veteran of the Spanish-American War, aged 68 died, April 19, in the Veterans' Administration Facility, Danville, Ill, of meningitis

Samuel E Hibbs, Uniontown Pa Western Pennsylvania Medical College, Pittsburgh, 1904 member of the Medical Society of the State of Pennsylvania aged 61, on the staff of the Uniontown Hospital, where he died, April 1, of carcinoma of the prostate.

Paul Allen Fox ♂ Beloit, Wis., Rush Medical College, Chicago, 1895 past president of the Rock County Medical Society, president of the Beloit Clinic, on the staff of the Beloit Municipal Hospital, aged 64, died, April 27, of coronary occlusion.

John J Osburn, Wheeling, W Va., Starling Medical College Columbus, 1882, member of the West Virginia State Medical Association, on the staff of the Wheeling Hospital, aged 77, died, April 17, at Tuscaloosa, Ala., of facial erysipelas.

James W Nixon, Holloway, Mich., Western University Faculty of Medicine London, Ont., Canada, 1892 member of the Michigan State Medical Society, aged 67, died, April 12, in the Emma L Birby Hospital, Adrian, of Vincent's angina.

William Wood Hobbs ♂ Raytown, Mo., University Medical College of Kansas City, 1904, on the staff of the Menorah Hospital, Kansas City, aged 54, died, April 14, in a hotel at Kansas City, of a self-inflicted bullet wound.

William Columbus Hendrick, Shreveport La. Memphis (Tenn.) Hospital Medical College 1908, member of the State Medical Association of Texas, aged 62, died, April 12, in the Tri-State Hospital, of chronic myocarditis.

Horace Stoffet Saylor, Altoona, Pa., Temple University School of Medicine, Philadelphia, 1915, for many years chief doctor for the Pennsylvania Railroad Company, aged 47, died, April 5, of posttraumatic epilepsy.

Alfred Clarence Wilhelm ♂ Traverse City Mich. Chicago College of Medicine and Surgery, 1913, served during the World War, on the staff of the James Decker Munson Hospital, aged 46, died, April 9.

Burton D Giddings, Niles Mich. Hahnemann Medical College and Hospital, Chicago 1903 member of the Michigan State Medical Society, aged 62, died, April 29, of myocarditis and coronary sclerosis.

Ever A Olson, Osseo Wis. College of Physicians and Surgeons, Keokuk, Iowa, 1880, aged 85 died April 21 in the Sacred Heart Hospital, Eau Claire, of thrombosis of the superior mesenteric artery.

Ernest Leslie Bickford, Seattle, Missouri Medical College, St. Louis, 1890, served during the World War aged 69 died April 27, in the Veterans' Administration Facility, Salt Lake City, of heart disease.

Daniel Guedalyah Golding ♂ Santa Monica Calif. Jefferson Medical College of Philadelphia, 1890, aged 65 on the staff of the Santa Monica Hospital, where he died, April 27 of cerebral hemorrhage.

Edgar Joseph Geisinger, Unionville Mo., College of Physicians and Surgeons, Keokuk Ia., 1878, for many years postmaster, aged 86, died, April 23, of chronic nephritis and prostate obstruction.

George Radcliffe Duncan, Oak Terrace Minn. University of Minnesota Medical School, Minneapolis, 1929, aged 32 on the staff of the Glen Lake Sanatorium, where he died, April 6, of tuberculosis.

Paul Gerhardt Sudhoff, Cincinnati University of Cincinnati College of Medicine, 1921, formerly medical director of the Hamilton County Home and Chronic Disease Hospital, aged 41 died, June 9.

Elizabeth Eldredge Wray-Howell ♂ Chester, Pa., Woman's Medical College of Pennsylvania, Philadelphia 1896 aged 63, died April 24, of rheumatic heart disease, myocarditis and endocarditis.

William Preston Hickman ♂ Harvey, La. Tulane University of Louisiana Medical Department, New Orleans 1908 aged 51 died, April 13, of cardiorenal disease, hypertension and arteriosclerosis.

Russell E Hawley ♂ Merrill Mich., Detroit College of Medicine and Surgery 1926 on the visiting staff of the Saginaw (Mich.) General Hospital, aged 36 died suddenly April 12 of heart disease.

Solomon H Barron, Hopewell Miss., Memphis (Tenn.) Hospital Medical College 1905 aged 63 died, May 9 in the Baptist Hospital Jackson, of hypertension and chronic myocarditis.

George Elliott Noggle, Chino Calif. Kansas Medical College Topeka 1895 member of the California Medical Association, aged 63 died, April 8 of adenocarcinoma of the cecum.

Lawrence Johnson Winder, Andalusia, Pa., Jefferson Medical College of Philadelphia, 1893, veteran of the Spanish American War, aged 69, died, April 22, of chronic myocarditis.

Fred Harrison, Gridley, Calif., California Medical College, San Francisco, 1905, member of the California Medical Association, aged 65, died, April 24, of endocarditis and influenza.

David Rice Gooch, Nolensville, Tenn., Vanderbilt University School of Medicine, Nashville, 1877, for many years member of the county school board, aged 82, died, April 6.

Tobias Higgins, Traphill, N C. (licensed in North Carolina in 1915), aged 62, died, April 13, in the Wilkes Hospital, North Wilkesboro, of coronary occlusion and arteriosclerosis.

Robert H Hunt, Gibson, Tenn., University of Nashville Medical Department 1872, Civil War veteran, for many years bank president, aged 90, died, April 6, in Humboldt.

May McKinney Palmer, Mercer Island, Wash., Cooper Medical College, San Francisco, 1899, aged 71, died, April 23, in the Stanford University Hospital, San Francisco.

Robert E Hughes, North Holston, Va., University College of Medicine, Richmond, 1909, member of the Medical Society of Virginia, aged 51, died, April 13, of pneumonia.

George Young Hunter ♂ Prosperity, S C., Tulane University of Louisiana Medical Department, New Orleans, 1891 aged 67, died suddenly, April 30, in Columbia.

Clyde Oscar Anderson ♂ Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1895, aged 65, died, May 18, of diabetes mellitus and coronary thrombosis.

John Walters ♂ Sewickley, Pa., Western Pennsylvania Medical College, 1897, on the staff of the Valley Hospital, aged 62, died, April 24, of cerebral hemorrhage.

Michael Roberson, Durham, N C. Medical College of Virginia, Richmond 1912, aged 51, died, April 30, of coronary sclerosis and pulmonary embolism.

James Porter Fuller, Modesto, Calif., Michigan Homeopathic Medical College, Lansing, Mich., 1872, aged 92, died, April 10, of chronic myocarditis.

Trusten Polk Peery, Marysville, Calif., Missouri Medical College, St. Louis, 1884, aged 78, died, April 16, of chronic myocarditis and acute nephritis.

Lillian Craig Randall, Rye, N Y., University of Buffalo School of Medicine, 1891, aged 77, died, April 17, of uremia and myocardial insufficiency.

Arthur Heinzelmann, Kansas City, Mo., Eclectic Medical University, Kansas City 1907, aged 58, died, April 4, of chronic nephritis and endocarditis.

Richard Hudson Beek ♂ Lakota, N D., University of Minnesota Medical School, Minneapolis, 1894, aged 66, died May 6, in Devils Lake.

George Samuel Bailey ♂ Hillsboro, N H., College of Physicians and Surgeons, Boston, 1899, aged 68, died, June 24, of angina pectoris.

Henry Charles Darby, Wilmot, Wis. College of Physicians and Surgeons of Chicago, 1883, aged 81, died, April 28, of coronary occlusion.

George W Westbrook, St. Louis American Medical College St. Louis, 1897, aged 74, died, April 13, in Maplewood, Mo., of heart disease.

Jacob F Roemer, Waukegan Ill., Hahnemann Medical College and Hospital, Chicago, 1891 aged 75, died, May 4, of heart disease.

Robert Ballard Davy, Hayward Calif., Jefferson Medical College of Philadelphia, 1868, aged 88, died, April 30, of myocarditis.

Hart M Boxley, Millersburg, Ky., Louisville Medical College 1901 aged 65, died, May 8, of cardiorenal disease and hemiplegia.

Mary Hobbs Iredale Earle, Cincinnati, Eclectic Medical Institute Cincinnati, 1891, aged 75, died, April 24, of intestinal obstruction.

Caleb W Bronson, Alameda Calif., Hahnemann Medical College San Francisco, 1884, aged 89, died, April 24, of arteriosclerosis.

Victor A. Bergeron, Kankakee Ill. Chicago Medical College, 1877, formerly a druggist aged 82 died May 6.

Frank A Noyes, Biggsville, Ill. (licensed in Illinois in 1878), aged 86 died, April 4.

B M Doyle, Knoxville, Tenn. (licensed in Tennessee in 1889) died April 24.

Bureau of Investigation

"MEDICAL ECONOMICS"—A HANDBOOK OF NOSTRUMS

For some time physicians throughout the country have been receiving each month through the kindness (?) of some dealer in medical or chemical supplies a periodical called *Medical Economics* with the subtitle "The Business Magazine of the Medical Profession." It has previously been called by THE JOURNAL in editorial statements a "throw-away periodical." It has apparently little, if any, paid circulation although it is stated that the price is 25 cents a copy or \$2 a year. It should be apparent to any one after glancing through the pages of any recent issue that this publication depends for its income and its circulation on the advertisements of great numbers of nostrums which from time to time have been investigated and rejected by the Council on Pharmacy and Chemistry of the American Medical Association. Following is a list of non-accepted preparations advertised in the issue of June 1936 with brief statements as to their records as far as the files of the Council on Pharmacy and Chemistry are concerned.

Fellows Syrup —Rejected by the Council twenty years ago because it was held to be a semisecret unscientific preparation—an affront to sound therapy—exploited by means of extravagant and misleading statements.

Antiphlogistine —A preparation which has been exploited for more than a quarter of a century with unwarranted and extravagant claims. In 1929 the Bureau of Chemistry of the American Dental Association published a report stating that the wonderful effects of the hygroscopic powers of Antiphlogistine are so manifestly absurd as to be unworthy of further refutation.

Argyrol —Once included in N N R but omitted in 1928 because of the manufacturer's refusal to comply with the Council's rules on claims and nomenclature.

Neobovimine with Malt and Iron —In 1931 the Council declared Neobovimine unacceptable for N N R because the information in regard to its composition is inadequate because the therapeutic claims are unwarranted and because the combination was considered unscientific.

"Taxol" —An unscientific mixture claimed to contain the total extract of the intestinal glands, biliary extract and lactic ferments with agar agar. Has not been considered by the Council.

Eskay's Neurophosphates —An irrational mixture marketed with unwarranted therapeutic claims under an objectionable name. Rejected by the Council twenty years ago.

Fescol Tablets —A dosage form of ferrous sulfate encased in U S P A which has not been considered by the Council.

Oxo-ate-B —A proprietary uninforming name for calcium ortho-oxo-benzoate. The isooxybenzoates were omitted from N N R in 1932 because of lack of evidence for their usefulness.

"U S T (Tilden)" (formerly "Uterine Sedative Tonic") —Unscientific mixture of obsolescent drugs, reminiscent of the female weakness cures exposed many years ago.

Ovaltine —Reported unacceptable by the Committee on Foods in December 1931.

Farastan —A cinchophen derivative which the Council rejected in 1930 because it was held to be an irrational preparation marketed with unwarranted therapeutic claims.

Oroferrin —Omitted from N N R in 1929 as an unscientific and superfluous mixture.

Vihurno —A viburnum preparation of the type exposed by the Council more than twenty years ago.

Tablet Stanno-Yeast —Probably a tin and yeast mixture. Has not been considered by the Council.

Pancrothin Tablets —Appears to be a modification of an old Reed and Carnrick preparation, the composition of which has been held to be essentially secret and the claims for which are extravagant and unwarranted.

Lorate —A fanciful name for a sodium perborate mixture. Has not been considered by the Council.

Nupercainal —An unaccepted dosage form of a Council-accepted anesthetic.

Calmitol —Stated to be a solution of Chloro-Camphoric aldehyde slightly iodized combined with menthol and a small amount of Laevo-Hyoscyne Oleinate in an ether alcohol chloroform base. Has not been considered by the Council.

Mu-col —Rejected by the Council in 1913 for conflict with Rules 1 4 6 8 and 10.

Kao-Mincin —Has not been considered by the Council.

Sal Hepatica —In 1914 the Council published its condemnatory report on this preparation in order that physicians may know the extent to which they have been made to act as advance agents for "patent medicines." Today Sal Hepatica is a full fledged patent medicine.

Ocey Crystine —Has not been considered by the Council.

"Alkalol" —Examined by the A M A Chemical Laboratory in 1915. In 1913 was the subject of the following comment by THE JOURNAL:

The polypharmacy represented by such a mixture is absolute non sense—the really useful ingredients are obscured by the useless shrunken which surround them.

"Aurocein" —Claimed to be "For the Gold Therapy of the Arthritides." Has not been considered by the Council.

"Taurocol" —A preparation to which the Council refused recognition in 1915 because of objectionable claims and composition.

"Unguentine" —Not considered by the Council. Reported on unfavorably by the A M A Chemical Laboratory in 1909.

"Hepvise" —A mixture of hepatic extract, insulin free pancreatic extract and mistletoe for high blood pressure. Has not been considered by the Council.

"Aspir Vess" —Bromo-Vess and Cinsa Vess —Effervescent mixtures of well known drugs which have not been considered by the Council.

"Burnham's Soluble Iodine" —Found unacceptable for N N R in 1933. A semisecret preparation marketed with extravagant and unwarranted therapeutic claims.

"Tablet Alukalin" —Has not been considered by the Council.

"Kaha" —A Battle Creek Food Co product comprising karaya gum plus yeast extract. Has not been considered by the Council.

"Ophthalmic Solution No 2 (DeLeaton)" —Not considered by the Council.

"Dionol" —The "Glorified Petrolatum" about which THE JOURNAL in 1918 wrote as follows: If one takes the word of the manufacturer, the therapeutic possibilities of Dionol are apparently limited only by the blue sky.

"Aluocol" —Rejected by the Council in 1928 because of conflict with the rules regarding nomenclature and therapeutic claims.

"Vince" —A sodium perborate preparation which has not been considered by the Council.

"Glyco-Thymoline" —In 1914 the Council called it a typical example of a patent medicine advertised to the public through the doctors. At that time in conflict with Rules 1 4 6 8 and 10.

"Stannoxyol" —A tin preparation for boils etc. which THE JOURNAL criticized in 1920 because of extravagant claims.

Gardner's Syrupus Acidi Hydriodici —Under the English name Gardner's Syrup of Hydriodic Acid this preparation was rejected by the Council in 1908 because of unwarranted claims.

"Gude's Pepto-Mangan" —More than twenty years ago the Council called attention to the unwarranted claims made for this preparation and to the manufacturer's attempt to exploit the product to the public.

"Aminophyllin Phenobarbital and Aminophyllin Potassium Iodide (Battle)" —These aminophyllin mixtures have not been considered by the Council.

"Micajah Medicated Wafers" —Found unacceptable by the Council in 1919 because the composition is essentially secret, the name is not indicative of composition, the therapeutic claims were exaggerated and unwarranted and because the product was advertised indirectly to the public.

"Absorbine Jr" —A patent medicine which has not been considered by the Council. See Nostrums and Quackery.

"Iododin (Iodinized Oil Compound)" —Has not been examined by the Council.

"Saraka" —Contains an agar agar substitute plus the laxative drug frangula. Introduced under the name "Normacol" as an ethical proprietary and now advertised directly to the public.

"Evac-u-gen" —Has not been considered by the Council.

"Man Na Gluconate" —A colloidal manganese sodium gluconate preparation. Has not been considered by the Council.

"Mazon" —A preparation of semisecret composition which has not been considered by the Council.

"Endo-Antrone" —Stated to be "a standardized anterior Pituitary like preparation of sex hormones." Has not been considered by the Council.

"Viscysate" —A mistletoe preparation which has not been considered by the Council.

"Sanmetto" —In 1915 the Council called it "a secret nostrum the exploitation of which is an invitation to haphazard uncritical therapy and a menace to public health."

"Uvursin" —An oral diabetic treatment reported on by the Bureau of Investigation.

"Kondremul" —Rejected by the Council in 1933 because of objectionable claims and name.

"Ceanothyn" —First rejected in 1926. Rejection reaffirmed in 1930. Claims unwarranted. Evidence for the usefulness of the product inconclusive.

"Ergoapiol (Smith)" —An unscientific shotgun mixture of drugs having widely different therapeutic effects. Rejected by the Council in 1914.

"Cystogen" —A therapeutically suggestive name applied to the well known drug methanamine. Rejected by the Council in 1914.

"Ortho-Gynol" —Has not been considered by the Council.

"Cremo-Carbonates" —Has not been considered by the Council.

The physician who believes the majority of these advertisements and prescribes the preparations listed departs far afield from the tenets of scientific prescribing. And he practices an uneconomical "medical economics." He serves as an agent for

the introduction to his patients of unaccepted, trade-name medicinal preparations. Patients obtain the first purchase on his prescription, thereafter they buy these preparations over the counter, frequently to their own detriment. Thus the doctor becomes an agent for introducing these preparations to patients, who in turn urge them on their self-prescribing friends. In many of the trade packages, accompanying circulars and advertising matter will be found which has the obvious purpose of inducing self medication.

The manufacturer of legitimate medicinal products who associates himself with nostrums such as are promoted through the pages of *Medical Economics* is also figuratively cutting his own throat. Physicians interested in the advancement of scientific medicine and in the welfare of their patients, as well as in their own welfare, will do well to limit their prescriptions for medicinal agents to those items which are included in the U. S. Pharmacopeia and in New and Nonofficial Remedies.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

HEAT OR COLD FOR PAIN OF APPENDICITIS

To the Editor—What is the best method to relieve pain and will off infection in acute appendicitis and also in acute mastoiditis? Is it better to apply the ice bag or the hot water bottle to the region of the mastoid or the region of the inflamed appendix? Why is it that some authorities claim that it is better to use heat while others say to use ice? When is the right and proper time to use one or the other? If either ice or heat is used should the heat or ice be continuous or should it be applied off and on—an hour on and about fifteen minutes to half an hour or so off? What is the best usage? I was taught in cases of acute appendicitis with a child or an aged person to apply the hot water bottle, while with all others apply the ice bag. I was also taught to apply the ice bag continuously. Please omit name. MD New Jersey

ANSWER—The pain of acute appendicitis is seldom severe enough to require morphine. In the presence of acute abdominal pains suggestive of appendicitis it is best not to give morphine or any other powerful opiate until the diagnosis is made for fear of disguising the picture and delaying diagnosis. If the patient must be observed for a time before the diagnosis can be made and if pain must be relieved to a certain extent, from 0.03 to 0.065 Gm. of codeine by mouth is an excellent sedative. Often acetylsalicylic acid, aminopyrine or sodium bromide will give sufficient sedative reaction to control the pain of appendicitis until the diagnosis is made. In the case of acute mastoiditis the nature of the infection is more evident and the relief of pain more imperative or more logical. Morphine, codeine or one of the milder sedatives can be safely used here.

The physiologic action of the ice bag or of the hot water bottle is practically the same. Both cause a localized hyperemia but the thermic units, whether heat or cold, are soon dispersed by the blood stream in the wall of the abdomen. Thus many authorities do not believe it makes much difference whether an ice bag or a hot water bottle is used. Many doubt if they have any influence in localizing or "walling off" infection in acute appendicitis. More relief of pain seems to be given by the use of the ice bag in acute appendicitis than of the hot water bottle.

LOSS OF HAIR DUE TO THYROID DEFICIENCY

To the Editor—I have a healthy patient aged 27, weight 155 pounds (70 kg.) whose symptoms are falling of the hair, irregular delayed menstrual period and gradual increase in weight. The hair is thin and not patchy. The falling of the hair is pronounced around menstrual time. She has had two pregnancies and all her symptoms date back to the first pregnancy. Could you suggest any procedure to determine the cause if due to endocrine disturbance other than basal metabolism which I plan to get? Please omit name and address. MD Ohio

ANSWER—The first procedure which is obviously being planned is to determine the basal metabolic rate. The clinical symptoms mentioned in the query point to the thyroid rather than to any of the other endocrine glands and they should be helped by thyroid therapy. It is possible though not certain, that other tests may later be indicated such as x-ray examination of the thyroid, blood sugar determination and sugar tolerance tests.

URETHRITIS WITH PHOSPHATURIA

To the Editor—I have under my care at present a man aged 25 who is suffering from a chronic urethritis. He has a persistent phosphaturia. He has been receiving fairly large doses of sodium acid phosphate with no help. Will you kindly let me know the significance of this condition and also any suggestions you may have for its treatment?

MILOSH KASICH, MD New York

ANSWER—There is considerable difference of opinion as to the clinical significance of phosphaturia. Although some urologists believe that it can be the cause of irritation, in the majority of cases its finding is of no clinical importance. It is doubtful whether phosphaturia alone is ever the cause of chronic urethritis. It is conceivable that precipitated phosphatic material might cause some irritation of an inflamed urethra, but hardly sufficient to produce a discharge. The persisting urethritis is probably due either to infection in the prostate gland and seminal vesicles, a stricture, or a follicular infection in the urethra.

The coincidence of phosphaturia and chronic urethritis is not uncommon. Patients occasionally are observed with both these conditions who become well following acidification of the urine. However, it has not been proved that overcoming phosphatic precipitation in the urine by acidification is necessarily the factor that aids the urethritis. In acidifying the urine it is advisable to keep a record of the hydrogen ion concentration in order to determine the efficacy of medication employed. It is well known that acidification of the urine frequently has an inhibitory effect on bacterial growth and that infection sometimes may be overcome by this comparatively simple procedure. In order to prevent bacterial growth it is necessary that the pH of the urine be brought down at least to a level of 5.4. Precipitation of phosphatic crystals usually occurs when the pH is no longer neutral or is slightly alkaline, and slight acidification with a pH less than 6, will usually cause phosphatic crystals to disappear. For the purpose of acidifying the urine, ammonium chloride given in enteric coated tablets will be found to be more efficacious than acid sodium phosphate.

IMMUNITY OF NEW BORN TO RESPIRATORY INFECTIONS

To the Editor—Please comment about the immunity of the newborn to respiratory infections. I am more interested in susceptibility of the newborn and infant to infections of the upper respiratory tract—the common cold, rhinitis, nasopharyngitis, tonsillitis, otitis media, bronchitis—than to the pneumonias. Is the newborn infant slightly susceptible or even susceptible at all to any of the respiratory infections? Comment briefly about the loss of natural immunity to respiratory infections as age advances. MD Texas

ANSWER—The new-born and the young infant seem to enjoy at least a relative immunity to infections of the upper respiratory tract. It has been observed that the incidence of such infections is four times greater at the twelfth month than at the third. Infants who have passed their first six months seem more susceptible to infections of the upper respiratory tract than those of the previous age period. This immunity in the young infant can be explained only by the assumption that antibodies in variable quantity are present in the body of the infant. The mother probably confers immunity to the infant. The best objective example of this early natural immunity is shown by the Schick test for diphtheria. In the first few months of life it is negative in 85 per cent of the cases. Toward the end of the first year the immunity has diminished so much that the Schick test is negative in only 10 per cent of the cases examined. On clinical grounds alone one would assume that the same degree of immunity holds good for diseases of the upper respiratory tract, though in the latter group the point cannot be proved as in the case of the susceptibility to diphtheria by use of the Schick test.

There are other factors such as the vague expression "the child's constitutional state." It appears that some children are better antibody producers than others. It has been observed that infants who appear fairly well developed and not debilitated by previous disease or nutritional disturbance may nevertheless show a markedly diminished immunity against infection. This applies to infections of the upper respiratory tract as well as to other infectious processes that attack young infants.

The season of the year also seems to affect the incidence of infections of the upper respiratory tract. Every clinician knows that infections and the high mortality rate and complications resulting from them are greater during the winter months than during the warmer season of the year. While these facts of seasonal variation are well known nevertheless it is difficult to offer an adequate explanation.

The nutritional status of the infant is an important contributing factor in establishing his immunity to infections of the upper respiratory tract. In healthy babies intercurrent infections of the upper respiratory tract take a moderate and short

course, whereas in those who have been improperly fed or have previously suffered from alimentary disorders the course is more protracted and severe. In a breast-fed infant, as a rule, there is greater resistance to infection, and if it does occur it runs a milder course.

A well balanced, well regulated diet tends to produce an optimal state of immunity. In the case of the artificially fed infant this obviously refers to the correct quantity and quality of the various food substances, properly balanced. It has been stated, and it is probably correct to say, that the vitamins A, B, C and D not only play an important part in nutrition but also tend to increase the immunity of the infant against infections, including disorders of the upper respiratory tract.

So far as the loss of natural immunity in respiratory infections with advancing age is concerned, one can only say that in addition to the loss of natural immunity there are such external factors as overcrowding in ill ventilated homes or institutions, exposure to infections, and the effect of cold and chilling on the body surface. We must also consider the increase in susceptibility to allergic factors, such as food, pollen and dust-laden air, animal emanations, and a host of other things that tend to cause allergic response. Nowhere are these reactions more marked than in the mucous membranes of the upper respiratory tract.

URTICARIA

To the Editor—A white man aged 44 married a farmer, complains of hives which first appeared about three years ago and are present from the beginning of fall through spring. The hives usually appear while he is in the house and disappear sometime after he goes outside. The rest of the history the physical examination urinalysis and blood count are negative. The patient was found to be sensitive by intradermal test to cattle hair horse hair wheat, potatoes and milk. Elimination of foods containing the latter three articles from his diet was of no avail and the patient cannot change his occupation in which he comes in close contact with both cattle and horses. A course of antigen for desensitization was given and the hives became smaller, did not last as long and did not itch as severely as before the treatment. However they occur as frequently as before. I am now giving the patient the continuation vial for continued treatment. Can you give me any suggestion as to further treatment? Please omit name and city.

M D, Illinois

ANSWER—It is suggested that the injections already started be continued for perhaps a month or two. In addition, it would be wise to try systematic elimination diets, irrespective of the skin tests. It is well known that in most cases of urticaria skin tests are not successful, as they are either positive with no clinical basis or negative to foods that really do bring on the attacks. In only about 25 per cent of instances (the figures vary with different workers) do the skin tests in urticaria correlate with the clinical observations. The percentage of positive skin tests in hay fever is about 95, in bronchial asthma perhaps 75.

Elimination diets may be carried out in several ways. One method is to eliminate one set of foods at a time, for example, all meats are forbidden for one week, then all fish, then fruits, vegetables, spices, nuts, cereals, eggs, milk, and so on during successive weeks. Another way is to start with milk and cream alone for two or three days and then add one food at a time. A third way is based on such diets as prescribed by Rowe in his book on food allergy. These diets are numbered 1, 2 and 3 and the patients are given those foods which are least likely to cause the urticaria. Eggs, wheat and milk are the most common offenders and are therefore kept out of the diet until all other foods have been tried. A record of changes in diet should be kept and from four to seven days should be required to see whether adding or subtracting a food has any clinical effect.

While most cases of urticaria are due to foods, some come from contact with certain substances particularly silk, horse hair, wool and certain dyes used in garments. These contacts should be looked into. Removal of a hair mattress has cleared up some cases. Substitution of rayon for silk has helped others. Drugs too may be responsible, as many cases have followed the use of such coal tar products as acetylsalicylic acid or aminopyrine. Quinine, barbiturates and other drugs have also caused trouble. Drugs are more apt to cause angioneurotic edema than ordinary urticaria. It would be wise to stop the use of all drugs if any are being given.

Other methods of treatment for urticaria may be tried. Autohemotherapy is favored by some. Withdraw 10 cc of blood from an arm vein and inject the blood at once intramuscularly into the buttocks. Vaccines have been tried calcium by mouth or intravenously and thyroid extract have been used. Most of these are only fairly successful, if at all. It is, of course, necessary to build up the patient's resistance as much as possible and to have him avoid all things that make him more nervous and therefore more susceptible to pruritus.

EFFECTS OF TUBERCULIN AND FOCAL REACTIONS

To the Editor—Having diagnosed pulmonary tuberculosis in a youth, aged 19 years, I thought I had better have the sputum of all the members of the family tested as well as do the intradermal tuberculin test on all. On inserting the needle intradermally in the forearm of the brother (20 years of age) I noticed the solution shoot out from the needle where it joins the bulb. No wheal was raised hence I sterilized another needle and proceeded to do the intradermal injection about 1 inch above the other point of injection. This was done on Saturday at 3 p. m. Sunday at 10 a. m. the patient returned complaining of a lump in the axilla. Around both points of injection was a flat area of erythema about one-half inch in circumference. The swelling in the axilla was soft and probably was an axillary gland inflamed. The patient complained of chilly sensations but had no fever. What worries me is: Did I give too much tuberculin unknowingly (New York Board of Health tuberculin) with a severe reaction? Did I inadvertently inject contaminating pyogenic organisms? Does the axillary enlargement indicate an existing tuberculous disease (rather than infection)? The chest has been negative. If the axillary swelling begins to fluctuate would you suggest incision and drainage or aspiration?

HENRY ROSNER M.D. Brooklyn

ANSWER—It does not seem probable that the axillary swelling was due to tuberculin, since such a short time elapsed between its administration and recognition of the swelling. Usually there is little or no reaction even at the site of injection in less than twenty-four hours. It would also seem unlikely that pyogenic micro organisms introduced so recently would result in the axillary condition. The development in the axilla is probably a coincidence or was preexistent rather than the result of tuberculin. If the swelling proves to be due to involvement of an axillary lymph node and fluctuation is elicited, aspiration may suffice. Examination of the aspirated material by smears, cultures and animal inoculation should aid in the final diagnosis.

Large doses of tuberculin introduced subcutaneously may cause focal reaction, that is, at the site of an area of disease some inflammation appears. In the case of superficial lymph nodes, such as those of the axillary group, enlargement and tenderness may be experienced. However, if the standard initial dose of tuberculin was used and even if all of both injections was introduced intracutaneously, it is most unlikely that such a reaction would result.

PREGNANCY IN HEART DISEASE

To the Editor—A white woman, aged 24 married had rheumatic fever at 6 but no subsequent attacks. Cardiac residuals consisted of chiefly aortic insufficiency (the mitral valve seems to be intact). The heart is fairly well compensated. The patient has no dyspnea or cyanosis but occasionally suffers pseudo-anginal pains lasting several hours and occurring only when she is at rest. No headaches occur she is rarely dizzy and she has no fainting spells. An appendectomy has been done and one ovary was removed for a cystic condition. She stood the operations well. What do statistics show as to the length of life in such cases? The patient is desirous of having a child. Should she be permitted to do so? Kindly withhold name.

M.D. New York

ANSWER—It is of the utmost importance in answering this query to know how much aortic insufficiency there is, how big the heart is, what the blood pressure levels are (both systolic and diastolic), the site of the pseudo-anginal pain, and whether or not it is simply the heart ache of neurocirculatory asthenia, as it probably is.

Assuming that the mitral valve is normal or at least not deformed to any appreciable degree, the following prognosis and suggestions may be made for each of three degrees of aortic regurgitation.

1 For very slight aortic regurgitation in which the heart will be little if at all enlarged and the blood pressure normal or but slightly changed, the prognosis will probably be good for many years to come, and in the absence of recurrent rheumatic infection or subacute bacterial endocarditis the patient may live the full length of life and go through several pregnancies with safety.

2 If the aortic regurgitation is of moderate degree with slight to moderate cardiac enlargement and a fairly full pulse, but not one of full blown water hammer character, the prognosis will not be so favorable. Life will probably continue for a number of years, but it seems likely that heart failure and death may occur sometime between ten and twenty years from now, other things being equal. It may be all right to allow such a patient to go through one pregnancy carefully watched.

3 In a patient with a high degree of aortic regurgitation, a much enlarged heart, and a water hammer pulse, a very full pulse pressure (such as with a systolic blood pressure of 140 or 150 and a diastolic pressure of 20 or 30) the prognosis is unfavorable, and it is possible that the patient may succumb in the next ten years from heart failure, from extension of the

heart disease or from subacute bacterial endocarditis. Such a patient should not be allowed to go through pregnancy.

If at the present time there is real angina pectoris or any evidence of congestive failure, the prognosis is still more unfavorable and the duration of life the matter of a few years at best.

OTOSCLEROSIS

To the Editor—I am 47 years old. Twenty years ago I discovered that I was not hearing as well as I should. From then on deafness has descended on me till now I find it a great burden in my life as a general practitioner. Some say it is otosclerosis and others nerve deafness. Probably it is both. The high notes are especially bad. I use a telephone aid and a Western Electric hearing aid. My hearing is much better in a moving auto and in a dance hall. I can hear better than most of my partners in fact, for a few hours while dancing I am in a new world with the blight of deafness removed. Is there not some clue for relief in the fact that my hearing is better in the circumstances mentioned? Is there anything you can recommend to help or at least to prevent further progress of this deafness? Is there any use in going to one of the great clinics for examination or treatment? I can manage if I do not get worse. Please omit name and address.

M D Manitoba

ANSWER—From the description given, this is probably a case of otosclerosis in which there is also involvement of the cochlea, so that the high tones also are affected. Many patients with otosclerosis have the so-called paracusis Willisii, in that they apparently hear better in a noisy environment. This is probably due to the fact that the otosclerotic patient does not hear the low tones, whereas the hearing individual who is conversing with him is masked for low tones by the surrounding noises and therefore raises his voice in intensity so that the individual with impaired hearing can better understand. He therefore thinks he is hearing better in a noise. If a thorough examination of the hearing function has been made, there would be no object in repeated examinations so far as a guide to treatment is concerned, for unfortunately there are no therapeutic measures that are of any avail in otosclerosis. On the other hand, if the bone conduction is normal or prolonged, the individual is often greatly benefited by the use of an electrical hearing aid, particularly one that has an attachment for application to the bone of the mastoid region.

SEPTICEMIA AFTER ABORTION

To the Editor—I have a patient who has developed a septicemia following incomplete abortion. Would you please give me information on the treatment of septicemia? This patient has a red cell count of 4,950,000, a hemoglobin of 70 per cent and a white cell count of 10,500. She feels quite well except for the chills and she is taking nourishment quite well. She has a severe headache beginning just before and continuing through the duration of the chill. A chill lasts about fifteen minutes. This condition developed about two weeks after the abortion started. She states that intervention was not done and I have reason to believe that she has done nothing to bring on abortion. Please omit name.

M D North Dakota

ANSWER—From the history of the case it does not appear certain that the patient has a septicemia. Nearly always when septicemia occurs in a case of incomplete abortion the infection starts within a few days following the abortion. Furthermore, this patient's subjective symptoms apparently are not disturbing except for the chills. Another unusual occurrence in this case is the normal red blood count, white blood count and hemoglobin. Nearly always in cases of septicemia there is a secondary anemia and a definite leukocytosis. No information is given concerning the temperature, the urinary examination and blood cultures. The history of a late onset of chills in this case should make one suspect pyelitis or thrombophlebitis. A catheterized specimen of urine should be obtained and it should be examined microscopically.

Treatment in this case should be along general lines. The patient should have abundant fresh air and ample sunlight. She should be given large quantities of fluids and fruit juices. If the urine contains many pus cells, large amounts of alkali should be given for a few days and then large amounts of acid should be given instead. Solution of posterior pituitary, 0.5 cc three times a day, helps in some cases. If the uterus is not well involuted, a half teaspoonful of fluid extract of ergot should be given by mouth four times a day for a few days. Nourishing food, of course, should be given. Attention should be paid to the bowels and bladder. If the patient cannot sleep sedatives should be given. The only indication for intra-uterine manipulation is hemorrhage that cannot readily be controlled by ergot and pituitary extract. Even if septicemia is definitely present there is no specific therapy. In some cases antistreptococcus serum is of distinct help. Large amounts of alcohol in the form of wine help others. Blood transfusions in amounts between 250 and 300 cc. are of great benefit even in cases in which there is not much anemia.

HAY FEVER RESORTS IN MAINE

To the Editor—I should like information regarding a good hay fever resort in Maine. The resort will have to be near a point where a patient could have hospital facilities if necessary and medical care.

EDWARD C. ALBERS, M.D., Champagn, Ill.

ANSWER—Any city in the vicinity of the Rangeley Lakes in the northern end of Maine will be found satisfactory for a ragweed hay fever sufferer. Calais, Fort Fairfield and Houlton, in Aroostook County have first-class hospital service. The latter place has two hospitals. It is advisable to avoid the Maine coast unless perhaps at Eastport, where the ragweed pollen concentration is less than at other points on the coast. The total pollen count for Eastport in 1935 was 280. There were only four days on which the pollen count exceeded 25 granules per cubic yard of air. The count at Upper Dam in the Rangeley Lakes area was 165, with only one day above 25. Conditions in northern Maine are even better than at Upper Dam.

MAPHARSEN IN SYPHILIS

To the Editor—A carpenter aged 42 weighing 160 pounds (73 Kg.) incapacitated for a month to six weeks because of what he thought to be rheumatism complicated by measles seen June 13, 1935 had a typical secondary papular syphilid with a four plus Wassermann reaction. The eruption had appeared from two and a half to three weeks previously. He had been exposed (at which time gonorrhea also was contracted) in March which was a full three months earlier. Examination revealed a penile scar chancre, which had been treated locally, edema of the foreskin and a gonorrheal discharge. The vascular and renal systems and the eyes were normal. No positive neurologic signs were found. It was decided to place the patient on the therapeutic regimen outlined by the League of Nations Committee of Experts (THE JOURNAL, April 11, 1935, p. 1329). The patient could be seen only once a week, so the arsenical chosen was mapharsen 0.06 Gm being used in all but the initial dose. The bismuth preparation used was bismuth salicylate in oil, 2 grains (0.13 Gm.). Potassium iodide was given by mouth during the bismuth courses. To date the following has been given: Eight injections of mapharsen followed by four weekly injections of the bismuth preparation then six injections of mapharsen and I have just finished the sixth and last dose of the second course of the bismuth preparation. The serologic reactions after both arsenical courses and the first bismuth course is Wassermann four plus and Kahn three plus. A spinal fluid examination at this time revealed the Wassermann reaction two plus, globulin slightly increased and colloidal gold 3332211000. The clinical response to treatment has been excellent, the patient being able to resume work after the second dose of the arsenic preparation. At present he states that he feels better than he has in ten years. Aside from the original dose of mapharsen when a marked Herxheimer reaction occurred, all treatment has been very well tolerated. There are no neurologic changes. Please advise whether I am justified in carrying out the plan of treatment I have started or should this be altered in any way. Would tryparsamide be a better arsenical to use in this case in view of the spinal fluid examination and if so how would it fit into the scheme of treatment? Please omit name and address.

M D, Kansas

ANSWER—Mapharsen is a trivalent arsenical compound, chemically meta-aminoparaxydroxyphenylarsine oxide, which has been recently tested out in experimental trypanosomiasis and human syphilis. The first report by Foerster and his associates made on the basis of a clinical study on eighty patients treated with 2,117 injections of the drug indicated that mapharsen was a potent antisyphilitic agent and that further clinical trial was justified. In nearly all the cases of early syphilis the Wassermann reaction of the blood serum was reversed to negative. Return to a positive reaction occurred in half the cases and was found to be associated in five with abnormalities in the spinal fluid. The drug was well tolerated by nearly all the patients in properly adjusted dosage. Mild gastro-intestinal symptoms occurred in some, jaundice developed in four cases, and renal symptoms were observed in four others. Other observers have also had the impression that the clinical results were comparable with those of the arsenphenamines. The value of mapharsen in neurosyphilis cases is still undecided and for the present Lorenz and Bleckwenn, who have used the drug for more than two years, state that it is not to be recommended in these cases. As the spinal fluid in the present instance is positive, it would seem to be wiser to substitute tryparsamide with proper visual control. Courses of tryparsamide should alternate with heavy metal therapy in the effort to obtain a reversal of the positive spinal fluid. The following references should be consulted:

Foerster, O. H., McIntosh, R. L., Wiedler, L. M., Foerster, H. R., and Cooper, G. A. Mapharsen in the Treatment of Syphilis. A Preliminary Report. *Arch. Dermat. & Syph.* 32: 868 (Dec.) 1935.
Gruhatz, O. M. Mapharsen (Arsenoxide) in the Therapy of Experimental Syphilis and Trypanosomiasis. *Arch. Dermat. & Syph.* 32: 848 (Dec.) 1935.

Mapharsen stands accepted by the Council on Pharmacy and Chemistry of the American Medical Association (THE JOURNAL, January 18, p. 214).

RECTAL GONORRHEA

To the Editor—I have under my care a woman of 30 who for the past year has complained of vague abdominal pains and a daily rise in temperature of low grade type, 99 to 100 with no increase in pulse and no loss in weight. The external physical examination is negative, the blood Kahn reaction is entirely negative. The urine is normal. Cervical smear is positive for gonococci for which I have been treating her for five weeks. Recently I made a proctoscopic examination and found the rectal mucosa to be very hyperemic and it bled on the least manipulation. At the upper pole of the rectum I discovered what appeared to be free pus, with no apparent sac. On gram stain I found intracellular gram negative diplococci, identical with the gonococci. Now this is apparently a case of rectal gonorrhea also. I should like to know whether the rectal condition could be responsible for the abdominal pains (mild gnawing sensation). The pelvic examination revealed free adnexa. Also is there a standard accepted method of treatment for rectal gonorrhea? How could the gonococcus gain access to the rectum unless during the act of wiping while at stool? There is no history of perverted intercourse. Please omit name. M D Illinois

ANSWER—Perverted sexual intercourse is a frequent cause of gonorrheal proctitis. It is difficult and often impossible to obtain a history of perversion, particularly if this has occurred but once. It may also occur in women who have been infected with gonorrhea and who are careless about their personal hygiene. Infected enema points have been held responsible in some instances. In some cases it may be quite impossible to determine the method of infection.

Gonorrheal infection of the rectum rarely causes gnawing sensations in the abdomen, and in a situation of this kind one should look elsewhere for the cause of abdominal pain. In some of the cases there are no symptoms and in others there is a sensation of burning and smarting, as well as tenesmus.

Treatment is best carried out by rectal irrigations with silver nitrate in the strength of 1:2000. The solution should be made up with water free of chlorine. Application of silver nitrate in the strength of 1 or 2 per cent is very effective. If the silver nitrate produces too much irritation, one may use preparations such as strong protein silver, 5 per cent, or mild protein silver, 5 per cent.

INOCULATION AGAINST TYPHOID IN MAN AND
RABIES IN DOGS

To the Editor—As the family and I have traveled widely each summer for many years we have taken an immunizing series against typhoid and paratyphoid every four years. Is it necessary to continue doing this indefinitely or have we probably developed a permanent immunity by now? If possible I should like an answer to another question not strictly medical but it seems to me rather important. A year ago we adopted a dog and had him get an immunization against rabies. The veterinary surgeon who gave it said that it should be repeated annually. Can you tell me whether that is necessary or was he merely looking for an annual fee? I think all dog lovers should be informed on this point and would greatly appreciate an answer if you can give it. ROBERT W. SHEARMAN M.D. Brooklyn

ANSWER—Unquestionably the injections of vaccine will have produced a degree of immunity. It is conceivable, however, that a massive infection might overwhelm the resistance and consequently it might be safer to repeat the immunization if the exposure to infection seems dangerous.

The single inoculation of antirabic virus used for dogs confers immunity probably in many instances not exceeding a year. There have been some failures noted in shorter periods. It is a good precaution, therefore, to have the dog immunized each year.

PATHOLOGY OF OPIUM ADDICTION

To the Editor—What is known to date of the blood chemistry and tissue pathology gross and microscopic of chronic opium addiction? Needless to say we in China are in constant contact with this and I am interested in fitting our treatments to the needs with the hope that better results may follow.

FREDERICK G. SCOVILL, M.D. Tsining Shantung China

ANSWER—Blood chemistry in chronic opium poisoning when individuals are stabilized on their drug of addiction is set forth in the volume "Opium Addiction" published by the American Medical Association in 1929-1930. The volume consists of a reprint of articles by various authors reporting on studies conducted by the Philadelphia Committee for the Clinical Study of Opium Addiction (Archives of Internal Medicine, Volume 43-44). These reports show the following to be normal: blood sedimentation rate, fragility of the red cells, clotting time, viscosity of whole blood, oxygen content, red cell count, white cell count, differential and hemoglobin, cell volume, Wassermann reaction (subsequent experiences have shown that in some instances the blood Wassermann and Kahn reactions

have shown differences during addiction and following withdrawal), specific gravity of blood and plasma, plasma refractive index, dry matter of the blood and plasma, plasma p_n , carbon dioxide capacity of the plasma, serum conductivity, blood sugar, blood urea, creatinine and uric acid, blood chloride, blood calcium, and blood magnesium.

The accepted blood changes that take place during the abstinence period of addiction are blood concentration, leukocytosis, hyperglycemia, hyperlacticacidemia, and decrease in inorganic phosphorus content of the plasma, and slight rise in blood cholesterol, in unrelated form.

OBSTRUCTION OF CERVIX

To the Editor—A woman aged 35 was curetted in the fall of 1932 for the frequent passing of blood and accompanying pain. A diagnosis of endometrial hyperplasia was made at that time. She was completely relieved for a period of three months when the old symptoms reappeared and in addition at each period a terrific odor appears and remains for about two days following cessation of the period. The period is of four days duration with few clots and moderate in amount. Between periods she occasionally has pain in the lower quadrants of the abdomen and passes small gobs of blood. She has been to several clinics without relief. She has taken courses of theelin amniot and so on without relief. Smears are negative. Hanging drop smears are negative and there are no vaginal irritations, signs or symptoms. There is no other body change. What is the most plausible diagnosis? Would another curettage be advisable? Is there a possibility of a sponge having been left in the uterus? The uterus tubes and ovaries appear normal to digital examination. Please do not publish my name. M.D., Minnesota.

ANSWER—The absence of symptoms for three months following a diagnostic curettage, together with the clinical picture related, indicates possible obstruction in the cervix. Cervical strictures are relatively common and by their interference with the free flow of uterine secretions may give rise to the symptoms which the patient presents. A careful study of the cervical canal under anesthesia is in order, together with thorough dilation and curettage of the uterus.

It is unlikely that a foreign body was overlooked at the time of the previous curettage.

If, at operation, it should be proved that there is no cervical obstruction, the patient has hyperplasia of the endometrium as a result of dysfunction of the ovaries. The subsequent course will be most interesting.

FUNCTIONAL TIC

To the Editor—A white woman aged 45 complains of a muscular twitch in the back on the right side over an area corresponding to the rhomboideus major. This condition began in August 1932 and while it has occasionally diminished in severity for a day or two at a time it has been constant ever since. It has been severe enough at other times to retract the shoulder. The patient can control the 'twitch' voluntarily by holding the muscles of the shoulder girdle taut. When they tire the condition begins again. Moreover, as long as she is working the 'twitch' is not present. But relaxation even for the shortest time will immediately set the contraction in progress. Her main problem is sleeping. She lies in bed and is unable to sleep until the contractions stop and she states that she is frequently awakened by them. There is no history of trauma. Physical examination is negative and there are no significant observations in blood count, urine analysis or Wassermann reaction. She has been taking one-fourth grain (0.016 Gm.) of phenobarbital four times a day which has not helped the situation much. These details are about all I can give. Please let me have your suggestions as to diagnosis and therapy. Kindly omit name. M.D., New York.

ANSWER—While this would be looked on as a case of functional "tic" analogous to spasmodic torticollis by those who consider the latter a "tic," it is more likely that the condition is disease of the lenticular nucleus or other part of the extrapyramidal motor system. Such disease might be primary "dystonia lenticularis" (dystonia musculorum progressiva), a sequel of unrecognized encephalitis, or possibly even early paralysis agitans. If phenobarbital has proved ineffective, scopolamine should be tried.

LOCAL ANESTHESIA FOR SURGERY ON PERI-
TONSILLAR ABSCESS

To the Editor—Will you please tell me the most satisfactory method of using local anesthesia for opening a peritonsillar abscess?

PAUL J. FLORY, M.D. Pawnee City, Neb.

ANSWER—There is no really satisfactory method of anesthetizing the palate locally in order to open a peritonsillar abscess. There are a number of methods in use, all of them offering satisfactory results at times, but all of them have their defects. One can paint a fine streak with from 30 to 70 per cent phenol, making sure that the applicator is not dripping, in the line of the expected incision. Phenol, however, used in

this fashion may cause a little local necrosis. One may inject a solution of procaine and epinephrine. The objection to this is that it is surgically unsound to inject solutions into infected areas. Finally one may use a curved cotton tipped applicator dipped in 10 per cent cocaine and passed along the floor of the nose backward until it rests on the nasopharyngeal aspect of the soft palate. Here the cocaine will rest on the nerves that go to supply the region involved and produce frequently enough a satisfactory anesthesia.

PLASTIC SURGERY OF NOSE

To the Editor—Is it possible to pare down an anteriorly bowed nasal bone by approaching the operation from within the nasal cavity? The condition is a congenital one. If this is possible what are the chances of dimpling of the skin at the back ridge of the nose as a complication? The patient a girl has a nose that appears in profile with an abnormal forward bowing of the ridge. Please omit name. M D Wisconsin

ANSWER—Convexity of the nasal bridge is usually congenital and may involve the bony or cartilaginous portion or both. The correction of this deformity is accomplished by an intranasal operation that leaves no visible scar or dimpling of the skin. The projecting portions of bone and cartilage are removed after the skin has been lifted and the profile is reduced to the desired level. It is usually necessary also in these cases to elevate the tip of the nose slightly in order to forestall the apparent lengthening that would result from merely removing the hump. It usually takes from ten days to two weeks for the postoperative swelling to disappear and the operation in no way impairs subsequent strength of the supporting structures.

FORMIC ACID BURNS OF HANDS

To the Editor—I have a case of formic acid burns of both hands. Everything I know of has been tried to heal them. New blebs form after each dressing. These break down and form new ulcers. Have you any treatment to suggest? Please omit name. M D Massachusetts

ANSWER—Formic acid may burn and blister the skin with the subsequent development of keloids in some of the cases. When these burns occur, immediate free irrigation of the affected sites with a weak aqueous solution of sodium bicarbonate should be applied until all the acid is neutralized and the pain relieved. The areas may then be painted with a 3 per cent aqueous solution of gentian violet. If new blebs continue to form, it is well to continue frequent irrigation. The use of bland ointments is also of value to promote healing in some of these cases.

INFECTIOUS ADENITIS

To the Editor—In THE JOURNAL, May 30 under Queries and Minor Notes there is a question headed Infectious Adenitis or Mononucleosis signed M D Georgia. I would point out that the reply is incomplete to say the least. The questioner has given a carefully detailed history which in itself would strongly suggest undulant fever. Adenitis is not a rare finding to brucellosis. All the laboratory data given would fit into the well established picture of undulant fever. The gradually rising white blood count with increase of lymphocytes at the expense of polymorphonuclear leukocytes is commonly seen in brucellosis. All other tests were negative. Agglutination occurred with Brucella abortus in a 1:20 dilution of the blood serum late in the course of the illness—a usual finding to brucellosis. (This could be a cross agglutination of no significance.) Angle Evans and others including myself have repeatedly pointed out that agglutination with Brucella abortus in a low dilution of blood serum is just as significant as agglutination in higher dilutions in patients exhibiting a clinical picture of undulant fever. Finally in the May 12, 1935 issue of THE JOURNAL under Queries and Minor Notes there is a question framed as follows: "In making a diagnosis of undulant fever in patients who show the clinical symptoms suggesting the disease I should like to know how high the titer must be in the serologic test before the diagnosis can be safely made. In reply the following remarks appeared among others: Diagnostic significance is usually attributed to agglutination in dilutions of 1:80 or above. It cannot be said however that there is any arbitrary diagnostic agglutination titer. While the serums of most individuals who exhibit a more or less well defined clinical picture of undulant fever will show agglutination in titers of 1:80 or above occasional cases will be encountered in which no agglutinins are present or agglutinins will exist in titers of from 1:10 to 1:40. Ordinarily serum agglutinins do not appear until a week or ten days after the onset of illness. In some cases however agglutinins may not appear for several weeks."

In your reply should not undulant fever have been suggested at least as a possible diagnosis? In addition to the suggestion that an agglutination test with sheep's red cells be done a blood culture for Brucella abortus might also have been suggested as well as further agglutination tests with Brucella abortus to detect a possible rising titer.

EAROLD J. HARRIS, M.D., Westport, N. Y.

Medical Examinations and Licensure

COMING EXAMINATIONS

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- AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Philadelphia, June Sec. Dr. C. Guy Laoc 416 Marlboro St. Boston.
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B candidates will be held at various cities in the United States and Canada Nov. 7 Applications must be filed at least sixty days prior to the examination Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh (6).
AMERICAN BOARD OF OPHTHALMOLOGY New York, Sept. 26. All applications and case reports must be filed sixty days before date of examination Sec. Dr. John Green 3720 Washington Blvd. St. Louis.
AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan. 9 Sec. Dr. Fremont A. Chaudler 180 N. Michigan Ave. Chicago.
AMERICAN BOARD OF OTOLARYNGOLOGY New York, Sept. 25-26 Sec. Dr. W. P. Wherry 1500 Medical Arts Bldg. Omaha.
AMERICAN BOARD OF PEDIATRICS Baltimore and Cincinnati is November Sec. Dr. C. A. Aldrich 723 Elm St. Winnetka, Ill.
AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York, Dec. 29-30 Sec. Dr. Walter Freeman 1028 Connecticut Ave. Washington D. C.
AMERICAN BOARD OF RADIOLOGY Cleveland Sept. 25-27 Sec. Dr. Byrl R. Kirkin Mayo Clinic, Rochester, Minn.

Connecticut March Examination

Dr. Thomas P. Murdock, secretary Connecticut Medical Examining Board, reports the written examination held in Hartford, March 10-11, 1936. The examination covered 9 subjects and included 70 questions. An average of 75 per cent was required to pass. Thirty-three candidates were examined, 21 of whom passed and 12 failed. The following schools were represented:

| School | PASSED | Year Grad | Per Cent |
|--|-------------|-----------|----------|
| Yale University School of Medicine | (1933) 75 | (1934) | 75 |
| George Washington University School of Medicine | (1935) | (1935) | 78.5 |
| Georgetown University School of Medicine | (1935) 77.2 | (1935) | 78.5 |
| Johns Hopkins University School of Medicine | (1934) | (1934) | 80 |
| University of Maryland School of Medicine and College of Physicians and Surgeons | (1935) | (1935) | 75 |

| | | |
|--|-------------|--------------------|
| Harvard University Medical School | (1933) 76 2 | (1935) 77 2 |
| Tufts College Medical School | (1935) 75 | 75 4 |
| 78 4 79 81 1, 85 9 | | |
| Long Island College of Medicine | (1933) | 75* |
| Temple University School of Medicine | (1935) | 75 |
| University of Pittsburgh School of Medicine | (1934) | 75 |
| Woman's Medical College of Pennsylvania | (1933) | 77 |
| Medical College of Virginia | (1935) | 79 3 |
| University of Dublin School of Physic | (1934) | 77 5 |
| Trinity College | | |
| School | FAILED | Year Grad Per Cent |
| George Washington University School of Medicine | (1935) 71 6 | 71 6 |
| Georgetown University School of Med | (1934) 73 5 | 70 9 |
| Boston University School of Medicine | (1934) | 73 1 |
| Tufts College Medical School | (1934) 67 1 | 72 4 |
| Jefferson Medical College of Philadelphia | (1934) | 73 5 |
| University of Montreal Faculty of Medicine | (1935) | 68 2 |
| Ludwig Maximilians Universität Medizinische Fakultät München | (1934) | 69 1 |
| Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia | (1933) | 71 |
| Osteopath | | † |

Fourteen physicians were successful in the examination for endorsement applicants given in New Haven, March 24. The following schools were represented:

| | | |
|--|--------------------------------|--------------------------|
| School | PASSED | Year Grad Endorsement of |
| Yale University School of Medicine | (1932) (1933), (1934) N B M Ex | (1930) * |
| School of Med of the Division of the Biol Sciences | (1933) | Ohio |
| University of Kansas School of Medicine | (1933) N B M Ex | |
| Johns Hopkins University School of Medicine | (1932) | Maryland |
| Columbia University College of Phys and Surgs | (1913)* | New York |
| Cornell University Medical College | (1931) | New York |
| Fordham University School of Medicine | (1919)* N B M Ex | |
| University of Oregon Medical School | (1931)* N B M Ex | |
| University of Vermont College of Medicine | (1931)* N B M Ex | |
| Ludwig Maximilians-Universität Medizinische Fakultät München | (1925) | New York |

* License has not been issued

† Average grade not reported Examined in medicine and surgery

Book Notices

Disease and Destiny By Ralph H Major M.D. Preface by Logan Clendinning M.D. Cloth Price \$3.50 Pp 338 with 47 illustrations New York & London D Appleton Century Company Inc. 1936

Dr Major's thesis is that disease whether affecting a single individual or great numbers of men may have a profound influence on subsequent events. The diphtheria that strangled George Washington, the smallpox that caused the death of Louis XV, the syphilis that wrecked the brain of Nietzsche had results as definite as had the bullet that took the life of Abraham Lincoln or the daggers that ended the career of Julius Caesar. The mass destruction of peoples by plague, malaria, yellow fever changed the history of cities or even of nations, at times the effects were world wide in extent. The diseases discussed by the author are familial hemophilia and nine parasitic diseases—plague, typhus, tuberculosis, smallpox, diphtheria, malaria, leprosy, yellow fever and syphilis. Dr Major knows his subject. He is a practitioner, teacher, investigator, and an ardent student of the history of medicine. He is not satisfied to be a compiler at second hand, he goes to original sources. His wanderlust has impelled him to travel in the Old World, as in the New, not alone the familiar routes of the tourist. His joy is to turn aside to visit less known places, to explore the narrow street, to enter the house or the very room where some celebrity lived or died, to seek out in the library some faded manuscript or rare first edition, or to study or photograph some forgotten but significant painting. It is the result of these excursions into by-paths that gives to the book the feature of human interest that always makes such a strong appeal to readers. The author has not intended to write an encyclopedic work far otherwise. The stories of malaria and yellow fever, for example, are by no means complete. But they convey much of information and attract one by their thumbnail sketches of Laveran, Ronald Ross, Finlay, Walter Reed, Gorgas. These men stand out as living personalities and not as conventional contributors of dry facts. Possibly one might criticize the writer for at times letting his enthusiasm lead him to describe individuals or their topical setting in such detail as to get him rather far away from his main theme, i.e., disease and its influence on destiny. That Ross was a poet and a mathematician

of note has a remote bearing on the question of malaria. Yet we are glad Dr Major wrote as he did, rather informally or even discursively, for it makes the reading of his pages a refreshing pleasure. All physicians, whether general practitioners or specialists, even well informed medical historians, will enjoy the book. The layman should find it attractive and illuminating. The author clearly had them in mind as he wrote and with a higher purpose than merely to please. There is not one of the chapters that does not convey an implied or frankly expressed lesson—the value of research in laboratory and at the bedside, the necessity for vivisection and of necropsy if scientific medical progress is to be made, the importance of preventive medicine and of public health activities, the nature of rational treatment of disease. Cults, pure empiricism, blind adherence to dogmatism and tradition find little comfort here. Altogether one must put on the book the stamp of emphatic approval. It deserves the success that was accorded Dr Major's earlier volume "Classical Descriptions of Disease."

Les voies aériennes et la tuberculose Par Georges Portmann professeur de clinique oto-rhino-laryngologique à la Faculté de médecine de l'Université de Bordeaux et Henri Retrouvey. Bibliothèque de phthisiologie sous la direction de Léon Bernard. Paper Price 50 francs Pp 312 with 30 illustrations Paris Masson & Cie 1936

This excellent book is one of a monograph series on tuberculosis, the Bibliothèque de phthisiologie, edited by the late Leon Bernard. According to the authors the purpose of this monograph is to relate and discuss the clinical aspects, the problems and the diagnosis of tuberculous lesions of the upper air passages, in connection with their relations with pulmonary tuberculosis. Chapters are added on nontuberculous infections of the nasal sinuses, nasal deformities that have a bearing on respiration, foreign bodies in the air passages, and hemoptysis that can originate in nontuberculous conditions in the upper respiratory tract. Four excellent roentgenograms of the accessory sinuses are reproduced and the associated conditions of sinusitis and bronchitis, which gave so much difficulty in the differential diagnosis of pulmonary tuberculosis during the World War, are well described. All forms of tuberculous lesions of the nose, pharynx, trachea and larynx are carefully described. Pictures portraying tuberculous laryngitis from the earliest myopathic form to the late perichondritis are admirable. The pathology of the tuberculous lesions is discussed and the lymphatic and hematogenous routes of these complications of pulmonary tuberculosis are carefully criticized, as well as direct infection from sputum. The distribution of the cervical lymph nodes is given a full page illustration. Climatic treatment, rest treatment and the effect of pulmonary collapse therapy on the upper respiratory tuberculous lesions are all matters thoroughly presented. A case is related of Vernieuwe's in which alcohol injection into the recurrent laryngeal nerve of the left side for serious ulceration with edema produced a paralysis of the cord for three months and resulted in cure. The case is referred to as one of "collapsothérapie hémilaryngée." One is surprised to find under general therapy that gold and rare earth salts have been found of benefit in certain upper respiratory lesions. Emil Bogen in a comprehensive study of the effects of all elements on tuberculosis found no favorable effect from cerium and most unfavorable results from beryllium in his work on guinea-pigs. In clinics for tuberculosis in this country, more and more emphasis is being placed on the use of the bronchoscope in patients when collapse therapy has not succeeded in making the sputum negative or when hemoptysis persists in spite of collapse therapy. Not only have tuberculous lesions in the trachea been found in such patients, but also ulcers in the bronchi which have yielded to local treatment. These matters will probably be given more stress in subsequent editions. It is a charming characteristic of the French to honor distinguished physicians. In this well written work one finds such terminology as "the disease of Brindel," "the malignant tuberculous pharyngitis of Letulle," "the acute military tuberculous pharynx of Isambert," "the subacute military tuberculous pharynx of Escat" and "le bacille de Koch" for the tubercle bacillus. The bibliography contains about 250 references and is compiled from the actual publications to which the authors had access.

Emergency Surgery By Hamilton Bailey FRCS Surgeon Royal Northern Hospital London Second edition Fabrikoid Price \$14 Pp 842 with 812 illustrations Baltimore William Wood & Company 1936

This work has been thoroughly revised and rewritten. The introductory chapters are on intravenous infusion, blood transfusion and anesthesia. Emphasis is placed on the necessity for the surgeon to be trained to meet any emergency. The treatment of general peritonitis is taken up from the point of first determining the cause. Cecostomy has proved of value. Operation for acute perforated appendicitis is not usually attempted after fifty hours except when there is general peritonitis, in children, after a cathartic and when one is in doubt as to the diagnosis. Urgent operations for various conditions in the abdomen, including the viscera and the intestine, are taken up first as to the diagnosis and then as to the proper treatment. The technic of operations for hernia and on the female pelvis are included. A comprehensive survey is given of the genitourinary organs. Emergency conditions are discussed rather briefly as they affect the thorax, spine head face, neck, bones, joints and extremities. A good section is that on hand infections. Acute infections and burns are included. Chapters on the eye and ear are written by collaborators, the field of general surgery being the work of the author. The clear and practical advice given over such a large field conclusively demonstrates an extensive experience. It is with pleasure that one reads the methods and particularly the indications for operation by a master surgeon. To the younger man in search of well seasoned advice the volume should prove invaluable.

Exploration radiologique des colons et de l'appendice au moyen des solutions flocculantes. Images de muqueuses. Technique sémiologie syndromes. Par Georges Malngot électro radiologiste de l'Hôpital Laënnec Raymond Sarasin et Henri Duclos assistant de radiologie à l'Hôpital Laënnec. Travail du service de radiologie de l'Hôpital Laënnec. Préface de Antoine Béchère membre de l'Académie de médecine. Cloth Price 200 francs Pp 229 with 203 illustrations Paris Mosson & Cie 1935

According to the preface, this is the composite work of three roentgenologists, who were not given special introduction because of their apparent eminence in France. The book describes a method of examining the colon and appendix by means of a colloidal solution of thorium oxide. Essentially the technic consists of an injection of the opaque medium and the examination of the colon first under pressure, secondly after elimination and thirdly after the injection of air. The modus operandi is attributed to the precipitation of the colloidal material on the mucosa of the bowel. In the first part of the procedure one develops the usual routine picture, in the second part the bowel appears as a network of interlacing lines that are attributed to the folds of the mucosa outlined by the precipitated thorium, and in the third part the distended bowel takes on a spotted appearance as the result of the separation of the precipitated thorium. Any departure from the normal is thus demonstrated particularly in the second and third parts of the routine. Disturbances in the intricate pattern of the mucosal relief are easily seen and in the third portion the pathologic lesions become outlined because they interrupt the snowstorm pattern. The book is excellently printed and a great number of illustrations some of which appear to be retouched, are shown describing the various pathologic lesions. This combined effort is a worthy contribution to a field that is already well filled. The method of presentation is clear and easily read.

Basal Metabolism in Health and Disease. By Eugene F. Du Bois M.D. Medical Director Rusell Sage Institute of Pathology New York Third edition Cloth Price \$5 Pp 494 with 98 illustrations Philadelphia Lea & Febiger 1936

In this edition Professor Du Bois's book has been almost entirely rewritten and much new material added. It is a remarkable book in that all the valuable literature on the subject both scientific and clinical is presented together with the extensive calorimetric investigation carried out under his direction in the Rusell Sage Institute of Pathology in an interesting and exhaustive manner. Du Bois has succeeded in his aim to bring basal metabolism out of the realm of pure physiology into the domain of clinical medicine and in doing this has made the book of the greatest value to the clinician and general practitioner. The work is indispensable to all research workers

in the field of metabolism. The book, as before, is divided into two parts. Part I, on metabolism in health, is enriched by a more ample discussion of the mechanism of the loss of heat from the body in which for the first time the subject of radiation is accurately presented in an understandable manner. This chapter will be of particular value to modern heating and ventilating engineers, as it opens up the possibility of developing new methods of heating rooms. The chapters on the biologic significance of the surface area and on normal standards have been clarified and enlarged by full discussion of the recent publications on these subjects including the studies of Boothby, Berkson and Dunn, which have not yet been printed. Part II, on metabolism in disease, has been enriched by a careful review and discussion of the vast literature on the subject that has appeared in recent years. It is this part which renders the book indispensable to the clinician and general practitioner.

The Specificity of Serological Reactions By Karl Landsteiner M.D. The Rockefeller Institute for Medical Research New York Cloth Price \$4 Pp 178 Springfield Illinois & Baltimore Charles C Thomas 1936

The review (THE JOURNAL, March 24, 1934, p 958) of the original edition in German (Landsteiner, Karl Die Spezifität der serologischen Reaktionen, Berlin, Julius Springer, 1933) is repeated here because it describes clearly the purpose and character of the book. "The purpose of this monograph is to summarize the results of the work of the author and his co-workers on antigens and to discuss serologic specificity and related questions. As would be expected from the leader in the chemical study of specificity, attention centers mainly on chemical work bearing on fundamental problems. The presentation follows essentially the development of this work. There is an introductory statement of the concept of specificity, which is followed by sections on the serologic specificity of proteins, on the specificity of cellular antigens, on the specificity of the antibodies, on serologic reactions with artificial antigenic complexes and simple chemical substances, and on chemical investigations of specific cell substances (carbohydrates, lipoids). The author is a master of clear, concise, correct statement. His method of reviewing published work is a model of exactness and concrete precision. Not a word is wasted. Landsteiner's monograph is a classical contribution. It should be translated into English. The present edition in English follows the plan of the German original, only such changes have been made as were necessary to incorporate into the text the significant new facts that have come to light in the meantime. No elaboration of the earlier review need be attempted, but it may be permitted to say that the book is of exceptional merit and deserves fully the praise bestowed on its predecessor.

Elektrokardiographische Befunde bei Herzinfarkt. Von Anton Jerrell. 1. Assistent Acta Medica Scandinavica Supplementum LXXVII Paper Pp 267 with 74 illustrations Oslo Kistenes Boktrykkeri 1935

This well written monograph, in German, is a detailed presentation of the electrocardiographic observations in sixty six clinically diagnosed cases of myocardial infarction in sixty five unselected patients, observed from 1931 to 1935. Serial curves, frequently numerous, were recorded in fifty seven instances. There are additional serial records of other conditions showing graphic alterations that simulate infarction. These, with diagrams of infarct localization as determined by necropsy, furnish an abundance of illustrations. A protocol of each case is included. There were forty-five men and twenty women in the series. ST interval displacement, a frequent early observation persisted longest in the precordial lead. Progressive T wave changes were of T₁ type in thirty five and of T₂ type in twenty-one instances. ST interval and T wave alteration, the most dependable diagnostic graphic change, occurred in forty-nine cases. The precordial lead revealed characteristic changes in twenty-six of the thirty-six instances in which it was employed. Extrasystoles occurred in thirty four supra ventricular in nine, ventricular in twenty-three, both forms in two auricular fibrillation or flutter in seven, paroxysmal auricular tachycardia in one, auriculoventricular dissociation in three, prolonged auriculoventricular conduction in three, sino-auricular block in one, sinus bradycardia with interference dissociation in one, bundle branch block in seven, of the com-

mon type in six, of the uncommon type in one, arborization block in five, low voltage in fourteen, deep Q_2 in nineteen and deep Q_3 in five cases. Of these electrocardiographic changes, arborization block alone appeared to be of prognostic significance. Necropsy was performed in twenty-six instances. Of sixteen with anterior infarction, eleven presented curves of T_1 type and three showed arborization block, whereas in two the graphic changes were of indeterminate type. Of the remaining ten with posterior infarction, all showed graphic changes of T_2 type. The material is unusually well presented. The pertinent literature is discussed in a clear and logical manner. A carefully selected bibliography includes reports of all the significant work on the subject and gives full recognition to American contributions. The monograph is a valuable addition to our knowledge of myocardial infarction, of particular interest to the clinician.

Die Entstehungsursachen der Haffkrankheit in dem Zeitraum von 1924 1933 vom epidemiologischen Standpunkt. Von Dr. med. Friedrich Wolter. Leiter des Hamburgischen Forschungsinstituts für Epidemiologie. Auf Grund des von der Regierung in Königsberg 1. Pr. zur Verfügung gestellten amtlichen Materials dargestellt. Kleine Hippokrates Bücherei Band VII. Herausgegeben von Prof. Dr. med. Kurt Klare Scheidegg. Boards. Price 4 50 marks. Pp 50. Stuttgart & Leipzig: Hippokrates Verlag GMBH 1936.

Several "new diseases" have come into the circle of medical interest during the course of the last two decades, among them German investigators have studied a curious epidemic on the Baltic coast near Königsberg. The syndrome of this 'Haffkrankheit' includes the sudden onset of muscle pain and spasm, involving chiefly the muscles of the trunk, together with rather characteristic urinary changes, including hematuria and albuminuria. The clinical course is one of repeated attacks, with ultimate progression to chronicity and involving finally severe degenerative changes in the kidney, the musculature and the heart, together with profound metabolic disturbances. The Germans have used the term "Haff disease" because of its regional appearance in the lower stretches of the small rivers leading to the sea in the region of Königsberg. Wolter, who is the director of the Hamburg Institute of Epidemiology, discusses the various etiologic possibilities and stresses particularly the meteorological conditions and the general relation of the appearance of this disease to the climatic cycles. He points out the similarity of the clinical picture to the "Bornholm disease" of Madsen. While of general interest to the epidemiologist, the monograph offers little that is concrete, and relatively much in the way of generalities.

Time of Ovulation in Women. A Study on the Fertile Period in the Menstrual Cycle. By Carl G. Hartman. Department of Embryology, Carnegie Institution of Washington. Medical Aspects of Human Fertility Series. Issued by the National Committee on Maternal Health, Inc. Cloth. Price \$3. Pp 228 with 72 illustrations. Baltimore: Williams & Wilkins Company 1936.

This little book, published under the auspices of the National Committee on Maternal Health, is a calm, concise and critical review of our knowledge concerning reproductive phenomena, especially as this bears on the correctness or incorrectness of the much discussed doctrine of a "safe period" of the cycle. Written as it is by a biologist whose life work has been in this field, its tone is in refreshing contrast to at least a good many of the scientific, lay and religious publications on this subject which have appeared in such profusion in the past few years. The author presents an excellent outline of reproductive physiology, paying especial attention to the question of the time of ovulation, a problem to which he himself has made important contributions. With reference to the Ogino-Knaus theory he concludes that "as the more objective and reliable proofs accumulate they show a trend decidedly toward a complete denial of ovulation in the last quarter of the cycle, i. e., toward the establishment of the Ogino-Knaus law. But thus far we cannot yet give this a final approval." The chief reason for this is the general unreliability of the available human data largely because of the paucity of really accurate menstrual records. The format and typography are excellent and the style of writing simple and clear, so that, in spite of the complexity of some of the problems discussed the book should be of value not only to the medical reader but also to the more intelligent and biologic minded laywoman seeking information on this subject. A foreword has been contributed by Dr. R. L. Dickinson.

Hydrotherapy and Climatotherapy. By Matthew B. Ray, D.S.O., M.D., M.R.C.P., Senior Physician, The British Red Cross Clinic for Rheumatism, Polo Place, W. J. London. With a foreword by The Right Hon. The Lord Horder, K.C.V.O., M.D., F.R.C.P., Cloth. Price 12s. 6d. Pp 312. London: Edward Arnold & Co. 1936.

The author has collected data concerning most of the important health resorts in the British Isles and Europe and some in Africa and Asia and presents in a clear and concise manner the hydrotherapeutic and climatological value attributed to each. A short discussion is given of the method of procedure at each resort, and the various diseases in which baths and favorable climatic conditions have proved helpful are mentioned. The subject matter is presented in an interesting and orderly manner so that the practitioner may readily determine which health resort is best suited to his patient's needs. The volume contains much new and useful information concerning the manner in which human physiologic function is influenced by the various hydrotherapeutic procedures in use today as well as the relationship of barometric and climatic conditions to health and disease. In Europe, where the population as well as the medical profession is definitely spa minded, this book should fill a distinct need. In this country the interest in our watering places and health resorts, at least as far as the medical profession is concerned, is of comparatively recent inception. A committee to investigate American spas has recently been appointed by the American Society for the Study and Control of the Rheumatic Diseases and it is to be hoped that Dr. Ray's book may serve as a pattern for a similar work on the spas of this country.

Synopsis of Clinical Laboratory Methods. By W. E. Bray, B.A., M.D., Professor of Clinical Pathology, University of Virginia. Cloth. Price \$3.75. Pp 324 with 43 illustrations. St. Louis: C. V. Mosby Company 1936.

In the words of the author as stated in the preface, "the object of this synopsis is to bring together in a small volume for ready reference the more recent information and the most frequently used methods of laboratory diagnosis." Dr. Bray has accomplished his purpose excellently. The book begins with a list of the various services and special cases and the tests and routines applied to each. Then follow well organized, well illustrated chapters on every division of laboratory work: urinalysis, blood chemistry, bacteriology and surgical pathology. Each begins with a brief discussion of general rules and procedures that apply to the subject under consideration. Next are the routine and special procedures. Each is given specifically, only reliable new methods and most of the more favored methods are included. The author states, when necessary, which methods are preferable for determining certain facts, and gives the relative reliability and significance of the procedures. The volume concludes with a list of indicators, stains, staining solutions, reagents, and the preparation of each, removal of laboratory stains, atomic weights, a table of equivalents and a table of normals. This brief but complete volume will be appreciated by laboratory technicians and physicians.

The Married Woman. A Practical Guide to Happy Marriage. By Gladys H. Groves and Robert A. Ross, M.D., F.A.C.S., Cloth. Price \$2.50. Pp 278. New York: Greenberg 1936.

Even in a span of ten years one can see a change in the books on marriage. Gone the moralistic, solemn sermon about the holiness of marriage. There is no more emphasis on the spiritual love and there is more talk about the real practical issues involved. This book deals with problems of marriage frankly and openly, with a good deal of emphasis on the intimate relationships of marriage. The question of sex in marriage is taken up in detail and the authors are not afraid to tackle some of the problems involved in the sex adjustment of the newly married couple. If anything the book overemphasizes the physical relationships in marriage and in that sense it carries a definite message and a plea. One may wish for a more extensive discussion of the later years of married life and problems involved in the raising of children, which, of course, can easily take up another volume. On the whole the book is practical, intelligent and frank and can be safely recommended to young married people. The placing of the responsibility for sex adjustment on the woman is a rather new note in books of this type, being obviously a welcome change.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Embalmers State Board of Embalmers Liable for Unauthorized Acts—The plaintiff a licensed embalmer, was employed as manager and embalmer of the Oregon City Funeral Home. This concern applied to the state board of embalmers for a license to conduct its business. The board as a condition precedent to the issuance of the license required the funeral home to discharge the plaintiff and to agree not to reemploy him. The plaintiff sued the board for wrongful interference with his employment, and from a judgment in favor of the plaintiff the board appealed to the Supreme Court of Oregon.

The board contended, among other things, that it was a quasi-judicial body and as such was not civilly liable for acts done within the scope of the board's lawful jurisdiction. In passing on the application of the funeral home for a license, the board contended, it was acting within the scope of its authority. But, said the Supreme Court of Oregon, the board was authorized to issue, renew, suspend, revoke and refuse to issue or renew funeral directors' licenses. It was not authorized to require any applicant for a license to discharge an employee and to agree not to reemploy him. In making such a demand the board was without any jurisdiction. In doing so it did not merely exercise jurisdiction erroneously; it acted without any jurisdiction. In proposing to withhold the funeral director's license unless the plaintiff was permanently discharged, the board did not exercise any legal right. Having thus acted without any jurisdiction, the board, the court said, may be held civilly liable for injuries sustained by the plaintiff. The judgment for the plaintiff was consequently affirmed.—*De Marais v Stricker (Ore)*, 53 P (2d) 715.

Health Insurance Postoperative Hernia and Inability to Follow a Gainful Occupation—The defendant insurance company promised to pay certain benefits to the plaintiff if he became so disabled as to preclude him from following a gainful occupation. The plaintiff, who had always been a farmer and knew no other calling, owned a large plantation on which resided sharecroppers. In operating his farm he did considerable manual work, rode a horse, drove an automobile, operated a tractor, and actively supervised the work of his tenants. He underwent an operation for the removal of a ruptured appendix. About four months later, a large postoperative hernia developed. The insurance company paid benefits for more than a year and then stopped payments. The plaintiff then sued the company, and from an adverse judgment the insurance company appealed to the Supreme Court of Louisiana.

There was no conflict in the evidence concerning the inability of the plaintiff to perform strenuous labor, but the company contended and produced testimony in support of the contention that the plaintiff, with the aid of an abdominal support, could attend to his normal duties in connection with superintending the operation of the farm. On behalf of the plaintiff, however, witnesses testified that he was unable to ride a horse, drive an automobile or walk any considerable distance, and that any physical exertion might enlarge the hernia and cause strangulation of the intestine. The plaintiff himself testified that such activity as he had been able to engage in resulted in exhaustion, extreme nervousness, nausea, headaches, and gallbladder disturbances.

The general rule said the Supreme Court is thus stated in 14 Ruling Case Law 1315:

total disability contemplated by an accident insurance policy does not mean a state of absolute helplessness which can result only from loss of reason. On the contrary, total disability is inability to do substantially all the material acts necessary to the prosecution of the insured's business or occupation in substantially his customary and usual manner.

In the opinion of the court the evidence was overwhelming that the plaintiff was totally and permanently disabled from operating his farm in the same manner in which he did before

the appendectomy, and the court could not bring itself in disagreement with the finding of the trial court that the plaintiff was incapable of riding a horse or driving an automobile for the length of time required of a superintendent of a farm to perform his duties without discomfort, pain, and danger to his health and life. Furthermore, the court said, the refusal of the plaintiff to submit to an operation to relieve the hernia did not justify the insurance company in refusing to pay him the benefits. The suggested operation, the court said, would not only be dangerous to the plaintiff's life, but also there was no definite assurance that the hernia would not recur. In the opinion of the court, the plaintiff should not be compelled to submit to an operation or else forfeit his right to disability instalments, because it was obvious that such an operation would seriously endanger his life. The judgment of the trial court for the plaintiff was therefore affirmed.—*Boughton v Mutual Life Ins Co of New York (La)*, 165 So 140.

Workmen's Compensation Acts—Epilepsy Attributed to Trauma—The worker, a young man who, according to the evidence, had always been well and strong, fell and struck his head against an iron radiator. He was unconscious for some hours. About a month later he developed symptoms of epilepsy and grew progressively worse. Attributing the epilepsy to the fall, he instituted proceedings under the workmen's compensation act of Tennessee and the trial court rendered judgment in his favor. The employer then appealed to the Supreme Court of Tennessee.

The employer contended that the epilepsy caused rather than resulted from the fall. The evidence, said the Supreme Court, did not sustain this contention. The employee testified that he fell when the chair in which he was sitting in a leaning position slipped from under him. There was evidence that he had never before had any head injury or shown any symptoms of epilepsy. Expert witnesses testified that the epilepsy may have resulted from the fall and the incidental brain injury. When, said the Supreme Court, a well man, with no history suggestive of brain disease, suffers a severe head injury and later develops brain trouble, without other or intervening apparent cause, the lay mind reasonably connects the affliction with the injury, and, when medical experts testify that such result may follow from such an injury, the causal chain is essentially complete. The judgment in favor of the worker was affirmed.—*Sears-Roebuck & Co v Finney (Tenn)*, 89 S W (2d) 749.

Optometry Corporate Practice of Optometry Illegal in New Jersey—The supreme court of New Jersey, in denying a writ of mandamus to compel the secretary of state to file the petitioners' certificate of incorporation to "engage in the practice of optometry, through duly registered licensed optometrists in its employ," held that a corporation is incapable of practicing optometry in New Jersey. Statutory provisions in this state, said the court, provide for the issuance of a license to practice optometry only to those who have met certain qualifications, and corporations cannot possess those qualifications. The legislature never intended, said the court, the creation of a corporation to do that which the law permits the individual alone to do.—*Teschel v Mathis, Secretary of State (N J)*, 183 A 146.

Society Proceedings

COMING MEETINGS

American Congress of Physical Therapy New York Sept. 8-11 Dr Nathan H. Polmer 921 Canal Street, New Orleans Secretary
Colorado State Medical Society Glenwood Springs Sept. 9-12 W. Harvey T. Sethman 1612 Tremont Place Denver Executive Secretary
Idaho State Medical Association Boise Aug. 31-Sept. 4 Dr Harold W. Stone 105 North Eighth St. Boise, Secretary
National Medical Association Philadelphia Aug. 16-22 Dr W. Harry Barnes 1315 North 15th St. Philadelphia Acting Secretary
Northern Minnesota Medical Association, Fergus Falls Aug. 31-Sept. 1 Dr Oscar O. Larsen Detroit Lakes Secretary
Washington State Medical Association Yakima, Aug. 31-Sept. 2 Dr Vernon W. Spickard 1303 Fourth Avenue Seattle Secretary
Wisconsin State Medical Society of Madison Sept. 8-11 Mr J. C. Crownhart 119 East Washington Avenue Madison Secretary
Wyoming State Medical Society Cody Aug. 24-25 Dr Earl W. Beddoe 50 North Main Street Sheridan Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia 191 597 740 (May) 1936

- Treatment of Pernicious Anemia with Intramuscular Injections of Highly Concentrated Solution of Liver Extract W P Murphy, Boston—p 597
- *Experimental Radium Poisoning. I. Bone Marrow and Lymph Node Changes in Rabbits Produced by Oral Administration of Radium Sulfate M Rosenthal and E J Grace Brooklyn—p 607
- Tetralogy of Fallot (Eisemenger Type) with Hypoplasia of Dextroposed Aorta J E Talley and K Fowler Philadelphia—p 618
- Coarctation of Aorta with Intermittent Leakage of Congenital Cerebral Aneurysm Report of Case T W Baker and W D Shelden Rochester Minn—p 626
- Primary Pulmonary Arteriosclerosis with Polycythemia Associated with Chronic Ingestion of Abnormally Large Quantities of Sodium Chloride (Halophagia) W Darley Denver and C A Doan Columbus Ohio—p 633
- *Variations in Systolic Blood Pressure in Renal Tumor Study of 491 Cases C G Morlock and B T Horton Rochester, Minn—p 647
- Dose of Antibody Effective in Treatment of Pneumococcus Type II Pneumonia M Finland, Boston and H F Dowling Washington D C—p 658
- Epidemic Pleurodynia (Devil's Grip) in Cincinnati M B Welborn Cincinnati—p 673
- Epidemic Myalgia or Pleurodynia in Southwestern Ohio F K Harder Cincinnati—p 678
- Rocky Mountain Spotted Fever in Pennsylvania H F Flippin Philadelphia—p 685
- Encephalomyelitis Following German Measles H H Merritt and I D Koskoff Boston—p 690
- Observations on Effect of Malaria on Wassermann Reaction R Wilson Jr and S L Levin Charleston S C—p 696
- Collapse Therapy for Tuberculosis in the Small Sanatorium R J Hanna Jackson Mich—p 703
- Punch Drunk E J Carroll Jr Pittsburgh—p 706
- Recovery of Brucella Abortus from Stools of Healthy Carriers J D Goldstein W W Fox and C M Carpenter Rochester N Y—712

Bone Marrow and Lymph Node Changes in Experimental Radium Poisoning—Rosenthal and Grace reproduced in rabbits by the oral administration of radium sulfate the general features of radium poisoning as observed in human cases. Jaw necrosis, a characteristic of the early acute cases among radium dial painters can be produced experimentally by radium alone without mesothorium. Striking changes are produced in the bone marrow, consisting of an early hyperplasia of the erythropoietic elements followed by a decreased maturation of the erythroblasts and the replacement of these elements by myelocytes. Finally this hyperplastic marrow is replaced by fibrous tissue. In the lymph nodes there is noted an initial stimulation of the stem cells with subsequent damage to these cells resulting in depletion and atrophy of the lymphoid tissue. In the circulating blood an absolute lymphopenia is found. The development of myeloid tissue in lymph nodes and spleen associated with the extreme myelocytic hyperplasia in the marrow of the animals suggests that the occurrence of leukemia in x-ray and radium workers may not be a pure coincidence.

Systolic Blood Pressure in Renal Tumor—Morlock and Horton studied the alterations of the blood pressures of 491 persons having renal tumors. In 459 cases there was a record of the preoperative systolic blood pressure, in 335 of which a pathologic diagnosis of renal adenocarcinoma of the hypernephroma type was made, 247 of the patients were males and eighty-eight females. Of this group of males 60 per cent had a normal blood pressure between 100 and 139 mm of mercury, 0.8 per cent had definite hypotension, that is, a systolic pressure less than 100 and 39.2 per cent had hypertension that is a systolic pressure of 140 or more. When the actual readings of blood pressure were plotted and the arithmetical mean of the different age groups was superimposed in the form of a curve it was found that this closely approached the curve

obtained by a similar analysis of a large series of normal males, being perhaps slightly but hardly significantly elevated above the normal value. The blood pressure, taken from a few days to several years postoperatively was recorded for eighty-one of the males who had hypernephroma. The mean values of these readings closely approximated the mean for normal males. In the eighty-eight females with hypernephromas the mean value was found to approximate closely that obtained by a similar analysis of normal females, although it is consistently slightly higher. The postoperative blood pressure was recorded in seventeen of these cases. Eight of the patients had a postoperative reading between 100 and 139 and nine had a reading of 140 or more. That the incidence for the different ranges of blood pressure was practically unaltered by removal of the tumor seems to the authors to be significant. The mean preoperative systolic blood pressure for the males with hypernephroma was 136 for the females 145. Though these values are admittedly elevated over those considered normal, if it is considered that this is due to the pressor action of a substance secreted by the hypernephroma there is no explanation why removal of the tumor does not consistently result in a lowering of the blood pressure. That such a drop does not occur is evident, in that the mean postoperative value for the blood pressure of males and females who had hypernephroma is 133 and 144, respectively. There were seventy-six males with renal tumors other than hypernephromas, 59.2 per cent having a systolic blood pressure between 100 and 139, and 40.8 per cent a systolic blood pressure of 140 or more. The arithmetical mean for this group closely approximated the normal. A postoperative record of the blood pressure was obtained in twenty-four cases, 66.7 per cent had a reading between 100 and 139, 8.3 per cent a reading less than 100, and 25 per cent a reading of 140 or more. There were forty-eight females with renal tumors other than hypernephromas, 45.8 per cent of these had a systolic blood pressure between 100 and 139 and 54.2 per cent of 140 or more. The arithmetical mean blood pressure also closely approaches the normal value. In twenty cases in which a postoperative record was made, 40 per cent of the patients had a blood pressure between 100 and 139 and 60 per cent of 140 or more. Of six cases of hypernephroma in which a definite involvement of the adrenals was proved, a marked hypertension was present in only two.

American Review of Tuberculosis, New York

33 585 732 (May) 1936

- *Role of Chronic Vitamin C Deficiency in Pathogenesis of Tuberculosis in Guinea Pig M R Greene M Steiner and B Kramer, New York—p 585
- Effects of Intravenous Injections of Lecithin on Tuberculosis in Rabbit, Edna H Tompkins Nashville Tenn—p 625
- *Mechanics and Biology of Tuberculous Cavities P N Coryllos New York—p 639
- Teaching of Tuberculosis at the University of California Medical School E Rosencrantz San Francisco—p 661
- Studies on Behavior of Tubercle Bacilli Within the Body I Fate of Virulent and Avirulent Tubercle Bacilli Injected Intracutaneously into Normal Animals H J Corper and M L Cohn Denver—p 679
- Id II Fate of Virulent and Avirulent Tubercle Bacilli Injected Intracutaneously into Immune Previously Inoculated Guinea Pigs H J Corper M L Cohn and A P Damerow Denver—p 694
- Id III Local Cutaneous Reaction to Virulent Tubercle Bacilli in Guinea Pigs H J Corper A P Damerow and M L Cohn Denver—p 701
- Id IV Cutaneous Reaction to Avirulent Tubercle Bacilli and Immunity H J Corper M L Cohn and A P Damerow Denver—p 709
- Id V Effect of Inoculation of Avirulent Tubercle Bacilli on Subsequent Virulent Infection in Animals H J Corper A P Damerow and M L Cohn Denver—p 721

Vitamin C Deficiency and Tuberculosis in Guinea-Pig—Greene and his co-workers found that chronic vitamin C deficiency combined with a progressive tuberculous infection causes a significant shortening of the survival period and a significant decrease in the body weight of guinea-pigs. Chronic scurvy did not cause the development of generalized tuberculosis in animals infected with the relatively avirulent strain R1. Generalized tuberculosis develops more rapidly in chronically vitamin C deficient animals than in nonscurvitic animals infected by the subcutaneous or enteric route with strain H37 or tuberculous sputum. Guinea-pigs maintained on a partially

depleted vitamin C diet develop more lesions and ulcers in the intestinal tract than do animals on a complete diet when fed tubercle bacilli. When infected tuberculous sputum is fed, the extent and severity of the tuberculosis in the intestinal tract is greater than when pure cultures of tubercle bacilli are administered. Animals infected with tuberculosis and allowed to develop acute scurvy show no more tuberculosis than the control guinea-pigs.

Mechanics and Biology of Tuberculous Cavities—Corvillo presents clinical, experimental and pathologic data which he believes cannot leave any doubt on the paramount importance of the bronchial outlets of tuberculous cavities in the evolution and the fate of the latter. The mechanism of the changes occurring in these cavities from their formation to their closure is regulated by the physiologic functions of gas exchange and gas absorption of the lung. The cure of the disease, or rather its change from progressive and active to arrested and inactive, is based on the biologic needs of the tubercle bacillus of large amounts of oxygen for life and growth. The development of fibrosis in the diseased lung is simply caused by the anoxemia that follows atelectasis and ischemia of the diseased parenchyma.

Annals of Medical History, New York

8 185 276 (May) 1936

- William Withering and Introduction of Digitalis into Medical Practice L. H. Roddis Washington D. C.—p. 185
Jean Devez (1753-1826?) Notes on Yellow Fever Epidemic at Philadelphia in 1793 J. E. Lane New Haven Conn.—p. 202
Obstetric Art at St. Peter's in Rome R. E. Schluter St. Louis—p. 227
Pre-Columbian Peruvian Tibia Exhibiting Syphilitic (?) Periostitis with Recognizable Varieties of Bone Marrow Cells E. B. Krumhaar, Philadelphia—p. 232
Syphilis and the Characters in Ibsen's Dramas J. V. Klauder Philadelphia—p. 236
Ancient Chinese Medicine R. Charr, Philadelphia—p. 242
Medical Lore in Shakespeare E. M. Watson, London Ont.—p. 249

Archives of Surgery, Chicago

32:747-914 (May) 1936

- *Evaporation of Water from Superficial Burns G. S. McClure, Rochester N. Y.—p. 747
Conservative and Radical Measures for Treatment of Ulcer of Leg II Critical Study of Healing in Experimental and Human Wounds Under Elastic Adhesive Plaster B. Douglas Nashville Tenn.—p. 756
*Shock Mechanism of Death Following Intestinal Obstruction V. H. Moon and D. R. Morgan Philadelphia—p. 776
Regional Ileitis II Koster L. P. Kasman and W. Sheinfeld Brooklyn—p. 789
Effect of Inflammation on Epiphyses R. A. Johnston London Ont.—p. 810
Pubic Bones and Their Symphysis C. J. Sutro New York—p. 823
Survival of Autoplastic Parathyroid Transplant in Patient Without Parathyroid Deficiency P. Shambaugh and E. C. Cutler Boston—p. 842
*Arthroscopic Examination of Knee Joint Report of Cases Observed in Course of Arthroscopic Examination Including Instances of Sarcoid and Multiple Polypoid Fibromatosis M. S. Burman and L. Mayer New York—p. 846
Site of Benign Giant Cell Tumor Eleven Years After Operation W. F. Beswick and A. Brunschwig Chicago—p. 875
Paralytic Dislocation of Hip H. Milch and H. H. Green New York—p. 880
Treatment of Gastrojejunocolic Fistula by Multiple Stage Operations F. M. Findlay Santa Barbara Calif.—p. 896
Hepatic Trauma Analysis of Sixty Cases E. G. Krieg Detroit—p. 907

Evaporation of Water from Superficial Burns—McClure measured rates of evaporation in thirteen cases of first and second degree burns, two cases of frost-bite, four cases of experimental burns produced by ultraviolet radiation and two cases in which tannic acid was applied to normal skin. It was found that evaporation has a negligible effect in producing dehydration after a severe burn. Even in children, evaporation alone could not be important. Increased concentration of the blood, such as was found by Underhill and others, can hardly be due ordinarily to loss of water from the body. This is confirmed by the constancy of the body weight during convalescence from burns. Hence water that leaves the blood probably remains in the body in the spaces in various tissues. Regulation of the normal distribution of fluid, then depends on vascular and other readjustments within the body. Treatment of burns with tannic acid reduces evaporation enormously

but the belief that the beneficial effects of tannic acid are due to the prevention of loss of water from the body is not supported by the data now available. Whatever water and protein are lost from circulation appear to remain largely within the body.

Shock Mechanism of Death Following Intestinal Obstruction—Moon and Morgan point out that the shock syndrome arises whenever there is a serious disparity between the volume of blood and the volume capacity of the vascular system. Such a disparity may develop from a decreased volume of blood, from an increased volume capacity of the vascular system or from combinations of these. In human patients with shock and in animals with experimentally induced shock there is visible postmortem evidence of an increased volume capacity of the vascular system. Evidence of this is seen in the edema of mucosae, in the effusions of serum into cavities lined with serous membrane and pulmonary alveoli and in the numerous capillary hemorrhages occurring in mucous and serous surfaces and in the parenchyma of organs. When capillaries are injured, by whatever means, the permeability of their walls is increased. When permeability of the capillaries is increased in extensive areas, the transudation of plasma through their walls causes edema in the tissues and increases the concentration of the blood. The dilated capillaries and venules are filled with viscid concentrated blood, and the heart is unable to maintain normal blood pressure because of insufficient return of blood from the periphery. As the circulation becomes ineffective, lack of oxygen contributes to further capillary atony, and the circulatory disturbance becomes more grave. If lowered blood volume and hemoconcentration are produced by plasmapheresis without injury to the capillaries, the animal may return to normal spontaneously or following the therapeutic administration of fluid. In shock, fluids are neither absorbed nor retained. Injection of them into the blood merely increases the edema. It appears that an essential factor by which shock develops and progresses is increased permeability of the capillaries. The hemoconcentration accompanying intestinal obstruction has been assigned to loss of fluid by vomiting. Such fluid comes from the blood, largely because of permeability of the capillaries. The combined effect of loss of blood volume by transudation and of increased volume capacity due to atony of capillaries and venules produces a circulatory insufficiency which manifests itself in the shock syndrome.

Survival of Autoplastic Parathyroid Transplant—Shambaugh and Cutler have clinically corroborated that parathyroid autografts will survive regardless of the physiologic need of the organism for parathyroid tissue. They assumed that in their patient the anatomic deficiency in parathyroid tissue at the time the graft was placed was 50 per cent. As far as can be determined, however, there was no physiologic deficiency. The patient showed no evidence of tetany at any time, and the calcium content of the blood did not fall postoperatively. In fact, there was a slight rise from the preoperative level of 11.2 to 11.5 mg. per hundred cubic centimeters ten days after operation and 11.8 mg. fourteen days after operation. A final determination seven weeks after operation showed the calcium content to be 10 mg. A coincidental observation was that the patient had Paget's disease of the bone involving the right ilium and, to a slight extent the skull. This probably does not signify a parathyroid deficiency and therefore does not alter the conclusion that the parathyroid autograft survived in the absence of an urgent specific physiologic demand.

Arthroscopic Examination of Knee Joint—In their arthroscopic examination of eighty knee joints, Burman and Maver encountered nine meriting individual report. In a case of sarcoid of the tendon sheath and joint, no cutaneous evidence of sarcoid was presented at any time. There was no splenomegaly but a roentgenogram of the lungs showed hilar adenopathy. Microscopically, the changes are not incompatible with those observed in tuberculosis, and a study of each tubercle would have invariably led to a diagnosis of tuberculosis. A case of synovitis of the knee joint was characterized by bodies resembling Hassall corpuscles in the synovia. Their third case, a multiple polypoid fibromatosis of the synovia of the knee joint, clinically resembles nonspecific synovitis of the knee with recurrent effusion. There is some resemblance to tuberculosis which condition must be considered in the differential diagnosis.

It is a true tumor of the knee. They encountered two cases of chronic nonspecific synovitis of the knee joint in young patients. The involvement is usually bilateral and is characterized by the presence of repeated effusions within the knee joint, with thickening of the synovial lining. Aspiration may diminish the effusion temporarily, but there is a marked tendency for rapid recurrence. Only the knee joint is involved, and no definite cause can be invoked. Trauma is apparently coincidental. The reaction to tuberculin is negative, and no signs of syphilis are present. The Wassermann reaction of the blood and of fluid from the joint is negative. It is always necessary to rule out a specific lesion, although the clinical behavior of the knee joints in these cases resembles that of syphilis more than that of tuberculosis. The disease process is seen to be confined to the synovia. In the sixth case, one of osteochondritis dissecans, the cartilage showed hypercellularity of the superficial layers and some localized thickening of the perichondrium. The synovia showed some villous hypertrophy and was the seat of chronic synovitis. Two cases of solitary intra-articular lipoma of the knee joint were observed. This is an uncommon tumor of the knee joint, the primary clinical importance of which lies in the fact that it acts as a mechanical block to motion, producing repeated temporary locking. It is the authors' opinion that the solitary lipoma arises in the presence of other diseases of the synovia and that it is such synovial irritation which rarely allows a synovial villus to proliferate so that a true lipoma is formed. While a history of direct trauma may be obtained, it is most likely that the trauma came about either coincidentally or as a result of the interposition of the tumor between the bony surfaces of the joint. Treatment consists in the removal of the tumor. The tumor should be transfixed by two needles just before the synovia is entered, otherwise, it may be difficult to locate it properly. The ultimate fate of the joint rests on the coincident pathologic process in the joint. The last case was one of sympathetic synovitis of the knee joint arising from an adjacent (abcess of tibia) bony focus. Without actual arthrotomy, the effusion within the knee seems to have been due to the subjacent bony focus, a sympathetic synovitis. This condition has occurred in many cases of joint-articular lesions, including fracture, infection and tumor. Yet it was imperative here to rule out an actual lesion of the knee, and this was done by arthroscopic visualization.

Journal of Biological Chemistry, Baltimore

114:1356 (May) 1936 Partial Index

- Studies in Histochemistry. VII. Concentration of Vitamin C in Thymus in Relation to Its Histologic Changes at Different Stages of Development and Regression. D. Glick and G. R. Biskind. San Francisco—p. 1.
- Fatty Acids of Chrysalis Oil. W. Bergmann. New Haven Conn.—p. 27.
- Preparation of Gonadotropic Hormone of Pregnant Mare Blood. E. L. Gustus, R. K. Meyer and O. R. Woods. Kalamazoo Mich.—p. 59.
- Influence of Milk Constituents on Effectiveness of Vitamin D. G. C. Supplee, S. Anshacher, R. C. Bender and G. E. Flanigan. Bainbridge N. Y.—p. 95.
- *Relationship Between Total and Free Cholesterol in Human Blood Serum. W. M. Sperry. New York—p. 125.
- Colorimetric Method for Determination of Inorganic Sulfate in Serum and Urine. T. V. Letonoff and J. G. Reinhold. Philadelphia—p. 147.
- Iron Content and Oxygen Capacity of Blood. Martha Johnson and M. E. Hanke. Chicago—p. 157.
- Metabolism of Sulfur XVIII. Influence of Ingestion of Cystine, Cysteine and Methionine on Excretion of Cystine in Cystinuria. H. B. Lewis, B. H. Brown and Florence R. White. Ann Arbor Mich.—p. 171.
- Action of Various Reagents on Insulin. H. Jensen, E. A. Evans Jr., W. D. Pennington and Ellen D. Schock. Baltimore—p. 199.
- Serum Lipid Changes in Relation to Intermediary Metabolism of Fat. A. E. Hansen, W. R. Wilson and H. H. Williams. New Haven Conn.—p. 209.
- Extraction of Blood Lipids. E. M. Boyd. Kingston Ont.—p. 223.
- Iron and Copper Content of Milk Throughout the Season as Related to Anemia Development in Rats. W. E. Krauss and R. G. Washburn. Wooster Ohio—p. 247.
- Accelerant Effect of Amino Acids on Activity of Bone Phosphatase. O. Bodansky. New York—p. 273.
- Inorganic Salts in Nutrition. Changes in Kidneys of Rats Fed Diet Poor in Inorganic Constituents. Pearl P. Swanson. Ames Iowa. Clare A. Storick, and A. H. Smith. New Haven Conn.—p. 309.
- Determination of Iodine in Biologic Material. Note. Gladys J. Fashena and Virginia Trevor. New York—p. 351.

Total and Free Cholesterol in Blood Serum.—Sperry determined the concentration of total and free cholesterol in 126 samples of blood serum from ninety-one healthy adults.

The minimal amount of free in total cholesterol was 24.3 per cent, the maximum was 30.1 per cent and the average was 26.9 per cent, with a standard deviation of 1.4 per cent. The result leads to the conclusion that the percentage is far more constant than has been recognized by previous investigators, most of whom have reported much larger variations and a higher average. Support for this conclusion was obtained in the observation that a large proportion of samples taken post mortem from human beings who had died suddenly gave values in the same narrow range. Similar results were obtained in healthy children and in four fifths of a large series of determinations on diseased children. With few exceptions, values above 31 per cent were found only in the presence of infection or liver disease. The percentage of free in total cholesterol appears to be a physiologic constant that may be of considerable value in the study of cholesterol metabolism and in pathologic conditions.

Journal of Nervous and Mental Disease, New York

83 505 644 (May) 1936

- *Dietary Deficiencies as Etiologic Factor in Certain Neurologic Syndromes. O. C. Perkins. Brooklyn—p. 505.
- Disseminated Toxic Degenerative Encephalopathy (Disseminated Sclerosis Involving Demyelination) Secondary to Extensive and Severe Burns. J. H. Globus and M. B. Bender. New York—p. 518.
- Psychopathology of Time. P. Schilder. New York—p. 530.
- Carcinomatosis of Meninges Simulating Pachymeningitis Haemorrhagica Interna. Report of Case. A. G. Dumas and L. E. Nolan. Minneapolis—p. 547.
- Comparative Physiologic, Psychologic and Psychiatric Study of Polyuric and Nonpolyuric Schizophrenic Patients. F. H. Sleeper and E. M. Jellinek. Worcester Mass.—p. 557.

Dietary Deficiencies and Certain Neurologic Syndromes.—From the study of eighty-two cases in which multiple neuritis was a prominent clinical entity, and in many of which there were mental symptoms, Perkins found that digestive disturbances were quite constantly present. A logical explanation for the lack of intake, failure of proper digestion or assimilation could be found in nearly every case. The varieties of clinical syndromes closely approximated those seen in beriberi, pellagra and sprue, which are accepted as being due to a lack of one of the vitamin groups. The known pathologic condition of the nervous system in these syndromes compares favorably with that seen in the accepted deficiency diseases. Finally, there was the therapeutic test of improvement when the patients were placed on a high vitamin diet. The failure to ingest the required amount of vitamins for that particular individual, or the inability to digest or assimilate the vitamins ingested, is responsible for the neurologic syndromes presented by the patients. Since the syndromes offer both clinical and pathologic fragments of deficiency diseases which are accepted as being due to different vitamins, the author believes that in many instances the lack of more than one type of vitamin is responsible for the pathologic changes. Until this subject has been more thoroughly investigated, these patients should be treated with a full diet rich in vitamins, especially B₁ and B. Since there are many diseases of the central nervous system in which the pathologic changes are degenerative instead of inflammatory, and the etiology is unknown, a more thorough investigation of the action of dietary deficiency on nerve tissue may bring to light at least one factor in the cause of the disease.

New Orleans Medical and Surgical Journal

88 669 732 (May) 1936

- What Shall We Do To Be Saved? Presidential Address. H. W. Kostmayer. New Orleans—p. 669.
- Pathology of Sickle Cell Anemia. W. R. Mathews. Shreveport La.—p. 671.
- Intensive Radiation in Hyperthyroidism. S. C. Barrow. Shreveport La.—p. 679.
- Recent Diagnostic and Therapeutic Advances in Peripheral Circulatory Disease. J. R. Neal. New Orleans—p. 682.
- Hematuria. D. T. Milam. Monroe La.—p. 690.
- Tnlaemia. Study of Sixty Nine Cases. J. M. Perret. New Orleans—p. 694.
- Increasing Call for the Modern Treatment of Fractures of Spine. E. S. Hatch. New Orleans—p. 702.
- Dementia Praecox. H. R. Unsworth. New Orleans—p. 707.
- Treatment of Acute Head Injuries. R. M. Penick Jr. New Orleans—p. 710.

Oklahoma State Medical Assn Journal, McAlester

29 117 156 (April) 1936

- Society and Scientific Medicine G R Osborn Tulsa—p 117
 Friendship in the Medical Profession L H Ritzhaupt Guthrie—
 p 121
 Achievements of Urology A R Sugg Ada—p 123
 Surgery A Fine Art or a Technique? A S Risser Blackwell—p 125
 Further Observations on Vitamin A Deficiency as Shown by Studies with
 Visual Photometer and Clinically I O Park Muskogee—p 129

Radiology, Syracuse, N Y

26 521 650 (May) 1936

- Technic for Roentgenoscopic Examination of Stomach and Duodenum
 B R Kirklin Rochester Minn—p 521
 Some Essential Considerations of Technic of Gastro-Intestinal Radiog-
 raphy J R Carty and Anita Merrill New York—p 531
 Intravenous Urography in Children M Swick New York—p 539
 Atypical Distribution of Pleural Effusions L G Rigler Minneapolis
 —p 543
 *Pulmonary Mycotic Infections R A Carter Los Angeles—p 551
 Primary Carcinoma of Lung D E Ehrlich and H A Hauptman New
 York—p 563
 Intrathoracic Tumors Their Diagnosis and Treatment S Brown and
 J E McCarthy Cincinnati—p 574
 *Influence of Roentgen Therapy on Basal Metabolism in Leukemia.
 W S Middleton O O Meyer and E A Pohle Madison Wis—
 p 586
 Incidence of Peptic Ulcer Associated with Duodenal Stasis J Frieden-
 wald and M Feldman Baltimore—p 595
 Duodenal Diverticula A S Unger and M H Poppel New York—
 p 601
 Mediastinal Tumors and Malignant Lymphoma. I Arons New York
 —p 605
 Construction of Roentgenkymographs and Kymoscopes W G Scott
 and S Moore St. Louis—p 622

Pulmonary Mycotic Infections—Carter points out that pulmonary mycotic manifestations on the roentgenogram vary from case to case and from disease to disease but will simulate closely some manifestation of tuberculosis. On the whole, minority characteristics of tuberculosis are simulated. These are seen so much more frequently as tuberculosis that they are properly recognized as tuberculosis-like. However, they are definite mycotic predilections. With persistent failure to find the tubercle bacillus and with suggestive peculiarities of history, the chance of mycosis is sharply increased. Geographic location, occupation, associated extrapulmonary lesions, or characteristics of the roentgenogram of the chest may direct suspicion to mycosis or to a particular disease, such as blastomycosis, coccidioides or actinomycosis. The accuracy of these deductions is immaterial so long as they promote the decisive bacteriologic investigation. Characteristics adding to the likelihood of a mycosis are: outstanding mediastinal or hilar adenopathy, miliary lesions associated in the adult with adenopathy, absence or sparsity of dry air-containing cavities in advanced lesions, extra prominent pleural lesions, absence of an obviously older apical or subapical lesion from which the remainder of the involvement may have spread bronchogenically, growth of a consolidation by contiguous spread, lesions of bone or soft tissue abscess about the thorax, extension of involvement through the thoracic wall, hilar truncal and peribronchial thickenings, bronchiectatic manifestations, fine discrete miliary or nodular manifestations associated with fine peribronchial accentuation and cloudy parenchymal densities accompanying a subacute persistent respiratory attack. Only by detailed study of the original roentgenograms of known mycoses in volume can any degree of accuracy be attained in their roentgen diagnosis.

Influence of Roentgen Therapy on Basal Metabolism in Leukemia.—In spite of the overwhelming evidence of the prognostic value of basal metabolic determinations in leukemia and their application as a guide to roentgen therapy, Middleton and his associates have not found a wide clinical acceptance. Only five of the thirty-five leukemic subjects failed to show an elevation of the basal metabolic rate at the time of their study. Even this small minority might have been further reduced had the period of study in such instances been extended. One of these exceptions occurred among sixteen cases of myelocytic leukemia as contrasted with four among eighteen cases of lymphocytic leukemia. The opportunity to follow the progress of leukemic patients under roentgen therapy by means of periodic or routine basal metabolic determinations was afforded in twelve cases of myelocytic leukemia and nine cases of

lymphocytic leukemia. Careful analysis shows that there is but a rough parallelism between the basal metabolism and the leukocyte count, the percentage of immature cells and the clinical condition of the patient. Though commonly subjective and objective improvement was coexistent with the lowered basal metabolism subsequent to irradiation, this was certainly not invariable. Parallelism seems closer in the cases of the lymphocytic leukemia group. It appeared that symptomatic improvement more closely approximated the diminution in metabolic rate than did the hematologic observations, conforming to expectations based on clinical experience. Thus, though the metabolic rate bears a more than casual relationship to the patient's state of well being, it certainly is not an infallible guide. It furnishes but one of several indications as to whether or not irradiation is necessary at a certain time in a particular case. The results further emphasize the necessity for individualization of therapy, based on the complete clinical picture in association with judgment resulting from a wide experience in this type of case. The technic of treatment was similar in all cases, but naturally the dosage as well as the site of irradiation was individualized. The conventional high voltage therapy technic was used, the tube potential amounted to either 160 or 189 kilovolts (valve tube and condenser equipment), with a filter of 0.5 mm of copper + 1 mm of aluminum. The quality of radiation corresponded to a half value layer in copper = 0.75 mm and 1 mm, respectively. For the exposure of the spleen, long bones and lymph nodes the focal skin distance was 50 cm., for general body exposure, however, it was from 60 to 100 cm. The dose applied per field varies from 100 to 200 roentgens (in air) for local areas, and from 25 to 50 roentgens for general body exposure. Not more than three areas in the case of local exposures, and not more than two areas in the case of general body exposure are irradiated at one sitting. There is no doubt that, in the early stage, moderate potentials will produce good results, however, as soon as there is less response during a series of treatments than in the beginning, a change to high voltage therapy should be made. So far the authors have not employed general body exposure as a routine in all cases but have reserved it for those that did not respond to the usual methods, particularly in the later stage of the disease. Several striking remissions were seen among such cases.

Rhode Island Medical Journal, Providence

19 43 58 (April) 1936

- Social Medicine and the Doctor R Hammond Providence—p 43
 Report of the 1935 Epidemic of Acute Anterior Poliomyelitis A K Gregory collaborators D L Richardson E J West and R E Stevens Providence—p 47

Tennessee State Medical Assn Journal, Nashville

29 167 208 (May) 1936

- Past and Present J B Steele Chattanooga—p 167
 Tuberculin Therapy in Ocular Tuberculosis M H Post St. Louis—
 p 174
 Tennessee's State Health Program W C Williams Nashville—p 181
 The Importance of Examining Family Contacts of Tuberculous Individuals R S Gass Nashville—p 188
 The Formulation of Diabetic Diets (A One Two One-and-a-Half Method for Preliminary Use with Adult Ambulatory Patients) R C Derivaux, Nashville—p 194

Texas State Journal of Medicine, Fort Worth

32 1 68 (May) 1936

- Account of Early History of Surgery in Texas A O Singleton, Galveston—p 6
 Alvar Nunez Cabeza de Vaca (1490-1564) First European Physician and Surgeon in the United States W G Stuck San Antonio—
 p 15
 Bone Grafting Following Gas Bacillus Infection J P Barnes Houston—
 p 21
 Fractures of Femur M M Brown Mexico—p 25
 Fracture of Patella Report of Unusual Case J M O Farrell Houston—p 28
 Remarks on Nasal Tuberculosis S A Schuster El Paso—p 31
 The Management of Thyroglossal Tract Cysts and Fistulas J W Hendrick Amarillo—p 34
 Orthoptic Training and Management of Concomitant Strabismus in Children L T Post, St. Louis—p 36
 Roentgen Diagnosis of Lesions of Small Intestine J B Johnson and H C Harrell Galveston—p 41
 Ray in Benign Gynecologic Conditions L W Kuser Gainesville—
 p 45

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1 781 826 (April 18) 1936

- *Influence of Gallbladder and Other Infections on Incidence of Coronary Thrombosis S B B Campbell—p 781
Results of Radium Treatment of Carcinoma of Cervix Uteri W F Shaw and D Dougal—p 786
Acute Otitis Media Its Treatment, with Results. A Campbell—p 788
Chronic Suppurative Otitis Media Its Operative Treatment M R Sheridan—p 791
Lower Segment Cesarean Section J Riddell—p 792
Progressive Familial Hypertrophic Neuritis (Dejerine-Sottas) E L Cooper—p 793

Influence of Infections on Incidence of Coronary Thrombosis—Campbell attempts to prove that there is an association between infection and the great increase in coronary thrombosis, while in no way disputing the fact that atheroma is increasing. Infections of the gallbladder are those most commonly associated with this cardiac lesion. He discusses illustrative instances of coronary thrombosis associated with cholecystitis and presents cases of coronary thrombosis following attacks of influenza, phlebitis, pyogenic infections, syphilis and diabetes. The cases demonstrate the fact that concurrent or previous infections are found in many cases of coronary thrombosis. More cases could be quoted bearing out the same intimate relationship. It is difficult to prove that these infections are the determining cause of the severe cardiac lesion, but the fact that lesions such as those of the gallbladder are found makes it essential that everything possible should be done to eliminate any focal infection in the hope that cardiac failure may be averted. The difficulties in diagnosis are due to the fact that varying degrees of anginal pain can be simulated by gallstone colic or by the pain of cholecystitis. Attacks of coronary thrombosis have to be differentiated from ordinary angina, acute abdominal disorders, such as perforations, acute cholecystitis, acute pancreatitis, diabetic ketosis—often a transient glycosuria, though coronary thrombosis is found in diabetes—and lobar pneumonia, in which a wrong diagnosis is sometimes made.

Journal of Tropical Medicine and Hygiene, London

39 77 88 (April 1) 1936

- Observations on Life History of Spirochetes of Relapsing Fever A C Coles—p 77
Self Inoculation of Leprosy Preliminary Note S Lagoudaky—p 81

Lancet, London

1 931 986 (April 25) 1936

- Assessment of Dental Sepsis as Factor Affecting Medical and Surgical Procedures A Bulleid—p 931
Induction of Labor for Disproportion Critical Analysis of One Hundred Consecutive Cases of Surgical Induction for Real or Suspected Disproportion. J H Peel—p 935
*Effect of Chloral Hydrate on the Heart S Alstead—p 938
*Possible Transmission of Hemolytic Streptococci by Dust Elizabeth White—p 941
Treatment of Phlebitis in Varicose Veins H I Biegeleisen—p 944
Treatment of Tuberculous Cervical Glands B C Thompson—p 946
Spectrographic Anomalies of Gastric Juice in Pernicious Anemia. L Karczag—p 947
*Tuberculous Thrombophlebitis of Lower Extremity E Altschuler—p 948
Toxic Purpura Haemorrhagica Complicating Scarlet Fever J E Morrish—p 949

Effect of Chloral Hydrate on the Heart—Alstead assessed the value of chloral hydrate in fifty-five cases, giving particular attention to the cardiac action and blood pressure. In thirty-three cases there was clinical evidence of heart disease and in the remaining twenty-two, though the heart was apparently normal, marked emphysema was found in seven and acute rheumatism and exophthalmic goiter in two. A hypnotic effect was produced by 13 Gm., the official dose. The drug in ordinary doses is entirely free from the disadvantages of tolerance and habit formation but is best avoided in the presence of gastro intestinal irritation, although this can be eliminated by sufficient dilution with water. Smarting of the eyelids and lacrimation were troublesome in about 5 per cent of the patients under observation. This occurred only after several days during which the dosage had been frequent and substantial.

Physical examination of the heart yielded no unequivocal evidence of weakening of the cardiac action by chloral hydrate. Only three cases appear to admit of some discussion on this point, but the results of further investigation of the cardiovascular system were inconsistent with cardiac damage. Clinical evidence of improvement in the action of the heart was seen in two cases. No significant changes occurred in the heart rate. About half the patients showed some fall in blood pressure. The decrease did not exceed 15 mm of mercury and, as there was no alteration in the condition of the heart, the change in blood pressure was regarded as being consistent with prolonged periods of sleep and almost continuous drowsiness. In the few cases in which the blood pressure was depressed more than 15 mm of mercury, conditions other than the administration of the hypnotic were regarded as being the main causes. Nearly a fourth of the patients were found to have an increased blood pressure after taking chloral hydrate. The results support the view that chloral hydrate is not particularly detrimental in the presence of heart disease. When the blood pressure is lowered during chloral hydrate administration, the effect is not much greater than occurs in natural sleep.

Transmission of Hemolytic Streptococci by Dust—White carried out tests on the air and the dust for the hemolytic streptococcus in twenty-seven single bed wards between the third and the sixth day after the patients were admitted. The dust of the twenty-seven wards housing patients who were discharging hemolytic streptococci was always contaminated with the organism, and in most cases the strain isolated from the dust was proved to be identical with that infecting the patient. The dust of similar wards housing patients infected with other organisms seldom yielded hemolytic streptococci, and then only very scanty growths. Spraying with 40 per cent solution of formaldehyde destroyed the hemolytic streptococcus in rooms contaminated with that organism. A case is reported in which exposure to dust carrying the hemolytic streptococcus was almost certainly responsible for an acute pharyngitis. Although no opportunity has occurred for investigating the point, it would seem unlikely in view of the experiments reported by Colebrook (1933) that a healthy throat carrier of the hemolytic streptococcus creates a zone of streptococcus-carrying particles around himself.

Tuberculous Thrombophlebitis of Lower Extremity—Altschuler states that in the cases of tuberculosis of veins described it was not a matter of a disease confined to the wall of the vein, the vein was infected by invasion from the surrounding tissues and there were always advanced tuberculous changes, with miliary infection of the viscera. In the authors two cases the organs are not demonstrably diseased. The tissue surrounding the vein was free from infection and only the intima was attacked. He cannot explain the etiology, no port of entry was discovered on the lower leg in spite of most exact interrogation of the patient. The inguinal glands were removed and examined but were not diseased. He believes that tuberculous disease of the veins of the extremities is not rare, and, if so, there is a wide field for research into its causes and its treatment.

Medical Journal of Australia, Sydney

1 489 524 (April 11) 1936

- Psychologic Aspect of General Medical Practice S O Cowen—p 489
Harelip H D Stephens—p 494
Id Vilray P Blair's Modification of Mirault's Operation R G Brown—p 499
Antidiphtheria Inoculation Delayed Reactions in Preliminary Testing C R Merrilees—p 503

South African Medical Journal, Cape Town

10 247 278 (April 11) 1936

- Bilateral Artificial Pneumothorax. H R Aekermann—p 257
Surgery in General Practice R. Schaffer—p 260

Japanese Journal of Gastroenterology, Kyoto

8 1 58 (April) 1936

- Vagus Nerves and Experimental Liver Cirrhosis I Pathologic Histologic Investigations S Matsumoto—p 1
Id II Investigation on Pigment Excretion of Liver S Matsumoto—p 6
Experimental Study on Process of Gallstone Formation Reports I to VI T Kurokouchi—p 11

Archives des Maladies de l'App Digestif, Paris

26 481 624 (May) 1936

- Tracing Acute Diffuse Hepatitis of Chronic Alcoholism by Test of Stimulated Galactosuria Concentrations Chiray G Albot and M Deparis—p 481
- Diverticula of Stomach Two Cases Ledoux Lebard P Hillemand Garcia Calderon and W Aubrun—p 527
- *Pyloric Decentration Roentgenologic Sign of Castroduodenal Ulcer A Chapuy—p 534
- Gee Herter's Disease (Celiac Disease) R S Mach—p 544
- Measured Compression in Exploration of Digestive Mucosae R Gilbert and L Bahaiantz—p 526
- *Carbon Tetrachloride Preferred Anthelmintic Against Tapeworm R V Talice—p 576

Pyloric Decentration.—Chapuy believes that normally the pylorus should lie in a position which is constant in relation to the stomach. He believes that the pylorus lies normally always in the axis of symmetry of the antral region. Decentration exists in those instances in which the pylorus does not lie in this axis of symmetry. Even a slight deviation from the axis has the same diagnostic value as a more marked decentration. With roentgenographic examination these facts can be satisfactorily demonstrated. There are a few causes for error, notably error of interpretation, neoplasm of the lesser curvature of the stomach and prepyloric dilatation. These can usually be eliminated by proper technique. The author thinks that the value of the procedure lies in the fact that pyloric decentration in the absence of any other abnormal image is practically pathognomonic of gastric duodenal ulcer. Furthermore, he has been able to demonstrate delayed gastric emptying in all patients showing decentration. He believes that these facts point to ulcers as truly a disease of the stomach and that one is dealing with a purely functional image rather than a static picture.

Carbon Tetrachloride for Tapeworm.—Talice believes that carbon tetrachloride is by far the most effective parasiticide against *Taenia saginata*. Before using the substance, he attempts to avoid intestinal absorption by forbidding his patients fatty substances and especially alcohol during the treatment. Furthermore, the treatment is contraindicated in patients having icterus hepatic insufficiency, acute enteritis or generalized infections. Carbon tetrachloride has an indirect action on the blood calcium. To avoid accidents resulting from hypocalcemia he gives calcium chloride during the week preceding the administration of the drug. A dose of from 3 to 4 cc. is given according to the weight of the patient. Immediately after ingestion the patients are given a strong saline purgative and advised to rest in bed at least during the day of the treatment. During the day the ingestion of sweetened drinks is allowed. Recovery was recognized only when the head of the worm was identified. Of the sixty-seven adults treated in this manner, sixty-one were cured with one treatment. Four were cured with two treatments and two failed to return for a second treatment. The author concludes that, when used with proper precautions this method is superior to any other in the treatment of infestation with *Taenia saginata*.

Revue de Chirurgie, Paris

55 263 330 (April) 1936

- Connective Tissue Cysts of Spermatic Cord Fiori—p 263
- Walled Off Perforated Ulcer H Costantini and E Curtillet—p 269
- Isotomeric Peptic Ulcer at Mesenteric Edge of Jejunum P Santy P Mallet Guy and J Sousselle—p 287
- Acute Emphysema of Mediastinum Following Thoracic Traumatism L Coariv—p 299
- *Hypogastric Neurotomy and Periaortic and Peri Iliac Sympathectomy as Integral Part of Certain Abdominal Operations A Bojovitch—p 320

Hypogastric Neurotomy and Periaortic Sympathectomy.—Bojovitch discusses in detail nine cases in which he has performed a presacral resection and in some a periaortic and peri iliac sympathectomy in addition. Three cases were inoperable cancer of the cervix and six were different gynecologic diseases which necessitated radical abdominal operation. The three patients in the first group were operated on by lumbar anesthesia, after which a resection of the hypogastric plexus was performed with the intention of reaching as many filaments of the nerves as was possible. A similar lumbar anesthesia was performed in the second group and in several instances resection of the presacral nerve was supplemented by periaortic and peri iliac sympathectomy. After having per-

formed sympathectomy of the abdominal aorta and the iliac vessels, the author isolated the latter by means of the parietal peritoneum. The results of the procedure outlined were quite favorable. The postoperative pains which follow every abdominal operation were limited in most of the cases to the incision area. Diuresis was increased and micturition was performed several times in twenty four hours. Resection of the hypogastric plexus and the sympathectomy produced a favorable action on postoperative intestinal obstructions and diarrhea. Periaortic sympathectomy by means of its vasomotor and reflex action and by other means which are not yet clear has a favorable action on the surgically produced lesions. The author believes that this method of operation is to be recommended in several types of painful gynecologic conditions.

Clinica Medica Italiana, Milan

67 289 362 (May) 1936

- Topographic Diagnosis of Intraspinal Tumors G Boattini—p 291
- Modifications in Electrocardiogram in Glycemic Disturbances P Garza—p 309
- *Total Creatinemia in Cardiac Diseases R Messina—p 324
- Proteases in Fluids of Effusions N Fucci—p 332
- *Achylic Hypochromic Anemia in Course of Chronic Intestinal Amebiasis E Greppi and S Deleonardi—p 349

Total Creatinemia in Cardiac Diseases.—Messina studied the behavior of total creatinemia in patients suffering from cardiac diseases in conditions of compensation or decompensation and also the relations between creatinemia and the residual nitrogen in the blood of the same patients. He found that the average amount of creatinemia, which is 48 mg in normal persons, is 715 mg in patients suffering from cardiac diseases in compensation and 1227 mg in the same type of patients having decompensation. In each case azotemia is normal. Total hypercreatinemia in these cases is due to metabolic disturbances of the myocardium rather than to retention of creatine and creatinine in the blood due to renal insufficiency, and it is unrelated to azotemia.

Achylic Hypochromic Anemia in Intestinal Amebiasis.—Greppi and Deleonardi report a case of achylic hypochromic anemia in the course of intestinal amebiasis and lamblasis in an adult. The hematologic picture was that of achylic chlor anemia, which is characterized by true microcytosis with preponderance of globules of maximal resistance and scanty hemolysis. It was controlled by the administration of iron in large doses (8 Gm daily for fifty days) up to normalization of the crisis of the blood. The author states that the gastro-anemic syndrome was secondary to gastric achylia, which resulted from the presence of chronic gastritis in intestinal amebiasis. The latter, as well as certain parasitic infestations, inflammations and tumoral processes of the digestive tract, may produce a gastro-anemic syndrome, either of a pernicious macrocyte nature (pernicious anemia) or of a chlorotic microcytic one (true microcytosis). Both forms of anemia develop from a pathologic condition related to a deficiency of the gastric secretions and are in direct relation to the latter and in indirect relation to the former. Both forms of anemia are controllable by specific therapy (liver and iron, respectively) thus proving their autonomic pathogenesis. In the authors' case the normalization of the blood coexisted with attenuation of the parasitic infestation and the symptoms of colitis, probably resulting from the improvement of the digestive functions and general condition of the patient because of the normalization of the blood.

Prensa Medica Argentina, Buenos Aires

23: 1083 1138 (April 29) 1936

- Alimentary Mineral Substances J C Navarro and Sara de Alarza—p 1083
- *Pernicious Anemia Due to Trichocephalus Trichinra Case. A Battaglia and E C Arata—p 1094
- Problem of Prevention of Syphilitic Aortitis J L Carrera—p 1101
- Pneumococcal Peritonitis O L de Goycochea—p 1102
- Acute Ostitomyelitis of Fibula Diaphysectomy J E Rivarola—p 1116

Pernicious Anemia Due to Trichocephalus Trichinra.—Battaglia and Arata's patient a woman aged 29, presented a clinical picture of anemia associated with digestive and nervous disorders. The condition had lasted for more than six months and the pallor and emaciation of the patient were extreme. The intense anemia was of a progressive pernicious type. The digestive disorders were characterized by uncontrollable vomit-

ing, nausea, anorexia and the passage of feces having an appearance of milk curd. Occasionally they had traces of blood. The nervous disorders appeared in crises of cervical pain, tremor of the extremities and crying. Neither syphilis nor infectious diseases were in the history of the patient. The examinations of the feces showed *Trichocephalus trichiura*. The administration of several treatments against the intestinal parasitic infestation until complete disappearance of the parasites in the feces resulted in gradual improvement of the blood and clinical picture with eventual recovery of the patient, which has lasted up to the present time, four years after discontinuation of the antiparasitic treatment.

Semana Médica, Buenos Aires

43 1509 1580 (May 14) 1936 Partial Index

- Bilateral Collapsotherapy (Phrenicectomy Following Artificial Pneumothorax) in Pulmonary Tuberculosis F Etcheverry Boeco—p 1515
*Multiple Myeloma (Kahler's Disease) Case R Dassen A Fisher and P C Rospi—p 1527
Late Postappendectomy Fistula Complicating Acute Appendicitis of Appendicular Stump Case E A Votta and J A Bracco—p 1536
Esophagostomy by Abdominal Route (Heyrowsky's Operation) Technic R C Ferrari—p 1539
*Biologic Treatment of Gonorrheal Vulvovaginitis in Virgins D H Negrete and E Fontán Balestra—p 1556
Roentgen Image of Hydro-Aereal Levels in Mechanical Ileus Roentgenograms of Intestinal Obstruction and Occlusion H L Mazza—p 1559

Multiple Myeloma—According to Dassen and his collaborators, a roentgen examination of the skeleton is advisable in patients suffering from anemia of a pernicious type of unknown origin for detection of the possible presence of multiple myeloma. The most important roentgen signs are the lack of deformation of the bone and the presence of shadows corresponding to round clear zones in the bone. The disease may develop and evolve, aside from the production of fractures, presence of pain in the bones and other known symptoms, with splenomegaly and intense anemia of a pernicious type, emaciation, bilateral pleurisy and anasarca of rapid reproduction after removal of fluids. The blood picture is that of an intense anemia and favorably reacts to the administration of liver extracts. The treatment which is palliative, consists in care of the patient to prevent the production of fractures, controlling the pains by the administration of analgesics and morphine, if necessary, controlling the anemia, evacuating the pleural cavity and giving diuretics to reduce the anasarca. Arsenic fails to control anemia. Hepatotherapy controls splenomegaly and anemia but does not interfere with the general evolution of the disease and the more or less rapid progress of cachexia. Roentgen irradiations fail to improve the bone conditions. The expectancy for the life of the patient is from one to four years. One case is reported.

Treatment of Gonorrheal Vulvovaginitis in Virgins—Negrete and Fontán Balestra state that Mendez's treatment of vulvovaginitis in virgins consists in daily subcutaneous injections of a vaccine prepared with bacteria of the type found in the vaginal secretions and intravaginal application, every other day, of an ointment prepared with the same type of bacteria. The vaccines are prepared with one or more bacteria. The amount of ointment used is 5 cc for each application. The expulsion of the ointment from the vagina is prevented by covering the vulva with a piece of gutta-percha held in place by adhesive tape, thus forming a local "closed cavity." Washing of the involved parts is avoided. The patient is given every morning a spoonful of oil for correction of constipation. Bacterial examinations of the vaginal secretions are frequently made during the treatment. If the bacterial flora changes, the bacterial vaccine is also changed to one containing the bacteria present in the vaginal secretion. The treatment is discontinued altogether on complete disappearance of the pathogenic bacteria from the vaginal secretions, which takes place in a short time. The merit of the treatment consists in maintaining the vaginal exudates in direct contact with the local tissues because of their antiseptic and antibody forming properties and also in stimulating the organism to the formation of a large amount of antibodies and haptens by means of the bacterial vaccine and of the local application of the bacterial ointment. Satisfactory results in several cases of varying intensity and duration are reported.

Monatsschrift für Kinderheilkunde, Berlin

63 225 384 (April 29) 1936 Partial Index

- Icterus Neonatorum Gravis F Thoenes—p 225
Spontaneous Pneumothorax I H Alant—p 235
Changes Caused by Pentose Nucleotide in Blood Picture of Normal Nursing C Laguna—p 242
Curves of Gastric Secretion in Nurslings W Steinman—p 264
*Modification of Growth of *Bacillus Coli* and *Bacillus Lactis Aerogenes* by Acidity of Milk H Bock and W Binder—p 285
Modification of Experimental Diphtheria by Vitamin C and Adrenal Cortex Extract Aline Ascham and H Bock—p 289

Influence of Acidity of Milk on *Bacillus Coli*—Bock and Binder say that the favorable action of sour milks in dyspepsia of nurslings is undisputed and has been proved by years of experience. In order to explain this action it is necessary to investigate the bacterial conditions in dyspepsia of nurslings. Since other investigators have come to the conclusion that the growth of the bacilli of the group *lactis aerogenes* is hardly at all inhibited by an acid milieu, the authors decided to investigate to what extent the inhibition of the growth of *Bacillus coli* on the one hand and of *Bacillus lactis-aerogenes* on the other hand is dependent on the degree of acidity and what practical conclusions may be drawn from this as regards dyspepsias of nurslings. They determined the acid sensitivity of twenty one *B. coli* strains and ten *B. lactis-aerogenes* strains and found that the latter are only slightly less sensitive to acidity than the former and they think that this slight difference is of no practical importance. The *pH* values at which the growth of the investigated bacteria is greatly inhibited are near to or identical with the *pH* values of the sour milks. Thus it is proved that the sour milks are helpful in the prevention and treatment of dyspepsias of nurslings.

Münchener medizinische Wochenschrift, Munich

83 713 754 (May 1) 1936 Partial Index

- Changes and Social Reforms in Diabetes Problem G Singer—p 713
*Puerperal Neuritis of Traumatic Origin G Gachtgens—p 720
Provocation of Attacks of Epileptic Convulsions Schonmehl—p 721
*Pathogenesis of Facial Erysipelas W Schultz—p 723
Family with Camptodactylia P Ritterskamp—p 724
Dangers of Physical Therapy in Practice F Lickint—p 727

Puerperal Neuritis of Traumatic Origin—Gachtgens points out that traumatic puerperal neuritis of the lower extremities plays a more important part than is generally assumed. He concedes that it is not always easy to differentiate it from disturbances that are of toxic origin, for the puerperal period seems to be characterized by a tendency to toxic neuritis or neuropathia. However, a traumatic cause may be assumed whenever the delivery was difficult, and particularly when obstetric interventions were necessary. The author describes two cases. Both women passed through an extremely difficult delivery. Moreover, the pelvic anomalies created the predisposition for lesions of the lumbosacral nerve trunks, and the obstetric operations increased the possibility of severe lesions of the nerves. The second case is practically identical with another case reported in the literature in that in both cases lesions of the peroneal and tibial nerves existed. The patients had a halting walk and were incapable of lifting the lateral portion of the foot and of abducting it, the capacity for plantar flexion was impaired and, as an indication of tibial paralysis, the movement of the toes was greatly restricted. In regard to the treatment, the author says that restitution depends on the severity of the lesion. He thinks that spontaneous cure may be expected in the majority of cases. To be sure, heat, massage and electrotherapy may accelerate the curative process. Induced by favorable reports about the efficacy of vitamin B₁₂ in cases of postdiphtheric paralysis and in various types of neuritis, the author gave daily subcutaneous injections of a vitamin B₁₂ preparation and noted considerable improvement after eight injections.

Pathogenesis of Facial Erysipelas—Schultz points out that at present it is generally believed that erysipelas is caused by the entrance of the pathogenic agent into defects of the skin or of the neighboring mucous membranes. The fact that the face is most often affected in cases of erysipelas is ascribed to the greater incidence of small injuries on the face and to the fact that aural and nasal diseases often are the point of origin of erysipelas. The author shows that a number of factors can be cited against this theory of pathogenesis, which is based on bacteriologic aspects. The author cites a statistical

report of 211 cases of facial erysipelas which indicates a greater incidence of the disorder in women and also in certain age groups. After puberty there is a great increase and in women the greatest incidence occurs during the menopausal age. This fact indicates that facial injuries cannot be the chief factor, for injuries of the face or of neighboring organs are not more frequent in that age group. Further, the author calls attention to a relationship with tonsillar infections. In this connection he cites the case of a woman aged 46, who developed a facial erysipelas after nursing children who had tonsillitis and he assumes that the facial erysipelas, like the tonsillitis, developed hematogenically. At any rate there is considerable evidence that in many cases of erysipelas constitutional factors play a part and that there is some justification for the hipocratic differentiation between idiopathic and traumatic erysipelas.

Wiener klinische Wochenschrift, Vienna

40 609 640 (May 15) 1936 Partial Index

Organization of Campaign Against Cancer at Women's Clinic of University of Graz H. Siegmund—p. 609

*Atypical Lead Poisoning by Tap Water O. Altmann and K. Nowotny—p. 613

Focus of Tick Larvae in Tyrol and Remarks on Dermatitis Caused by Meadow Plants K. Toltdt—p. 616

Plastic Operations on Renal Pelvis in Hydronephrosis T. Hryntschak—p. 620

Laws of Allergy B. Jęgorow—p. 621

Atypical Lead Poisoning by Tap Water—Altmann and Nowotny describe four cases of a complicated but primarily spinoperipheral neurologic disorder, which were observed at their clinic within a comparatively short period. The diagnosis as well as the etiology presented at first considerable difficulties, but the fact that the four patients came from the same district of a city in Lower Austria led to the discovery that the lead content of the tap water of that district was responsible for the disorders. The urine of the patients showed a considerably increased porphyrin content and also lead, and the drinking water of the city in question contained much more than the permissible amount of lead. However, although more than 5,000 persons were exposed to the same influence, the four persons (three were women) whose cases are described here were the only ones who contracted this disorder. The authors think that this indicates a predisposition for lead poisoning, which has been observed also among workers who are exposed to lead intoxication.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

80 2753 2828 (June 13) 1936

Tuberculosis of Kidneys with Complications E. Deddes—p. 2754

*Hypoglycemia in Everyday Practice in Apparently Healthy Persons E. Janssen—p. 2761

Crystallization Process at the Basis of Blood Coagulation. E. Hekma—p. 2764

Treatment of Hyperthyroidism L. J. Frijda—p. 2771

Hypoglycemia in Apparently Healthy Persons—Janssen states that although the symptoms of hypoglycemia are well known nowadays to every practitioner and the patient himself generally notices the initial disturbances it is surprising that children do not notice them and consequently are unable to give timely warning of an impending attack. Hypoglycemia in children often is ushered in by changes of character which may come to expression in fits of temper. The author mentions two forms of hypoglycemic symptoms which he found in his practice. The first was in a boy aged 9 who had no appetite and could not concentrate at school. When his attention was requested he became impolite and was punished. On returning home from school he would lie down complain of being tired, look pale and have cold sweat on the forehead. Then he would be somewhat nauseated and unable to eat although he was hungry shortly before. A couple of sugar tablets dispelled the attack and appropriate treatment resulted in giving the boy normal health and in making him a good scholar. The second form occurred in a young woman who was nursing a four months old baby and complained of pain between the scapulae and in the back and of feeling dizzy and nauseated after each nursing. Determination of blood sugar showed it to be 0.072 Gm. per hundred cubic centimeters before and 0.053 after nursing. A small amount of sugar taken before each nursing cured the symptoms and the back pain disappeared when the diet of the patient was regulated.

Acta Medica Scandinavica, Stockholm

88 407 625 (May 27) 1936 Partial Index

Inhibition Inversed Reaction, Tonicity and Trophic Processes. N. Kabanow—p. 407

Heparin Its Chemical Nature and Properties E. Jorpes—p. 42

*Influence of Intravenous Injections of Heparin in Man on Time of Coagulation P. Hedenius and O. Wilander—p. 443

Heparin in Blood Transfusion E. Skold—p. 450

*Sedimentation Reaction with Heparin. B. Enochsson A. Gjertrud, A. Schnell and T. Torgersrud—p. 455

Sodium Content of Blood in Essential Hypertension and Smokers' Disease E. Kylin and H. Elmquist—p. 507

*Blood Metabolism and Urobilinuria in Cardiac Insufficiency M. C. Ehrström—p. 517

Influence of Heparin on Coagulation Time—Hedenius and Wilander say that, although many methods have been tried to lessen the risk of postoperative thrombosis, the most natural anticoagulant, heparin, has not been used for that purpose. They point out that heparin has so far been employed almost exclusively in animal experiments, because the available preparations were not pure enough for intravenous injections in human beings. In recent years it has become possible to obtain heparin in a fairly pure state. The authors used a protein-free, sterile, 5 per cent solution which contained approximately 0.25 per cent of tricresol. Before administering the substance to patients, the authors made preliminary experiments on rabbits and on themselves. The investigations revealed that the intravenous injection of heparin (from 50 to 150 mg.) results in normal persons in a considerable prolongation of the coagulation time. Different persons react fairly uniformly to the same dose of heparin. The prolongation of the coagulation time is not quite proportional to the dose of heparin, in that the effect of smaller doses is relatively stronger. By repeated injections of small doses of heparin (from 50 to 25 mg. every three hours) a prolonged heparin effect can be obtained. The treatment with heparin seemed to cause no objective or subjective disturbances.

Sedimentation Reaction with Heparin—Enochsson and his associates have investigated in what relation the sedimentation reaction with heparin has an advantage over that with citrate. They reach the conclusion that the heparin sedimentation reaction represents the actual sedimentation reaction, is more sensitive than that which is made with citrate, and has the advantage that the necessity for a special syringe is done away with, if necessary the blood can be taken from a puncture in the finger, or in some other way, when there is any difficulty in obtaining venous blood. Against these advantages hardly any drawbacks can be mentioned, except that the heparin test is more expensive than the citrate test. The appearance of lower sedimentation values with heparin than with citrate in cases of anemia and fever is comparatively rare. With a material of about 2,000 cases the authors gained the impression that these lower values in cases of the heparin test are often due to the use of too small amounts of heparin, so that coagulation is not completely inhibited. They are convinced that if this fact is taken into consideration the lower values with heparin will be rarely found.

Blood Metabolism and Urobilinuria in Cardiac Insufficiency—Ehrström studied the blood metabolism and the behavior of urobilinuria in ten patients with cardiac insufficiency. To obtain information about the metabolism of the blood he counted the reticulocytes, determined the volume of the blood, took an erythrocyte count, determined the hemoglobin content and examined the pigmentation of the serum. He determined the total elimination of urobilin and observed the urobilinuria. During the period of insufficiency there exists a true reticulocytosis which, however, subsides when compensation is achieved. This subsidence is accompanied by an increase in the total urobilin elimination. Expressed differently the blood metabolism of patients with cardiac insufficiency is characterized by an increased hematopoiesis during the period of insufficiency and an increased hemolysis during the subsidence of the insufficiency. The most probable cause of these changes in the blood metabolism is the anoxemia. The urobilinuria of patients with cardiac insufficiency shows such a pronounced parallelism to the urobilin elimination in the feces that it appears probable that the hemolysis is a dominating factor in the pathogenesis of the urobilinuria during cardiac insufficiency.

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OBSERVATIONS ON INDUSTRIAL DERMATOLOGY

CHAIRMAN'S ADDRESS

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The evolution of industry during the present generation, with its associated changes in the social and economic status of labor, has effected related changes in medical practice in industrial communities. This has been brought about in part by industry itself in the interests of economy, efficiency and safety, and it has been regulated and promoted by governmental agencies in the interests of public health and political control. The management of industrial accidents and diseases today is a modified form of state medicine that is still in a transitional phase, subject to the directional influences of lay, legal and medical groups.

The need of organizing dermatologic information, study and activity in this field resulted in the creation of a committee for that purpose at the last session of the Section on Dermatology and Syphilology. In view of this, some observations on the economic, legal and medical status of industrial dermatology in the United States will be presented.

INCIDENCE

A proper understanding of the scope and importance of industrial dermatology requires a brief review of the economic considerations. Complete and accurate figures on industrial skin diseases are not available, because few states record them and then only when five or more more days of disability for work has occurred. Nondisabling dermatoses, always a large group, are not available for study, except where legally reportable. The following information is authoritative however, having been obtained through the cooperation of public officials of the individual states and the federal government.

The United States census of 1930 listed nearly 49 million individuals in gainful occupations, of whom approximately 4 million were in public and professional service, 5 in domestic and personal employment, 10 in agricultural pursuits and 25 in trade, transportation, communications, and in manufacturing, mechanical and mining industries. It is chiefly this last group of 25 million that is subject to compensation laws, though in some states practically all employees, excepting farm and home help, are covered. Workmen's compensation acts usually apply to all employers of five or more employees.

The United States Department of Labor¹ lists 928 hazardous occupations, inclusive of 122 of the more common activities in which skin diseases are prone to develop. There are also numerous unlisted industries and occupations in which skin diseases occur. In the states where figures are available the incidence of dermatoses is uniformly high. In a single year (1934) six states (California, Connecticut, Ohio, Massachusetts, Wisconsin and Missouri) recorded 4,500 cases of disabling dermatoses, or 68 per cent of the total number of occupational diseases. In a three-year period Ohio statistics showed that there was no compensable disability in 61 per cent of the claims filed for occupational skin diseases.

During the first six years that occupational diseases were legalized as compensable in Ohio, 4,400 claims were filed, of which 3,000 were because of skin disease. Dermatitis was stated as the cause of disability in 2,900 claims, and the total group of skin diseases was responsible for a loss of 86,000 work days, in addition to five fatalities and two permanent disability claims.²

That the numerical superiority of occupational dermatoses over other industrial diseases may not unduly exaggerate their importance, it should be stated that the total number of compensable occupational diseases constitutes only from 1 to 3 per cent of the total number of compensated occupational injuries and diseases.

For example, in 1934 Massachusetts recorded 35,200 disabling injuries and diseases, of which 700, or 2 per cent, were occupational diseases, 493 cases or less than 1.5 per cent of the total, were dermatoses.³

Schwartz⁴ of the United States Public Health Service examined 18,000 workers in rubber industries, oil refineries, dyeing establishments and candy factories and found 235 cases of occupational dermatoses among active employees at the time of examination, an incidence of 1.5 per cent. He believes that more than 1 per cent of the workers engaged in basic industries are annually affected by dermatoses. In a chemical and dye plant with 2,500 employees he observed during one year an incidence of 16 per cent of chemical burns and dermatitis. An even higher disease incidence was observed in work with synthetic waxes and resins,⁵ in one factory it reached 50 per cent. This is in line with the observation that the newer the industry and the newer the chemical compounds, the greater will be the number of cases of dermatitis, because of unknown

1 Bull 582, U S Dept of Labor Bureau of Labor Statistics Washington 1933

2 Special Bulletin No 1 Industrial Commission of Ohio 1927

3 Public Document No 105 Massachusetts 22d Annual Report of Department of Industrial Accidents 1935

4 Schwartz, Louis The Incidence of Industrial Dermatoses January 1936 to be published

5 Schwartz, Louis Dermatitis from Synthetic Resins and Waxes Read before the American Public Health Association Milwaukee, Oct 8 1935

and unfamiliar hazards, lack of protective measures, and lack of adaptation on the part of the employee to the work.

A careful compilation of statistics on occupational dermatoses should be sought by this section because of its economic value in directing attention to the need of instituting preventive measures against dermatoses and improving their diagnosis and treatment. Massachusetts, Connecticut and Ohio are the only states that have made a satisfactory approach to this subject.

LEGISLATION

Compensation laws are a recent development in this country, and the trend of the times is evident in the broadening of the scope of such laws in eight states in the last two years.

The first provision for compensation of injured employees in the United States was established in 1908 for the federal civil service. In 1911 the Wisconsin legislature established the first workmen's compensation act to deal with industrial injuries.⁶ In rapid order several other states enacted similar laws and since then there has been a gradual increase in such enactments.

Our compensation laws were based on older European "codes" but have become broader in their scope and have been more liberally interpreted by commissions and courts, and, in the opinion of Jones,⁷ they "have been much more precipitate, ill considered, diversified and variant." Jones states also that "under the compensation laws of this country, differing from nearly all foreign precedents, claims for occupational disease, where covered by such laws are determined by laymen everywhere regardless of the weight of medical evidence, the claimant receiving the benefit of doubt if there be any medical opinion or testimony in favor of the validity of a claim."

Workmen's compensation legislation in this country applied originally to occupational injuries only, and in more than twenty-four states this restriction still holds good, though a number of states have broadened their interpretation of the word "injury." Eight states (Colorado, Georgia, Iowa, Montana, Maryland, Pennsylvania, Texas, and Washington) specifically exclude occupational diseases from their compensation provisions though a few exceptions are made.

In 1919 the Wisconsin legislature defined "injury" under the workmen's compensation act as "mental or physical harm caused by accident or disease," since which time it has been necessary only to establish an occupational origin for a disease to legalize a compensation claim in Wisconsin.

Eight states (Alabama, Maine, Nevada, Oregon, Tennessee, West Virginia, Virginia and Rhode Island), without specific laws regarding occupational disease, recognize the compensability of dermatoses when caused by or aggravated by injury.

The industrial commission of Nevada has allowed compensation for dermatitis when it could be reasonably interpreted that the dermatitis arose from an injury or an accumulation of injuries or from trauma caused by continued irritation. The Oregon state industrial accident commission holds that "occupational diseases are not compensable since they are not due to injury by accident received through violent or external means as defined by the law, and yet the courts of Oregon have compelled payment of compensation in a

large number of cases of dermatitis from poison ivy, hemlock, spruce, hop and fruit on the theory that the exciting cause of dermatitis in such cases is an abrasion or minor injury.

Six states (Kansas, Ohio, New Jersey, Nebraska, North Carolina and Minnesota) specifically restrict compensation for occupationally acquired dermatoses to listed or scheduled occupations, listed diseases, or contacts with listed substances. This has resulted in errors of omission and commission and in certain absurd rulings.

New Jersey has compensated for dermatitis when it could be shown that "the worker had contracted an occupational substance covered by the occupational disease act." Minnesota legalizes compensation for dermatitis from African boxwood and recognizes only twenty-two other occupational diseases and causes of occupational disease. In Nebraska compensation is limited to diseases in the lead and zinc industries, though recognition is given to the aggravation of pre-existing disease by accidental injury. Ohio's schedule of twenty-one occupational diseases is quite inclusive and meets the major industrial disease problems of that state.

Arkansas and Louisiana have no compensation laws for either injury or disease.

The 1935 New Hampshire legislature provided for a commission of three physicians, three representatives of labor and three representatives of industry, to study the compensation laws and occupational disease situation in that state. Michigan, Idaho and Maryland have provided for similar investigations.

Eight states (Illinois, California, Connecticut, Massachusetts, North Dakota, Missouri, New York and Wisconsin) and Hawaii and the Philippines have what is called "blanket legislation." New York joined this group in 1935 and Illinois in 1936, and the Rhode Island legislature has a "blanket provision" under consideration at this time. The "blanket" provides compensation for any disabling disease, dermatosis included, arising out of an individual's occupational activities. Predisposition to dermatitis is no bar to compensation in such cases.

In Missouri any skin disease directly traceable to an employee's work is compensable under the law, "provided both employer and employee are operating under that particular phase of the law." In Connecticut, occupational disease is defined as "a disease peculiar to the occupation in which the employee was engaged and due to causes in excess of the ordinary hazards of employment as such." Interpretations have been liberal. The Connecticut law also states that in case of aggravation of a preexisting disease, compensation shall be allowed only for such proportion of the disability as may be reasonably attributed to the injury on which the claim is based.⁸

There is much to be said both in commendation and in criticism of our laws, as regards their provisions, interpretation and enactments. Under both schedules and blanket provisions the opportunity exists for injustice to both employer and employee, and the variability of the laws in different states, and the greater variability and uncertainty of their interpretation by the courts constitute a constant hazard to the financial security of some industries and their insurance carriers. Legal provisions for nondisabling injuries and diseases are usually lacking or vaguely defined.

⁶ Industrial Compensation in Wisconsin, 1934.
⁷ *Ind. Eng. Chem. Anal. Ed.* 4: 222 (April 1932).

⁸ Bull. 13, Connecticut Workmen's Compensation, 1935.

The recognition of compensability of industrial injuries, which are sometimes the result of carelessness by the worker, and the denial of compensation for occupationally acquired disease, for the acquisition of which the employee is usually not responsible, are legal anachronisms that should not be permitted to exist. The same criticism applies to the restriction of compensation to listed or scheduled occupations, diseases or substances, it being recognized by dermatologists that almost any trade or occupation, and any irritant, may be the source of a dermatosis in a susceptible individual. The important legal consideration is obviously not the type of occupation, nor the nature of the irritant, but the relationship of both irritant and occupation to the acquisition or aggravation of the dermatosis. "Schedules" provide a legal crutch that may be used to bar a legitimate award for compensation or to support an unjust claim. It permits the lawyer to settle the question of compensability on the basis of names, whereas it should be the physician who determines the liability on a basis of etiology and the law that decides the case on the evidence presented.

In a recent article on the medicolegal aspects of occupational dermatoses, Sulzberger⁹ has directed criticism at laws that permitted the awarding of compensation without reasonable proof of the causal connection between the occupation and the existing dermatosis.

MEDICAL SUPERVISION

In reviewing the compensation laws of the states, I have been impressed with the almost complete absence of provision for participation by the medical profession in the designing and enactment of the various laws and the provisions for their application and interpretation.

The industrial accident commissions of California, Iowa, Nevada and Washington have medical directors or advisers. In Massachusetts¹⁰ the industrial accident board submits claims for compensation to a board of three physicians, known as industrial disease referees, who are individually selected for each case from a list of registered physicians furnished by the state board of medical registration. In all other states, lay boards have exclusive jurisdiction over compensation and pass judgment on controversial cases.

As this question applies to dermatology, I am heartily in accord with the opinion expressed by Sulzberger⁹ "that compensation laws will more adequately do justice to occupational dermatoses only when they are formulated with the advice and collaboration of competent dermatologists." I also agree with him "that an employee be entitled to compensation only when his occupation can be proven, beyond reasonable doubt, to be, directly or indirectly, a causal or contributory factor in the production of the dermatosis, and that compensation be commensurate with the degree to which the occupation is responsible for the skin disease."

State boards of health, concerned primarily with disease prevention, have supervision over industrial accidents and disease in only eight states.

Physicians in Ohio and Connecticut are required by law to report to the director of health all diseases and disabilities contracted as a result of the nature of the patient's employment. The Connecticut health department has a bureau of occupational diseases which makes surveys and field studies, secures and compiles reports of occupational diseases, provides consultation and

information for physicians and industry, and renders reports of its conclusions and recommendations to industry.¹¹ Michigan has just created a department of industrial hygiene within its health department.

There appears to be a very definite need for closer cooperation between legislative bodies and organized medicine for disease prevention and control, the realization of which should not be difficult in view of common aims. The United States Public Health Service and the respective state boards of health, not being engaged in competitive medical practice, appear to be the logical bodies for such cooperation and could do much toward the accumulation of valuable data, the dissemination of information and the endorsement of remedial legislation in the field of industrial dermatology. This section may safely sponsor a program along these lines.

Considering the advance that has been made in many states toward the recognition of occupational diseases, when previously only injuries were judged compensable, we may anticipate the recognition of the right of compensation of all industrial diseases in all states, with consequent elimination of archaic schedules or "listing." I believe that we, as a representative dermatologic group, may advisedly endorse the type of workmen's compensation legislation now prevailing in those states with "blanket legislation," recognizing however the dangers inherent in such liberal laws, and the need of certain modifications and restrictions. I believe that some form of medical control over occupationally acquired diseases should be legally provided and that occupational dermatoses should be under dermatologic supervision. This section should recognize the desirability and need of dermatologic direction of legislative procedure pertaining to dermatoses and should take action as spokesman for this specialty.

INTERPRETATION

The practice of defining occupational diseases by naming or specifically describing them for "listing or scheduling," and of restricting compensation to diseases falling in such classifications is a European custom, and it is favored by insurance carriers in this country. The chief arguments in its favor are based on an apparently smaller margin of error in diagnosis and compensation awards, because of restriction of liability to industries in which there is a particular disease hazard. It is not however in the best interests of the worker, and the increasing complexity and development of industry constantly introduces new factors in disease production that would require frequent revision of schedules through legislative action. "Blanket laws," on the other hand, penalize industry in that under their provisions many cases recognized as occupational dermatoses are not due, or not solely due, to the industry but result from some act or predisposition of the patient foreign to the employment.

The wide abuse, through incompetent medical and legal interpretations, observed to follow progressive liberalization of industrial disease legislation, is not a valid argument against such legislation but speaks for the greater need of expert diagnosis and experienced medical management.

As the responsibilities of the physician increase, our responsibilities as dermatologists involve the extension and unification of dermatologic knowledge and opinion. James C. and C. J. White, C. Guy Lane, Knowles Cole,

⁹ Sulzberger M. B. *Am. J. Surg.* 30: 531 (Dec.) 1935.
¹⁰ Massachusetts Department of Industrial Accident and Workmen's Compensation General Laws chapter 153: 1935.

¹¹ Bulletin Connecticut State Health Dept. Major Activities 1936.
Gray A. S. Importance of Industrial Hygiene *J. A. M. A.* 103: 157 (Oct. 12) 1935.

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⁶ *Pulleton Industrial Commission Wisconsin, 1934*
⁷ Jones, F. R. *Industrial Med.* 4: 222 (April) 1935

⁸ *Bull. 13 Connecticut Workmen's Compensation, 1935*

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information for physicians and industry, and renders reports of its conclusions and recommendations to industry.¹¹ Michigan has just created a department of industrial hygiene within its health department.

There appears to be a very definite need for closer cooperation between legislative bodies and organized medicine for disease prevention and control, the realization of which should not be difficult in view of common aims. The United States Public Health Service and the respective state boards of health, not being engaged in competitive medical practice, appear to be the logical bodies for such cooperation and could do much toward the accumulation of valuable data, the dissemination of information and the endorsement of remedial legislation in the field of industrial dermatology. This section may safely sponsor a program along these lines.

Considering the advance that has been made in many states toward the recognition of occupational diseases, when previously only injuries were judged compensable, we may anticipate the recognition of the right of compensation of all industrial diseases in all states, with consequent elimination of archaic schedules or "listing." I believe that we, as a representative dermatologic group, may advisedly endorse the type of workmen's compensation legislation now prevailing in those states with "blanket legislation," recognizing however the dangers inherent in such liberal laws, and the need of certain modifications and restrictions. I believe that some form of medical control over occupationally acquired diseases should be legally provided and that occupational dermatoses should be under dermatologic supervision. This section should recognize the desirability and need of dermatologic direction of legislative procedure pertaining to dermatoses and should take action as spokesman for this specialty.

INTERPRETATION

The practice of defining occupational diseases by naming or specifically describing them for "listing or scheduling," and of restricting compensation to diseases falling in such classifications is a European custom, and it is favored by insurance carriers in this country. The chief arguments in its favor are based on an apparently smaller margin of error in diagnosis and compensation awards, because of restriction of liability to industries in which there is a particular disease hazard. It is not however in the best interests of the worker, and the increasing complexity and development of industry constantly introduces new factors in disease production that would require frequent revision of schedules through legislative action. "Blanket laws," on the other hand, penalize industry in that under their provisions many cases recognized as occupational dermatoses are not due, or not solely due, to the industry but result from some act or predisposition of the patient foreign to the employment.

The wide abuse, through incompetent medical and legal interpretations, observed to follow progressive liberalization of industrial disease legislation, is not a valid argument against such legislation but speaks for the greater need of expert diagnosis and experienced medical management.

As the responsibilities of the physician increase, our responsibilities as dermatologists involve the extension and unification of dermatologic knowledge and opinion. James C. and C. J. White, C. Guy Lane, Knowles Cole,

⁹ Sulzberger M. B. *Am J Surg* 30: 531 (Dec) 1935.

¹⁰ Massachusetts Department of Industrial Accident and Workmen's Compensation General Laws, chapter 153, 1935.

¹¹ Bulletin Connecticut State Health Dept. Major Activities 1936. Gray A. S. Importance of Industrial Hygiene. *J. A. M. A.* 105: 1157 (Oct 12) 1935.

Hazen and Pusey were among the pioneers in this field in the United States.¹² Recent valuable contributions have been made by Downing,¹³ Eller and Schwartz,¹⁴ Osborne and Putnam,^{14a} and other members of this section, and in Europe particularly by R. Prosser White¹⁵ and by Ullmann, Oppenheim and Rille.¹⁶

Occupational skin diseases actually constitute only a small percentage of all skin diseases, and it should be evident that a broad knowledge of dermatology is essential to maintain a proper balance in the interpretation of cases and the evaluation of observations. In the practice of most dermatologists with experience in industrial disease, occupational dermatoses aggregate less than 10 per cent of the total practice.

My associates and I recorded over 1,400 cases of occupational dermatoses in private practice in fifteen years, an average of 5 per cent.

Preexisting and coexistent dermatoses must be properly evaluated as regards their part in the development or prognosis of an occupational dermatosis. A judicious outlook in arriving at a diagnosis in a case with occupational implications is important, as emphasized by O'Donovan.¹⁷ All the evidence must be carefully weighed and too much credence must not be placed in the history furnished by the patient, which may be at variance with the facts. A general knowledge of factory conditions and a specific knowledge of the individual's work and working environment is of value and sometimes is necessary for diagnosis.

One of the chief causes of controversial legal procedure in certain types of dermatoses is the failure to obtain early expert dermatologic examination and treatment. Insurance carriers must become cognizant of the economic importance of the early observation and care of certain industrial cases by the specialist and of the need of closer cooperation between practitioner and specialist.

CAUSES

The etiology and symptomatology of occupational dermatoses have been exhaustively discussed in previous papers¹⁸ and will not be elaborated on at this time.

The majority of industrial dermatoses in this country are cases of contact dermatitis and are due to acids, alkalis, caustics, oils, greases and solvents. The causes as well as the incidence exhibit great variability in different states, dependent on the types of industries and the preponderance of industrial activities.

Schwartz's⁴ investigations in 1935 disclosed that the majority of occupational dermatoses were caused by alkalis and petroleum derivatives in New York, by lime, cement and plant poisons in Missouri, and by plant poisons and by mercury used in the hat industry in Connecticut, while in Ohio the majority occurred in the rubber industries and in workers with oils and cutting compounds.

A nonoccupational origin should always be sought for in cases of supposed trade dermatitis, it being too commonly assumed that a dermatitis, particularly a

dermatitis venenata, has resulted from the work. This occupation is one in which dermatitis is prevalent. A potent cause of occupational dermatitis that is often overlooked and that is entirely preventable is the use of turpentine, benzene and abrasive soaps in the removal of paint, grease and dirt.

DERMATOMYCOSES

Fungous and bacterial infections and allergic conditions represent some of the most important diseases that frequently cause confusion in diagnosis and prognosis. Of the dermatomycoses, epidermophytosis and monilia are of sufficiently frequent occurrence in industrial workers to present an important problem in diagnosis. Many laborers have intertriginous dermatitis of the toes, due to sweating and lack of proper hygiene, and this condition, when associated with a dermatitis venenata of the hands, may be mistaken for an epidermophytosis with a phytid reaction. A diagnosis of fungous infection in an industrial worker should therefore be made with proper reservation, subject to microscopic or cultural confirmation or the results of an adequate therapeutic test. Direct fungous infection of the hands is less common and is more readily differentiated from dermatitis venenata and eczematoid dermatitis than the more frequent phytid reaction. While admitting the importance of excluding fungous infections in the differential diagnosis of dermatitis venenata, and while recognizing the possibility that such infection may predispose to the acquisition of a dermatitis venenata or may complicate an occupational dermatitis through secondary infection, I believe this issue has been adequately emphasized in the past not to require elaboration in this paper.

INFECTIOUS ECZEMATOID DERMATITIS

The recognition of infectious eczematoid dermatitis is always important, and particularly in those states that restrict compensation for dermatoses to conditions arising out of industrial injuries. This disease is frequently observed both as a direct complication of injury and as the result of improper medical management of injuries. It is responsible for prolongation of disability and not infrequently for the development of a generalized, resistant eczematoid dermatitis.

DERMATITIS VENENATA AND CONTACT ALLERGY

Allergy plays a predominant role in industrial dermatology and accounts for some of the most difficult problems in this field. The majority of occupational dermatoses are cases of dermatitis, and the largest number of these, and the most clearly defined, belong in the dermatitis venenata or contact dermatitis group. Some of the cases of the latter group are examples of direct toxic action of chemical irritants on normal skin, others are cases of epidermal allergy, and the distinction between the two is not always clear.

In those cases of contact dermatitis due to allergic factors the allergy is usually, if not always, acquired and the shock tissue is primarily the epidermis. The allergic state may be limited to certain areas of the epidermis. According to Coca¹⁹ there is probably present in the sensitized epidermal cells an antibody-like substance but there is apparently no antigenic function in the excitant, which is an allergen, and no antibody-antigen reaction. Max Michael²⁰ considers

12 Foerster H. R. Industrial Dermatoses Arch. Dermat. & Syph. 17 585 (May) 1928

13 Downing J. G. New England J. Med. 213 358 (Aug. 22) 1935

14 Eller J. J. and Schwartz Louis New York State J. Med. 35 951 (Oct. 1) 1935

14a Osborne, E. D., and Putnam E. D. Industrial Dermatoses J. A. M. A. 99 972 (Sept. 17) 1932

15 White R. P. Occupational Affections of the Skin ed. J. New York Paul B. Hoeber 1928

16 Ullmann Oppenheim and Rille Die Schädigungen der Haut durch Beruf und gewerbliche Arbeit Leipzig and Hamburg Leopold. 1935 vols. 1 and 2 1915 1925

17 O'Donovan, W. J. J. Indust. Hyg. 16 223 (July) 1934

18 Foerster H. R. Downing J. G. Eller and Schwartz. 19 Downing J. G. J. Indust. Hyg. 17 178 (July) 1935

19 Coca A. F. Tr. International Dermatologic Congress 1935

20 Michael Max Klin. Wchnschr. 10 2180 (Nov. 21) 1911

pure epidermal allergy rare in occupational disease and believes that altered cutaneous reactions of allergic type occurring through occupational sources cannot result from epidermal contact alone but involve a vascular mechanism

THE PATCH TEST

It is in these cases of contact dermatitis that the eczema or patch test is of value, but it must be emphasized that this test is not a short-cut to dermatologic knowledge and it should not be made the basis of a diagnosis. Correctly applied and intelligently interpreted, it may be very useful, but its widespread adoption for diagnosis, its loose acceptance by insurance companies, and the likelihood of faulty interpretations should result in the application of proper restrictions.

The most reliable test is that of actual working conditions, but this is usually contraindicated and is chiefly valuable in retrospect, as indicated at times by the history. Occupational trauma, sweating at work, and repeated exposures over periods of weeks and months are some of the factors in industry leading to skin sensitization that cannot be duplicated in patch testing.

The hypersensitivity that resulted in a dermatitis is often confined to the area of dermatitis, and a patch cannot be applied to that site until long after recovery. If the material used in a test is in stronger concentration than existed in the occupational exposure or is in contact over a more prolonged period of time, or if it is applied to an area of localized hypersensitivity, a false positive reading may be obtained. The opposite condition may result negatively. In cases of positive patch test reactions, negative control tests in normal subjects, made under identical conditions, are important. Schwartz has pointed out that after a person has recovered from a dermatitis he may have become immune to the causative substances and yield a negative patch test, and also that if a polyvalent sensitivity has been developed the tested individual may react positively to a great variety of test materials not concerned in the development of the dermatitis.

Field and Sulzberger²¹ have recently shown that the result of a patch test may depend on the site chosen for the testing and on the time of application of the test or phase of sensitivity of the individual, and they warn against basing positive conclusions on one or a few patch tests, particularly if applied at the same time. Their experiments showed that variations in response to testing seemed to depend on chronological fluctuations in degree of sensitivity, which varied greatly at different times in one and the same area and they also showed that certain irregularly disseminated circumscribed skin areas seemed consistently less sensitive than others.

ATOPIC DERMATITIS

In atopic dermatitis (allergic eczema) the primary shock tissue is the vascular structure of the cutis and the epidermis becomes secondarily involved. There appears to be a hereditary abnormality of the cutaneous shock tissue in this group and the affected individual may possess a polyvalent sensitivity that results in acute attacks of dermatitis or in aggravations of existing dermatitis, following irritant occupational exposures.

Commonly developing in infancy or childhood and then becoming latent to appear again in early adult life, atopic dermatitis may readily be mistaken for occupational dermatitis. Many of these cases recur or exacerbate at an age when young men and women leave

school to enter industry, and this frequently occurs in autumn, when seasonal factors such as pollen exposures and cold weather may aggravate atopic dermatitis.

Even when it exists, a history of atopy may be difficult or impossible to obtain, particularly from a foreign-born laborer. The worker will admit a history of occupational aggravation more readily than he will disclose a preexisting dermatitis, hay fever or asthma, and if he had an infantile eczema he probably does not know it. Exposed surfaces of the upper extremities, face and neck are usually the sites of predilection for both atopic dermatitis and occupational dermatitis. After either condition has been active for weeks or months it defies dermatologic acumen to determine the etiology. A hereditary atopic dermatitis aggravated by irritant occupational contacts, may yield a positive patch test to occupational materials and thus result in further confusion.

Disabling chronic dermatitis, intractable to appropriate treatment and showing no tendency to recover after prolonged removal from the supposed occupational cause, should always be looked on with suspicion as possibly having been originally a nonoccupational allergic condition.

CHRONIC ECZEMA

Cases of eczematoid dermatitis in which the primary attack was due to a specific occupational sensitization, and in which frequent relapses or recurrences resulted in the development of a chronic eczema that continued indefinitely after discontinuance of employment, are the result of a gradually developed nonspecific polyvalent cutaneous sensitivity to substances come in contact with in daily life. Such cases may be further complicated by secondary bacterial and fungous infections and result in confusion with Coca's infectious allergic dermatitis.

Some cases of intractable chronic eczema of occupational origin, continuing indefinitely after removal from work, occur in elderly employees, of impaired or mediocre physical stock, with obscure foci of infection, degenerative changes in vital organs or defective metabolic processes, all of which contribute to the prolongation of dermatitis and disability.

Cases of this type are usually not seen by the dermatologist until it is too late to determine the etiology with certainty or until polyvalent sensitivities and other complications have rendered them intractable to treatment. Whether or not a case of this nature originated as an occupational dermatitis, the employer or insurance carrier can no longer escape liability. Obviously there is liability, but likewise not sole responsibility, of the employer.

How are these cases to be interpreted and managed? Probably a legal limit should be established for total disability payments in such cases, based on an appraisal of the occupational factor, though from a humanitarian point of view these patients should be cared for as chronic invalids. In several states where public funds are used to meet occupational disability payments the problem can be solved by the establishment of pension funds. Where private corporations and private insurance carriers hold sole financial responsibility for such cases, the present controversy over awards will continue until the laws are changed. In the adjustment of such cases the medical expert will play a responsible role, requiring an intimate knowledge of medical interpretation and analysis.

²¹ Field, Hans and Sulzberger. *M. B. J. Allergy* 7: 139 (Jan.) 1936.

CONCLUSION

Since the dermatologist possesses the basic knowledge essential for the proper interpretation and solution of many problems in skin diseases confronting industry, he should prepare himself to cope intelligently with them in cooperation with others, and he should be called on to exercise the functions of an expert.

The industrial dermatoses committee of this section has before it the opportunity of clarifying and unifying dermatologic knowledge and opinion on industrial dermatology, and in that way of further advancing industrial medicine and the proper participation of individual dermatologists in such progress.

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NEURALGIAS AND EAR SYMPTOMS

ASSOCIATED WITH DISTURBED FUNCTION OF THE
TEMPOROMANDIBULAR JOINT

JAMES B. COSTEN, M.D.
ST. LOUIS

When this group of pain symptoms and deafness were proposed¹ in 1933 as comprising a symptom complex regularly associated with destruction of the mandibular joint, it was considered as not rare but of infrequent occurrence. Deductions were made from cases presenting an edentulous mouth and extensive destruction of the joint, showing wide overclosure of the jaw. In the first small group there appeared patients with unilateral loss of molar support, however, which demonstrated the pain qualities more clearly and responded more promptly to the proposed solution of the problem, that is, the replacement of adequate molar support on the affected side.

During a two year period the study of these cases was continued, and they were drawn not only from a group referred as sinus and ear cases but also from those being studied in dermatology, internal medicine and neurosurgery. The number of proved cases having reached 125, their occurrence may now be considered very common. It was shown that ear symptoms predominate in patients with edentulous mouths whose symptoms develop slowly as a pressure effect on eustachian tubes and that pain symptoms, with or without herpes of the external canal and buccal mucosa, predominate in the cases of natural malocclusion or malocclusion from loss of molar support on one side only. A few patients with apparently perfect natural teeth were definitely relieved by extension of the joint the very minimal amount of 2 to 4 mm., accomplished by the use of an overlay on the molar teeth. A majority, eighty-nine patients, were above 40 years of age, the largest group being between the ages of 50 and 60 years. Each decade of life results in more wear of the natural teeth or loss of them, with the potential chance of destruction of the mandibular joint.

Some or all of the following symptoms were regularly found associated with these cases of malocclusion.

The ear symptoms were intermittent or continuously impaired hearing, stopping or "stuffy" sensation in the ears, marked about meal time, tinnitus, usually "low

buzz" in type, less often a snapping noise while chewing, dull or "drawing" pain within the ears, and dizziness, with nystagmus.

The pain and irritative symptoms were headache about the vertex and occiput and behind the ear, typical site of posterior sinus pain, increasing toward the end of the day (atypical sinus history and suggestive of eye headache), burning sensation in the throat, tongue and side of the nose, dry mouth with almost total absence of saliva and, rarely, excessive saliva, occasional herpes of the external ear canal and buccal mucosa, most marked on the edentulous side.

The chief function of the jaw being mastication, it is equipped with powerful muscles, the masseter, the temporalis, the pterygoideus internus, all of whose function it is to close the jaw. Acting as openers are the factors of the external pterygoid action, the action of the digastric muscle and the natural weight of the jaw. By complicated interaction, the jaw is fixed to aid in the act of swallowing, moves to a varying extent to accommodate the production of speech, and adapts itself to great variations produced by densities of food, yawning, laughter, and so on. The extent of normal opening of the jaw is controlled by the sphenomandibular ligament, the stylomandibular ligament and the short temporomandibular ligaments making up the capsule of the mandibular joint. The latter being weak at the forward aspect, extreme looseness sometimes permits the condyle to slide entirely beyond the articular eminence, producing subluxation of the jaw. The extent of closure of the jaw is determined by the teeth. Since most of the power of the muscles of mastication is applied to the posterior third of the jaw, most of the impact of chewing is taken by the molar teeth, very little being applied in the incisor district, the mandibular joint acting only as a weak hinge or guide to this movement.

It is not surprising therefore, when molar teeth are missing or the vertical dimension of the jaw is abnormally reduced by shrinkage of the alveolar ridge beneath plates or by grinding away of the natural teeth, that the mandibular joint should assume an unaccustomed burden from this district and much of its structure destroyed. When this occurs some of the force is thrown into the incisor region, but most of it is referred upward to the mandibular joint in direct line of the vertical dimension of the jaw. Proper regard for this function is the basis for testing the patient for the mandibular joint "syndrome" and is the basis on which the dentist proceeds to restore the position of the jaw.

The most common symptom observed was headache. Sixty-three patients had regular daily headache, more or less severe, forty-nine of whom described the pain as vertex, occipital and about the ears. Twelve had only supra-orbital pain. All these presented themselves or were referred for study as sinus cases. Almost all showed more or less sinus infection, for which proper treatment was given. Thirteen volunteered the description of pain as increasing toward the end of the day. This was typical of eyestrain headache, and no eye lesions were found. The distribution of pain was quite typical of posterior sinus disease.

In a previous report,¹ anatomic reasons were advanced for the pain, i. e. (1) erosion of the bone of the glenoid or mandibular fossa, and impaction of the condyles against the thin bone separating them from the dura, (2) irritation by the uncontrolled movement of the condyles backward or mesially, of the auriculo-

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Read before the Section on Laryngology, Otolaryngology and Rhinology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

1 Costen, J. B. A Syndrome of Ear and Sinus Symptoms Dependent upon Disturbed Function of the Temporomandibular Joint. *Ann. Otol. Rhin. & Laryng.* 45: 1 (March) 1937.

temporal nerve, which passes intimate to the mesial side of the capsule between the condyle and the tympanic plate to distribute over the temporal and vertex region, (3) production of reflex pain and sensory disturbance in the various connections of the chorda tympani nerve, the condyle irritating it where it emerges from the tympanic plate at the mesial edge of the glenoid fossa through the petrotympanic fissure.

Reasoning from the fact that the mandibular joint capsule is weaker on the mesial side and the glenoid fossa is protected laterally by the zygoma, it was assumed that the condyle of the joint most affected would move mesially to impact the nerves, and the condyle of the opposite side would adapt itself downward or forward. It was also assumed that in unilateral loss of teeth the joint on the unsupported side would suffer most destruction. Observation of the jaw movements of this type of case showed that the patient attempts to occlude the remaining teeth by weaving the jaw laterally toward them. The lower teeth slip beyond the upper on occlusion, and the condyle on the unsupported side is pulled mesially and upward by the chewing muscles. Exactly the same thing happens when the natural teeth are worn or badly occluding and fail to take the impact of the chewing movement. The joint on the poorly supported side is destroyed. Its condyle slips mesially on closure, impacts the nerves and initiates pain on the same side. Twenty-one cases fall into this group, and the various pains invariably occur on the side in which proper molar support is entirely lost. The joint on the same side is usually quite tender to palpation internally and functions with a crunching noise. Ear symptoms such as stopping and deafness, are notably absent in these unilateral neuralgia cases.

Glossodynia, or burning tongue, has been described by Butlin,² Engman,³ Dean,⁴ Sluder⁵ and numerous others. Frequent reference is made to the complaint in cases of pernicious anemia, glossopharyngeal neuralgia and gastric diseases. Dean, and later Sluder, found that some of the cases could be relieved by injection of the nasal ganglion.

Twenty-two patients in this series described pain and sensory disturbances about the lateral pharyngeal wall and tongue. The emergence of the chorda tympani nerve at the mesial edge of the mandibular fossa was suggested¹ to account for sensory disturbance in the tongue, when irritated by the loose movement of the condyle mesially. Irritation of the auriculotemporal nerve, as described, may produce pain in the remaining branches of the mandibular nerve, one of the largest of which is the lingual nerve, supplying sensation to the anterior two thirds of the tongue. The afferent fibers represented by the chorda tympani nerve are actually the sensory part of the facial nerve and end, in part, in the same nucleus as does the ninth or glossopharyngeal nerve. These fibers are considered (Piersol) "as an aberrant strand of the glossopharyngeal." Under other circumstances of study these cases may have been regarded as glossopharyngeal neuralgia, the description of glossopharyngeal neuralgia usually is that it is a paroxysmal pain referred to the region of the fauces and lateral wall of the pharynx, often radiating up to

the ear on the affected side, case reports state that the trigger which starts the pain is the act of swallowing. With the mouth closed, as in swallowing, the mechanism for irritating both the chorda tympani and the auriculotemporal nerves by the condyle is ideal.

The evidence is convincing that malocclusion and destruction of the mandibular joint is important in the etiology of glossopharyngeal neuralgia. It is clear, since eighteen of the twenty-two cases of burning tongue were completely relieved by reposition of the jaw, that this is the principal etiologic factor of glossodynia of peripheral nerve origin.

A test was made in one patient who had complained of a copper and salt taste along the left border of the tongue for a period of four months, by wearing a cork pack 12 mm in thickness within the left molar spaces for forty-eight hours. She was completely relieved and the case was classified as an example of irritation of the left chorda tympani. She was sent to the dentist but refused to have a denture because she considered the condition entirely cured.

Herpes and salivary disturbance appear to be irritative phenomena. These occur frequently in the pain

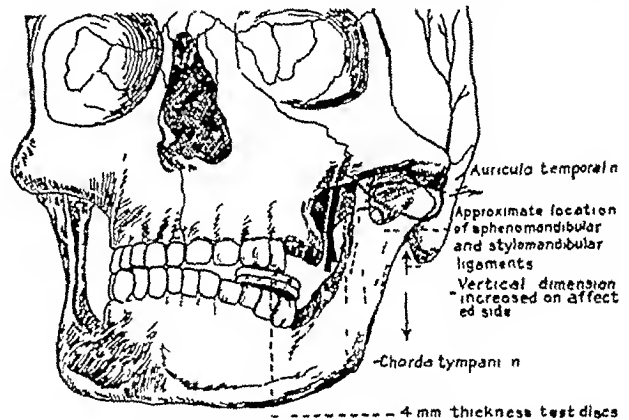


Fig 1—Manner of testing suspected destruction of the mandibular joint. The two 2 mm disks are worn within the jaws an arbitrary period of from two days to one week. This schema shows the effect on the joint of widening the vertical dimension moving the condyle away from proximity to the nerves.

group and are invariably relieved when the pain factors are successfully removed. Salivary disturbance, usually inhibition with excessive dryness of the mouth, is constantly found in the cases presenting burning tongue.

Although herpes is established as a toxic disease of the ganglions of the posterior nerve roots associated with a vesicular inflammation of the skin of the corresponding areas, a mild type is found associated with these cases not occurring in the presence of acute infection. There were twenty-one patients in the series, all in the pain group, who described vesicular eruption about the external canals, the corners of the mouth, the hard palate or the buccal mucosa. In fifteen cases that were followed up this was relieved along with the other complaints. Hunt⁶ has pointed out a characteristic symptom complex: deep seated pain in the ear and mastoid, herpes of the auricle, the external auditory canal, and the tonsillar region, and also facial paralysis in connection with inflammation of the geniculate ganglion. He described certain cases presenting herpetic lesions about the external auditory canal, and

² Butlin H T. Diseases of the Tongue. London: Cassell & Co. 1900. p. 81.

³ Engman M F. Glossodynia. Burning Tongue. Arch Dermat & Syph. 1: 137 (Feb.) 1920.

⁴ Dean L W. The Control of Glossodynia. South M J 15: 856 (Oct.) 1922.

⁵ Sluder Greenfield. Lower Half Headache (Neuralgia) of Nasal Origin. Glossodynia. Otagia. Nausea. Parosmia. Vertigo. Scotoma. Photophobia. Rhinorrhea and Asthma as Isolated Related Phenomena. J A M A 79: 1898-1899 (Dec. 2) 1922.

⁶ Hunt J R. On Herpetic Inflammation of the Geniculate Ganglion. A New Syndrome and Its Complications. J Nerv. & Ment Dis 24: 73-96 (Feb.) 1907.

with pain symptoms but without facial palsy. He classed these as of the type of zoster of the auricle, long before termed idiopathic, these were accounted for by earlier observers favoring the neuritic theory of herpes zoster, by ascribing the skin lesions on the auricle to a neuritis of the auriculotemporal branch of the fifth nerve. The favorable reaction of the herpes group of this series to repositioning of the jaw is proof that their source is pressure irritation of the auriculotemporal and chorda tympani nerves by uncontrolled movements of the condyle and is transmitted to the ganglions. It would explain the idiopathic group referred to in Hunt's series, as well as the twenty-one cases just mentioned.

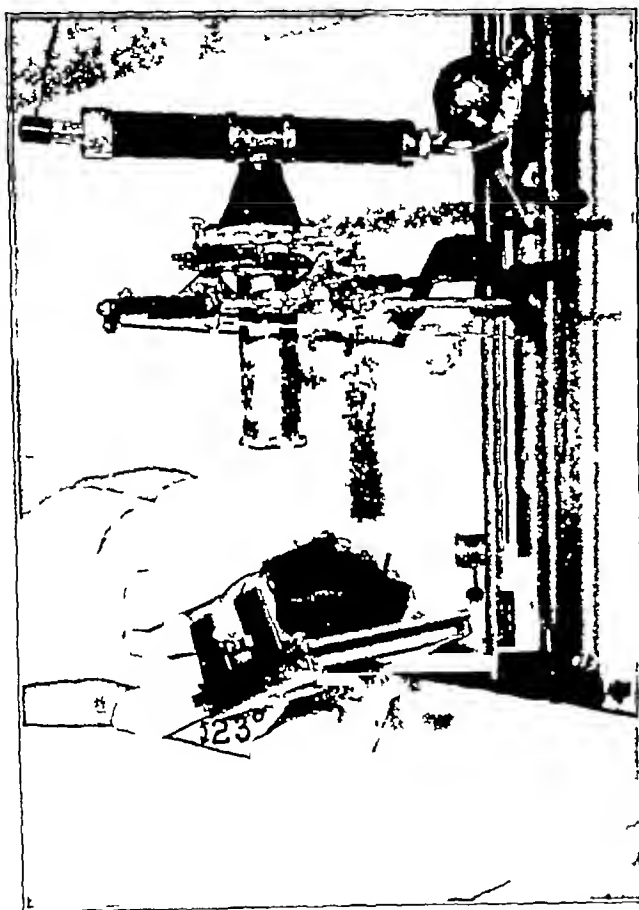


Fig. 2—The Spronll position is used in making films of the temporomandibular joints. The patient's head is tilted 23 degrees toward the feet. A small cone and a fine focus x-ray tube are necessary for proper detail. Exposure factors for an average adult are 66 kilovolts, 20 milliampères, three seconds and 28 inch target film distance. (Courtesy Drs. Sherwood Moore and Wendell G. Scott, Edward Mallinckrodt Institute of Radiology, St. Louis.)

The presence of salivary disturbance in the glossodynia group was not investigated until the return of saliva was described voluntarily by the tenth patient of that series. There have been twenty-two patients with glossodynia to date and among the last twelve, four have described constant dryness of the mouth. In these four the saliva has returned abundantly during the test treatment. Another, in the glossodynia group, with unbearable pain had excessive saliva which became normal after relief of pain. Another case not in the painful class had been diagnosed parotid tumor for twenty-three years. The gland remained enlarged and hard regularly and at intervals softened with discharge of a large amount of saliva into the mouth. Increase of vertical dimension of the jaw 3 mm on the

affected side in this case was followed by return of the gland to normal in four months. A direct parallel seems to exist between these clinical observations and some earlier experimental work on salivary secretion. Although the results of Heidenhain's experiments (1878), of stimulating the chorda tympani with weak induction shocks, showed that sympathetic impulses augment salivary secretion, other records showed an opposite effect. Czernak⁷ (1857) had shown that stimulation of the chorda tympani inhibited secretory activity of the submaxillary gland. Mislavsky and Smirnow (1893)⁸ "observed a similar inhibitory effect of sympathetic stimulation on the secretory activity of the parotid gland brought about by stimulation of the auriculotemporal nerve." When the factors of irritability of the gland cell as well as the effect of vasomotor change on the glands are recognized, one finds that the relationship of irritation of the chorda tympani and auriculotemporal nerves by the condyle to changes in salivary secretion is consistent.

For x-ray study, plates of the joints are taken with the mouth closed and open. Erosion of the head of the condyle on its anterior face, and to a less extent of the articular eminence, is the usual finding. Evidence is noted of fibrosis of capsule structures and of wide excursion of the condyle forward when the joint is greatly loosened. These x-ray examinations correspond with the pathologic studies of the joint by Dufourmentel,⁹ Axhausen,¹⁰ and Steinhardt.¹¹

A few of the patients with neuralgia complained of tinnitus of a mild grade, but the majority of the ear symptoms seem to be referable to simple overbite or overclosure of the jaw. Forty-two of the series presented ear symptoms. Thirty-two of them were edentulous or had natural teeth allowing a wide overbite. The majority of the forty-two ear cases presented headache in addition to deafness, tinnitus or dizziness. So it would seem that headache and the pain effects appear more common by a large majority than ear involvement.

The ear involvement was usually found to be mild and the result of compression of the eustachian tubes. Dizziness disappeared with the inflation of the eustachian tubes, and this was considered an important test in the diagnosis. Deductions as to the behavior of the tissues bordering the tube during overclosure of the jaw were made by experimental overclosure of the jaw of a soft tissue specimen. When this is done manually (to imitate similar overclosure in life) the tensor veli palatini muscle bordering the membranous anterior edge of the tube and the adjacent sphenomeniscus muscle are seen to wrinkle and crowd the eustachian tube, closing it firmly. During the act of swallowing, the tensor palatini muscle should be tensed and effect a temporary opening of the tube. This function cannot occur during overclosure, and the result is derangement of intratympanic pressure and dizziness. Continued production of the tube effects brings about a catarrhal or adhesive deafness exactly as produced by inflammation or pressure from the nasopharynx. The catarrhal deafness improves more or less after reposition of the jaw. The rate of improvement may be increased by inflation at intervals of the eustachian

⁷ Quoted by Kuntz, Albert. *The Autonomic Nervous System*, Philadelphia, Lea & Febiger, 1934, p. 287.

⁸ Dufourmentel, L. *Chirurgie de l'articulation temporo-mandibulaire*. Paris, Naon & Cie, 1928.

⁹ Axhausen, G. D. *Das Kiefergelenkknacken und seine Behandlung*. Deutsche Zeitschrift für Chirurgie, 232, 238, 1931.

¹⁰ Steinhardt, G. *Zur Pathologie und Therapie des Kiefergelenkknackens*. Deutsche Zeitschrift für Chirurgie, 241, 531, 1933.

tubes Follow up has been possible in only the earlier of this large group, but a tabulation of sixteen cases of dizziness showed twelve of the patients improved in hearing and relieved of dizziness

SUMMARY

Review of a large group of cases in which headache and ear symptoms were shown to be partially or altogether due to disturbed function of the mandibular joint shows this to be a common factor The description of pain and ear involvement are similar in every respect to some commonly known eye, sinus and ear disorders

Eighty-five cases fall into the pain group, and these include the ones with burning and sensory disturbance about the tongue and pharynx Four of these showed salivary disturbance, which may be directly traced to irritation of the chorda tympani and auriculotemporal nerves, these effects also were relieved

Thirty-five of the forty-two cases presented varying grades of catarrhal deafness, due either to compression from overclosure or to chronic nasal infection Four of the ear cases presented shortened bone conduction and were not improved by reposition of the jaw, these may be regarded either as eighth nerve deafness or as examples of microfractures of regions near the otic capsule interfering with transmission of sound waves to the inner ear, as observed by Guild¹¹ The dizziness is not typical of toxic labyrinthitis

Twenty-six of the series, or about 20 per cent of the cases, showed mild herpes of the buccal mucosa, angle of the mouth and external ear canal, all preceded by pain and improving with the disappearance of the other symptoms

The results of reposition of the jaws were generally good except in a few cases of malocclusion of natural teeth, presenting great difficulty However, it was noted that the cases showing the best results were corrected in several stages, slowly increasing the vertical dimension of the jaw This increase in distance is built into the molar district of the jaw and is not merely a problem of "opening the bite" Some failures to obtain a proper result have been traced to lack of understanding of this point and the anatomic problem involved by the dentist

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ABSTRACT OF DISCUSSION

DR ROLAND M KLEMM, St Louis My interest in this subject was first aroused by a patient who presented herself with the following history She had pain in her face following the extraction of a molar on the right side She had visited three large clinics The first clinic advised the posterior section of the fifth nerve, the second clinic advised a section of the ninth nerve, the third clinic advised a superior cervical sympathectomy Her remark as she stated her story, was Just what shall I do? Fortunately none of these procedures were carried out She was referred to Dr Costen and was promptly relieved when proper treatment was instituted The neuralgia as described by Dr Costen is a definite clinical entity It is frequently associated with trigeminal neuralgia, because many of these patients had all their teeth extracted on the side of their pain and that is the cause of the associated neuralgia Even after the relief of the trigeminal neuralgia by section of the sensory root these patients continue to have the pain, owing to lack of proper support This is occasionally seen associated with glossopharyngeal neuralgia for the same reason It is important to give a differential diagnosis between a trigeminal glossopharyngeal neuralgia and a superior cervical

sympathetic pain A typical major trigeminal neuralgia is a definite clinical entity It is characterized by paroxysmal attacks of lightning-like pain in the distribution of the fifth nerve, more commonly in its maxillary and mandibular divisions, and very commonly associated with a point on the face that, when irritated or stroked, will precipitate an attack This is commonly spoken of as a trigger zone, usually the upper and lower lip at the angle of the mouth Trigeminal neuralgia is most commonly seen after the fifth decade, although it is occasionally seen in younger people It is unilateral as a rule, about 05 per cent are bilateral The point to remember is that it is in the distribution of the fifth cranial nerve Glossopharyngeal neuralgia, also a definite clinical entity that has been recognized for years, is a typical paroxysmal attack of pain in the distribution of the ninth cranial nerve In addition, one must take into consideration the differential diagnosis between this condition and supernumerary teeth, carcinoma of the lip, carcinoma of the alveolar process of the jaw and carcinoma of the anterior two thirds of the tongue Glossodynias, which have been rather baffling in the past, have responded very satisfactorily to this type of treatment The one patient that Dr Costen mentioned obtained immediate and permanent relief This type of neuralgia must be considered every time one deals with an individual who has not had proper support in the jaw after the molars have been removed, and only after the dental profession has been educated not to extract teeth in neuralgia will the incidence of this disease be cut down

DR WENDELL G SCOTT, St Louis With the patient reclining 23 degrees off the horizontal, the joint is roentgenographed on the under side The x-ray tube is centered one-half inch anterior to the external auditory canal and 1½ inches above it A small cone is used to give the utmost detail and contrast Both joints are always taken with mandible open and closed In Dr Costen's excellent study of the changes in this joint, three changes can be identified on the roentgenograms (1) the erosion of the anterior and superior aspect of the condyle involved, (2) a narrowing of the joint space with accompanying haziness and indistinctness of the bony outlines, which is indicative of arthritic changes, (3) the condyle on the involved side may move considerably farther forward on the eminence than does the normal side In studying films of the temporomandibular joints, the appearances of both joints must be carefully observed in the same manner that mastoid films are analyzed

DR SAM E ROBERTS Kansas City, Mo I have some slides to illustrate how this dental procedure is carried out I have been following Dr Costen's teachings nearly two years, and I am sure I have had at least fifty cases, both the pain syndrome and the ear syndrome One of my greatest difficulties has been getting the cooperation of the dentists I have tried to be ethical and return the patient to his own dentist, and there I made a mistake In one day there were three patients in my office who had had work done on their bite, and all of them had been improperly corrected In fact, they were no better, and their bite was not opened I have become unethical now I take them away from their dentist and send them to some one who I am sure knows something about this procedure As a consequence, I am getting satisfactory results I don't want to appear too enthusiastic, but I do feel that the work that Dr Costen has done has been one of the greatest advances in our specialty in many years He has claimed too little rather than too much

DR JAMES B COSTEN, St Louis I might say one thing regarding the relationship with the dentist When I examine the patient I tell him what I think the trouble is, and I establish it by having him wear those cork disks for fifteen minutes or two or three days I don't allow him to feel that his problem is solved and that I am through I have him back in two weeks, and again in a month, and try to analyze any changes in his pain especially if he is in the hands of a dentist who is disregarding, perhaps, the anatomic feature The traditional training of dentists is to open the bite What I try to impress on him is that, whether he opens the bite or not, the main thing to do is to increase the vertical dimension and allow the joint to pull down After that is done, in a week or so, the incisors come together and the joint has given way to allow for the correction These are the important points in getting results from a strange dentist if he is not thoroughly informed

11 Guild S R The Probable Role of the Muscles of Mastication in the Causation of Microfractures of the Human Temporal Bone Anat. Rec. 61: 20 (March) 1935

CASE FINDING METHODS FOR THE DIAGNOSIS OF TUBERCULOSIS

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NEW YORK

The declining death rate from tuberculosis is one of the most impressive events in modern medical history. Yet the retreating force still holds a devastating outpost, so that it remains the most fatal disease of early adult life and causes physical disability, economic impairment and social disruption beyond accurate estimation. The pulmonary form and its direct complications are responsible for all except a small percentage of this. It seems paradoxical, therefore, to state the fact that pulmonary tuberculosis is one of the most readily diagnosable diseases and, in its early stage, one of the most curable.

In general, the percentage of tuberculosis cases diagnosed in their early stages has increased discouragingly little in comparison with the lowering death rate. The recent survey¹ by the Council on Medical Education and Hospitals of the American Medical Association reveals that only 13.1 per cent of 66,861 tuberculous patients were in the incipient or minimal stage of the disease when admitted for treatment to the hospitals and sanatoriums of this country. Surveys of various groups of the population of New York City in which I have participated more or less directly in the past five years demonstrate that there are a number of reasons for this situation, one of the most important being that at least 60 to 70 per cent of tuberculous people do not develop an awareness of ill health until the disease has entered the moderately advanced or far advanced stage. Even in a group of intelligent graduate nurses who are employed at Bellevue Hospital and may have medical examinations on request, we have found in a five years study that about two thirds of those who develop clinical tuberculosis have moderately advanced or worse lesions when the diagnosis is first made. The reason is that, in the early stages, subjective symptoms are lacking or misinterpreted as physiologic fatigue, nervousness or something equally innocent. It is difficult, by education of the lay public, to change this human tendency to ignore apparently small troubles. It is desirable therefore to seek for case finding methods that are effective for early diagnosis, practicable and not liable to arouse undue apprehensiveness in the population. That these conditions can be satisfied has been demonstrated by the five years study which we have made among student nurses at the Bellevue Hospital Training School for Nurses and by the work of many others. The methods are predicated on a recognition of certain prominent characteristics of behavior of tuberculosis in the community and in the individual.

TUBERCULOSIS AS A COMMUNITY DISEASE

In communities of people tuberculosis tends to pattern its behavior along well recognized lines. Young adults and adolescents are especially liable to attack. Young women are more vulnerable than young men, but the reverse holds true after the age of 25 or 30, and to a more striking degree. Color is a prominent element in the pattern especially in young people. Thus, in New York City the death rate is commonly five to ten times as high among young Negroes as among young

white persons.² Occupation is important since it usually is the determinant of living standards and on the expression of intelligence, very potent factors in the tuberculosis rate.³ Work in dusty atmospheres is a menace, especially if dust is that of siliceous rock. A thread which runs through the whole pattern is the opportunity for and intimacy of contact with the "open," sputum-positive case, usually in the household; this may have been recent or remote. Among 73,000 adult "contacts" examined in New York City, Chicago and London, Drolet² estimates that 8.2 per cent were found tuberculous.

THE EARLY LESION OF PULMONARY TUBERCULOSIS

Diverse as its variations may be, there is a certain constancy of behavior of tuberculosis in the person. The first lesion of clinical importance is most likely to develop in a young person, usually between 15 and 25 years of age. It appears usually in the upper half of one lung, as a patch of lobular pneumonic infiltration. At best, this may undergo almost complete absorption and scarring in a few months, entirely unknown to the patient; at worst, it may caseate, liquefy at its center and discharge its bacillus-laden content into the bronchial tubes, leading to contamination and infection of healthy parts of the lungs and the march of new lesions into advanced phthisis—all within a few weeks or a few months. Caseation is more constant than absorption, especially in the young, more especially in young females, and most especially in young colored females. Artificial as it may be, it is useful to set a dividing line between the early infiltrate and advanced cavernous phthisis, remembering that the former usually is the precursor of the latter. In distinction from the all too familiar picture of the latter, the early lesion does not give rise to cough or blood spitting, high fever or night sweats, but as a rule only to a mild toxemia which often expresses itself as easy fatigue, with loss of weight. Even these symptoms may not be recognized subjectively. There is, as yet, no softening or ulceration into the bronchus and therefore no sputum and no tubercle bacilli in discharges from the throat. Physical examination is entirely negative in about 75 per cent of the cases, and in most of the others the so-called finding is a patch of fine rales in an area so localized that it is almost covered by the bell of the stethoscope. The roentgenogram shows, with rare exceptions, a patch of soft mottling or clouding, which may be only a centimeter or so in diameter, its size often bellying its potentially dire significance.

Even after excavation of and bronchogenic extension from the original infiltration begins and proceeds—sometimes causing hemoptysis—the grippal, pneumonic or bronchitic character of the symptoms often deceive the patient, and sometimes the unwary physician also, particularly if the physical signs are scanty or lacking, if the need of x-ray examination is not recognized, or if reliance is placed on a single sputum examination.

If such alertness must be expected of the physician, the presence of the occasional patient with early tuberculosis who comes to the office or clinic with symptoms how are we to reach the much greater number who do not come before more advanced disease has developed. It is obvious that physical examination of large groups of people is not sufficiently reliable for the purpose. The most effective method is x-ray examination of the

Read before the Section on Miscellaneous Topics, Session on Tuberculosis at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.
1. Survey of Tuberculosis in Hospitals and Sanatoriums in the United States, J. A. M. A. 105: 1265 (Sept. 7) 1935.

2. Compilations by G. J. Drolet, statistician, New York Tuberculosis and Health Association, 1936.
3. Whitney, Jessamine S. Death Rates by Occupation, National Tuberculosis Association, 1934.

hest of groups of the population selected for their probable susceptibility to the disease. Such groups include young laborers in industry, factory girls, young mothers attending antepartum clinics, Negroes living in a low economic level, and high school and college students. In fact, a sizable community can determine, from mortality records, in what sections of the population tuberculosis has worked most of its havoc, and then survey those sections with the full expectation of finding nests of unrecognized disease.

The use of tuberculin testing before x-ray examination is a matter to be decided for each survey. In urban communities, where two thirds or more of the selected population groups are found to be tuberculin positive, it is usually simpler and more economical to proceed without this preliminary. In adolescents, especially, tuberculin testing is a good means of eliminating the majority who will not react and, therefore, not require x-ray examination.

Narrower searching concerns families and household groups principally. The death of an infant from tuberculous meningitis, for instance, means recent contact with an "open" case, and x-ray examination of the chest of each member of the household is likely to find this. Examination of "contacts" should always be carried out.

In ordinary practice, x-ray examination is made with the celluloid film. In large surveys the rapid paper film method has been found highly effective and economical. In certain groups, fluoroscopy of the chest as a part of the periodic physical examination approximates the roentgenographic method closely in efficiency.

The yield of case finding methods depends, of course, on the prevalence of tuberculosis in the community. Where the annual death rate from the disease is between 60 and 100 per hundred thousand of population, the yield of new cases usually is from 1.5 to 2 per cent of the number examined. In some groups, particularly in older people, it runs to 4 or 5 per cent, but in these the lesions are more often of a chronic fibroid and obsolete type. Of the lesions found, 70 per cent or more can be expected to be in the minimal stage according to the classification of the National Tuberculosis Association. In groups of young people, repetition of the examination annually will reveal a number of newly developed lesions in previously clear lungs, varying according to the rate of infection determined by the tuberculin test and the opportunity for reinfection. In a group of student nurses we have found an incidence of new lesions of about one per hundred annually. Yearly x-ray examination detects from 70 to 80 per cent of the cases in the minimal stage, and we have found that semiannual examination brings the percentage almost to 100. Not all of these lesions are serious nor do they all require treatment. Case finding, therefore, may accomplish little unless the yield is studied and sorted by physicians of experience, after proper clinical study. Remembering the potentialities of the early infiltration occurring in young people and causing few or no symptoms, the physician must have conviction as well as skill, since the prompt and proper treatment of such lesions is the most effective measure in combating tuberculosis. It is doubly effective, since it surpasses any other means of restoring a patient to lasting health and, simultaneously, is the best preventive of the development of advanced cavernous phthisis, which is the infection source of almost all subsequent tuberculosis in other people. It is apparent, therefore, that neither the case finding survey nor the skill and conviction of the

physician will be of avail unless facilities are provided for prompt and proper treatment. In most communities the sanatorium waiting list is a positive curse.

The cost of case finding is considerable, but trifling in comparison with the exactions of advanced tuberculosis in most communities.

SUMMARY

1 Pulmonary tuberculosis remains the first cause of death in young adults.

2 From 60 to 70 per cent of tuberculous people, even intelligent ones, are unaware of symptoms of serious disease until the pulmonary lesions are moderately or far advanced.

3 Most cases will not be diagnosed early except by case finding methods based on a familiarity with the characteristics of tuberculosis as a community disease as well as an individual lesion. Some of these characteristics are mentioned.

4 The simplest and most effective method of case finding consists of x-ray surveys of the chests of selected susceptible groups, in some instances with preliminary tuberculin testing.

5 In the yield of cases from such surveys, the proportion found in the earliest stage is 70 per cent or more.

6 If the cases found are skilfully studied and promptly and properly treated, when necessary, the accomplishment of actual cure of the disease and prevention of spread of the infection to others exceeds that of any other known methods.

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ABSTRACT OF DISCUSSION

DR. GEORGE H. HOWE, Kansas City, Mo. The difficulties with the procedure are twofold. Most physicians are loath to take on this new work, and secondly there is lacking in the community physicians willing to take the leadership in the unpopular work of carrying on surveys and preventing the disease rather than curing it. Yet it rests with the medical profession to decide what is to be done. In those communities in which the medical profession has studied the matter there seems to be a gradual recognition that something should be done and that it is up to them to do it. But if we do not take that attitude we should not be displeased with the general public if it takes up this work of preventive medicine. One of the chief difficulties in discovering early cases has been the difficulty in recognizing early lesions. And it is only by the recognition of the early processes that we can hope to secure a real advance in this campaign. It seems to me that in the Middle West we would have to make an approach different from that suggested by Dr. Ambersson. It will be easier for us to enter the public schools and take the pupils in groups on which to carry on our surveys. And I believe that it would be wiser if we went below the adolescent age and examined the students in the elementary grades, not so much with the view of finding the disease full blown as by using the tuberculin test to find familial infections, foci of infection, the carriers, and the fibroid types of disease hidden through former wrong diagnosis. I should like to see the feeling general among the medical profession that tuberculin testing should be done in the preschool age or in the first year of the elementary grades, in order to find foci of infection. Surveys in high schools should be done with the aim of recognizing the individuals about to become sick. The next question was concerned with what to do with children who show positive tuberculin tests. Most of them do not need sanatorium treatment, but they do need very close supervision. Another point is to have x-ray work that is above reproach. Much of what I have seen has been questionable, and I believe that it will be necessary to ask for better machines—machines that will make an exposure through a youngster's chest in a tenth to a twentieth of a second—and to have interpretations of films by men who understand the beginning lesion rather than cavitation and fatal or far advanced lesions.

DR. WILLIAM DEVITT, Allenwood, Pa. We who live in institutions and work with tuberculosis all the time are impressed with the statement Dr. Amberson made that only 13 per cent of the cases that come under our observation are incipient. I know of nothing easier to cure than early tuberculosis and of nothing harder to cure than far advanced tuberculosis, the kind that all institutions get. I believe thoroughly that we shall never control tuberculosis until we have brought that to the attention of the family physician. He is the first to see the case, whether it is minimal, early or far advanced. Until we wake him up to that possibility, we shall never do much to stamp out tuberculosis. It has been shown that one out of forty-six school teachers has an active, positive tuberculosis. It has been shown that there are 18,000 school teachers in the United States who have positive tuberculosis. If that is true, it behooves us to do something about it. Dr. Myers of Michigan has done a great deal of work in that direction, until the state of Michigan, because of Dr. Myers' efforts, began to demand that every school teacher have a clear bill of health either by a tuberculin test or by competent x-ray examination. I do not know how to bring about this state of affairs. It certainly is not a federal or national concern. It must come from the local boards and from them to the local states. It is a problem for each state. If school teachers are compelled to undergo an examination they will be helped because they can be cured. We always have between five and nine school teachers. Nobody today knows the solution of the problem of tuberculosis. Miss Whitney has said that it is going to be more difficult from now on to lower the death rate than it has been for all these years, because we have done the obvious and now we have to go out and find the hard, difficult things to do.

DR. SAM H. SNIDER, Kansas City, Mo. In tuberculosis we look for the woman who infected the child. It may be a mother, it may be a teacher, it may be a grandmother. In a case of tuberculosis in a child whose father, the mother, the cook and the chauffeur showed no signs of tuberculosis on examination, the grandmother apparently was the source of infection since she had a moderately advanced tuberculosis. Dr. Pinner and Dr. Amberson have stated clearly the epidemiology and the pathology of early tuberculosis. I like to use the term "childhood type tuberculosis," not "childhood tuberculosis," because childhood type tuberculosis is not peculiar to childhood but may be seen in adult life. It is seen in people past 40. The progression from the childhood type to the adult type of tuberculosis may be very rapid. What yesterday was a childhood type of tuberculosis, with only a caseated gland in the hilus tomorrow may be a far advanced tuberculosis. Let us therefore not forget that any child with a childhood type of tuberculosis, particularly as he is approaching the adult stage of life, may within a month or two become a menace to the community. We should reexamine the children with the childhood type of tuberculosis. I like to examine them with the fluoroscope not less often than every two or three months to determine if there is any progression of the lesion and if there is any suspicion I like to use the x-ray plate to determine further the progression. Tuberculin tests are made for the purpose of determining who shall have x-ray plates. The x-ray plate will determine the degree of advancement. If we can apply pneumothorax therapy to the adult case fairly early as soon as cavitation appears we shall be very much more likely to suppress the infection before that individual has spread his infection to a large number in the community.

DR. H. I. SPECTOR, St. Louis. In a study of statistics of the tuberculosis mortality in St. Louis it was found that 50 per cent of the cases were reported after death of the patient or a month before death. A questionnaire was sent to the physicians in St. Louis asking them to state the reasons for late reporting. Some 25 per cent of the physicians frankly admitted that they were unable to recognize the disease in its early stages. Others stated that in many instances in which the diagnosis was in doubt they would suggest to the patient the necessity of a roentgenogram but the patient could not afford to pay for it. The advice to have sputum examined was not always followed. The patients likewise failed to return for observation. These are practical points that come up in the control of tuberculosis. Many physicians stated that the patients came to the physician in a late stage of the disease, when the damage has already been done. Those of us charged with

the responsibility of controlling tuberculosis have these practical problems to face. In our own city, we felt that, as physicians admitted that they were unable to diagnose and recognize early tuberculosis, something had to be done about it. We have for this reason instituted courses on tuberculosis. We offer annual courses to physicians, stressing practical points not immunology or pathology. Because of the fact that tuberculosis in the early stage does not always manifest itself in signs, we are teaching them other methods of diagnosis. I think we have been fairly successful in getting the cooperation of the physicians. We are going to conduct our fifth annual session this coming fall. How to get the patient to come to the doctor early in the disease is always a problem. Through the radio and the press we are advocating and urging periodic health examinations. It seems to me that unless we attack the problem from these two angles, we are going to fail in recognizing the early cases.

DR. J. BURNS AMBERSON JR., New York. In the past five years during which we have used such case finding methods among student nurses in the Bellevue Hospital Training School we have regarded these small newly developed lobular perimonic lesions seriously and have given the cases prompt and rigid treatment. In the group so treated there has not been a single death from tuberculosis and not a single case has gone on to advanced disease. Practically all these girls who have finished treatment are now back at work and thus far have had no further trouble from their tuberculosis.

PRIMARY MALIGNANT DISEASE OF THE TRACHEOBRONCHIAL TREE

REPORT OF 140 CASES

PORTER P. VINSON, M.D.

ROCHESTER, MINN.

One of the interesting developments of the past decade has been the marked increase in the incidence of primary malignant disease of the tracheobronchial tree. Prior to 1925, primary malignant growths in the air passages were considered rare, at present, however they are encountered as frequently as pulmonary abscesses.

It is true that certain types of malignant growths arising primarily in other organs may metastasize to the lungs and ulcerate through the bronchial wall, producing signs and symptoms that are identical with those occasioned by primary bronchial growths,¹ in most instances, however, the differentiation of primary and secondary neoplasms in the lung is not difficult. Metastatic nodules in the lungs, even though they may be large and numerous, rarely produce signs or symptoms of pulmonary disease unless they involve the pleural surfaces and cause pain or effusion into the pleural space. When secondary growths are situated in the parenchyma of the lung, they may be unsuspected until a roentgenogram of the thorax reveals their presence. In contradistinction to metastatic nodules in the lung, a small growth arising in a bronchus may soon reduce the lumen of the tube and interfere with drainage to such an extent that suppurative processes may mask the underlying disease.

The chief factor in the more frequent antemortem recognition of primary malignant growths in the air passages has been the more general employment of

From the Division of Medicine the Mayo Clinic.
Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.
1. Maytum C. K. and Vinson P. P. Pulmonary Metastasis from Hypernephroma with Ulceration into a Bronchus Simulating Primary Bronchial Carcinoma. Report of a Case. *Arch. Otolaryng.* 23: 101-114 (Jan.) 1936. Vinson P. P. and Martin W. J., Jr. Pulmonary Metastasis from Hypernephroma Diagnosed by Bronchoscopy. *ibid.* 1: 368-370 (March) 1932.

bronchoscopy in the diagnosis and treatment of chronic pulmonary diseases and the removal of tissue for microscopic examination

Doubt as to the accuracy of pathologic reports in these cases has recently been expressed, especially by Kernan² and also by Kramer,³ who felt that many of the growths found in the bronchi are benign and should be classified as adenomas or carcinoid tumors. They contended that, although the tumors may resemble carcinomas, they do not exhibit evidence of mitosis, are more frequently encountered among women, produce symptoms because of mechanical interference with bronchial drainage, never produce metastatic lesions, are readily removed by diathermy but are insensitive to irradiation, and may be diagnosed accurately from their gross appearance at bronchoscopic examination. While it is not my purpose in this report to attempt to settle this controversy, I can state that from the pathologic, clinical, roentgenographic and bronchoscopic observations it is felt that the lesions in the cases presented in this paper represent true malignant tumors. While some may have been benign, it was not possible to distinguish them in any way from malignant tumors.

From May 1925 to January 1931, at the Mayo Clinic, a diagnosis of primary malignant disease of the trachea or bronchi was made from microscopic study of tissue removed at bronchoscopic examination⁴ in seventy-one cases. From January 1931 to June 1935 a similar diagnosis was made in sixty-nine additional cases. The purpose of this report is to analyze all these cases and the results obtained from the various types of treatment employed. One hundred and ten of the patients were men, thirty were women. Five patients were from 20 to 29 years of age, sixteen from 30 to 39 years, thirty-two from 40 to 49 years, fifty-one from 50 to 59 years, and thirty-four from 60 to 69 years, one patient was 72 and another 75 years of age.

Many factors have been mentioned as influencing the development of carcinoma in the lung, one of which is tuberculosis. In the present series tuberculous infection in the lung was present in only two cases. It does not seem likely that tuberculosis is an etiologic factor, as the increase in malignant lesions of the lung has come at a time when tuberculous infections have shown a decided decline.

Other respiratory infections had been present in sixty-eight cases, but there was little evidence to establish an etiologic relationship as most of these infections were mild and were not associated with the development of symptoms leading to a diagnosis of pulmonary carcinoma. However, there were a few cases in which malignant disease had developed in the respiratory tract of patients who had suffered from chronic bronchiectasis for many years. Seventy of the patients were smokers, which certainly was not a noteworthy finding. There was a family history of carcinoma in nineteen.

Practically all chronic pulmonary diseases have similar symptoms and it is futile to attempt to distinguish one from the other on the clinical history alone. One of the most frequent symptoms of pulmonary disease is cough, and yet it is an interesting feature of pulmonary carcinoma that an advanced lesion may exist

with evidence of metastasis and stenosis of a bronchus without cough being present. This was true in ten of the cases. Three patients had not noted any pulmonary symptoms. Dyspnea was a prominent symptom and was present in ninety-nine cases. Pain in the thorax was noted by ninety-three patients, and in many instances it was a very disturbing symptom. Sputum was present in 100 cases, and hemorrhage or blood-stained sputum had been noted in eighty-four. One hundred and twenty-one of the patients had lost weight, and this was usually associated with more than a corresponding loss in strength.

Stridor, which was present in thirty-five cases, is usually interpreted as being produced by an obstructing lesion proximal to the bifurcation of the trachea, in the majority of these cases, however, the lesion was situated well beyond the carina. In one case definite stridor was produced by a lesion that obstructed a bronchus to the lower lobe of the lung. Any lesion producing bronchial occlusion interferes to a greater or less degree with drainage from that area of the lung distal to the obstruction and infection invariably ensues. Evidence of sepsis occurred in many of the cases in the series. Fever was present in sixty-two cases, sixteen patients had had chills, and fifty-five had leukocytes numbering more than 10,000 per cubic millimeter. Ten patients had clubbing of the fingers. Eighteen had had an effusion into the pleural space.

The most significant physical sign was evidence of bronchial obstruction as revealed by distant breath sounds, which was noted in 113 cases. This finding is noted rarely in other pulmonary diseases without involvement of the pleura and when it is observed without corresponding impairment of the percussion note over the area involved, carcinoma should be suspected at once. In some cases breath sounds were markedly reduced or absent when on bronchoscopic examination the bronchial lumen did not appear to be greatly narrowed. This is in striking contrast to the absence of physical signs in cases of inflammatory lesions of the lung, especially in cases of pulmonary disease in which the lumen of the bronchus is greatly reduced in size.

Distant metastasis may present the first evidence of primary bronchial carcinoma. This has been true particularly in cases in which secondary lesions have occurred in the brain. In a few instances glandular metastatic lesions were not demonstrated, although metastatic nodules in the opposite lung were revealed on roentgenographic examination.

Twenty-eight of the patients in the series had definite metastatic lesions, in one case metastasis was questionable. Seven patients were hoarse as a result of involvement of the nerve supply to a vocal cord, in five of these cases metastatic masses were not demonstrable.

Roentgenographic examination revealed the presence of a lesion in 136 cases. In one case in which the examination was considered negative the tumor was situated in the trachea, in three cases in which the lesion was situated in the lumen of a bronchus, however, examination failed to reveal the presence of disease. In some cases the roentgenologic appearance of bronchial carcinoma is quite characteristic, but in the majority of cases it is impossible to distinguish malignant from benign lesions. In four cases the lesions were situated in the trachea, in the remainder they were bronchial in origin. In eighty-seven cases lesions were on the right side, and these were distributed as follows: thirty-one in the main bronchus, forty-three in the bronchus to the

2. Kernan J. D. Treatment of a Series of Cases of So-Called Carcinoid Tumors of the Bronchi by Diathermy. A Report of Ten Cases. *Ann Otol Rhin & Laryng* 44: 1167-1191 (Dec.) 1935.

3. Kramer Rudolph. Adenoma of the Bronchi. *Ann Otol Rhin & Laryng* 39: 689-695 (Sept.) 1930. Kramer Rudolph and Som M. L. Further Study of Adenoma of the Bronchi. In *Transactions of the Eighteenth Annual Meeting of the American Bronchoscopic Society*. St. Louis: Annual Publishing Company 1935. pp. 64-84.

4. Vinson P. P. Primary Carcinoma of the Bronchus. Report of Seventy One Cases in Which the Diagnosis Was Made by Bronchoscopic Examination. *Minnesota Med* 15: 15-17 (Jan.) 1932.

lower lobe four in that to the middle lobe and nine in that to the upper lobe. Forty-eight of the lesions were on the left side, twenty-seven of these were in the main bronchus, fifteen in the bronchus to the lower lobe, and six in the bronchus to the upper lobe.

In one case both main bronchi were obstructed by the tumor and it was impossible to determine the origin of the growth. In this case death occurred immediately after withdrawal of the bronchoscope and was evidently the result of bilateral bronchial occlusion. Symptoms of respiratory limitation in this case were not pronounced until immediately before examination was begun, and they were erroneously attributed to a nervous reaction associated with instrumentation. This was the only fatality that was related in any way to examination.

According to the method of grading advocated by Broders, carcinoma of the bronchus represents a high degree of malignancy. Seventy-six of the lesions were squamous cell epitheliomas, forty-two of these were graded 4, thirty were graded 3, three were graded 2, and one could not be graded satisfactorily because the tissue was insufficient in amount. In fifty-nine cases the lesion was an adenocarcinoma, twenty of these were graded 4, twenty-seven were graded 3, six were graded 2, and six were graded 1. Undifferentiated carcinoma of grade 4 was present in two cases and of grade 3 in one case. One lesion was not graded and one was thought to be lymphosarcoma.

Although there was no difference in the pathologic appearance of tissue removed from the seventy-one patients observed in the period from May 1925 to January 1931 and from the sixty-nine who were examined from January 1931 to June 1935, there was nevertheless a striking difference in the clinical course in these two groups. In the first group metastasis had occurred in ten cases, whereas in the second group it occurred in eighteen. In the first group pleural effusion was present in six cases and in the second group in twelve. In the first group eight patients survived for as long as four years following high voltage roentgen therapy, and six of these were living at the time of writing, from four to seven and a half years after treatment.⁵ In the second group four patients are living and are in satisfactory condition ten, eleven (two cases) and thirty months following irradiation or local destruction of the tumor by surgical diathermy, a fifth patient in this group is living but is in failing health one year after irradiation. All patients in each group who did not receive treatment are dead, in the first group thirty patients who were not treated lived an average of six months after examination at the clinic in the second group twenty-six who were not treated lived little more than an average of four months. Excluding those patients in the first group who at the moment of writing were still living the duration of life of the thirty-five patients who received treatment was more than twelve months, the duration of life of the thirty-eight patients in the second group who received treatment on the other hand was five and a half months. It would appear from these data that neoplastic disease of the tracheobronchial tree is not only becoming more frequent but is exhibiting increasingly malignant characteristics.

Although it seems unwise to draw too sweeping conclusions as to prognosis from study of small groups of cases representing different types or lesions neverthe-

less from my experience better results have been obtained from treating patients with adenocarcinoma than those with lesions of the squamous cell variety. Nine of the eleven patients who are living had lesions of the adenocarcinomatous type. Four of them are women, the remaining five, men. Of the two patients with squamous cell tumors, one is the man who is failing rather rapidly a year after treatment and the other is a woman who was well four years after treatment.

Numerous investigators have reported gratifying results following surgical removal of malignant growths from the lung, but, as equally good or better results can also be obtained by a combination of radiotherapy and surgical diathermy in the treatment of an adenocarcinomatous type of lesion, it would seem proper at present to restrict radical operation to the squamous cell type of tumor.

ABSTRACT OF DISCUSSION

DR. JOHN DEVEREUX KERNAN, New York. Up to 1933 there had been in the Presbyterian Hospital in New York sixty-six cases of carcinoma of the lung, in the past three years there have been sixty-five cases. This reports a material nearly as large as that of Dr. Vinson. At the Lenox Hill Hospital in New York between 1923 and 1933 there have been twenty-eight additional cases. All the large hospitals report the same increase, in spite of the fact that in many large hospitals the bronchoscope is not yet in frequent use. The etiology is just as obscure as in carcinomas anywhere else in the body. There are undoubtedly cases of a primary tumor of the bronchus which closely resemble carcinoma and are reported as such by the pathologist. Nevertheless, their history and course are non-malignant. They begin early in life and persist for many years without metastases. Their symptoms are purely the local ones of the obstruction of a main bronchus. Local treatment by diathermy or even by removal by forceps will cure them. Surely these are not what are ordinarily thought of as cancers. It is important to recognize them, as they will be reported by the pathologists as carcinomas and the most radical treatment, such as lobectomy and pneumonectomy, may be proposed. It is surprising that, in spite of his broad clinical experience, Dr. Vinson has not yet encountered tumors which, for lack of a better name, are called adenoma. Dr. Vinson makes the important point that all chronic pulmonary diseases have similar symptoms. Neither the history, the physical examination nor the x-ray appearances are characteristic. Only by bronchoscopic examination and the removal of a specimen for biopsy can the diagnosis be made with certainty. The next most valuable means for making the diagnosis is the x-ray examination, which in Dr. Vinson's series revealed the lesion in 136 out of 140 cases. Dr. Vinson approves only of x-ray treatment and has made little mention of the various surgical attacks that are now proposed. I believe that successful lobectomies and pneumonectomies have been reported by a number of authors. It has not been my good fortune to see one of these successful cases. I should like to ask Dr. Vinson whether he has had any experience with surgical procedure and whether he has seen any that even promised hope. The experience of Bellevue Hospital has been a complete failure as far as surgical measures are concerned. The results of x-ray therapy have not been encouraging. In the twelve years from 1922 to 1934 seventy-two males and thirty-two females with carcinoma of the lung were treated by x-ray therapy at the Presbyterian Hospital. Only twenty-one of these cases received a satisfactory dose. The others had been treated in earlier years with smaller dosage and in some cases lower voltages. Four of the twenty-one patients survived between fifteen and twenty-eight months.

DR. EDWARD H. SKINNER, Kansas City, Mo. The following procedures may be used in the treatment of a carcinoma of the lung: (1) a lobectomy, (2) a pneumonectomy, (3) the placing of a radium container with radium element opposing the lesion, (4) the use of radon implants, (5) the use of surgical procedure of lobectomy plus radon, and (6) the matter of high voltage roentgen therapy. This discussion is from the angle of what might be hoped for with high voltage roentgen therapy.

⁵ Vinson, P. P. and Leddy, E. T. The Roentgen Treatment of Primary Malignant Disease of the Tracheobronchial Tree. *Ann. Otol., Rhin. & Laryng.* 45: 129-126 (Dec.) 1932.

when the surgeon agrees that lobectomy or pneumonectomy is not possible. Gamma irradiation, when one is treating a malignant growth in any circular organ, provides the possibility of producing a stenosis of that organ in the process of healing. Therefore I am inclined to agree with Dr Kernan when he says that some of the cases treated with high voltage therapy have not been benefited but their condition made worse. Undoubtedly the same result may take place in the case that has not been treated with x-ray therapy. It is my observation in the career of these cases that the disease itself may produce the blocking, with the infection developing in the particular area behind the stenosis. One must be careful in attempting to apply a lethal dose of x-ray therapy to any large area, and therefore if any one is proposing to use high voltage therapy on these lesions, may I suggest that he carefully localize the lesion. With the fluoroscope a lead circle is placed on the posterior wall of the patient and another lead circle on the anterior chest wall. The lesion is lined up directly between these two circles with a straight beam of the x-rays. The x-ray therapy should be introduced through a very small portal, not more than a 5 cm port, possibly smaller. This must be focused most exactly and the x-ray film with the record of the fluoroscopic examination must be at hand so that one can actually center on the particular portion of that lung. If one does use a large port of high voltage therapy on lung tissue, one should be cognizant of what has happened in the treatment of mammary carcinoma. I have produced a pleuritis, a pneumonitis, with consequent fibrosis. I have produced such a thickening of the pleura as to obliterate the space of a lobe. Therefore, all high voltage roentgen therapy must be done through very small portals. This will give another advantage, that of introducing a far larger amount of gamma radiation to that particular area by cross-fire. Large skin portals sacrifice avenues of cross-fire. It is folly to attempt to apply x-ray therapy anteriorly and posteriorly to a chest presenting a malignant growth. It is high time that the beam be focused directly and intimately on the lesion which has been properly localized by means at hand.

DR. MILLARD F. ARBUCKLE, St. Louis. Malignant disease of the lung probably is increasing. Abscess usually is present and often obscures the diagnosis. Improved methods of study have increased the number of positive diagnoses. Except by direct extension from contiguous growth, as in cancer of the esophagus, invasion of the bronchial wall from a metastatic lesion is unusual, but I have seen the biopsy specimen from a case in which a melanoma of the cheek metastasized to the bronchial mucosa. In about 33 per cent of our autopsies there has been involvement of the adrenal glands. Metastatic brain lesion occasionally is the first sign of primary endobronchial carcinoma. Prognosis and treatment based on microscopic classification alone is not satisfactory. Tuttle and Womack showed that a well differentiated cancer arising from a small bronchiole may resemble a very poorly differentiated cancer arising from a major bronchus. It follows that most well differentiated cancers arise in the major bronchi, while those of the poorly differentiated variety arise in the minor bronchi. Analysis of sixty cases selected from a group of 150 showed that carcinoma originating in the major tubes permitted a much longer duration of life than those originating in the smaller tubes and in the periphery of the lung. Some patients with treatment and some without in cases of tumors originating in the major bronchus lived an average of 26.3 months from onset of the symptoms to death. Two patients lived sixty months and one fifty-four months, whereas those with tumor in the parenchyma lived on an average only 7.3 months from onset of the symptoms to death. Early in its course bronchiogenic carcinoma invades the bronchial wall though the bronchial wall probably forms a temporary barrier between the cancer and the regional lymph nodes. This barrier has already been passed in most cases when the patient is first examined. The curability of bronchiogenic carcinoma like that of cancer elsewhere in the body, depends on its extent and on the possibility of its being completely removed or destroyed. Because of its distribution the hope of cure of endobronchial carcinoma by the local use of cautery or radon seeds is not well founded, but palliation may be possible. In benign tumors I have no doubt that cure may occasionally be obtained by the use of diathermy

or cautery or by irradiation. This would apply especially to polypoid, adenomatous lesions projecting into the bronchial lumen with very little infiltration of its wall.

DR. EDWIN N. BROYLES, Baltimore. For the last twenty-five years, bronchoscopy has gone ahead by leaps and bounds, owing to the work of Killian in Germany and of Dr. Jackson and his co-workers in Philadelphia. For the last three years thoracic surgery has started upward, and I believe that the solution for the treatment of large tumors and carcinomas is going to lie in the field of thoracic surgery. I believe that surgical treatment is the correct treatment for the removal of these large tumors. When looking down through the bronchoscope, one has no idea of the size of the growth; one merely sees the top when it completely occludes the bronchus. These tumors occur in young adults, who, I believe, can stand the operation fairly well when there is no infection.

DR. PORTER P. VINSON, Rochester, Minn. The physicians who have kindly discussed my paper have brought up some interesting questions with regard to carcinoma of the bronchus. One of the difficulties about determining whether radical operation should be employed in these cases is the fact that the pathologists have not settled the type of tumor in the bronchus. At present I should hesitate to advise surgery in the cases classified as adenocarcinomas, because, as Dr. Kernohan has pointed out, these tumors, whether they are adenomas or adenocarcinomas, respond to diathermy and to irradiation. In the majority of instances the tumors are located near the bifurcation of the trachea, and many of them have metastases or pleural effusion at the time of examination. Thus, of course, reduces the accessible and favorable cases to a very small number. I should hesitate to attempt removal of one of these tumors with forceps. Many of them are quite vascular and in one of my recent cases, a rather severe hemorrhage followed coagulation with the diathermy needle.

THE PRESENT STATUS OF OXYTOCICS IN OBSTETRICS

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The rapid strides that obstetrics has made in the present century has detracted little from the universal popularity that the oxytocic drugs have enjoyed since their introduction into medicine. New drugs and many derivatives of the older drugs have been introduced from time to time, and some have added confusion to the therapeutic armamentarium of the obstetrician. Clinical impressions on the value of many of these oxytocics have had to give way to sounder methods of investigation and evaluation. It is thus not surprising to find that many of the therapeutic claims for drugs used in ancient eras have not withstood the test of time and progress.

The first authentic oxytocic drug introduced into medicine was ergot. The medicinal properties of this fungus, which attacks rye, the consumption of which resulted in widespread epidemics of "ergotism" leaving mutilation and death in its wake, was known to European midwives. However, it remained for John Stearns¹ of Stratoga, N. Y., to introduce its use in obstetrics in 1807. Many other medicinal herbs and drugs of various kinds were used by earlier peoples all over the world for their oxytocic properties in labor and the puerperium but more often as abortifacients. Although most of these therapeutic agents have been

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¹ Stearns, John. New York M. Repository 11: 1807.

lost in the limbo of time, ergot still serves mankind. Recent investigations have resulted in a new active principle derived from this drug, which is probably responsible for most of its desirable oxytocic activity, so that much of this paper will be concerned with this new agent.

The crude drug contains many constituents, some of which are peculiar to ergot, others not, some of which exhibit oxytocic activity, others being relatively inert

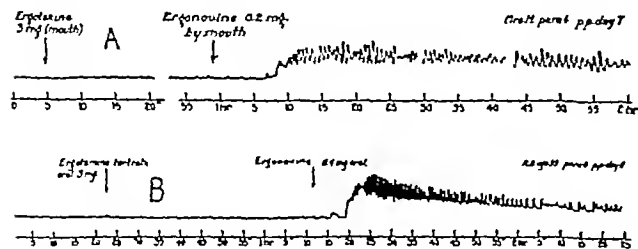


Fig 1—A kymographic tracing of uterine motility following the oral administration of 3 mg of ergotamine. No uterine contractions occurred for nearly an hour, although the uterus promptly responded following the administration of 0.2 mg of ergonovine orally. B a second record in which no uterine response followed the oral administration of 3 mg of ergotamine tartrate. The above curves demonstrate that the desirable effect of ergot does not reside in its previously described alkaloids.

Medicinal preparations of ergot were in common use in obstetrics before any of the now known constituents were isolated and identified. Thus the earliest decoction prepared by Stearns² consisted of one-half drachm (2 Gm) of powdered ergot in one-half pint (236 cc) of water boiled and given to the patient in three doses at twenty minute intervals. This preparation was crude and unstable, and of questionable potency and dosage. The efficacy and value of the drug soon led to its official recognition by the pharmacopoeias of this and other countries. The alcoholic extract became the U S P preparation in which a 49 per cent alcoholic solution is used. The aqueous extract became the official B P preparation, in which water is used in the extraction of the crude drug, and alcohol is added as a preservative.

Various pharmacologic methods of biologic assay are used to assure the potency and uniformity of these official preparations. There are three methods of assay of ergot for potency in common use today. The cock's comb method has been given official recognition in the United States Pharmacopoeia. This method makes use of the phenomenon of ergotism. A standard fluid-extract of ergot when injected into the breast muscle of a cock, in a dose not exceeding 0.5 cc per kilogram of body weight, i. e., about 1 cc per fowl, will show marked bluing of the cock's comb. These fowl are all standardized. The Broom-Clark method of biologic assay has become official in the British Pharmacopoeia. Here the pharmacologic antagonism of ergot and epinephrine is utilized. When isolated uterine strips from rabbits are treated with epinephrine the motor action of this drug is abolished by a standard ergot preparation.

Tuoret³ in 1875 isolated ergotamine from crude ergot. Although this alkaloid proved to have no oxytocic properties, ergotamine isolated by Barger and Carr in 1906 was found to contain some activity. Stoll⁴ in 1918 isolated and described an inactive alkaloid from certain strains of ergot which he called ergotamine and its active isomer ergotamine. In recent years two other

alkaloids, sensibamine and ergoclavine, have been reported. Little work has been done on the latter drugs. Thus, of the four well known alkaloids present in ergot at least two exhibit oxytocic properties.

With the advent of the pure alkaloids, some of these were substituted therapeutically for the aqueous and alcoholic extracts. Ergotamine and ergotamine, when studied by the present methods of investigation on the human uterus, are found to have a very unreliable action when given by mouth in several times their therapeutic dose (fig 1). When any oxytocic activity is manifested, it is delayed and irregular in its exhibition. Parenteral administration evokes a variable response in large doses, coming on after a considerable length of time. Thus these newer experimental data definitely prove that the oxytocic activity residing in the crude extract is not due in a great measure to these known alkaloids.

Until Moir⁵ began his investigations on the aqueous extract (B P) it was generally assumed that all the desirable activity of ergot in obstetrics was due to the known alkaloids in the preparation. Indeed, Barger,⁶ in his monograph on ergot and ergotism, states that the quantity of the total alkaloids is a measure of its physiologic activity. Moir⁵ studied the official B P aqueous solution and found that it was an active oxytocic preparation even though it was low in alkaloidal content. He further showed that the presence of ergotamine, ergotamine and histamine were not in themselves sufficiently active to account for the entire oxytocic activity of ergot preparations. These experi-

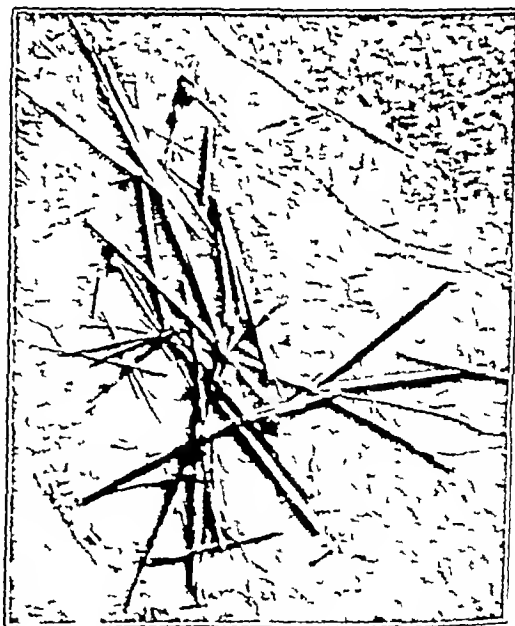


Fig 2—Appearance of crystals of ergonovine maleate

ments were confirmed by us and by Koff,⁷ working independently. All these experiments crystallized the idea that crude ergot still contained an unknown substance, soluble in water and unlike the known alkaloids which was responsible for most of the desirable activity present in the drug.

⁵ Moir Chassar and Dale H. H. Brit. M. J. 1:1119 (June 15) 1932.
⁶ Barger George. Ergot and Ergotism. London: Gurney & Jackson 1931.
⁷ Koff A. K. Surg., Gynec. & Obst. 60: 193 (Feb.) 1932.

² Stearns J. V. Rec. 5: 675 1822.
³ Tuoret C. Comp. rend. Acad. d. sc. 81: 896 1875.
⁴ Stoll A. Verhandl. d. Schweiz. naturf. Gesell. 1920 p. 197.

ERGONOVINE

Following a long series of investigations, Davis, Adair, Rogers Kharasch and Legault⁸ announced that on Dec 12, 1934, they had succeeded in isolating and testing clinically a pure, crystalline base from the crude extract which further study proved to contain most of the desirable oxytocic activity. The name "ergotocin" was given to this new active principle. Independent studies carried on in other laboratories led to similar discoveries.⁹ These independent groups assigned different names to this new ergot base, which subsequent chemical comparative analysis proved to be the same. To obviate further confusion, the Council on Pharmacy and Chemistry of the American Medical Association has renamed this new substance ergonovine,¹⁰ although in all our previous communications the new oxytocic principle was called ergotocin. In all our future communications we will refer to this new substance by the name approved by the Council of the American Medical Association.

The Empirical Formula and Chemical Characteristics—Ergonovine comes under the broad definition of an alkaloid. However, it differs chemically from the previously isolated alkaloids of ergot. Unlike the other alkaloids in ergot, ergonovine is not precipitated by Meyers' reagent in a dilution higher than 1:6,000, while the other alkaloids are precipitated by that reagent in dilutions as high as 1:2,000,000.

It is a colorless, crystalline material appreciably soluble in water, imparting to the latter a weak alkaline reaction. It may be crystallized in long, fine, needle-shaped forms from such solvents as chloroform, benzene and trichloroethylene (fig 2).

The empirical formula for ergonovine is $C_{19}H_{27}N_3O_2$. The formula previously reported¹¹ for ergotocin, $C_{21}H_{27}N_3O_3$, was obtained from analyses on samples dried in vacuo at a temperature of 40°C. This low temperature was selected because we found that prolonged heating at a higher temperature (100 degrees) inactivates the material. Our samples for analyses contained a molecule of alcohol of crystallization, so that when a higher temperature is employed (76 degrees) in drying the samples our analyses are in agreement with those recently reported by Dudley and Stoll.¹² These data are in complete agreement with all our reported results, i.e., the molecular weight and the presence of three active hydrogen atoms in the ergonovine molecule. It is clear, however, that one of these active hydrogens is in the alcohol molecule and the other two active hydrogens are part of the ergonovine molecule.

The degradation of ergonovine in our laboratories has yielded lysergic acid and a base which at the time was the object of further study.¹³ In the meantime Jacobs and Craig have identified this basic hydrogen product as propanolamine, and our independent study has led to the same result. From these observations

it is quite obvious that ergonovine is a much simpler molecule than ergotamine or ergotoxine. All these substances, however, have a similar structural skeleton (lysergic acid) and our studies of the absorption spectrums corroborate that view.

Ergonovine is a rather unstable substance, and when solutions of the salts are heated in sealed tubes for any length of time the material decomposes, as indicated by darkening of the solution and loss of potency. When kept at ordinary temperatures, solutions of some salts of ergonovine are relatively stable. An investigation is under way in our laboratories at the present time to determine the rate of decomposition of solutions of ergonovine salts and the various factors that influence this decomposition. It should be noted here that, while ergonovine can be assayed by the Smith colorimetric method,¹⁴ it cannot be analyzed by the same procedure employed in the assays of ergotoxin and ergotamine. The chief difference is in the fact that ergonovine when in solution cannot be extracted from water by ether. The method of Smith should be changed to include chloroform as the solvent of extraction. With that modification, ergonovine can be assayed quite readily.

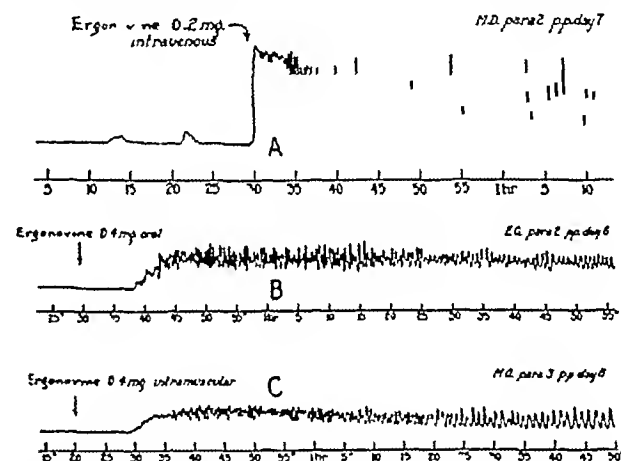


Fig 3—Kymographic tracings of uterine motility showing the action of ergonovine on postpartum uteri by (A) intravenous, (B) oral and (C) intramuscular administration. Note the immediate response of the drug following intravenous administration and the delay of only six to eight minutes following its oral and intramuscular use. The tetany is well maintained and as it subsides increasingly vigorous contractions occur. The activity of the drug lasts two hours or longer.

by following the procedure suggested by Smith. For quantitative assay it is also essential to extract three or four times with chloroform, to make sure that the water solution is thoroughly saturated with salts and that the pH is not lower than 6.8 and not higher than 8.2.

Pharmacology—The new ergot alkaloid may be primarily assayed by the U S P cock's comb method and by the isolated uterine response. It cannot be assayed by the Broom-Clark method.¹⁵ Unlike ergotoxine and ergotamine, it has little inhibitory action on epinephrine. The maleate salt of ergonovine shows little toxicity. The minimum lethal dose when given intravenously is 250 mg per kilogram in mice and 80 mg per kilogram in guinea-pigs. That this new ergot principle has a stimulating action on the sympathetics is evidenced by the fact that it causes mydriasis on instillation into the rabbit's eye, constriction of the frog's limb vessels, and relaxation of the rabbit's small

8 Davis M E, Adair F L, Rogers Gerald, Kharasch M S and Legault R R. *Am J Obst. & Gynec* 29: 155 (Feb.) 1935. The Active Oxytocic Principle of Ergot. *editorial J. A. M. A.* 104: 1910 (May 25) 1935. Adair F L, Davis M E, Kharasch M S and Legault R R. *Am J Obst. & Gynec* 30: 466 (Oct.) 1935.

9 Dudley H W and Moir C. *Brit N J* 1: 520 (March 16) 1935. Dudley H W. *Proc Roy Soc. London* s B 118: 478 (Oct. 3) 1935. Brown G L, and Dale, H. *ibid* 118: 446 (Oct. 3) 1935. Stoll A and Burckhardt E. *Bull d sc pharmacol* 42: 257 (May) 1935. Rothlin E. *Schweiz med Wchnsch* 65: 947 (Sept. 28) 1935. *abstr Compt rend Soc de biol* 119: 1302, 1935. Thompson M R. *J Am Pharm A* 24: 748 (Sept.) 1935.

10 Ergonovine, *editorial J. A. M. A.* 106: 1012 (March 21) 1936.

11 Kharasch M S and Legault, R R. *J Am Chem Soc* 57: 1140 1935.

12 Dudley H W. *Pharm J* 134: 709 1935. Rothlin E.

13 Kharasch M S, Stanger D W, Bloodgood M A. and Legault, R R. *Science* 87: 6 (Jan 10) 1936.

14 Smith M I. *Pub Health Rep* 45: 1466-1481 (June 27) 1930.

15 Davis M E, Adair F L, Chen K K. and Swanson, E. E. *J Pharmacol. & Exper Therap* 54: 398 (Aug.) 1935. Swanson H C C, and Chen K. K. *J Am Pharm A* 24: 835 (Oct.) 1935.

intestine. The latter effect can be abolished by the previous application of ergotamine. The new ergot principle has a demonstrable pressor action on pithed cats but a depressor action in anesthetized animals. In large doses it suppresses respiration. In rats it increases the metabolic rate when injected intravenously in appropriate doses.

Ergonovine is the only alkaloid of ergot which is effective by oral administration in small doses. When administered in doses of from 0.2 to 0.4 mg by mouth it causes a typical ergot response in six or eight minutes. The uterus develops tonic and following the initial tetany, which lasts five or six minutes, uterine motility is established which becomes more vigorous in character as the uterine tone diminishes. Good uterine motility continues for at least two hours and often longer, so that frequent administration of the drug is not necessary. Intravenous administration in doses of 0.2 mg produces an immediate response, particularly marked by the high degree of tone, which is of great importance in its therapeutic application (fig 3).

The drug does not affect pulse, blood pressure or urinary output. Its toxicity is extremely low, so that

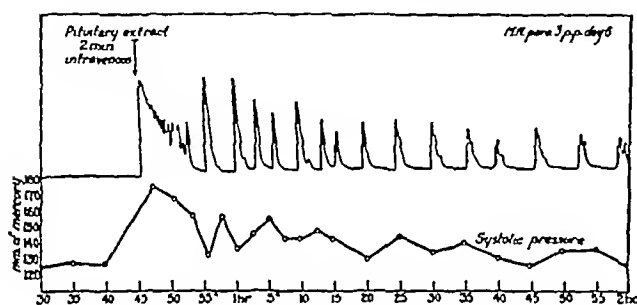


Fig 4—The action of posterior pituitary extract lasts less than ten minutes and the motility induced by this drug is irregular in character

many times the therapeutic dose causes no undesirable symptoms. Its cumulative action is likewise negligible, since prolonged administration in patients resulted in no signs of toxicity. The drug is colorless, tasteless and odorless and is administered therapeutically with ease. The crystals are entirely stable, so that oral tablets can be kept indefinitely. The aqueous solution, however, is as yet not sufficiently stable. The powder is therefore best dissolved in water just before it is to be administered intravenously.

SOLUTION OF POSTERIOR PITUITARY

Oliver and Schafer¹⁶ in 1895 first prepared an extract of the posterior lobe of the pituitary gland and observed pressor effects on experimental animals. Dale¹⁷ in 1906 demonstrated that the most important pharmacologic action of such an extract was its oxytocic activity. This principle was first applied to the parturient woman three years later by Blair Bell,¹⁸ thereby introducing one of the most important therapeutic agents in obstetrics. Kamm and his co-workers¹⁹ separated the posterior pituitary extract into a fraction containing the oxytocic principle, "pitocin," and one containing the diuretic and pressor principles, "pitressin."

The aqueous extract of the posterior pituitary gland is stable and can be kept almost indefinitely unless exposed to temperatures above 40 C. It is standardized

by a comparison of the response of the excised uterus of the guinea-pigs under standard conditions, with a standard sample of dried posterior pituitary.

The action of posterior pituitary extract in the immediate postpartum period and in the puerperium is quite uniform. Its intramuscular or subcutaneous administration causes the initiation of uterine motility in from three to five minutes. The uterus becomes tetanic, and as the tonus diminishes increasingly vigorous contractions occur. The action of the drug lasts for five or ten minutes and rapidly disappears, to be reinitiated by another dose (fig 4). The intravenous administration of small doses, 3 minims (0.2 cm), provokes an immediate response. However, the general reaction to this mode of therapy is quite marked. The patient may develop a marked circumoral pallor, a sense of constriction in the chest, pain in the back of the head, marked palpitation, nausea and occasionally vomiting. The reaction may last several minutes or longer and gradually disappear without any serious effects.

Posterior pituitary extract has a variable effect on blood pressure of normal individuals. Usually they show little or no elevation of blood pressure after therapeutic doses of posterior pituitary. The pallor which may develop is not an index of a change in blood pressure. However, in patients with hypertension a marked elevation occurs after intravenous or intramuscular administration of the drug. The rise in pressure is transitory and is followed by a return to normal. Posterior pituitary extract also causes a diminution in the urinary output, which likewise becomes more marked in patients with kidney damage. A temporary anuria may occur in patients with toxemia of pregnancy. These abnormally marked effects of pituitary solutions on blood pressure and urinary output in patients exhibiting toxemia of pregnancy make the use of this drug undesirable in this group.

OTHER OXYTOCIC DRUGS

Quinine, an alkaloid derived from cinchona bark, has maintained a wide clinical popularity. It has been used to augment weak, ineffective labor pains but more commonly in conjunction with castor oil for the induction of labor. Its oxytocic action is very mild and unreliable, even though it is administered in doses large enough to evoke a general reaction. It is our impression that quinine does seem to sensitize the pregnant uterus at or near term, so that it becomes more responsive to the more potent oxytocics, posterior pituitary extract and ergonovine. Thus, its use in obstetrics is rather restricted.

Hydrastis has been combined with ergot to augment the oxytocic effect. In large therapeutic doses hydrastis alone does not evoke regular uterine motility or accentuate motility initiated by ergot.

INDICATIONS FOR OXYTOCIC DRUGS

Use in Nonpregnant Patients—The present indications for oxytocics are almost limited to pregnancy and its complications. Although posterior pituitary extract and ergot will cause tonic and contractions of the nonpregnant uterus, they are rarely indicated except for temporary relief of bleeding. All bleeding, whether in the form of profuse or prolonged menses or bleeding between the menstrual periods, should be considered of sufficient pathologic import to merit a careful investigation and a correct diagnosis. It is never justifiable to give oxytocics as a temporary expedient in the hope that the bleeding will cease. Once a diagnosis is positively established ergonovine can be given in the hope

16 Oliver and Schafer, *J. Physiol.* 18:276, 1895.
17 Dale, H. J., *J. Physiol.* 34:163, 1906.
18 Bell, W. B., *Brit. M. J.* 2:1699, 1909.
19 Kamm, O., Aldrich, T. B., Croft, I. W., Powe, L. W., and Fieber, E. P., *J. Am. Chem. Soc.* 50:537, 1928.

that bleeding can be temporarily checked. Usually the underlying pathologic condition must be corrected to obtain permanent relief.

Therapeutic Abortion—By medicinal means this is rarely successful. The uterus is poorly responsive to posterior pituitary extract early in pregnancy. Many investigators feel that the corpus luteum of pregnancy inhibits the uterine response to posterior pituitary extract. That this is true in animal experimentation, notably in the rabbit, is borne out by a host of investigators. Less is known about the uterine response to ergot early in pregnancy. Clinical experience justifies the conclusion that it is almost impossible to interrupt the normal gestation early in its course by the known oxytocic drugs.

When normal pregnancy has been interfered with, such as in inevitable or incomplete abortions, the oxytocic drugs can be used to hasten or complete the process. Posterior pituitary extract and ergot can be used to initiate uterine motility or to increase it when already initiated. We have observed the results obtained in a small group of these cases and have found that the new ergot alkaloid has a beneficial effect. In some of the cases the retained secundines were expelled and the hemorrhage was controlled. Following a complete or completed abortion, ergonovine, given orally for several days, is of distinct value to control bleeding and favor normal involution.

Induction of Labor—The medicinal induction of labor becomes more successful the closer to term it is used. At least half the cases can be induced when the induction is tried at term. Before term when induction is indicated because of some complication of pregnancy, medicinal induction must be combined with some mechanical means. The method of medicinal induction of labor at or near term used at the Chicago Lying-in Hospital consists of the following procedure: Castor oil, 1½ ounces (42 cc), is given early in the morning, followed two hours later by quinine in 3 grain (0.2 Gm) doses at hourly intervals for four or five doses, followed by graduated doses of posterior pituitary extract, beginning with half a minim (0.03 cc) and increasing half a minim at each dose fifteen minutes apart until 3 minims (0.2 cc) is given. The latter dose can be repeated until a total of 1 cc is used. The uterus should be carefully observed, and if it exhibits tetanic contractions so that the fetal heart tones are interfered with, the posterior pituitary extract is discontinued. The administration of the drug ceases when regular, rhythmic contractions are initiated anywhere in the course of the induction.

Labor—The oxytocic drugs are rarely indicated during the first and second stages of labor. Although Stearns² first introduced ergot to stimulate labor pains and shorten the course of labor, clinicians soon noted the ill effects of the indiscriminate use of the drug. Ergot soon lost its popularity in labor, and today it has no place in the first and second stages. Posterior pituitary extract is rarely indicated during the first and second stages of labor. It is occasionally administered during this period in cases of uterine inertia in 2 or 3 minim (0.13 or 0.2 cc) doses when the ineffective contractions result in a long painful labor with little or no progress. Its use under such circumstances is fraught with great danger for the patient and her baby. Uterine tetany, abnormal uterine motility, with possible complications at delivery and intra-uterine asphyxia of the baby, are not uncommon sequelae. Rupture of the

uterus³⁰ is a real danger. Because of these untoward complications, posterior pituitary extract as well as ergot must be omitted from the therapeutic regimen of this period of labor.

Posterior pituitary extract can be administered immediately following the birth of the baby to facilitate the third stage of labor. The placental stage can be shortened and hemorrhage decreased by this means. The objection to the routine use at this period of labor is that the drug may cause a contraction zone at the lower uterine segment, resulting in the incarceration of a partially or completely separated placenta. This interference with the normal mechanism of separation and expulsion of the placenta may eventuate in a postpartum hemorrhage. The use of posterior pituitary extract in the third stage of labor should be confined to hospital practice, where complications of the third stage, which may result from its use, can be more safely managed than in the home. It should not be used before the completion of the first phase of this stage or placental separation.

In the immediate postpartum period, hemorrhage due to uterine atony is the most important indication for the use of oxytocics. Postpartum hemorrhage accounts for from 10 to 12 per cent of the maternal deaths that occur every year. It is the complication that is ever before the mind of the obstetric attendant. The rapidity of its onset, its magnitude, the rapid development or the serious symptoms often overwhelm the accoucheur. It is here that oxytocics fulfil their greatest role.

One must remember that uterine atony is not the only cause for postpartum hemorrhage. Trauma of the soft parts such as deep cervical tears and uterine rupture, may lead to serious and even fatal postpartum bleeding, which, needless to say, no oxytocics can control. Portions of placenta retained in the uterus may account for uterine bleeding and interfere with the action of oxytocics. A careful diagnosis of the cause of the hemorrhage must be made to determine the etiology.

Posterior pituitary extract in 1 cc doses subcutaneously or intramuscularly can be given. Small doses, 3 minims or less, can be given intravenously in an emergency regardless of the possible reaction. Ergonovine is the ideal drug and can be given intravenously in 0.2 mg doses for its immediate and sustained action. This drug can likewise be given by mouth if the patient is not under anesthesia.

We have had an opportunity of observing the action of ergonovine in some twenty labors complicated by postpartum hemorrhage. The following brief case summaries will illustrate the spectacular action of this new oxytocic agent.

CASE 1—A primipara aged 20, was admitted to the hospital one and a half hours following home delivery, Jan 13, 1936. The pulse was 150 and the blood pressure 55 systolic 20 diastolic. The placenta was retained in utero and attempts at manual removal at home failed to deliver it. Posterior pituitary extract, 1 cc, had been administered at home for the profuse hemorrhage. Treatment in the hospital consisted of manual removal of the placenta and immediate intravenous administration of 0.2 mg of ergonovine. The uterus contracted firmly and remained so. No further oozing occurred. She received a transfusion of 700 cc of blood and one of 600 cc of 10 per cent dextrose solution.

CASE 2—A quintipara octigravida, aged 28 entered the hospital, Feb 12, 1936 with a transverse presentation. The pulse was 90 and the blood pressure 120 systolic, 80 diastolic. A Voorhees bag was introduced into the uterus and after a

20 Telfair, J. H. *Am. J. Obst.* 73: 655 (April) 1916.
L. G. *ibid.* 74: 432 (Sept.) 1916.

twenty-four hour labor sufficient dilatation and effacement were obtained to deliver the baby by version and extraction. Following the manual removal of the placenta a profuse vaginal hemorrhage occurred as the result of uterine atony. Ergonovine, 0.2 mg intravenously, was followed by immediate contraction of the uterus and cessation of bleeding. The blood loss was 1,000 cc. (measured).

PUERPERIUM

The use of oxytocic drugs in the puerperium has enjoyed almost universal popularity. Ergot in its various forms has been the therapeutic bulwark for this period. It has been credited with hastening normal involution, decreasing the likelihood of late postpartum bleeding, limiting the likely spread of intra-uterine infection if present, and helping to maintain the genital organs in the best state possible. The present study was undertaken to evaluate carefully the therapeutic possibilities of ergot in its most desirable form, ergonovine.

A group of 200 women were placed on ergonovine during their first three days of the puerperium. Careful observations were made of all the factors involved in normal and abnormal involution of the uterus. This group on routine ergot therapy was contrasted with a similar group in which no oxytocic drugs were given.

tion and expulsion of the placental site. When the uterine cavity is again lined by normal endometrium, the uterus has completely reverted to its nonpregnant state. The duration of the process is variable but usually is eight or ten weeks in the normal individual.

The mechanism of involution is as yet unknown, however, many factors influence the process. Metabolic and catabolic processes must play an important role in the physiologic atrophy of the uterus. Uterine tone and motility must likewise have an important bearing. In an experimental study on the physiology of the puerperal uterus, uterine tone and motility were recorded on graphs by the introduction of a small rubber balloon into the uterine cavity.²¹

It was found that immediately following delivery there is considerable tone in all uteri and regular rhythmic contractions occur. By the end of the fifth day of the normal puerperium the majority of primiparas still show considerable tonic and regular uterine motility. However, multiparas vary considerably. About half the patients exhibit no tone or uterine motility, and the small bag may remain in the uterus for several hours without eliciting any response. About 25 per cent of the cases exhibit irregular contractions, spasmodic in character, which may be excited to regularity, increased frequency and amplitude by the uterine bag or by various oxytocic drugs. The remaining cases show regular rhythmic contractions altered little from the onset of the puerperium. Little additional change has occurred by the end of the ninth or tenth day. As all the patients observed in these and subsequent studies were normal, it was difficult to evaluate the effect of uterine motility on delayed or abnormal involution. Clinical observation, however, has given the impression that the boggy, atonic condition of the uterus which does not respond to external stimulation seriously interferes with its normal involution.

The criteria of involutional progress are the extent of atrophy of the uterus, the general consistency of the musculature and its lack of irritability to suitable stimuli, and the character and amount of the lochia. These factors are difficult to evaluate, for they are subject to considerable variation in perfectly normal individuals. However, one can gain definite impressions by careful observations.

A group of normal puerperal women were followed carefully to note the rate of the progressive atrophy of the uterus. The uterine outline was accurately sketched from day to day during their ten day hospital stay. Figure 5 represents reproductions of uterine outlines drawn to scale in representative cases. Needless to say the bladder was empty when each outline was made. From the foregoing one can see that the uterus is always palpable above the symphysis at the tenth postpartum day and that its height averages 4 or 5 cm.

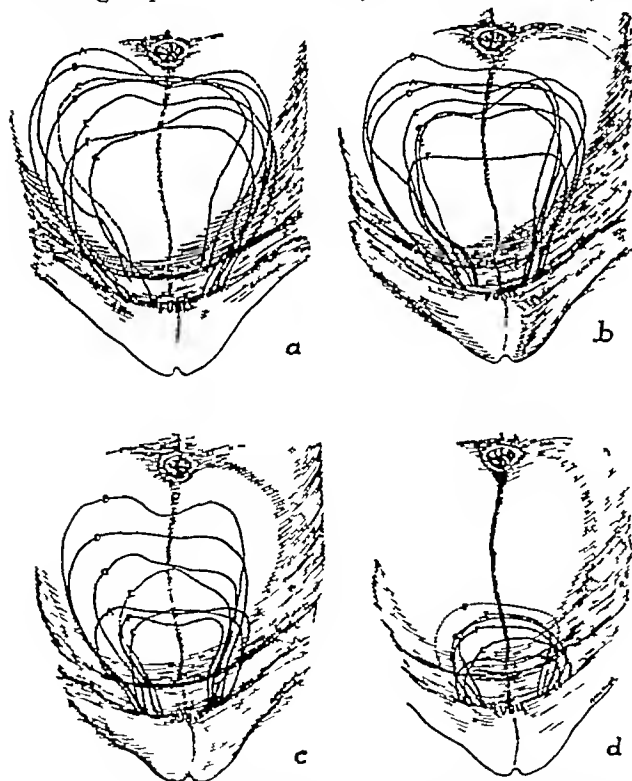


Fig. 5—Normal uterine involution in a series of normal puerperal women of various ages and parity. a first day b fourth day c seventh day and d tenth day.

during the puerperium. The observations and impressions gleaned from this careful investigation are here recorded.

Physiology of Postpartum Involution.—The physiologic process by which the puerperal uterus is reduced to approximately one-twentieth its size and restored to the normal nonpregnant state is known as involution. It involves desquamation and expulsion of the remaining decidua basalis, the decrease of the individual constituent muscle fibers to a fraction of their hypertrophied state, and the ultimate exteriorization, separa-

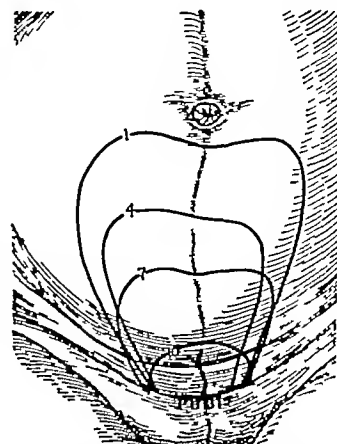


Fig. 6—A composite diagram to illustrate the uterine involution in a group of 200 women who received ergonovine maleate during the first three days of the puerperium.

above this level. Involution progresses at a much more rapid rate during the first five days than during the second five days. Physiologic uterine atrophy takes place at a progressively diminishing rate.

The group of patients that received ergot in the form of ergonovine exhibited a more rapid decrease in the size of the uterus. Figure 6 is a composite reproduction, drawn to scale, of the uterine outlines of the 200 patients on ergot therapy. This increased rate of involution was most apparent during the last few days of the hospital stay. The rapid return of the uterus to normal size is desirable because a large, heavy uterus probably predisposes to malpositions in the late puerperium.

Improper drainage of lochial secretions due to malpositions of the uterus and to inactivity and the lack of tone on the part of the muscular organ has been said to delay involution. Our work on the postpartum patient has demonstrated that lochial retention is present in almost 25 per cent of the patients. The escape of 25 or 30 cc of retained fluid has been noted in this group of patients when the rubber balloon is introduced for kymographic study. In quite a number of the patients as much as from 100 to 200 cc has escaped. It must be remembered that only normal cases exhibiting no symptoms referable to the retention of lochia were studied. Our puerperal patients are not quiescent but lead a rather active life while confined to bed. Thus frequent changes in posture have not led to satisfactory drainage. Further study of this group has revealed a lack of uterine motility and tone. Stimulation of these patients by oxytocic drugs should favor involution. The actual character of the lochia is probably an unimportant factor in involution.

Infection of the uterus or its appendages seriously delays involution. The uterus remains large, soft, and unresponsive to stimulation. This condition favors the retention of infectious contents in its cavity and favors the spread of infection in the genital organs and to environmental structures. The large thrombosed vessels of the placental site may be incompletely cut off from the circulation, favoring extension of the thrombi and embolic phenomena. Theory and practice have favored the stimulation of tonicity and uterine motility in these circumstances.

Summary of Study on Patients Who Received Ergot and Controls

| | 200 on Ergot Therapy | | 200 Control Cases | |
|--------------------------|----------------------|----------|-------------------|----------|
| | Cases | Per Cent | Cases | Per Cent |
| Morbidity .. | 37 | 18.5 | 53 | 26.5 |
| In hospital over 10 days | 6 | 2.5 | 13 | 6.5 |
| Operative incidence | 54 | 27.0 | 55 | 27.5 |
| Epiliotomies | 150 | 75.0 | 133 | 66.5 |

* Any patient who exhibited a temperature of 38 C (100.4 F) or over on any day after the first twenty-four hours was listed as morbid.

The accompanying table summarizes the data obtained from a study of the group of patients that received ergot during the puerperium and of the control group. These groups are far too small to provide more than a general impression that the increased uterine tonicity and motility resulting from the administration of ergot had a favorable influence on morbidity.

The use of oxytocic drugs in the puerperium²² is of value in aiding involution by increasing uterine tone and increasing or reinitiating uterine motility. Thus

uterine activity results in complete evacuation of the uterine cavity of its lochial secretions, a more rapid decrease in the size of the uterus, and perhaps some limitation of the spread of infection if present. Ergot therapy is therefore of value when involution is not progressing normally because of a lack of uterine tone and motility, because of retained secretions, or in the presence of uterine or general infection. The prophylactic use of ergot to assure a normal involution is probably of some value, although further studies with ergonovine will be necessary to confirm this impression. A careful follow up of patients for six months and longer will ascertain whether the incidence of malpositions is less in patients receiving ergot therapy in the early puerperium.

It has been our practice to prescribe ergot in the puerperium for delayed involution. At present ergonovine maleate,²³ from 0.2 to 0.4 mg three times daily, is given to patients who have had a postpartum hemorrhage, a difficult forceps, intra-uterine manipulation, abnormal lochia, fever regardless of the cause, or delayed involution without cause. This therapy is kept up for at least three days or as long as is necessary. If uterine contractions become too painful, the dose of ergonovine maleate is reduced or the drug omitted.

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HYPERVENTILATION IN ABDOMINAL SURGERY

THOMAS J. RYAN, M.D.

PHILADELPHIA

Abdominal operations are associated with a very much higher incidence of pneumonia, embolism and atelectasis than extra-abdominal procedures, and many theories regarding the method of their production have been advanced. Muller, Overholt and Pendergrass¹ have shown that hypoventilation, diminished vital capacity and subsequent compression of the bases of the lungs occur after practically all upper abdominal operations, and that these conditions were the result of elevation of the diaphragm and reduction in the normal diaphragmatic excursions, as shown by x-ray studies. Graham, in a discussion of this paper, referred to the value of carbon dioxide inhalations on the operating table for the reduction of the incidence of pulmonary complications.

On the assumption that the entrance of air into the abdominal cavity might be instrumental in causing the elevation of the diaphragm and limitation of its excursions, this investigation was undertaken to determine the value of inhalations of carbon dioxide during closure of the abdominal cavity, and at the same time to report the incidence of pulmonary complications occurring at the Misericordia and Fitzgerald-Mercy hospitals. The study began Nov. 1, 1934, and was continued until June 1, 1935. The patients were admitted to the surgical services of Drs. Beltran, Kelly, Muller and myself. The group comprises 411 abdominal operations. Carbon dioxide was administered until deep respiration was produced. The amount was variable, the average being a 10 per cent mixture of carbon dioxide with oxygen, given for about three

²³ Ergotrate is the trade name of ergonovine maleate (Lilly) which was used in our experimental and clinical observations.

Read before the Philadelphia Academy of Surgery Oct. 7, 1935.

¹ Muller, G. P., Overholt, R. H., and Pendergrass, E. P. Post-operative Pulmonary Hypoventilation. Arch. Surg. 19: 1322 (Dec.) 1929.

²² Sonnenfeld, E. Deutsche med. Wchnschr. 57: 16 (Jan. 2) 1931.
Hahn, K. Med. Welt 6: 1617 (Nov. 5) 1932.

minutes. Care was taken not to tire the patient unduly or to raise the blood pressure excessively. Of the 411 patients admitted, 135 received this treatment during the process of closure of the abdominal cavity.

Early in our experience my associates and I were impressed with the ability of this gas to deoxygenize the patient, as reported by White,² and to improve the blood pressure, as reported by Henderson.³ In addition to the inhalation of carbon dioxide in the operating room we advised all abdominal patients to expand the lungs by deep breathing during the immediate postoperative stage, as suggested by Scott.⁴

Henderson,⁵ in one of his contributions, concludes that the "inhalation of carbon dioxide, by counteracting

bronchial secretion was removed from a patient suffering from atelectasis. This substance was injected into the main bronchus of a dog, producing massive atelectasis, which was completely relieved after aspiration of the mucus. These experiments are the only conclusive data submitted to date on the etiology and cure of this condition.

Scott and Cutler⁹ believe that atelectasis is initiated by a nervous reflex probably largely vasomotor, which results in a narrowing of the lumen in the peripheral bronchioles by venous engorgement, swelling of the mucous membrane, and the elaboration of a tenacious secretion.

In our efforts to secure a comparable group of cases we included all patients on whom abdominal operations were performed. In order to have the conditions identical, the two groups were simultaneously conducted. Table 1 shows the varied types of operations that were performed.

It will be noted that appendectomy, for both acute and chronic conditions, was performed on 187 patients and was associated with five pulmonary complications, a most striking feature being the fact that four occurred in patients who were operated on for acute appendicitis. This is in keeping with the observation of King,¹⁰ namely, the incidence of pulmonary complications is markedly increased in operations that are performed in an already infected area. The group of ninety-three cases under the heading of gynecology included all types of pelvic operations in which it was necessary to open the abdominal cavity. There were no pulmonary complications, although thirteen operations were performed for chronic pelvic inflammatory disease.

The operations on the colon consisted of colostomy and resection of the colon for carcinoma and were not attended with any major pulmonary complication. The twenty-three operations on the stomach were practically

TABLE 1—Group of 411 Abdominal Operations

| | | Pulmonary Complications |
|-----------------|-----|-------------------------|
| Appendix | 187 | 5 |
| Gynecology | 93 | 0 |
| Colon | 16 | 0 |
| Stomach | 23 | 0 |
| Hernia | 40 | 0 |
| Gallbladder | 37 | 2 |
| Small intestine | 15 | 0 |
| Totals | 411 | 7 or 1.7% |

acapnia and inducing deeper breathing, inflates the lungs and prevents the development of atelectasis, thus becoming a specific preventive of the postoperative pulmonary complications that lead to pneumonia."

Cutler,⁶ in discussing postoperative complications, concludes that in view of the evidence now at hand embolism certainly plays a rôle in many of these pulmonary complications, and for this reason everything possible should be done to avoid spreading infection and to handle tissues with the utmost care. Such procedures as the proper ligation of an open vein or, better still, the placing of clamps on all vessels before division so that tissue juices and bacteria do not enter such channels, are of major importance. The only thing in common to all surgical patients is the wound, and it behooves surgeons to look there for postoperative difficulties and not lay the blame for such sequelae on extraneous matters.

In September 1925 Lee⁷ was the first to suggest any form of treatment that had a favorable effect on fully established atelectasis. In collaboration with Jackson, bronchoscopic aspiration in several cases produced sufficient improvement in the patient's condition and the degree of atelectasis to establish this as an accepted form of therapy. Other papers by Lee have materially increased interest in the management of this severe postoperative complication, especially the animal experiments of Lee and Tucker,⁸ wherein very thick tenacious

TABLE 2—Pulmonary Complications in 411 Abdominal Operations

| Name | Age | Diagnosis | Complication | Carbon Dioxide | Result |
|-------|-----|----------------------|------------------------|----------------|-----------|
| L. G. | 51 | Acute appendicitis | Bronchopneumonia | Yes | Recovered |
| J. T. | 41 | Acute appendicitis | Empyema | No | Died |
| M. M. | 34 | Acute appendicitis | Pleurisy with effusion | Yes | Recovered |
| T. R. | 44 | Acute appendicitis | Embolism, right | No | Recovered |
| M. M. | 31 | Acute cholecystitis | Atelectasis, right | No | Recovered |
| A. N. | 15 | Chronic appendicitis | Collapse, left | No | Recovered |
| A. F. | 69 | Chronic pancreatitis | Embolism, right | Yes | Died |

all gastro-enterostomies. Although this operation should be associated with a high incidence of complication, none occurred.

Herniorrhaphy carries a higher incidence of pulmonary complications than is apparently justified by the severity of the operative procedure. Since this operation is always done in a clean area and there is very little motion of the abdominal wall in this region, it is difficult to assign a single etiologic factor for the production of complications in the lungs.

9. Scott W. J., and Cutler E. C. Postoperative Massive Atelectasis II. The Effect of Hyperventilation with Carbon Dioxide. *J. A. M. A.* 90: 1759-1763 (June 2) 1928.
10. King D. S. Postoperative Pulmonary Complications. I. A Statistical Study Based on Two Years' Personal Observation. *Gynec. & Obst.* 56: 43-50 (Jan.) 1933. II. Carbon Dioxide as a Preventive in a Controlled Series. *J. A. M. A.* 100: 21-26 (Jan. 7) 1933.

2. White J. C. Deoxygenization by Carbon Dioxide Inhalation. *Arch. Surg.* 34: 347 (Sept.) 1923.

3. Henderson J. and Yandell Haggard H. W. and Cohn R. C. The Therapeutic Use of Carbon Dioxide After Anesthesia and Operation. *J. A. M. A.* 74: 783 (March 20) 1920.

4. Scott W. J. M. Massive Atelectasis and Postoperative Pneumonia. *J. A. M. A.* 82: 101-103 (July 13) 1929.

5. Henderson J. and Yandell Haggard H. W. Acapnia as a Factor in Postoperative Shock. *Atelectasis and Pneumonia. J. A. M. A.* 95: 572-575 (Aug. 23) 1930.

6. Cutler E. C. Postoperative Complications. *Proceedings of the Inter State Post-Graduate Medical Assembly of North America.* Nov. 5 (1928) 9. Philadelphia.

7. Jackson Chevalier and Lee W. E. Acute Massive Collapse of the Lungs. Discussion of Its Mechanism and of Its Relation to Foreign Bodies in Bronchi and Postoperative Complication. *Ann. Surg.* 82: 364 (Sept.) 1925.

8. Lee W. E. and Tucker Gabriel. Postoperative Pulmonary Atelectasis. *Atlantic J. J.* 31: 264 (Feb.) 1929.

Of the thirty-seven gallbladder cases, two pulmonary complications occurred. Cholecystectomy was performed in twenty-three patients for chronic and on three patients for acute conditions. Cholecystostomy was performed for acute cholecystitis on six patients and for chronic pathologic processes on five. The operations on the small intestine included resection, enterostomy and adhesions. Although the group was small there were no complications.

Table 2 is a summary of the complications described. It should be noted that five occurred following operations for acute pathologic conditions, while two resulted from operations that were performed for chronic processes.

REPORT OF CASES

CASE 1—L. G., a woman, aged 51, was admitted to the Misericordia Hospital Feb 24, 1935, with generalized peritonitis and maximum pain over the gallbladder. Operation was deferred for eight hours in order to promote localization of the process, as well as to make the diagnosis more definite. At the time of operation, tenderness and rigidity were localized over the right lower quadrant. The abdomen was opened through a low right rectus incision, and a large quantity of pus and a ruptured appendix were removed. Drainage was instituted. On the second postoperative day bronchopneumonia developed, which was verified by x-ray examination. A complete recovery occurred and the patient was discharged after eighteen days. Carbon dioxide was given during the process of closure of the abdominal cavity.

CASE 2—J. T., a boy, aged 4, was admitted to the Misericordia Hospital Jan 10, 1935, with an appendiceal abscess and a gangrenous appendix, which was removed. He was readmitted to the hospital February 4 with a secondary abscess in the left lower quadrant of the abdomen, which was excised and drained. One week after the second operation, evidence of pleural effusion occurred and positive blood culture for hemolytic streptococcus was secured. Aspiration of the chest revealed pus, and a rib resection was performed. Death occurred sixteen days after admission. The patient was not given carbon dioxide.

CASE 3—M. M., a woman, aged 41, was admitted to the Misericordia Hospital April 14, 1935, and operation revealed a generalized peritonitis with a perforated appendix. Drainage was instituted. One week after operation the patient developed acute pain over the posterior aspect of the right chest, followed by effusion of clear fluid, which was removed by aspiration. A complete recovery ensued. Carbon dioxide was given for three minutes during closure of the abdominal cavity.

CASE 4—T. R., a man, aged 44, was admitted to the Misericordia Hospital April 12, 1935, and was operated on for a localized peritonitis and an acutely inflamed gangrenous appendix, which was removed. Drainage was instituted. Ten days after operation the patient suffered from an acute pain in the right side of the chest. A diagnosis of pulmonary embolism was made. X-ray examination of the chest revealed a small area of consolidation in the right lobe. The patient made a complete recovery. Carbon dioxide was not given.

CASE 5—M. M., a woman, aged 31, was admitted to the Misericordia Hospital March 31, 1935, with a diagnosis of acute cholecystitis and chronic appendicitis. The gallbladder and appendix were removed. On the second postoperative day lobular pulmonary atelectasis occurred, which was verified by x-ray examination. A complete recovery ensued with postural drainage. Carbon dioxide was not given during closure of the abdominal cavity.

CASE 6—A. N., a boy, aged 15, was operated on for chronic appendicitis. The operation was performed without any complications or difficulties. On the day following operation, collapse of the left lung occurred. Relief was obtained by postural drainage. The patient made a complete recovery. No carbon dioxide was given.

CASE 7—A. F., a woman, aged 69, was admitted to the Misericordia Hospital Feb 11, 1935, with an elevated temperature and a white blood count of 13,000. She also had jaundice and pain over the gallbladder. After five days a cholecystos-

tomy was performed and the operation revealed a contracted gallbladder with acute inflammatory reaction in the common duct and enlargement of the pancreas. Although the final diagnosis was chronic cholecystitis and pancreatitis, there were some evidences in the case of acute inflammation. During the following two weeks her temperature was continually above normal. March 3 she expectorated bloody mucus which was diagnosed as embolus by physical signs. March 9 the patient died. Carbon dioxide had been given.

COMMENT

The group of 135 cases in which carbon dioxide was given, as shown in table 3, was associated with three pulmonary complications, including bronchopneumonia, pleurisy with effusion, and embolism. One of the patients died and two recovered, making a pulmonary morbidity of 2.2 per cent and a pulmonary mortality of 0.74 per cent. Carbon dioxide was not given to 276 patients. In four cases, which included empyema, embolism and two cases of atelectasis, pulmonary complications occurred, making a morbidity of 1.4 per cent and a mortality of 0.36 per cent.

In a personal communication Dr. E. C. Cutler suggested that comparable cases be used for the study. In following out this plan it was found that of the 124 cases diagnosed as acute appendicitis carbon dioxide was given in thirty-three and not given in ninety-one,

TABLE 3—Group of 411 Abdominal operations

| | Carbon Dioxide | No. of Cases | Pulmonary Morbidity | Pulmonary Mortality |
|-----------|----------------|--------------|---------------------|---------------------|
| Given | | 135 | 2.2% | 0.74% |
| Not given | | 276 | 1.4% | 0.36% |
| Total | | 411 | 1.7% | 0.48% |

making an incidence of 6 per cent pulmonary complications in the former group and 2 per cent in the latter. Of the sixty-three patients diagnosed as having chronic appendicitis, seventeen received carbon dioxide and forty-six did not, resulting in no pulmonary complications for the former and one case of collapse in the latter. Under gallbladder surgery there were thirty-seven cases, in seven of which carbon dioxide was given, and in thirty not given, making an incidence of 14 per cent for the former and 3.3 per cent for the latter.

CONCLUSIONS

1. A study was made of 411 abdominal operations to determine the value of carbon dioxide inhalations during closure of the abdomen.

2. It would appear from this study that carbon dioxide is of no value in the prevention of postoperative pneumothorax.

3. This group of cases accentuates the importance of infection in the operative field as an etiologic factor in the production of postoperative pulmonary complications.

255 South Seventeenth Street

Vitamin in Salmon Oil—The salmon, on the other hand, is a fat fish, it has much body fat and its store of fat-soluble vitamin is not contained in its liver only but in the fat of its body as a whole. The concentration of vitamin in salmon oil is therefore not usually so high as in the liver oil of a much leaner fish, but the total amount of fat-soluble vitamin furnished by salmon (fresh and canned) is quite large.—Sherman, Henry C. Food and Health, New York, Macmillan Company, 1934.

MORTALITY OF NEW-BORN INFANTS
IN CHICAGO DURING 1935

WITH SPECIAL REFERENCE TO THE PREMATURE

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President Chicago Board of Health

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CHICAGO

Survey of Deaths of Infants Under 30 Days of Age

—In order to determine ways of further decreasing infant mortality in Chicago during 1935, the Board of Health made an intensive field investigation of the deaths of every infant aged 30 days or less. A questionnaire was devised covering sixty-eight items relating to the prenatal period, the process of delivery, and postnatal care. This questionnaire served as a framework on which the whole structure of the inquiry was built and developed.

Table 1 presents the details concerning the birth rates, stillbirth rates, and infant mortality rates in Chicago for the period from 1925 to 1935 inclusive, showing especially the rates for deaths under 1 month and from 1 month to 12 months. The accuracy of calculation of infant mortality rates on the basis of

TABLE 1—*Birth Rates, Stillbirth Rates and Infant Mortality in Chicago 1925-1935*

| Year | Total Live Births | Stillbirths | | Total Deaths Under One Year of Age | | Deaths Under One Month | | Deaths One to Twelve Months | | Births per 1,000 Total Population |
|------|-------------------|-------------|-------|------------------------------------|-------|------------------------|-------|-----------------------------|-------|-----------------------------------|
| | | Num | Rate* | Num | Rate* | Num | Rate* | Num | Rate* | |
| 1925 | 60,679 | 2,193 | 36.9 | 4,457 | 74.7 | 2,268 | 37.0 | 2,249 | 37.7 | 19.5 |
| 1926 | 60,290 | 2,242 | 37.2 | 4,007 | 66.6 | 2,067 | 34.3 | 1,940 | 32.2 | 19.8 |
| 1927 | 60,848 | 2,214 | 36.4 | 3,822 | 62.7 | 2,109 | 34.6 | 1,713 | 28.1 | 19.6 |
| 1928 | 60,016 | 2,200 | 37.3 | 3,763 | 63.0 | 2,049 | 34.7 | 1,716 | 29.1 | 18.7 |
| 1929 | 59,900 | 2,142 | 36.4 | 3,333 | 60.1 | 2,030 | 34.5 | 1,503 | 26.6 | 18.4 |
| 1930 | 58,083 | 2,072 | 35.7 | 3,102 | 53.4 | 1,789 | 30.8 | 1,313 | 22.6 | 17.2 |
| 1931 | 62,973 | 1,006 | 36.0 | 2,957 | 56.4 | 1,692 | 31.4 | 1,323 | 20.0 | 15.3 |
| 1932 | 49,248 | 1,535 | 31.2 | 2,404 | 48.8 | 1,467 | 29.8 | 937 | 19.0 | 14.0 |
| 1933 | 46,633 | 1,403 | 30.1 | 2,278 | 48.8 | 1,454 | 31.2 | 824 | 17.7 | 13.0 |
| 1934 | 47,935 | 1,399 | 29.2 | 2,289 | 47.7 | 1,451 | 30.0 | 838 | 16.8 | 13.7 |
| 1935 | 49,425 | 1,325 | 26.9 | 1,933 | 40.1 | 1,361 | 27.5 | 622 | 12.6 | 14.2 |

* Per thousand live births

the number of reported deaths under 1 year per thousand live births is dependent among other things, on the completeness of registration of births and deaths. In Chicago a survey carried out by the United States Census Bureau during 1935 showed that there was 99.5 per cent registration of births. It should be noted that the stillbirth rate also has been declining during the period from 1925 to 1935 inclusive. This fact would seem to indicate that the decreasing number of infant deaths cannot be explained as due to a tendency to classify, as stillbirths, infants born alive but dying soon after birth.

During 1935 the Board of Health adopted a number of measures which had been found to be successful in reducing premature deaths at Sarah Morris Hospital.¹ It was felt that establishing the same methods throughout the city at large would aid somewhat in reducing the mortality during the first year of life, especially of

premature infants, as well as reducing the number of stillbirths. At the same time the program of infant care which had been instituted before 1935 was continued and enlarged.

At present the program of care for all infants under 2 years of age, including the premature, is as follows:

As soon as a birth is registered, the book "Our Babies," describing in simple language with many illustrations, the details of infant care, is sent to the mother, and a Board of Health nurse makes a birth registration call at the home, delivering a birth certificate and the first of a series of monthly letters on infant care.

The nurse urges the mother to keep the baby under a private physician's care but if the mother cannot afford a private physician she is urged to register the infant at one of the twenty-eight Board of Health infant welfare stations or one of the eighteen stations conducted by the Infant Welfare Society of Chicago, depending on the district in which she lives. Each month one of the pamphlets on infant care is sent to the mother. These monthly pamphlets give the important things to be done for the baby each month.

The nurse keeps in touch with the infants who are under the care of private physicians, to make sure that these babies are taken to their doctors regularly. Those not under the care of private doctors and not registered at the welfare stations are visited monthly by the nurse, who at each visit continues to urge medical supervision. If a baby is sick or the home conditions are poor, she makes daily visits to see that the infant is getting proper care and medical attention. If a baby is registered at one of the stations it is the responsibility of the station nurse to see that he continues to be brought to the station. All nurses have a panel of cards (one card for each baby in the district), which enables them to keep track of these babies and permits the supervisors to keep a definite check on the progress of the work. A copy of this card is shown herewith.

Whenever a nurse finds a baby in urgent need of medical care, or whenever home conditions are not adequate for good infant care, every possible effort is made to have the child hospitalized.

Another measure taken during 1935 was the adoption of standardized rules for the care of new-born and premature infants in hospitals. These rules and regulations were sent to all the hospitals and, as a result, improvement in hospital facilities and procedure has resulted as determined by Board of Health surveys made before and after their passage. These surveys were carried out by a nurse with many years of experience as a nurse in one of Chicago's largest hospitals. Regulations for obstetric care were also adopted.

During 1935, of the 1,361 infants who died under 30 days of age, 795 or 58.4 per cent, were considered to be premature, that is they were of less than eight and a half months' gestation and were regarded as premature by the physician. Eighty-four and eight-tenths per cent weighed less than 5 pounds. In 450 instances prematurity alone was given as the cause of death on the death certificate while in the other 345 cases there were other causes of death besides the prematurity. It is obvious then, that one of the most promising fields of endeavor for the further reduction of infant mortality lies in an effort to save the lives of premature infants.

It has been pointed out by a number of observers² that, for the premature infant who has any possibility of surviving, the chances of living can be improved by keeping the baby warm enough from the moment of birth, by giving adequate and proper food, that is, breast milk (or the best possible substitute), by preventing infections, and by giving intelligent nursing and medical care.

In view of this fact, the Board of Health adopted several measures which, it was felt, would be of advantage in saving the lives of prematurely born babies. First, a careful survey was made of all the hospitals in the city to determine whether or not they were provided with adequate facilities to care for the prematurely born infant. Each hospital was rated on a basis of the facilities available. The institutions that lacked facilities were encouraged to make corrections, and they equipped their nurseries to meet the needs for the proper care of premature infants. As a result of these endeavors, several of the hospitals constructed

a nurse is assigned to cooperate with the doctor in any way she can to give the infant adequate care.

Third, an incubator ambulance was provided to transport these infants, without charge, from homes

TABLE 3—Manner of Inducing Labor

| Manner of Inducing Labor | Premature Infants |
|---------------------------------|-------------------|
| Bag | 27 |
| Catheter | 1 |
| Mannai dilation | 3 |
| Artificial rupture of membranes | 5 |
| Oxytocles | 7 |
| Uterine pack | 1 |
| Total | 44 |

and institutions where proper facilities are not available. Two of the larger hospitals of the city, equipped with incubator stations, agreed to care, without charge, for the premature infants of indigent parents.

| | | | |
|------------------------|---|---------------|-----------|
| BM | J A N U A R Y M A R C H A P R I L M A Y J U N J U L Y A U G U S T S E P T E M B E R O C T O B E R N O V E M B E R | | |
| A | INFANTS NAME | DATE BIRTH | DIST. NO. |
| ADDRESS | | PART OF HOUSE | |
| PLACE OF BIRTH | | | |
| FATHER'S GIVEN NAME | | | |
| DATE TOXOID GIVEN | CCD LIVER OIL | AMOUNT | |
| CONDITION OF HOME HEAT | CLOTHING | BEDDING | FOOD |
| ON RELIEF | AGENCY ADDRESS | W.P.A. | |
| MEMBERS HOUSEHOLD SICK | NATURE OF ILLNESS | | |
| DEMONSTRATION GIVEN | SAW DOCTOR LAST | | |
| ACTION TAKEN | | | |
| REMARKS: | | | |

BOARD OF HEALTH, CITY OF CHICAGO
AUTOMATIC-VANDEX FORM NO. 35-1283P

Nurse's card

"premature" nurseries, many bought heated beds and provided equipment for the administration of oxygen, as well as other devices that have been found of value in reducing mortality from prematurity.

TABLE 2—Labor Onset

| Type of Onset | Premature* Infants |
|------------------|--------------------|
| Spontaneous | 697 |
| Induced | 44 |
| Cesarean section | 51 |
| Unknown | 3 |
| Total | 795 |

* In tables 2 to 10 inclusive the figures refer to premature infants who died.

Second, the Board of Health passed a regulation making premature births reportable at once by telephone and requiring confirmation in writing within twenty-four hours. As soon as such a birth is reported,

² Hess J. H. The Care of the Premature Infant. Clifford S. H. Reduction of the Infant Mortality. J. Pediat. 6: 139 (Aug.) 1934. Blackfan K. D., Yagiou C. P. and Wyman Katherine M. The Premature Infant. Am. J. Dis. Child 40: 1175 (Nov. part 2) 1933.

Some heated beds were secured to be sent, whenever they are needed, to hospitals not equipped with them. These heated beds are also sent to homes for premature infants requiring them.

The Board of Health, with funds supplied by the Mayor of Chicago, established a mother's milk station where breast milk is collected and made available for premature and other infants who are in need of it and whose parents are not able to pay for it.

In connection with the care of the premature infant, instructions were sent to the various hospitals. These stated, especially, the need for the prevention of hand-borne infections. A booklet on the care of the premature infant, written in simple language, was prepared. This is sent to mothers who have prematurely born infants, as well as to all physicians, nurses and others who desire the material.

ANTEPARTUM CARE

Of the 795 premature infants who died, the antepartum care given was ascertained for the mothers of 786 infants. Reports indicate that 389, or 49.5 per cent, received antepartum care that conformed to the minimum requirements.

nation had been made. This, of course, eliminates the possibility of discrepancies between the cause of death given on the certificate and that found on autopsy. Only a few of the records showed whether or not the autopsy confirmed the clinical diagnosis.

MALFORMATIONS

Malformations were present in sixty-one, or 7.7 per cent, of the premature infants who died. With few exceptions these malformations were serious enough to be the cause, or contributing cause, of death. Cardiac and cephalic malformations were the most frequent.

In fifty-seven, or 7.2 per cent, of the premature infants, the physical defect was so severe as to be incompatible with life. Many infants were affected with multiple malformations.

MORTALITY RATE

In 1935, 1,862 infants out of 49,425 live births were classified as being prematurely born. This is a rate of 37.7 premature births per thousand live births. Of the premature infants, 795, or 42.7 per cent, died during the first month of life. Of the 795 prematurely born babies who died, 450 were stated to have died from prematurity alone.

Of the 450 infants autopsies were performed on eighty-four. In thirty-two of these the cause of death was found to be other than that on the death certificate. Twenty-seven of these thirty-two deaths were directly due to atelectasis, one to syphilis, two to bronchopneumonia, one to a birth injury, and one to a congenital malformation and not to prematurity, as had been stated on the death certificate. In view of this fact it is fair to assume that, in many of the remaining infants on whom no autopsy was performed, some condition other than prematurity caused the death.

There is a great deal still to be done if the deaths from prematurity are to be further reduced. Endeavors to save the infants who die during the first forty-eight

the prematurely born infants who died, 62.4 per cent weighed from 1½ to 4 pounds.

Of the 795 premature infants of whom we had knowledge and who died under 1 month of age, 74.8 per cent were born in Chicago hospitals, 24.8 per cent were born at home and 0.4 per cent were born outside the city, en route to a hospital, or else the place of birth was not known.

TABLE 11—*Presence of Certain Pathologic Conditions at Birth*

| Condition | Number of Times Condition Occurred in 795 Premature Infants |
|---------------------------------|---|
| Atelectasis | 239 |
| Asphyxia | 41 |
| Hemorrhage | 69 |
| Icterus | 11 |
| Sclerema | 3 |
| Congenital syphilis | 10 |
| Pathologic condition discovered | 472 |
| Unknown | 1 |
| Total conditions | 837 |

TABLE 12—*Methods of Resuscitation Used*

| Method | Number of Times Method Was Used on 251 Premature Infants |
|-------------------------------|--|
| Ombelator (tracheal) | 131 |
| Artificial respiration | 77 |
| Oxygen | 72 |
| Oxygen and carbon dioxide | 37 |
| Stimulants | 63 |
| Hot and cold water | 58 |
| Mouth to mouth respiration | 11 |
| Mechanical stimulation | 9 |
| Respirator | 5 |
| Total times methods were used | 465 |

TABLE 10—*Weight at Birth*

| Weight in Pounds | Premature Infants |
|------------------|-------------------|
| ½ to under 1 | 5 |
| 1 to under 1½ | 42 |
| 1½ to under 2 | 79 |
| 2 to under 2½ | 102 |
| 2½ to under 3 | 109 |
| 3 to under 3½ | 113 |
| 3½ to under 4 | 63 |
| 4 to under 4½ | 69 |
| 4½ to under 5 | 59 |
| 5 to under 5½ | 47 |
| 5½ to under 6 | 24 |
| 6 to under 6½ | 24 |
| 6½ to under 7 | 5 |
| 7 to under 7½ | 8 |
| 7½ to under 8 | 3 |
| 8 to under 8½ | 2 |
| Unknown | 53 |
| Total | 775 |

hours, especially, must be exerted during the prenatal period and toward the control of factors operative at the time of delivery.

Further analysis of the figures obtained through the investigation of the premature deaths revealed some interesting facts.

FIFTH WEIGHT, PLACE OF BIRTH

The birth weight of 742 premature infants who died is shown in table 10. Of this number as shown in table 10, 62.4 per cent weighed less than 5 pounds. Of

PATHOLOGIC CONDITIONS AT BIRTH

Three hundred and twenty-two, or 40.5 per cent, of the premature infants who died had clinically one or more of the conditions listed in table 11. Atelectasis, hemorrhage of some type, and asphyxia were the conditions most frequently present.

RESUSCITATION

Information as to whether or not resuscitation measures were used was obtained for 794 premature infants who died, and resuscitation was used for 251, or 31.6 per cent.

A catheter (tracheal) for aspirating the pharynx or larynx was used in 52.2 per cent of the premature infants who died and who required resuscitation, as shown by table 12.

The various methods of resuscitation were used 465 times in 251 babies. Methods which, in general, are not accepted as being satisfactory, such as slapping, swinging, spraying with ether, artificial respiration, alternate hot and cold baths and similar violent efforts to induce breathing, were used 149 times, or in 32 per cent of the total. The administration of drugs such as epinephrine or other cardiac and so-called respiratory stimulants was noted in sixty-five cases.

The most frequent difficulty encountered in the child at the moment of birth was a lack of adequate respiratory function due to atelectasis. Physiologically the lung is in an atelectatic state in the new-born. There

is a variety of abnormal conditions which may tend to cause the atelectasis to continue. In premature infants, an undeveloped respiratory center and weak respiratory muscles may delay or prevent the establishment of breathing. Cerebral compression or hemorrhage may have the same effect. Asphyxia, from this or other causes, such as compression of the cord, detachment of the placenta or aspiration of fluids, is an urgent condition to be met promptly.

The first movement in the respiratory act is, of necessity, inspiration. Unless the mucus or fluid in the nose, pharynx, larynx or trachea is withdrawn by the use of the catheter (tracheal), with continued breathing this mucus may be drawn into the lungs and may result in asphyxia. Therefore the immediate and proper use of the catheter (tracheal) should be the first step in the attempt at resuscitation in all instances.

PLACE OF DEATH

Five hundred and seventy-six premature infants, or 72.5 per cent, died in the same hospital in which they were born and had never left the institution, 105, or 13.2 per cent, were born at home and died at home, eighty-seven, or 10.9 per cent, were born at home but died in a hospital.

TABLE 13—Place of Birth and Death

| Place of Birth and Death | Premature Infants |
|---|-------------------|
| Died in hospital of birth | 576 |
| Died in hospital of birth (was at home between birth and death) | 1 |
| Died in another hospital than that of birth | 12 |
| Died in another hospital than that of birth (was at home between birth and death) | 1 |
| Born and died at home | 105 |
| Born at home and died in hospital | 87 |
| Born at hospital and died at home | 5 |
| Born at home and died en route to hospital | 5 |
| Born en route to hospital and died at hospital | 3 |
| Total | 795 |

TABLE 14—Immediate Care Given

| Type of Care | Number of Times Type of Care Was Given to 795 Premature Infants |
|--------------------------------------|---|
| Incubator | 565 |
| Oxygen | 276 |
| Oxygen and carbon dioxide | 114 |
| External heat such as warm blankets | 188 |
| Stimulants | 174 |
| Routine care | 82 |
| Efforts to establish respiration | 72 |
| Other | 35 |
| None | 9 |
| Unknown | 6 |
| Total times types of care were given | 1,570 |

TYPE OF CARE

Of the 795 premature infants who died, 565, or 71.1 per cent, were placed in an incubator at once, as is shown by table 14. Of the 230 who did not receive immediate incubator care, forty-six received it within a few days. In addition to incubator care, oxygen, external heat and stimulants were the most frequently used forms of treatment for premature babies.

The mortality rates from various institutions show the advantage of caring for premature infants in

specialty equipped nurseries under the supervision of an expert personnel. Resuscitation measures were instantly operative, adequate heat and breast milk provided, and the infant disturbed as little as possible, at those institutions where the mortality rates were low.

An attempt was made to evaluate the care which the babies received, as is shown in tables 15 and 16. The care of sixty-four premature babies who died was judged as inadequate by the investigator. The main

TABLE 15—Treatment Received by Mother and Child

| | Premature Infants |
|-------------------------------|-------------------|
| Adequate care given | 731 |
| Hospital care inadequate | 32 |
| Outpatient service inadequate | 4 |
| Medical care inadequate | 23 |
| Midwife care inadequate | 5 |
| Total | 795 |

TABLE 16—Reasons Why Care Was Considered Inadequate

| Reason | Hospital | Doctor | Outpatient Service | Midwife | Total |
|---------------------------------|----------|--------|--------------------|---------|-------|
| No heated bed | 8 | 12 | 8 | 0 | 23 |
| No breast milk | 6 | 1 | 0 | 0 | 7 |
| Questionable obstetrics.. | 8 | 0 | 0 | 0 | 8 |
| No oxygen | 1 | 0 | 0 | 0 | 1 |
| Removed from incubator too soon | 1 | 0 | 0 | 0 | 1 |
| Discharged in poor condition | 1 | 0 | 0 | 0 | 1 |
| Birth injury | 1 | 0 | 0 | 0 | 1 |
| Inadequate equipment | 1 | 0 | 0 | 0 | 1 |
| General inadequate care | 5 | 10 | 1 | 5 | 21 |
| Total | 32 | 23 | 4 | 5 | 64 |

reasons for this judgment were lack of incubator care, lack of breast milk, the use of questionable obstetrics, and general inadequate care and attention.

SUMMARY

A review of the mortality of premature infants under 30 days of age in Chicago for 1935 shows that the adoption, for city-wide use, of measures shown by Hess to be effective in hospital practice has brought progress in saving the lives of these babies. Most of the deaths of premature infants occurred during the first twenty-four hours (69.7 per cent). This is almost double the percentage of full-term infants who died during the first twenty-four hours (37.6).

Lack of proper antepartum care is a large factor in the production of high mortality rates in premature infants.

Wassermann tests on pregnant women are not made with nearly the frequency with which they should be carried out.

The improper use of analgesics, anesthetics and oxytocics may account for some of the mortality from prematurity. Pathologic conditions in the mother, such as toxemia, placenta praevia, infections, such as pneumonia and syphilis, are factors in almost half of the deaths of premature babies. The most frequent causes of death associated with prematurity were atelectasis, cerebral hemorrhage, malformation and bronchopneumonia.

Methods of resuscitation in general not accepted as being satisfactory were employed 149 times. The use of proper resuscitation methods will help reduce the mortality of premature babies.

CONCLUSION

The problem for the future consists, especially, in more extensively controlling the causes of death at the time of the birth of premature babies, as well as those conditions operative during the antenatal period. In other words, there is need for extension of antepartum, obstetric and postnatal care.

The proper antepartum and obstetric care for all pregnant women should bring about a marked reduction in the number of deaths not only among premature babies but among all infants who die under 30 days of age, as well as the number of stillbirths. The Board of Health will continue to extend its efforts along these lines during the coming years.

To find ways and means for further reducing infant mortality, data concerning the exact causes for these deaths must be at hand. Such data can best be obtained by a careful personal investigation of each death by a trained medical investigator. If such investigations were conducted by boards of health in many communities and the figures compared, much informative material would be made available.

THE DIFFERENTIAL DIAGNOSIS OF SALICYLATE POISONING AND DIABETIC ACIDOSIS

REPORT OF A CASE

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When Langmead¹ in 1906 reported eight cases of salicylate poisoning in children, two of which were fatal, he called attention to the similarity of these cases to diabetic acidosis. Likewise, he referred to the term 'salicyl-dyspnea,' which Quinke had used in 1882, when he too had apparently noted the resemblance. Since that time this observation has been abundantly confirmed. It would appear, however, that the syndrome produced by overdosage of salicylate has not been sufficiently stressed to make it common knowledge. Standard textbooks and systems of medicine, as well as key treatises on the subject of diabetes, do not mention it. Two of the textbooks on pediatrics which we examined described it briefly under "poisons." Our object in restating this problem under the foregoing title is again to call attention to this similarity.

REPORT OF CASE

History.—H. U., a boy aged 18 months, was sent to the Children's Hospital on the evening of Jan. 31, 1936, by Dr. B. M. Bukowski, with a tentative diagnosis of diabetic coma. It appeared that restlessness, irritability and heavy breathing had been observed three days previously. On the following day these symptoms were aggravated and vomiting had become persistent. On entrance the child had not retained food or fluid for thirty-six hours. It had become stuporous about six hours before admission. The mother said that the child had been exceedingly thirsty all during this illness and prior to the acute illness had had a voracious appetite.

Bedside Examination.—The child was well nourished and well developed. A high grade hyperpnea (Kussmaul breathing) was present. The skin and tongue showed evidence of considerable dehydration. The child cried when disturbed but soon

fell asleep. The pupils were dilated and the eyeballs were noticeably soft. There were no abnormal neurologic signs or evidence of meningeal irritation. The temperature was 99.2 F (rectal), pulse rate 140 per minute and respiration rate 40. The urine reduced Benedict's solution (3+) and showed a strongly positive ferric chloride reaction.

Course.—Shortly after admission the child was given 5 units of insulin and 400 cc. of 5 per cent dextrose in physiologic solution of sodium chloride subcutaneously. An hour later the insulin was repeated. The blood sugar, taken before the administration of insulin, was then reported to be 87 mg. per hundred cubic centimeters. Two hours later the child's eyes were "starey," and 10 Gm. of dextrose in a 50 per cent solution was administered intravenously. The probability of diabetes seemed to be eliminated. An acidosis from some unknown cause, a lesion of the central nervous system or some type of poisoning was then considered. The carbon dioxide capacity of the blood plasma was found to be but slightly reduced (50 volumes per cent). This seemed to rule out acidosis as the cause of the hyperpnea. The spinal fluid (20 cc. removed without difficulty, under pressure, which, unfortunately, was not measured) was clear, contained no increase in protein or cells, and reduced Benedict's solution in fifteen seconds.

The following day the child was less drowsy, but still restless, and cried frequently. He had taken milk and water by mouth, and vomiting had ceased. The respirations remained at 40 per minute but were noticeably less deep. The urine did not reduce Benedict's solution, but the Gerhard test showed the characteristic violet color of the salicylate reaction. The spinal fluid, which had been removed the day before, was also found to show the same reaction to an extreme degree. The sodium nitroprusside test on both the urine and the spinal fluid was negative, as was the stomach washing obtained the previous night.

On the second day the restlessness and hyperpnea had entirely disappeared. The child was discharged from the hospital three days after admission clinically well.

Subsequent investigation revealed that the parents had found several "anacin"² tablets in a place that would have been accessible to the patient. Also it was determined that the child, on the day before the illness, had taken a sip of well diluted oil of wintergreen.

Additional Laboratory Examination.—The admission specimen of urine showed considerable albumin (2+), but none was present in the specimen obtained before discharge. The blood count, which was taken on admission, showed some unexplained hypochromic anemia. The hemoglobin was 52 per cent (Sahli) and the red blood cells numbered 5,900,000. The white blood cells numbered 17,700 per cubic millimeter, 67 per cent of which were polymorphonuclears. The blood smear showed considerable anisocytosis and hypochromia.

COMMENT

It is well known that diabetes in children may not be suspected until symptoms of acidosis appear. One who is confronted with a clinical state such as we have described may be led to the error as we were, of treating such a patient for diabetic acidosis, unless facilities for doing blood sugar and carbon dioxide determinations are promptly available. It is well known that the urine of patients who are taking salicylates reduces copper solution, often quite completely. Also the laboratory technician who is unacquainted with the Bergundy red reaction of acetoacetic acid and the violet color produced by salicylates in performing the Gerhard test may unwittingly report the presence of diacetic acid. Starvation under such circumstances may produce ketonuria (sodium nitroprusside test). When such an emergency exists there is not time to differentiate the reducing substance of salicylate and dextrose in the urine by the fermentation method.

The permeability of the meninges to salicylate has been known since 1878 when Livon and Bernard³

² Anacin tablets are reported to contain a ethylsalicylic acid quinine sulfate, caffeine and acetaminophen.

³ Livon, Charles and Bernard, J. cited by Katzenellenbogen, S. The Cerebrospinal Fluid and Its Relation to the Blood. Baltimore: Johns Hopkins Press, 1935, p. 322.

From the P. T. S. General and Children's Hospitals and the University of Medicine at Buffalo, N. Y.
¹ Langmead, F. Salicylate Poisoning in Children. Lancet, 1, 1922, 1000-1001.

demonstrated it in dogs by the ferric chloride reaction. Both Hitch⁴ and Dyke⁵ found salicylate in the spinal fluid in their cases by this method. The pressure of the spinal fluid has been measured in but few instances. In Madisson's⁶ case it was 190 mm of water, in Dyke's⁵ 180 mm, and in Mikulowski's⁷ 150 mm. The examination of the spinal fluid for salicylates at the bedside might be decidedly helpful in making a differential diagnosis.

Dyspnea is an important symptom of salicylate poisoning, and it is largely because of this hyperpnea that acidosis of diabetic or renal origin is often suspected, unless there is a clear history of the ingestion of salicylate. Sylla⁸ followed the pulmonary ventilation in his patient with acetylsalicylic acid poisoning after the second day. It fell from 37 liters per minute to 11 liters on the third day and was normal, 5 liters per minute, on the seventh. The basal metabolic rate was plus 33 per cent on the third day and normal on the seventh.

The cause of this dyspnea has been widely discussed. Naturally, because of the Kussmaul type of breathing, it was thought to be caused by an acidosis, particularly since all investigators agree that there is some reduction of the carbon dioxide capacity of the blood plasma in salicylate poisoning. Many observers have noted the disparity between the degree of hyperpnea and the alkali reserve. Veil and Graubner,⁹ Gebert¹⁰ and Odin¹¹ found with this an increased p_H of the urine. They suggest that salicylate has an irritative action on the respiratory center which produces hyperventilation. Thus, in turn, causes decreased carbon dioxide tension of the alveolar air and blood, and a reduction of the fixed alkali in the blood by the excretion of an alkaline urine. Also it is their contention that for this reason the administration of alkali is contraindicated in the treatment of salicylate poisoning, in contrast to the view of others. Johnson¹² found that four of eight of his experimental cats which had received the equivalent of a full therapeutic dose of sodium salicylate had significant decreases in the alkali reserve and that in these there was an increase in blood lactate. He believes that these changes are reconcilable with a fixed acid acidosis.

The literature on salicylate poisoning has been reviewed by other authors prior to 1928. Space here does not permit us to consider them comprehensively. A comparative list of the changes in diabetic coma and salicylate poisoning based on our review is presented in table form. During this period reports of thirty-two severe cases were found. In fifteen the salicylate was administered therapeutically, in eleven either by accident, self administration or error, and in four deliberately for the purpose of self destruction. One

followed the use of salicylate injection into varicose veins. Death occurred in one half of the cases. Twenty-five of the cases occurred outside the United States.

A considerable number of cases have come to necropsy and while the pathologic changes are not sufficiently characteristic to permit the pathologist to make an unequivocal diagnosis of salicylate poisoning in the absence of a history or the demonstration of large amounts of salicylate in the body fluids, nevertheless certain changes warrant such a suspicion. Madisson⁶ found an engorgement of the blood vessels of most of the organs with small hemorrhages in both human and experimental (rabbits) salicylate poisoning, also cloudy swelling of the heart, liver and kidneys, which in some instances had progressed to fatty degeneration. Inci-

Comparative Conditions Found in Diabetic Acidosis and Salicylate Poisoning*

| Symptoms and Signs | Diabetic Acidosis | Salicylate Poisoning |
|----------------------------------|-------------------|----------------------|
| Onset | Slow | Rather slow |
| Epigastric | May be present | May be present |
| Vomiting | Usually present | Usually present |
| Hyperpnea | Present | Present |
| Dehydration | Present | Present |
| Thirst | Present | Present |
| Coma | May be present | May be present |
| Hypotension | May be present | May be present |
| Laboratory Examinations | | |
| Blood | | |
| Sugar | High | Usually normal |
| CO ₂ capacity | Low | Slightly decreased |
| Leukocytes | May be increased | May be increased |
| Polymorphonuclears | May be increased | May be increased |
| Urine | | |
| Albumin | Present | Present |
| Oasts | Present | Present |
| Red blood cells | May be present | May be present |
| Copper reduction (dex- trose) | True | False |
| Ferric chloride | Burgundy red | Violet |
| Sodium nitroprusside | Present | May be present |
| Spinal fluid | | |
| Pressure | Probably normal | May be increased |
| Ferric chloride | May be positive | Violet (false) |

* The following are rarely seen in diabetic acidosis but frequently in salicylate poisoning: tinnitus, twitching, convulsions, deafness, dimness of vision, sweating, hallucinations, disorientation, delirium and urticaria.

dently, he believed that his experiments showed that the administration of dextrose along with the salicylate lessened the intensity of the reaction and delayed death.

CONCLUSIONS

1 Salicylate poisoning appears to be a clear clinical entity, but one that may be confused with diabetic or renal acidosis.

2 Salicylate poisoning should be considered when one is eliminating the various causes of coma, especially if hyperpnea is present.

3 The finding of the violet color reaction in the spinal fluid with ferric chloride may be a useful differential diagnostic procedure, it would have been in our case.

4 Physicians should be acquainted with the syndrome produced by the overdosage of salicylate, especially since the drug is so widely used, in its various forms, as a therapeutic agent, a household remedy, and a method of suicide.

5 The dyspnea of salicylate poisoning appears to be more reasonably explained on the basis of an irritative action on the respiratory center than on acidosis.

100 High Street.

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Clinical Notes, Suggestions and New Instruments

FAILURE OF SODIUM CHLORIDE RESTRICTION TO PRECIPITATE CRISIS IN A CASE OF ADDISON'S DISEASE

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Many of the symptoms of adrenal insufficiency are those commonly associated with dehydration and depletion of the bases of the animal body, chiefly sodium. In cases of Addison's disease the administration of an adequate amount of sodium tends to produce a more nearly normal state of hydration and corrects the sodium deficit. Harrop¹ first suggested that sodium chloride restriction precipitated crises in patients suffering from Addison's disease and could be used in this manner to establish a diagnosis in questionable cases. The following case is presented as evidence that such a test is not reliable in all instances.

REPORT OF CASE

History—Mrs. E. W., aged 39, admitted to the medical service of Dr. H. A. Reimann at the University Hospitals in July 1934, gave the following history. She had not been strong since she suffered from "milk leg" following the birth of her last living child in 1920. In 1928, during the ninth month of gestation, a severe painless vaginal hemorrhage developed following which she delivered a dead full-term fetus. Thereafter she experienced a greater sense of fatigue and a reduced ability to work. In December 1933 the patient noticed puffiness of the eyelids and general body surface, nausea, vomiting and

Blood and Urinary Dextrose Values

| Blood Sugar Mg per Hundred Cubic Centimeters | Urinary Sugar |
|--|---------------|
| Fasting 99 | 0 |
| After 1/2 hr 285 | ++ |
| After 1 hr 240 | +++ |
| After 2 hrs 198 | ++ |
| After 2 1/2 hrs 186 | + |

pallor, and experienced an attack of syncope with loss of consciousness lasting about eight hours. She remained in bed at home for three or four weeks and in January 1934 was transferred to a hospital, where she had a second attack of syncope and unconsciousness, which lasted for several hours and was said to have been rather dramatically relieved by the intravenous administration of a dextrose solution. The patient was later able to do some housework but experienced spells of dizziness and marked weakness. A few weeks prior to admission thyroid extract was prescribed, and following this puffiness of the eyelids and subcutaneous tissue disappeared, but other symptoms were not changed.

The patient was well developed, with evidence of recent loss of subcutaneous tissue. There was questionable pigmentation in the skin folds of the palms of the hands and soles of the feet and around the umbilicus, but no abnormal pigmentation was noted in the mucosa of the mouth, pharynx or eye fundi. No significant finding was observed when the head, neck, chest, abdomen, genitalia and extremities were examined. The heart tones were somewhat faint but otherwise normal. The blood pressure on admission was 88 mm systolic and 60 mm diastolic.

Laboratory Examinations—Several urinalyses were negative. The hemoglobin averaged 75 per cent (Sahli), there were 3,100,000 erythrocytes and 5,000 leukocytes per cubic millimeter of blood, 48 per cent of which were polymorphonuclear granulocytes, 51 per cent lymphocytes and 1 per cent eosinophils. The nonprotein nitrogen of the blood measured 26.2 mg per hundred cubic centimeters. Blood Wassermann tests were negative. The blood and urinary dextrose values following the intravenous injection of 40 Gm of dextrose are given in the accompanying table. Five basal metabolic rates varied from minus 20 per cent to minus 30 per cent. The carbon dioxide

combining power of the blood was 64 volumes per cent. The blood plasma contained 600 mg per hundred cubic centimeters of chlorides. The stools were normal.

Course—The patient was at first thought to have Addison's disease. A Mantoux test with 0.1 mg old tuberculin was strongly positive. X-ray plates of the lungs, heart, kidneys and adrenals failed to show any evidence of abnormality. The patient was given 3 grains (0.2 Gm) of desiccated thyroid daily for about one month without definite improvement. This medication was discontinued and she was given 9 Gm of sodium chloride daily in addition to the general hospital diet. After one week the patient stated that she felt better than she had in a long time. She was then given a diet low in sodium chloride (approximately 15 Gm daily) from September 4 to September 25. This twenty-one day period of sodium chloride restriction did not cause recurrence of symptoms. The chloride and nonprotein nitrogen content of the blood were not altered. The blood pressure varied but little, averaging 90 mm systolic and 65 mm diastolic.

Hypothyroidism was then considered as the most probable diagnosis, and the patient was discharged with instructions to follow a high caloric general diet and take 1 grain (0.06 Gm) of desiccated thyroid (Armour's) three times daily. She was readmitted one week later, October 1, because of headache, persistent vomiting and great fatigue. The physical changes were essentially the same as those previously described, except that the patient was slightly dehydrated. Laboratory examination on the second admission showed that the hemoglobin had dropped from 75 per cent to 55 per cent and the erythrocytes from 3,500,000 to 2,700,000 per cubic millimeter. The nonprotein nitrogen content of the blood increased from 26.2 to 33.3 mg per hundred cubic centimeters. The blood pressure varied from 76 to 88 mm systolic and 52 to 60 mm diastolic. The patient was given dextrose solution and physiologic solution of sodium chloride intravenously with great improvement in her general condition. She appeared to improve gradually but died very suddenly and unexpectedly with gasping respiration and obvious air hunger.

A complete autopsy was performed. The only abnormal conditions found were bilateral hydrothorax of approximately 100 cc of clear straw-colored fluid. Both adrenals were so atrophied that they could be identified only on microscopic examination, which showed an extreme atrophy of the cells of the cortices with condensation of the supporting connective tissue stroma. The medulla was represented by a few widely distributed small groups of characteristic cells, a considerable number of which showed pyknotic nuclei with lipid vacuoles in the cytoplasm. There was no evidence of inflammatory reaction. The thyroid gland was small. The cut surface was pale and the microscopic sections showed a decrease in colloid and acini. The cells lining the acini were flat, and there was considerable lymphocytic infiltration of the stroma. The ovaries were pale, small and hard. On microscopic examination no graafian follicles were found in the several sections examined. A few corpora albicantia were present.

The diagnosis was Addison's disease, bilateral cortical atrophy, hypothyroidism, chronic thyroiditis, bilateral hydrothorax, and atrophic ovaries.

COMMENT

Clinically this case was considered an example of hypothyroidism rather than Addison's disease because of the edema or myxedema of the subcutaneous tissues, the low basal metabolic rates, the absence of definite pigmentation, and the failure of sodium chloride restriction to precipitate an addisonian crisis. However, the postmortem examination revealed a marked atrophy of both adrenals in addition to a chronic thyroiditis. The adrenal insufficiency was in all probability the cause of the patient's sudden death. Bilateral adrenal cortical atrophy is not uncommonly the cause of Addison's disease but in our experience the absence of characteristic pigmentation in bilateral cortical atrophy is rare. The failure of sodium chloride restriction to precipitate a crisis in this case may be explained by the presence of an adequate amount of adrenal hormone at that time to prevent excessive sodium excretion and the associated dehydration. Nishimoto,² Schuttenhelm and Eisler³ and

From the Department of Medicine, University Hospitals.
1 Harrop, G. A. Wernim, Albert, Seifer, L. J. and Treacher, J. H. The Diagnosis and Treatment of Addison's Disease. J. A. M. A. 100: 1467 (June 10) 1933.

2 Nishimoto, H. Jap. J. Exper. Med. 7: 225-239 (April 10) 1927.
3 Schuttenhelm, A. and Eisler, B. Ztschr. f. d. ges. exper. Med. 61: 239-277 1928.

others have shown that there is a decreased sodium chloride excretion in hypothyroidism and that, when the hypothyroid state is corrected by feeding of thyroid or injection of thyroxine, the excretion of sodium chloride increases. This patient received thyroid extract before the period of sodium chloride restriction but not sufficient to increase the basal metabolic rate above minus 20 per cent, consequently the sodium chloride excretion was probably low. During the period prior to salt restriction the patient received 9 Gm of sodium chloride daily, which may have resulted in sodium chloride retention, and because of the hypothyroidism the subsequent twenty one day period of restriction was too short to deplete the patient's supply of sodium chloride. Wilder⁴ has been able to induce crises in Addison's disease by high potassium feeding. This suggests that potassium may exert an influence opposite or antagonistic to that of sodium in Addison's disease similar to that observed in certain juvenile diabetic patients and in patients with tissue edema. It is possible that the adrenal cortical hormone is an important factor in the control of the sodium-potassium ratio in the body.

MIGRATING GRÄFENBERG CONTRACEPTION RING

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It appears that the use of a flexible metal ring in the uterus as a contraceptive is rather widespread, and according to an advertisement in a medical journal the manufacturers advise that it is both efficient and safe. This apparatus is variously called Von Graffe ring, Gomco contraception ring and Gräfenberg ring. A foreign body remaining in the uterus would be expected to give some unfortunate results.

The case which I report is one of these. I have found very little in the medical literature on this subject, but I have collected the reports of three other cases which would further suggest the danger of the use of such an apparatus.

Jan 14 1936, Mrs. X consulted me. Her last period began Oct 5, 1935. She told me that a contraceptive ring had been inserted in the uterus in November 1934, and she brought with her a roentgenogram taken eight months before which showed the shadow of a ring apparently near the center of the pelvis. The uterus was about the size of a three months pregnancy. She told me that the ring had been inserted by a prominent gynecologist in another city. As I was not familiar with this particular instrument, I wrote to him for information. He courteously reported that he had placed a Von Graffe ring (apparently a Gräfenberg ring) in November 1934. He also said that these rings had been used in Germany in many thousand cases and that pregnancy could be expected in only about 1 per cent of the cases, but that if it did occur an abortion would be required, as the child would be deformed.

Obviously if the uterus was to be emptied it was necessary that the ring also be removed to prevent complications. Another picture was made, which showed the ring in about the same location as before. As the patient was now about four months pregnant, hysterotomy seemed to meet the indications best. The contents of the uterus were evacuated but no ring could be found. Grasping the cervix between the thumb and the fingers, I felt the ring in the wall of the cervix. On further investigation the edge of the ring was seen under the bladder flap of peritoneum. It was divided and removed. A part of the ring was embedded in the wall of the cervix. If I had found this first I would not have opened the uterus.

Cregan¹ reports a conception with the Gräfenberg ring in place. This resulted in spontaneous abortion associated with streptococcal septicemia incidental to middle ear infection.

Green-Armytage² reports an infected abortion of nine weeks gestation. The Gräfenberg ring was found embedded in the chorion.

Murphy³ describes a case of three months pregnancy complicated by a migratory Gräfenberg ring. The chief complaint was pelvic pain particularly on walking and a sick feeling. Roentgen examination showed the ring apparently to one side

of the uterus. When the abdomen was opened, the ring was visible showing through the peritoneum of the broad ligament. It was divided and removed and pregnancy was allowed to proceed.

Including the three cases found in the literature, four cases of pregnancy are here reported in which the Gräfenberg ring failed to prevent conception. In two of these the pregnancy ended in septic abortion, and in two the ring migrated out of the uterus, requiring abdominal operation.

It is possible that other such results have followed. This information may serve to curb some enthusiasm as to its efficiency and safety.

305 Medical Arts Building

Special Clinical Article

THYROTOXICOSIS

CLINICAL LECTURE AT KANSAS CITY SESSION

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May I preface my address by telling you how greatly I appreciate the honor and privilege of attending these Kansas City meetings of your Association. The subject on which I am speaking was suggested by those responsible for my name being on the program, but it would be ungracious of me to hold them responsible for what I say. And yet I do not think they need fear even if I did, because I have nothing of an iconoclastic nature to say. What intelligent person has in a field where exact knowledge is so meager? The temptation to exceed the facts, though great, must be resisted. I have no new facts to offer you, but if I can clear the air a little by a reminder of what we know, and what we only presume, that may be a contribution not altogether worthless and—or so I think—not untimely.

Take this word "thyrotoxicosis," for example. I am uncertain that it serves any very useful purpose. Anyway, unless it is taken in the most generic sense to connote all the toxic states in which there is a thyroid factor concerned—whether the thyroid is the sinner or is more sinned against than sinning, and whether the gland is disturbed only in a functional sense or is the seat of gross organic disease—only in this way should physicians tolerate its introduction into the nomenclature. The question arises whether if this principle is acknowledged, the word can really be justified. But it has arrived, and the best thing we can do is to watch it, and to see that it does not mesmerize us into the belief that its arrival has taught us a new fact or series of facts.

It would be an interesting digression to consider how the premature introduction of new words and phrases can obstruct, rather than help, the progress of medicine. But I must refrain, at least this morning. But I do not think it amiss to remind you that Thomas Hobbes, the father of English philosophy, warned us that "words are the counters of wise men but the monies of fools." In no study is it more imperative than in medicine that we should heed his warning.

The great objection to the word "thyrotoxicosis" is that it postulates a basic fact which has never been established. There is no indisputable evidence that exophthalmic goiter owes its evolution in the main, or

⁴ Wilder R M Snell A M Kepler E J Rynearson E H Adams M Kendall E C Control of Addison's Disease with a Diet Restricted in Potassium. A Clinical Study. Proc Staff Meet., Mayo Clin 11: 273 283 (April 29) 1936

¹ Cregan G T Brit M J 1: 237 (Feb 6) 1932

² Green-Armytage V B Brit M J 1: 13 (Jan 2) 1932

³ Murphy Margaret C Lancet 2: 1369 (Dec 16) 1933

Read in the General Scientific Meetings at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 12 1936

even in a lesser degree, to the circulation of disordered thyroid secretion. The same may be said of the symptoms variously classified under the terms "toxic goiter," "toxic adenoma." *Pace* certain textbooks whose authors or editors strive prematurely to substitute for non-committal names of diseases terms having precise pathologic connotation, the postulate that exophthalmic goiter is an expression of mere hyperthyroidism is even less authenticated, whether on clinical or on experimental grounds.

Until we find some method of measuring the amount of thyroid secretion poured out into the blood stream—and at present we possess no such method—we shall not solve the main problem facing us in this matter.

There are facts which suggest that the thyroid hyperplasia which is the characteristic change in the fully developed picture of exophthalmic goiter is not the primary, but a secondary, phenomenon. Certainly there is no quantitative relation between the degree of thyroid enlargement and the degree or the duration of the symptoms. The latter may be very severe and active in association with very little, or even with no thyroid enlargement, but again the symptoms may be mild and tending to quiescence in association with considerable hyperplasia. Nor is there any reason to believe that we have yet established any qualitative relation by which I mean that there is no evidence that the secretion from gland tissue that is merely hyperplastic diffusely fibrotic or the seat of adenomas differs from that which is elaborated by a healthy gland. Nor, again (to complete the series of morbid anatomic changes in the thyroid which appear to have associations with metabolic increase and/or with sympathomimetic manifestations), is there evidence that the cells of an adenoma themselves yield a pathologic secretion.

DEVELOPMENT OF THE DISEASE

In considering the pathogenesis of exophthalmic goiter the use of the term "thyrotoxicosis," as already noted, lands us at the very center of the problem. What is the *causa causans*? It remains hidden. As in so many other instances, nature has revealed the results of a disease process but jealously guards the secret of the exact mechanism by which these results are evolved. We see the picture on the screen quite plainly but the projector is hidden. That some poison is at work seems an irresistible conclusion. Especially suggestive in this connection are the crises often pyrexial which are so alarming a feature and prognostically so serious. They surely give us a dramatic presentation of an intense toxemia. There is no reason for believing them to be of microbic origin. Are they metabolic? Or are they due to the flooding of the circulation by some uncontrolled physiologic hormone? What part in the pathogenesis of the disease is taken by iodine metabolism?

The removal of a large part of the thyroid gland in a chronic and established case of the disease, resulting, as it often does in such a marked subsidence of the symptoms, suggests that the source of manufacture of the poison resides in the gland. But the actual proof of this hypothesis eludes us despite painstaking research. Moreover we must exercise great care in the argument at this point. Thyroidectomy may interrupt a vicious circle in the patient's interest and so do good in quite another fashion than by getting rid of the primary cause of the trouble. There are analogies bearing on this possibility: splenectomy in splenic anemia and the same operation in acholuric jaundice. It is feasible that the missing clue may be

found extrinsic to the thyroid. Indeed such a possibility is coming to be regarded as probable. But it may be found to be extrinsic to the involuntary nervous system also, though it certainly appears as if the latter organ bulks largely in, at any rate, the earlier stages of the disease. Biochemistry linked with histology may find the solution, for here is a field of discovery of enormous potential value, as we appreciate when we realize the unveiling by these methods of the reticulo-endothelial system, and its bearing on the mechanism of addisonian anemia.

Of the state of the thyroid gland itself, quite apart from the moot question of the exact relation which it bears to the syndrome in general I do not propose to deal in detail. The fact that so many different pathologic conditions may be present in association with the syndrome I am considering has induced some workers to discard the thyroid altogether as being even indirectly concerned in a causative sense. Yet the conclusion that the gland is intimately bound up with the pathogenesis of exophthalmic goiter seems, on clinical grounds, indisputable. But the factor of metabolic increase has by some been discarded also. Indeed, certain of the recent analyses of this baffling syndrome remind me not a little of the devastating and uneconomical criticism of the cynical friend who gradually reduced the fishmonger's caption "Fresh Fish Sold Here" to no caption at all by the elimination of unnecessary words. There was no need for the word "fresh," he said, for surely he wouldn't sell stale fish, no need for the word "here," since his shop wasn't anywhere else, no need for the word "sold," because he didn't give the fish away, and no need for the word "fish" for it could be smelled two streets off. The exophthalmos may be only a symptom, the thyroid gland may be secondarily and not primarily affected, the involuntary nervous system may be stimulated from without and not from within and the basal metabolic rate may be low rather than high. But the subtleties of too fine an analysis confuse, rather than clarify, our ideas seeing that the basic data are as yet so meager. The stubborn fact remains. Exophthalmic goiter exists for all to see. The syndrome repeats itself with increasing persistence and demands our attention. If we take our stand here we are on the sure ground of clinical medicine, and in my further remarks this is what I propose to do.

ETIOLOGIC FACTORS, SYMPTOMS AND COURSE

The known etiologic factors, the symptoms and the course of the disease call for a few remarks. That there is a diathesis in exophthalmic goiter is generally accepted. But whether the flaw resides in the involuntary nervous system or in the psyche or in the endocrine balance, or in some other as yet unrecognized tissue or function, or in more than one of these we do not know. Of the predisposing causes we know a little: sex, certain collateral familial conditions and an "autonomic imbalance." Of exciting causes there are the sex epochs, there are psychic traumas, and there is focal sepsis. Or is it merely fashion which leads us to speak of focal sepsis? For myself, I have been very disappointed in the search for focal sepsis in exophthalmic goiter, however thorough this search may have been. Associated endocrine defects are sometimes advanced as a contributory cause but the evidence is entirely unconvincing. Is this mere fashion again? Or is the suggestion due to a desire to give support to the hypothesis that exophthalmic goiter is itself an endocrine disorder? Of this however, there is as already remarked, no good evidence.

To the original three symptoms observed by Graves—the exophthalmos, the tachycardia and the goiter—Charcot added tremor. These constitute the cardinal features. Many others have been noted from time to time, among them various ocular changes, dermatoses, glycosuria, neuroses, psychoses, and manifestations of sympathetic instability such as flushing, sweating and diarrhea. Loss of weight is very common, though, as in diabetes, which is one of the familial associations, the patient may be fat rather than lean. Lesser degrees of the disease are recognizable, and, given favorable conditions, these quite frequently abort.

An attempt has been made by some to segregate cases which present some of, or even all, the symptoms of exophthalmic goiter but which show no increase in the basal metabolic rate—a striking feature in the great majority of the established cases. It is proposed to use the term “autonomic imbalance” for these cases in which the basal metabolic rate is not raised. How far this segregation is justified, and what proportion of these cases pass on to what these observers would call true exophthalmic goiter, we do not yet know. Granted that the basal metabolic rate, as a measure of metabolic activity, is of fundamental importance, too much weight must not be attached to this criterion. The basal metabolic rate is raised in some conditions which are not, and do not tend to become, exophthalmic goiter. On the other hand, some cases of exophthalmic goiter, if we use the clinical standard occur with a normal, or even lowered, basal metabolic rate.

As regards the course of the disease, in the majority of cases the onset and the early stages are insidious. In a few cases the origin seems to be acute or even abrupt, but here, as in some other diseases, such as diabetes and disseminate sclerosis, it is usually possible to trace a latent stage of the disease before the exacerbation arrives. When fully developed, and even when the patient is very ill indeed, the disease may subside completely and with no recognizable residues—a very striking experience. Or the established picture may remain long enough to render organic residues permanent, even though quiescence arrives. But, unfortunately, in a large proportion of the established cases the fire even if it dies down somewhat, continues to smolder. The patient becomes a chronic invalid, with at first functional and intermittent, and, later, organic and permanent heart damage. In still other cases the fire, instead of dying out or dying down, blazes and the patient succumbs to an intense and overwhelming toxæmia, the so-called thyroid crisis.

DIAGNOSIS

The diagnosis of exophthalmic goiter may be very easy or it may be very difficult. The difficulty lies in a recognition of the early and the incomplete pictures. It is these which call for clinical acumen, and it is these which reward the observer so abundantly if he discovers them. The secret if secret there be, lies in bearing the disease in mind when one is faced with an obscure case having nervous or metabolic features. Training in the observation of facies and behavior is of paramount importance. Whenever these deviate from the average we should not rest until we have a positive, not merely a negative, explanation. The formula ‘I failed to elicit any signs of organic disease’ and the supposed comfort to be derived from it have hidden many an early case of exophthalmic goiter and will continue to do so for years to come. In these days we tend to fall upon a patient too early after our first contact with him so anxious are we to pass him through

the mill of our routine examination of his various organs. Exophthalmic goiter in its early stages is a disease of the patient and not of her organs. So let us give ourselves time ‘to stand and stare’ as the poet has it. We shall then have a chance of observing if the patient is staring, and why. Be it observed that the “stare” is not merely, or perhaps not at all, a matter of exophthalmos: there are the enlarged palpebral fissures, the infrequency of blinking, the dilated pupils and the immobile forehead. But there is also the manner of entering the room, the hot hand, quickly given and quickly withdrawn, the restlessness, the rapidity of movement, the lack of poise, the excess of gesture, the record short time spent in undressing and in dressing, the moist skin, and the flush on the neck and chest.

Unexplained loss of weight, especially in men who are past middle age, should always raise the question of exophthalmic goiter. So also should certain changes in the patient's conduct, whether noticed by others or—and this sometimes happens in highly conscientious and self-critical women—by the patient herself: unwonted lack of control, irascibility, excessive show of the emotions, and the quick expenditure of an unaccustomed store of nervous energy without apparent fatigue.

TREATMENT

In considering the treatment of exophthalmic goiter the physician must concern himself with prevention whenever the diathesis is recognized: a thankless task, for, as a philosopher has truly observed, it is not to be expected that human beings will accept advice when they will not accept warning. And the fact that the potential victim of the disease is more often a woman than a man lessens the chance of much being accomplished in this direction.

The picture of the slighter manifestations of the sympathomimetic part of the syndrome—to use Dale and Barger's term—too often escapes detection, as already remarked. Yet if these “larval” types, or “formes frustes,” are noted, the physician has a better chance than if committal symptoms have declared themselves. Even so, his efforts seldom carry conviction. To some his suggestions savor too much of washing in Jordan, to others they constitute an intolerable interference with that round of excitement which entails so much psychologic and nervous stress for many young people. The doctor is often accused of wanting to make his patient a cabbage. Yet for those who accept his control and cooperate with him there is undoubtedly a good promise of stabilization. The chief difficulty, next to the temperament of the patient, lies in securing the necessary relief for those who are forced by their economic position to earn their daily bread by jobs which make excessive demands on their nervous system. Whenever possible—and this applies to all classes—the question of the patient's occupation should be carefully considered. Though it is not necessary that the patient should become a cabbage in order to attain physiologic salvation, it may help him very materially to grow cabbages, or something equally useful. The more rustic the type of routine, the better, it is no mere shibboleth that leads the doctor to preach the doctrine of “the simple life” to these patients.

If the symptoms persist in spite of controlling the patient's routine of life, and in all cases in which the full syndrome has developed, the degree of physiologic and psychic rest should be absolute and should be continued for at least three months. Bed is the only place where such rest can be guaranteed. A good deal of time can be wasted over compromises for the adoption

of which most patients seek to win their doctor's sanction. To yield or not to yield is the test of the latter's experience of the disease. To secure rest of the mind, a heart-to-heart talk of an entirely confidential nature is imperative, and it is best to assume the existence of some emotional hold-up, since this is so frequently present. The patient should be given confidence in her ability to get well, though the need for patience should not be concealed. It is better to discount anything by way of a royal road from the first.

If focal sepsis is present, this should be eliminated as far as possible. Efforts at specific therapy based on the hypothesis of the thyroid dysfunction, whether by the use of serum from thyroidectomized animals or from animals inoculated with excess of thyroid secretion, have failed in the hands of most observers. There is no specific drug, though there are drugs that help iodine certainly, and in all cases in which the thyroid is involved (but surely there is room for more research into the best methods of exploiting this drug to its best advantage), belladonna (introduced by Trousseau) in some, the bromides in others. Of quinine hydrobromide, which has had a vogue, I cannot myself give any good account. Digitalis appears to be unhelpful apart from cardiac dilatation.

There remains the important question of partial thyroidectomy, a form of treatment which has so far justified itself of late years that debate on the main issue seems unnecessary. In what cases, therefore, and especially how, it behoves us very carefully to consider. Suffice it to say that in my own experience the operation should be undertaken whenever the disease remains active after six months of carefully supervised medical treatment, and also in cases which relapse in spite of the patient's routine of life being adequately controlled. I agree, too, that the operation is indicated in all cases in which auricular fibrillation has developed, and that it is indicated still more absolutely when signs of congestive heart failure are present, whether the cardiac rhythm be so affected or not. To delay when any of these three criteria have arrived is to lose valuable time and to lessen the benefit which may otherwise be expected. I do not propose to consider the technic. But no doubt we should all desire that the procedure be as bloodless as possible, that every patient be allowed the benefit of her parathyroids, that the recurrent laryngeal nerves be left intact, and that as few cases of myxedema be created as may be.

As for the question of an immediate mortality, the difference between a patient being only chronically ill one day and very dead the next is so tragic and so striking—an experience that was not very uncommon until a few years ago—that it is a relief to know that this difference can be eliminated by careful preparation for the operation by skilled technic in its performance and by a form of anesthesia which is competently chosen and as competently administered.

It is not without significance that the most striking results of thyroidectomy are seen in those cases which are advanced and in which the vicious circle is complete. Always provided the load of the procedure is not more than the patient can carry. One conclusion that may be derived from this fact and the general results of the procedure is that if you want to do the operation of subtotal thyroidectomy in exophthalmic goiter, a disservice you will do it too early.

We must consider whether the known benefits seen after ablation of the thyroid in some cases of congestive heart failure throw light on the rationale of

subtotal thyroidectomy in exophthalmic goiter. We must not omit to remember, in this connection, the fact that surgeons tend to remove more and more of the gland, whether in one or two stages, and that some of them attribute to this change in stratagem and in the tactics involved the better results seen today as compared with those seen formerly. That I discuss the question of surgical treatment even as much as I do is because I believe that if we can properly assess the criteria and the responses connected with this important procedure, we shall make a valuable contribution to the elucidation of what is at present a great mystery—the pathogenesis of exophthalmic goiter.

I understand that those who have studied most fully the results of total thyroidectomy in congestive heart failure have quite recently come to the conclusion that, despite the striking immediate effect on the decompensation and on associated anginous symptoms, the procedure is, in the majority of cases, scarcely worth the patient's while. But the adventure may be said at least to have taught us something, and this is, after all, a not uncommon result in surgical adventures—medicine gains more than the patient. Just as it takes all sorts of people to make up a world, so it takes all sorts of experimental measures, those that are retained as serviceable, as well as those that are discarded ultimately to make up a system of effective therapy in obscure disease processes.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS FORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

KEPHRINE HYDROCHLORIDE—Methylaminoacetate catechol hydrochloride— α -keto β methylamine-ortho para dihydroxyethyl-benzene hydrochloride— $(\text{OH})_2 \cdot \text{C}_6\text{H}_3 \cdot \text{COCH}_2 \cdot \text{NH}(\text{CH}_3) \cdot \text{HCl}$. Kephrene hydrochloride is the monohydrochloride of a base resembling epinephrine (lacro-methylaminoethanol catechol) but differs in that kephrene possesses a ketone group in place of the secondary alcohol group of epinephrine.

Actions and Uses—Kephrene hydrochloride acts by constriction of the blood vessels. In comparison with epinephrine its action is less powerful, but the effects are more lasting. Kephrene hydrochloride is used only locally and will, as a rule, arrest capillary bleeding within two or three minutes. The hemostatic effects usually persist from one to two hours. As there is no appreciable absorption of kephrene hydrochloride into the blood stream, it does not have any noticeable effect on the blood pressure. Kephrene hydrochloride is not destroyed by blood alkali.

Dosage—Kephrene hydrochloride is marketed in the form of powder and suppositories, bandages and gauze impregnated with kephrene hydrochloride are also supplied. The selection of a suitable dosage form is governed by the anatomic or pathologic characteristics of the individual case.

Manufactured by Pharmazeutische Industrie A. G. Vienna, Austria (Campbell Products Inc., New York, distributor). No U. S. patent or trademark.

Kephrene Hydrochloride Powder—Kephrene hydrochloride 5 parts and tricalcium phosphate 95 parts.

Kephrene Hydrochloride Rectal Suppositories—Kephrene hydrochloride 3 parts, extract of belladonna 1 part in 96 parts of a suppository base.

Kephrene Hydrochloride Bandage—Bandages 5 meters long and 1, 1.5 and 8 centimeters wide, impregnated with kephrene hydrochloride 1 Gm. per 3,000 square centimeters.

Kephrene Hydrochloride Gauze—Gauze impregnated with kephrene hydrochloride 1 Gm. per 3,000 square centimeters.

Kephrene hydrochloride occurs as a white, odorless powder, freely soluble in water, soluble in alcohol, insoluble in ether. Its aqueous solution is neutral to litmus. Kephrene hydrochloride melts with decomposition at 238 to 240°C. It is soluble in 0.5 Gm. of kephrene hydrochloride in 25 cc. of water and a very light excess of ammonia water or 1 cc. of

resultant methylaminoacetatechol on a filter paper, wash and dry at 100 C a yellow crystalline powder results which on heating deepens in color at 200 C and melts with decomposition at 230 C the filtrate from the foregoing gives a white precipitate with silver nitrate solution insoluble in boiling nitric acid but soluble in an excess of ammonia water

Dissolve about 0.02 Gm of kephrine hydrochloride in 20 cc of water, separate portions of 2 cc yield a canary yellow color with 1 cc of ammonium molybdate solution which is not discharged on subsequent addition of 0.3 cc of dekanormal sodium hydroxide solution (distinction from epinephrine), a bluish purple color with 0.2 cc of a 1:100 sodium nitroprusside solution, 1 cc of sodium hydroxide solution and 0.2 cc of glacial acetic acid (distinction from salts of ephedrine, neosynephrine and tyramine). Boil about 0.01 Gm of kephrine hydrochloride with 2 cc of alcoholic potassium hydroxide solution and 3 drops of chloroform no odor of phenylisocyanide is evolved (primary amines). To about 0.1 Gm of kephrine hydrochloride to 5 cc of water add 1 cc diluted hydrochloric acid and 1 cc. of barium chloride solution no turbidity develops (sulfate).

Dry about 0.5 Gm of kephrine hydrochloride accurately weighed to constant weight at 100 C, the loss does not exceed 7 per cent. Incinerate about 0.5 Gm of kephrine hydrochloride accurately weighed the residue is not more than 0.1 per cent. Transfer about 0.25 Gm. of kephrine hydrochloride accurately weighed to a 500 cc Kjeldahl flask and determine the nitrogen content according to the method described in Methods of Analysis of the Association of Official Agricultural Chemists third edition, page 20 art. 22 the amount of nitrogen is not less than 6.35 per cent nor more than 6.5 per cent when calculated to the dried substance. Transfer about 0.3 Gm. of kephrine hydrochloride accurately weighed, to a suitable Erlenmeyer flask, add 100 cc of water, previously boiled to remove carbon dioxide and titrate with tenth normal sodium hydroxide solution using phenolphthalein as an indicator the amount of hydrogen chloride found corresponds to not less than 16.5 per cent nor more than 17 per cent, calculated to the dried substance. Transfer about 0.3 Gm. of kephrine hydrochloride accurately weighed to a suitable glass stoppered Erlenmeyer flask, dissolve in about 20 cc of water neutralize with a diluted ammonium hydroxide solution, adding a very slight excess place the flask and contents in a refrigerator at 5 C, and allow to stand for eighteen hours. Collect the precipitate on a tared Gooch crucible wash with cold water followed by cold alcohol and ether, dry to constant weight at 100 C. the percentage of methylaminoacetatechol obtained corresponds to not less than 83 per cent, nor more than 86 per cent calculated to the dried substance.

KINNEY'S COD LIVER OIL CONCENTRATE LIQUID—A concentrate of the unsaponifiable fraction of cod liver oil dissolved in sufficient cod liver oil to give the desired potency to the marketed product. It has a vitamin A potency of not less than 60,000 units (U S P) per gram and a vitamin D potency of not less than 8,500 units (U S P) per gram

Actions and Uses—It possesses the therapeutic properties attributed to the vitamins present in cod liver oil

Dosage—For the Liquid Infants, from six to eight drops daily, children, two to four drops three times daily adults, four drops three times daily. The liquid is marketed with a dropper designed to supply $\frac{2}{3}$ minim (0.041 cc.) in each two drops. For the Capsules Children, one capsule daily, adults, one to two capsules daily

Manufactured by the Health Products Corporation, Newark N J (Scientific Sugars Co. Indianapolis distributor) U S patent 1984 858

Kinney's Cod Liver Oil Concentrate Capsules 3 minims—Each capsule contains Kinney's Cod Liver Oil Concentrate Liquid, 3 minims and has a vitamin A potency of not less than 10,000 units (U S P) and a vitamin D potency of not less than 1,450 units (U S P)

Kinney's Cod Liver Oil Concentrate Liquid, Vials 5 cc—Each $\frac{2}{3}$ minim (0.038 Gm) has a vitamin A potency of not less than 2,280 units (U S P) and a vitamin D potency of not less than 320 units (U S P)

DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1935, p 408)

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

Diphtheria Toxin for Schick Test Diluted Ready for Use Mulford—A diphtheria toxin diluted with a sodium chloride-borax-boric acid buffer solution containing 0.1 per cent of Witte's peptone, so that 0.1 cc contains a Schick test dose ($\frac{1}{50}$ minimum lethal dose). The minimum lethal dose is determined by injection of graduated doses into a series of 250 Gm guinea pigs. Marketed in 1 cc vials containing sufficient material for ten tests in 5 cc vials containing sufficient material for fifty tests and in 10 cc vials containing sufficient material for one hundred tests. For the control test a diluted diphtheria toxin inactivated by heat is supplied in 5 cc vials representing sufficient material for fifty control tests.

INSULIN (See New and Nonofficial Remedies, 1935, p 227)

Insulin-Mulford (See New and Nonofficial Remedies, 1935, p 231)

The following dosage form has been accepted

Insulin Mulford 100 units 10 cc Each cubic centimeter contains 100 units

ALLERGENIC EXTRACTS-LEDERLE (See New and Nonofficial Remedies, 1935, p 28, THE JOURNAL, July 11, 1936, p 130)

The following additional product has been accepted

Alfalfa Allergenic Extract Lederle

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. FRANKLIN C BING, Secretary



LIBBY'S BRAND CALIFORNIA ORANGE JUICE

Manufacturer—Libby, McNeill & Libby, Chicago

Description—Canned California orange juice retaining in high degree the original vitamin C content

Manufacture—Tree-ripened Valencia oranges are sorted, scrubbed with water, halved and the juice and pulp mechanically burred out. The juice is vacuumized, filled into cans which are closed under vacuum, processed in agitated cookers and immediately cooled. The entire process requires only a few minutes

Analysis (submitted by manufacturer) —

| | per cent |
|--|----------|
| Moisture | 87.4 |
| Total solids | 12.6 |
| Ash | 0.4 |
| Fat (ether extract) | 0.1 |
| Protein (N \times 6.25) | 1.1 |
| Total sugars as invert sugar | 9.7 |
| Crude fiber | trace |
| Carbohydrates other than crude fiber (by difference) | 10.0 |
| Total acidity as citric acid | 1.0 |
| pH | 3.7 |
| Sodium (Na) | 0.05 |
| Potassium (K) | 0.18 |
| Calcium (Ca) | 0.01 |
| Magnesium (Mg) | 0.01 |
| Iron (Fe) | 0.0008 |
| Phosphorus (P) | 0.02 |
| Sulfur (S) | 0.01 |
| Chlorine (Cl) | 0.004 |

Calories—0.5 per gram 14 per ounce

Vitamins—Chemical titration shows an average cevitic acid (ascorbic acid) content of 0.6 mg per cubic centimeter, 174 mg per fluidounce, as compared to 0.7 mg per cubic centimeter for fresh juice, showing practically no reduction of vitamin C in canning

Claims of Manufacturer—This orange juice is practically equivalent to fresh juice in nutritive value. For all dietary and table uses

ARIZ-SWEET BRAND GRAPEFRUIT JUICE (SUGAR ADDED)

Manufacturer—Ariz-Sweet Grapefruit Growers, Ltd, Peoria, Ariz

Description—Canned Arizona grapefruit juice, with added sucrose, retaining in high degree the original vitamin C content

Manufacture—Same as Ariz-Sweet Brand Grapefruit Juice, (THE JOURNAL, April 25, 1936, p 1474), except that a small amount of sugar is added.

Analysis (submitted by manufacturer) —

| | per cent |
|--|----------|
| Moisture | 86.5 |
| Total solids | 13.5 |
| Ash | 0.4 |
| Fat (ether extract) | trace |
| Protein (N \times 6.25) | 0.6 |
| Crude fiber | 0.1 |
| Reducing sugars as invert sugar | 7.8 |
| Sucrose | 2.7 |
| Carbohydrates other than crude fiber (by difference) | 11.2 |
| Acidity as citric acid | 1.2 |

Calories—0.5 per gram 14 per ounce

Vitamins—Same as Ariz-Sweet Brand Grapefruit Juice (THE JOURNAL, April 25, 1936, p 1474)

Claims of Manufacturer—Intended for all dietary and table uses of grapefruit juices. Practically equivalent to fresh juice in vitamin C

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 25, 1936

A CLINICAL STUDY OF ABORTION

A steady increase in admissions of abortions in some hospitals in England has occurred during the last ten years. Indeed, about 2 per cent of the total admissions in the general hospitals of the London County Council are cases of abortion. The deaths attributed to abortion in England and Wales in 1933 amounted to 24.2 per cent of the total deaths from puerperal sepsis.

In his recent review of 1,000 cases of abortion, Parish¹ found that 203 of the women had no living children and 173 were pregnant for the first time, 207 of these women had one living child and only 136 had six or more children. Admittedly, 485 of the women had induced abortion by one means or another, varying from the employment of an abortionist to the use of slippery elm bark. Most of the deaths that occurred in the entire series were in this group. In another group, of 246 cases, abortion was the result of various diseases or conditions, the most common, in order, being uterine displacement, accidents, pulmonary diseases, pelvic diseases, lacerated cervix and renal diseases. There was no intervention in this group, and there were no deaths. Of the 1,000 cases under review, infection was present in 48.3 per cent on admission to the hospital.

For the group of 151 cases of threatened abortion, the plan of treatment was to place the patients completely at rest, giving 0.016 Gm (one-fourth grain) of morphine if pains were present, and to defer pelvic examination if the diagnosis was clear. With this treatment 57 per cent of the patients with threatened abortion were discharged still pregnant. For the 148 cases of inevitable abortion, no treatment other than ergot was given unless there was a special indication. If the abortion was not progressing, an enema was given followed by three injections of 0.5 cc. of solution of posterior pituitary every two hours. When this treatment failed to complete the abortion the uterus was evacuated. In 72.9 per cent of the cases of inevitable abortion, completion occurred spontaneously or with

the assistance of drugs. Of 481 cases of incomplete abortion, infection was present on admission in 52 per cent. Expectant treatment was followed until the fever subsided, unless hemorrhage necessitated more active measures. Five days was found to be a satisfactory period to allow between the subsidence of fever and evacuation of the uterus. When the temperature, however, failed to return to normal in a week, the retained products were removed from the uterus with as little trauma as possible. If it was necessary to dilate, great care was taken not to split the cervix, to avoid any pathway for the entry of micro-organisms into the parametrium. If the uterus could not then be evacuated digitally, a blunt curet was used only to explore the uterus. When drawn gently over the uterine surface, if an obstruction was located, a slightly firmer pressure was made to remove it, but curettage was not performed. The uterus was flushed with a mild antiseptic solution, when retained products ceased to come away with the flushings, the curet was abandoned.

Four hundred and sixty-one cases required operative intervention to evacuate the uterus completely, and 72 per cent of these later showed some rise in temperature, while in only 17 per cent of the spontaneously completed abortions was there any exacerbation of infection. Active infection was present in more than half of the cases of complete abortion on admission to the hospital, if the temperature did not fall with bed rest in such cases, treatment by means of intra uterine injections of glycerin was undertaken. All but one of the eighteen patients who died was infected at the time of admission, in the one fatal case, septicemia became apparent six days after curettage for subinvolution.

The mortality rate for the entire series of 1,000 abortions was 1.8 per cent. Mortality from abortion is due chiefly to sepsis following illegal interference with pregnancy, it is therefore preventable.

SOME FAILURES OF SURGICAL TREATMENT IN GASTRODUODENAL ULCERS

The operation of partial gastric resection has won for itself a place of major importance in the treatment of gastroduodenal ulcers. In the removal of the ulcer-bearing area, enthusiasts on behalf of resection thought they had found a happy solution of the therapeutic problem of peptic ulcer. Careful statistical studies of a later period were able to bear out this contention only in part. The occurrence in a not too negligible percentage of cases of grave postoperative complications, recurrences and failure to cure the patient of his disease or to relieve him of his symptoms suggests that interference with normal physiologic relationships of the motor and secretory functions of the stomach and duodenum are not always in themselves innocuous.

Operative measures for the cure of gastroduodenal ulcer aim at the reduction of the gastric secretion and the removal of motor or mechanical hindrance to the

¹ Parish, T. N. A Therapeutic Study of Abortion. J. O. & Graces. Feb. 1935. 42: 116 (Dec.) 1935.

emptying of the stomach contents Gastro-enterostomy introduces a new factor into the evacuating mechanism of the stomach, that of hydrostatic pressure The normal peristaltic evacuating force becomes predominant in a gastro-enterostomized stomach toward the completion of the emptying process The greater portion of the stomach contents is still conducted along the pyloroduodenal route except where cicatricial stenosis or a special operative procedure prevents its passage The motility of the stomach after a gastro-enterostomy is completely dominated by the factor of hydrostatic pressure The emptying will depend principally on the size of the anastomotic stoma There frequently results a "dumping" stomach The development of a sort of a new pyloric ring and bulb with active retention of stomach contents takes place not uncommonly after the first operation of Billroth With the introduction of roentgenologic study of the relief of the gastric mucosa and its direct inspection by the gastroscope, it was established that most operative procedures on the stomach, and in particular gastro-enterostomy, are followed by a diffuse inflammation of the mucosa The gastric rugae in roentgenologic studies of the mucosal relief appear enlarged, particularly near the stoma, giving rise at times to a difficulty in differentiating this condition from carcinoma The gastroscope reveals swelling and redness of the mucosa The inflammation may develop into atrophic gastritis, with consequent lowering of the acid secretion and cure of the ulcer It may, however, persist as an acid gastritis with high acid secretion, in which case it is likely to lead to a recurrence of the original ulcer or to formation of a peptic marginal jejunal ulcer The finely balanced relationship between the gastric motility and the gastric secretion is no longer operative after a surgical intervention While the stomach rapidly empties itself, the secretion of the gastric juice continues and now acts on the empty stomach The condition is analogous to the experiment in which high gastric acidity in starved animals is maintained by histamine injections or by sham feedings with the aid of an esophageal fistula The combination leads in both human beings and experimental animals to ulcer formation

Even partial gastric resection fails to lower the gastric secretion to the degree heretofore believed The glands of the pyloric region secrete an alkaline juice, while those of the corpus portion secrete hydrochloric acid and the ferments The regulation of the acidity, however, is localized in the pyloric zone Here humoral influences arise which are conveyed by the blood stream to the glands of the corpus Thus it is believed that the generally favorable results of the first and second operations of Billroth and their modifications are to be accounted for not so much by the removal of the ulcer-bearing area as by the loss of the acid-stimulating area The effect is further promoted by the diminution in size of that portion of the stomach which secretes hydrochloric acid and the ferments The simple experiment

of histamine injection demonstrates that the stomach after a partial resection is still capable of secreting acid juice

Disturbances in motility and secretion attendant on operative intervention may lead to complications consisting of vomiting and acute dilatation of the stomach Unless rapidly relieved, hypochloremic coma and death will supervene Late complications may arise as the result of motor disturbances, such as the already mentioned "dumping" stomach, stenosis of the new stoma, compression of the efferent loop of jejunum by the distended afferent loop and adhesions causing strangulation Probably the most frequent complication is inflammation of the mucosa of the stomach, the duodenum and the first coil of jejunum It has been most frequently observed following gastro-enterostomy, less often after the second Billroth operation and least often after the first Among the more serious and disappointing late complications, recurrence of the ulcer and formation of a marginal jejunal ulcer must be mentioned Because of its greater tendency to bleed, to perforate into the free peritoneal cavity, to grow callous and to resist treatment, jejunal ulcer has come to be considered a more formidable condition than the original disease Penetration of a jejunal ulcer into the transverse colon with the formation of gastro-jejunocolic fistula is manifested by true fecal vomiting and diarrheal stools with undigested contents The prognosis is utterly bad unless relieved by the difficult operation of partial resection of the stomach, the involved segment of the jejunum and of the transverse colon and the reconstruction of the continuity of the gastro-intestinal tract Digestive disturbances develop from such causes as artificially produced achylia, loss of the influence of the duodenal secretions, and the too rapid passage of the gastric contents into the intestinal canal Loss of the duodenal reflex may lead to gall-bladder stasis and cholelithiasis The effect of the removal of a considerable portion of the stomach on the organism as a whole manifests itself at times by the development of secondary anemias of hypochromic type and rarely by hyperchromic anemia of the pernicious type

Constitution undoubtedly plays an important part in the tendency to recurrence of ulcer According to von Bergmann, persons with "vegetative stigmas" are particularly vulnerable The milder types of digestive complications can be successfully treated by rest, diet and internal therapy The more stubborn cases, particularly those following a gastro-enterostomy, are best treated by a partial resection One, however, must not forget that there are cases, fortunately few, in which a second and even a third resection is followed by the recurrence of symptoms and new ulcer formation

In explanation of these "surgically incurable" cases, Kalk¹ advances the theory of an anatomic peculiarity,

¹ Kalk, Heinz Das Erfolgrlos operierte Geschwur des Magens und Zwolfingerdarmes *Chirurg* 8 May 15 1936

namely, an unusually long zone of pyloric glands, such as exists in moles and guinea-pigs. But most observers blame the constitution and the ulcer "diathesis."

Consideration of postoperative complications is in no sense a condemnation of the surgical treatment, which has come to be recognized by the internist as well as by the surgeon as a valuable and in many cases the more successful method of treating gastroduodenal ulcer. It should, however, make the indication for operative intervention, as well as the choice of the operation, a matter of careful individual study in each case.

Current Comment

LEAD IN HUMAN BONES

Much has been written¹ of the ways by which lead may enter the body, its relatively transitory occupation of soft tissue areas, and its final storage in the skeleton, to which, after only a few days, a large part of the absorbed unexcreted lead gradually migrates. The lace-like trabecular structure has been credited as the special bony tissue which holds lead and may release it under the influence of certain biochemical conditions induced within the living organism through medication or by certain pathologic states. The mean daily intake of lead derived from ordinary food may reach 0.25 mg., an amount, however, no greater than that readily excreted by the body, hence, after a "substantial constant concentration of lead" in the tissues has been reached, a further accumulation is normally avoided.² Apparently it may take many years to arrive at such a steady state between intake and output. Human fetuses have been reported³ to contain small but definite amounts of this metal, and there are indications⁴ of a progressive increase in the lead content of human bones from infancy to old age without histories of specific exposure to lead. A similar chronological increase in the lead content of teeth apparently also occurs under seemingly normal conditions.⁴ Reports of many investigators indicate a wide but uneven distribution of lead in soft tissues. Likewise in bony structures Tompsett⁵ recently furnished confirmatory and extended evidence that, without specific exposure to lead, different bones contained unlike quantities. He found that the shafts of the femur and tibia housed larger amounts of this metal than either ribs or vertebrae. The probability of an extensive but unequal distribution of lead in tissues, especially skeletal and the so-called normal level varying with age, suggests the complexity of the problem of interpreting the presence in human bodies of lead occurring in even relatively large amounts. Tompsett has suggested that in cases of suspected lead poisoning, different bones should be examined. For significant

interpretation of even such extended data, however, one would need to compare such results with values obtained for the same bones belonging to the same age groups obtained from bodies of persons who had suffered no known exposure to lead during their lifetime.

DETECTION OF OCCULT BLOOD IN THE STOOL

Small hemorrhages in the gastro-intestinal tract may escape recognition by the usual tests for blood in the stool but can be detected with a high degree of exactitude by the spectroscope. The studies of Häcker,¹ Haurowitz,² Boas³ and other coprohematologists show that ingested blood is eliminated chiefly as hematin, which is an iron-containing nonprotein decomposition product of hemoglobin. The usual elimination curve, according to Häcker, reveals a rapid excretion of hematin within the first twenty-four hours. The peak of elimination of kopratin (reduced hemin) is reached in from two to three days, while that of the porphyrin bodies is delayed to the third or fourth day. Attention is directed to one of these porphyrin bodies, kopratoporphyrin or deuteroporphyrin, for its presence has been found by some of these investigators to be helpful in the diagnosis of minute hemorrhage originating from carcinomatous or other ulcerative processes in the gastro-intestinal tract when the stool specimens are negative for hematin. Routine tests for kopratoporphyrin were obtained in three out of five cases of gastric carcinoma studied by Häcker, while the test was positive in only one of his forty-one cases of gastric ulcer. The term porphyrin literally means a purplish red pigment (Greek porphyra, purple). Chemically, it is iron-free hemin. The porphyrins are basic constituents of pigments such as chlorophyll, bile pigments, muscle pigments and cytochrome as well as hemoglobin and are important not alone in the respiration of animals and plants but also in the synthesis of sugar from carbon dioxide and water. As illustrated by the synthetic studies of H. Fischer,⁴ the porphyrins are substituted products derived from porphin. Porphin, the fundamental nucleus common to hemoglobin, chlorophyll and other derivatives, consists of four linked pyrrole nuclei. Koproporphyrin occurs normally in the feces and urine, and uroporphyrin is found in the urine in porphyrinuria. All the porphyrins display four absorption bands in alkaline solution, but the spectrographic appearance is distinct for each porphyrin. The complex methods employed in the isolation of kopratoporphyrin discourage extensive use of the kopratoporphyrin test. An immunologic method for the detection of human blood in the stool would be ideal, but the facts that hematin is not endowed with antigenic properties and that globin, which may perhaps give rise to a specific antibody response, is decomposed in the intestinal tract precludes such a test for the present at least.

1 Aub J. C. Lead Poisoning. *Medicine* 4: 1 (Feb-May) 1925. The Biochemical Behavior of Lead in the Body. *J. A. M. A.* 104: 87 (Jan. 12) 1935.

2 Kehoe R. A., Tharmann Frederick, and Cholak Jacob. Normal Absorption and Excretion of Lead. *J. A. M. A.* 104: 90 (Jan. 12) 1935. Tennant S. L. and Anderson A. B. The Lead Content of Human Tissues and Excreta. *Biochem. J.* 29: 1851-1935.

3 Barth E. Ingestion of the Lead Content of Human Bones. *Virchows Arch. f. path. Anat.* 281: 146-1931.

4 Pfeiffer F. Normal and Pathologic Lead Content of Teeth in Man and Animal. *Arch. f. Hyg.* 111: 212 (Jan.) 1934.

5 Tompsett S. L. The Distribution of Lead in Human Bones. *Biochem. J.* 30: 345-1936.

1 Häcker W. Leber den Nachweis okkulten Blutungen des Magen-Darmkanals mit besonderer Berücksichtigung des Auftretens von Kopratoporphyrin und Hämoglobin. *Arch. f. Verdauungskr.* 58: 268 (Dec.) 1935.

2 Haurowitz F. Konstitution und biologische Eigenschaften des Blutfarbstoffes und seiner Derivate. *Klin. Wchnschr.* 13: 321 (March 3) 1934.

3 Boas I. Das okkulte Hämoglobin in den Faeces sein Nachweis und sein klinische Bedeutung. *Deutsche med. Wchnschr.* 57: 1271 (July 24) 1931.

4 Fischer H. Oppenheimer's Handbuch der Biochemie 1924. A III: 72-104.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Nurse Anesthetist Lawful When Under Medical Supervision—The Supreme Court of California has sustained the judgment of the court below that refused to enjoin a nurse employed by a hospital from administering general anesthetics in connection with surgical operations. The surgeon, said the court, has the power, and therefore the duty, to direct the nurse and her actions during the operation. Nurses, during the preparation for and progress of an operation, are neither diagnosing nor prescribing within the meaning of the medical practice act, it is the legally established rule that they are but carrying out the orders of the physicians, to whose authority they are subject.

CONNECTICUT

Results of New Marriage Law—Since January 1 it has been compulsory for couples desiring a license to marry to have a blood test for syphilis. Up to July 6, according to the state health department, about one blood test out of every 100 made at the state department of health laboratories had been reported distinctly positive for syphilis.

Personal—Drs John T Winters and Francis L Lundborg were appointed police surgeons of West Hartford, June 1, succeeding Dr Frederick E Kunkel resigned.—Dr Francis G Blake, Sterling professor of medicine, Yale University School of Medicine, New Haven, was awarded an honorary degree of doctor of science by Dartmouth College, Hanover, N H, June 14.

Society News—Dr William Dameshek, Boston, read a paper before the Bridgeport Medical Association in Bridgeport, June 2, on "Recent Advances in Hematology."—The Connecticut Association of Public Health and Clinical Laboratories was recently addressed by Drs Alfred L Burgdorf, Hartford, who discussed the state marriage license law, and Elliott S A Robinson, Boston, "Immunologic Application of Placental Extracts."—The Connecticut Society for Mental Hygiene held its twenty-eighth annual dinner meeting in Greenwich, May 22. Speakers included Dr Charles C Burlingame, Hartford whose paper was entitled "When Clifford Beers Began and Now", Dr Clements C Fry, New Haven, "The Anatomy of Personality," and Charles-Edward A Winslow, Dr PH, New Haven, who was toastmaster. Officers include Dr Winslow, president, and Dr Burlingame, vice president.

ILLINOIS

Poliomyelitis and Typhoid—Eight new cases of poliomyelitis were reported for the week ended July 14, making the total throughout the state for this week the highest recorded up to this date in any one week since 1932, newspapers reported. It was stated that three cases were reported from Cook County, two from Winnebago, and one each from De Witt, Kane and Macon counties. Typhoid, with twelve new cases during the same week, reached a new weekly high for the year.

Health at Peoria—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended July 11, indicate that the highest mortality rate (27.5) appears for Peoria and that the rate for the group of cities as a whole is 11.9. The mortality rate for Peoria for the corresponding period last year was 11.4 and for the group of cities 10.7. The annual rate for eighty-six cities for the twenty-eight weeks of 1936 was 12.8 as against a rate of 12.1 for the corresponding period of last year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Chicago

Births Must Be Reported Within Ten Days—Physicians are asked to recognize the significance of reporting the births of infants to the board of health in compliance with an Illinois statute making it mandatory that all births be reported

within ten days after they occur. Recently it was found necessary to bring suit against some physicians who failed to report births on time. The board is reluctant to initiate such proceedings. The reporting of births is, however, a civic duty.

Chicago Leads in Traffic Fatalities—Chicago reported more automobile traffic deaths for the first five months of 1936 than any other city in the country, according to a report of the National Safety Council. Seventy-nine deaths were recorded during May as compared with forty-nine in May 1935. For the first five months of 1936, 315 fatalities were reported as against 305 for the corresponding period last year. For the country as a whole, traffic deaths in May 1936 were 7 per cent higher than for May 1935.

Memorial to Dr Wilder—A memorial to the late Dr William H Wilder has been established in the form of the William Hamlin Wilder Foundation, according to an announcement of the Chicago Ophthalmological Society. Its purpose will be to establish and maintain a lectureship in ophthalmology or an allied topic. The lecture will be given every year and the interest from a fund of \$10,000, now being raised, will be used for the payment of an honorarium to the lecturer and to defray expenses of publication of the lecture. The administrative details are vested in a committee composed of the president and the three most recent past presidents of the Chicago Ophthalmological Society, while the financial details will be managed by the Northern Trust Company. Friends and colleagues of the late Dr Wilder are invited to send their contributions to the Wilder Foundation, Northern Trust Company of Chicago. At the time of his death in 1935, Dr Wilder was professor emeritus of ophthalmology, Rush Medical College. He had served as president of the American Academy of Ophthalmology and Otolaryngology in 1931 and of the American Ophthalmological Society in 1918. At one time he was vice president of the Illinois Society for the Prevention of Blindness. He was chairman of the Section on Ophthalmology of the American Medical Association in 1907-1908 and a member of the House of Delegates during 1926, 1927, 1928, 1930 and 1931.

INDIANA

Society News—Dr Goethe Link, Indianapolis, discussed the "Diagnosis and Treatment of the Less Obvious Thyroid Diseases" before the Jefferson County Medical Society in Madison recently. Dr James O Ritchey, Indianapolis, discussed diseases of the chest before the society, June 22.—At a meeting of the Jasper-Newton County Medical Society in Rensselaer, May 28, Dr George J Garceau, Indianapolis, spoke on diseases of the joints.—The Wabash County Medical Society was addressed in Wabash, June 3, by Drs Jack E Pilcher, Frank B Ramsey and John H Greist, Indianapolis, on "Postoperative Complications and Their Treatment."—Dr Angus C McDonald, Warsaw, discussed "Physiologic Action of Digitals" before the Kosciusko County Medical Society in Mentone, May 12.—At a meeting of the Wayne-Union Counties Medical Society in Liberty, June 11, Dr Henry B Freiberg, Cincinnati, spoke on management of prostatism.

IOWA

Dr Nomland Appointed Head of Department—Dr Ruben Nomland, for the past six years instructor in dermatology and syphilology, Rush Medical College, has been appointed professor and head of the recently organized department of dermatology and syphilology at the State University of Iowa College of Medicine, Iowa City effective July 1. Dr Nomland graduated at Rush Medical College in 1925. He spent three years at the Mayo Foundation, specializing in dermatology and syphilology. He has been a member of the faculty at Rush for eight years.

KANSAS

Personal—Dr Mirl C Ruble Parsons has been named a member of the state board of medical examination and registration for a term of four years, he succeeds Dr John D Pace, Parsons.—Dr Mary A T DeMotte, Phillipsburg, has been named health officer of Phillips County, and Dr Grant R Hastings, Lakin, of Kearny County.

Liaison Committees—A plan is under way to organize liaison committees in the Kansas Medical Society to work with the state board of health and provide a statewide and unified method by which the society may offer closer cooperation and assistance in administration of the Social Security Act and other health programs of the state. These committees are

composed of one chairman and two members representing each county medical society and the members in counties which do not maintain chartered societies they will serve in a liaison capacity with the physicians of their county, the county health department the state board of health and other public health agencies. Dr Howard L. Snyder, Winfield, president of the state medical society requested that these committees be formed by July 15, the state journal reports.

KENTUCKY

Illegal Practitioner Sentenced.—Clyde Barlow was recently convicted of practicing medicine without a license and fined \$50 by Judge Strange in the Powell County Court, Stanton. Failing to pay, he was sentenced to work out the fine and costs at hard labor.

Dr Moore Receives Award.—Dr John Walker Moore, dean of the University of Louisville School of Medicine, received the university's 1936 Award of Merit. Among points mentioned in his citation were the following "significant contribution through research on cardiovascular functions, establishment a decade ago of the student unit system of clinical instruction, effective and stimulating teaching." Dr Moore has been associated with the university since 1915. He was made professor of medicine in 1923 and dean in 1928. He was graduated from the University of Pennsylvania School of Medicine in 1912.

School for Health Officers.—The annual school for city and county health officers was conducted by the state department of health in Louisville, June 3-6. Dr Thomas Parran Jr, surgeon general, U. S. Public Health Service, Washington, D. C. spoke at a dinner meeting and other guest lecturers were Dr Clifford E. Waller of the U. S. Public Health Service, on training of public health personnel. Dr Joseph E. Moore, Baltimore, syphilis. Dr Paul P. McCam, Sanatorium, N. C., tuberculosis control, and James O. Clarke, B. S., of the U. S. Food and Drug Administration, dangers from spray residues on fruits and vegetables.

MASSACHUSETTS

Changes at Harvard.—The following promotions on the faculty of Harvard University Medical School Boston, recently appeared in the *New England Journal of Medicine*:

Dr Robert M. Green, associate professor of applied anatomy.
Dr Charles F. McKhann, associate professor of pediatrics and communicable diseases.
Dr Jacob E. Finesinger, assistant professor of psychiatry.
Dr William G. Lennox, assistant professor of neurology.
Dr Henry R. Viets, associate in neurology.
Dr Harry C. Solomon, associate professor of psychiatry.

Personal.—Dr William B. Castle, associate professor of medicine, Harvard University Medical School, Boston was awarded the honorary degree of doctor of medicine by Utrecht University, June 24 the tercentenary of the university, according to the *New England Journal of Medicine*.—Dr Horace Binney has been appointed chief of staff at Boston City Hospital succeeding Dr David D. Scannell, who has been surgeon in chief and chairman of the surgical staff since July 1931. Dr Scannell resigned to devote his time to private practice, it is reported.—Dr William E. Castle, since 1903 professor of genetics Harvard University, Boston will retire in September with the title of professor emeritus. He has been associated with the university since 1903.—Dr Robert T. Monroe, associate in medicine Harvard University Medical School, has been appointed physician at the Peter Bent Brigham Hospital, effective September 1. He will succeed Dr Reginald Fitz.

Safety Conference.—The fifteenth annual Massachusetts Safety Conference was held in Boston recently, under the auspices of the Massachusetts Safety Council and cooperating organizations. One session was devoted to industrial health problems with the following speakers:

Robert D. Evan, Ph.D., assistant professor of physics Massachusetts Institute of Technology, Radium Poisoning.
Edward C. Riley, supervising engineer Massachusetts granite dust control project, Dust Control in the Small Granite Plant.
Philip Drinker, Ch.E., associate professor of industrial hygiene Harvard School of Public Health, The Nose as a Natural Dust Filter.

The discussion for this program was led by Dr Anthony J. Lanza, assistant medical director Metropolitan Life Insurance Company. Other speakers included Dr Timothy Leary, medical examiner Suffolk County on Carbon Monoxide Gas or Indigestion. Dr Cassius H. Watson, president National Safety Council and medical director American Telephone and Telegraph Company, New York, "The National Outlook for Greater Industrial Safety." Dr Harry K. Messenger of the Massachusetts Eye and Ear Infirmary, Boston, "Essentials of Eye Examination in Industry."

MICHIGAN

Personal.—Dr John F. Prendergast has resigned as medical director of Receiving Hospital, Detroit, to engage in private practice. Mr G. R. Harris, superintendent of Receiving Hospital, has been appointed to succeed Mr John F. Ballenger as general superintendent of the department of public welfare and administrator of the Wayne County Welfare Administration in Detroit. Both changes are effective July 31.—Dr George P. Myers, Detroit, has been appointed chief surgeon of the Michigan Central Railroad and acting medical director of the New York Central Lines.

Children's Clinic Dedicated.—The new Children's Clinic established by the Children's Fund of Michigan was dedicated in Traverse City, June 24, with Senator James Couzens delivering the principal address. Several considerations enter into the founding of these clinics by the Children's Fund: (1) giving the rural child the same chance for adequate medical care as the urban child, (2) to make possible observation in the hospital of certain juvenile cases requiring prolonged study, (3) to provide training centers for physicians and nurses, and (4) to develop methods and facilities which can be used by other child health agencies. The fund locates each clinic adjacent to a well operated general hospital to keep from building additional hospital beds. In Traverse City Munson Hospital has been selected.

Society News.—The Eaton County Medical Society is now publishing a bulletin. Dr John T. Hodgen, Grand Rapids, discussed osteomyelitis at a recent meeting of the society.—At a meeting of the Ionia-Montcalm Counties Medical Society in Ionia, June 9, Dr Francis A. Hargrave, Ionia, was the guest of honor in recognition of his completion of fifty years in the practice of medicine. Speakers included Dr Richard R. Smith, Grand Rapids, on cancer.—Dr Carl V. Weller, Ann Arbor, discussed "The Pathology of Automobile Accidents" at a meeting of the Washtenaw County Medical Society recently. Lieut. Herbert McCaske of the Detroit Police Department spoke on "Our Traffic Problem", Dr Max M. Peet, Ann Arbor, "First Aid Treatment of Injuries to the Head and Back," and Dr Charles L. Washburne, Ann Arbor, "Management of Injuries to the Body and Extremities."

MINNESOTA

Osteopath Receives Suspended Sentence.—Wayne A. Hockett, who holds a license to practice osteopathy in Minnesota, pleaded guilty in Owatonna, April 20, to practicing medicine without a license. This was said to be the first arrest in eight years of an osteopath on this charge. Hockett, who had practiced nearly two years in Waseca, had between March 2 and March 21 written two prescriptions for medicine to be taken internally by one Max Schoenfeldt, who was suffering from cancer of the pancreas with metastasis to the liver. Hockett also gave Mr Schoenfeldt two injections in the arm of a so-called cancer serum, for which he received \$150 in advance. A third injection was to be given but, because of the severe illness of the patient, was never administered. Mr Schoenfeldt died March 26. Following a complaint by a relative, \$100 of the fee was returned. A release, which Hockett had drawn up by his attorney, specifically stated that Hockett had treated Schoenfeldt for cancer. It also provided that the widow was to return to Hockett the remainder of the capsules and pills then in her possession. When Hockett was interviewed he stated he did not know the name or the ingredients of the serum that he had injected in Mr Schoenfeldt's arm. Judge Senn sentenced Hockett to pay a fine of \$250 or serve 120 days in the Waseca County Jail but suspended the sentence pending Hockett's good behavior and on condition that he refrain from violating the medical practice act in the future.

MISSISSIPPI

Course on Pediatrics.—A course in pediatrics opened in Clarksdale, July 6 with Dr Robert A. Strong, professor of pediatrics Tulane University of Louisiana School of Medicine, New Orleans, as the lecturer. The course is sponsored by the Mississippi State Medical Association, the state board of health, the school of medicine and the graduate school of medicine at Tulane and the state hospital association in cooperation with the Mississippi State Pediatric Society. The lectures cover a discussion of the new-born nutritional requirements, nutritional diseases in infancy and childhood immunizations, and the most frequent causes of vomiting in infancy. The course consists of five lectures a week and will continue ten consecutive weeks throughout the state.

MISSOURI

Society News—The Lawrence, Stone and Barry County Medical Society was organized in Aurora, June 24, with Dr Leonard Mason Lyons, Pierce City, president. The new society takes the place of the Barry County Medical Society. Other officers are Drs Lewis H. Ferguson, Monett, vice president, and Jesse A. Stocker, Mount Vernon, secretary. Its next meeting will be in September.—Dr Thomas G. Orr, Kansas City, discussed "Treatment of Diseases of the Gall Tract" before the Buchanan County Medical Society, June 3.—At a meeting of the Dallas-Hickory-Polk County Medical Society in Halfway, June 2, Dr Ernest Loyd Cartwright, Springfield, spoke on "Abnormal Conditions in Pregnancy."—The Cole County Medical Society was addressed May 21, by Drs Mazyck P. Ravenel, Columbia, and George D. Kettlekamp, Koch, on prevention and early diagnosis of tuberculosis. The meeting was a joint one with the Cole County Tuberculosis Society and the Parent-Teacher Association.

NEW MEXICO

Society News—Dr James R. Scott, Albuquerque, was elected president of the New Mexico Public Health Association at the annual meeting in May. Paul S. Fox, C.E., Santa Fe, is secretary. The association adopted a resolution petitioning the President and Congress of the United States to assume the function, through proper administrative channels, of preventing the advertisement of remedies sold for profit for the alleged cure of cancer, tuberculosis and syphilis.

NEW YORK

Lake Keuka Meeting—The thirty-seventh annual meeting of the Lake Keuka Medical and Surgical Association was held at Penn Yan July 16-17. Speakers included Dr Floyd S. Winslow, Rochester, on 'Trends in the Progress of Medicine', Dr Charles C. Higgins, Cleveland, "Recent Experimental Observations Dealing with the Production and Solution of Urinary Calculi and the Clinical Management of Patients", Dr Stuart W. Harrington, Rochester, Minn., 'Surgical Treatment of Diaphragmatic Hernia' and B. E. Sackett, LL.B., of the federal bureau of investigation, Buffalo, 'Work and Functions of the Federal Bureau of Investigation'.

Pharmacists Condemn Socialized Medicine—At the annual meeting of the New York State Pharmaceutical Association at Bolton's Landing, June 17, Mr David N. Ditchek, Brooklyn, chairman of the committee on socialized medicine and compulsory health insurance, presented a report in which he pointed out that changes in systems of medical, dental and pharmaceutical practices will affect the pharmacist no less than other professions. He urged pharmacists to become interested in the movements toward socialized medicine. The association adopted a resolution condemning the New York Edison Company, a corporation, for entering the practice of medicine, dentistry and pharmacy.

New York City

Jacobi Fellowship Awarded—The Mary Putnam Jacobi fellowship of \$1,000 for graduate work abroad has been awarded to Dr Angeline F. Simecek. Dr Simecek graduated from the University of Nebraska College of Medicine, Omaha, in 1933 and for the past three years has been on the staff of the New York Infirmary for Women and Children. The fellowship is offered by the Women's Medical Association of New York City.

Society News—The Physicians Equity Association of America, Inc., held its first annual golf tournament and dinner at the Scarsdale Golf Club, Hartsdale, June 30.—The Brooklyn Thoracic Society was recently formed with Dr Foster Murray as president, and Dr Alexander L. Louria as secretary. The society plans to hold its meetings in the building of the Medical Society of the County of Kings and to hold stated clinics in the hospitals of Brooklyn. The first scientific meeting will be the third Friday in October.

Gifts to New York University—Among recent gifts to New York University are the following for medical purposes.

Carnegie Corporation of New York \$8,750 for support of the college of medicine.

Milbank Memorial Fund \$1,200 for the gonococcus project under the direction of Dr Charles Hendee Smith.

Lucius M. Littner \$1,000 for a special fund for the department of forensic medicine.

International Cancer Research Foundation \$1,000 for research in cancer under direction of Prof Robert Chambers, Washington Square College.

Sundry donors \$1,445 for research in pneumonia under direction of Dr Jesse G. M. Bullowa.

New York Reduces Automobile Death Rate—The National Safety Council reports that for the first five months of this year the city death rate from automobiles was 93 per hundred thousand, the lowest achieved by any large city in the country. The number of persons killed was 276, as compared with 349 in the same period last year. The city won second place last year in the safety contest sponsored by the council and is at present leader in this year's contest. New York State has made a 14 per cent reduction in automobile fatalities for the first five months of this year. 829 persons were killed as compared with 965 for the corresponding period of 1935.

Hospital Positions Under the Civil Service—Mayor La Guardia has signed a resolution adopted by the Municipal Civil Service Commission placing under civil service many positions in the city department of hospitals hitherto exempt. Approval by the state civil service commission is necessary to make the ruling effective. About 4,000 persons will be affected. Present holders of the positions will take examinations to determine whether they are qualified and those found deficient will be dismissed, the *New York Times* reports. The positions placed in the competitive classes by the resolution include those of bakers, butchers, dentists, laundrymen, orderlies, supervisors, laboratory assistants and helpers, matrons, pharmacists, tailors, telephone operators, watchmen, electricians, carpenters, tin-smiths, plumbers, clerks, assistant alienists, coffee roasters and seamstresses.

OHIO

Doctors' Symphony Orchestra Completes Tenth Year—The Doctors' Symphony Orchestra of Akron ended its first decade with its sixty-first concert June 7 at the Edwin Shaw Sanatorium. During the ten years sixty-five physicians and dentists have been members of the orchestra. Its present strength is thirty-seven. Dr Alexander S. McCormick organized the orchestra and has been its director throughout the ten years.

PENNSYLVANIA

Personal—Dr George W. Reese has resigned as superintendent and surgeon-in-chief of the Shamokin Hospital, Shamokin. Dr Robert Y. Grone, Danville, was appointed chief surgeon to succeed him.—Dr Charles I. Shaffer, Ralphton, has been appointed superintendent of the Somerset County Home and Hospital, Somerset.

County Society Buys a Home—The Montgomery County Medical Society recently bought the Ersine Tennis Club, Norristown, as a permanent home and took possession July 1. A fund was started toward a home for the society in 1905, when Dr Oscar H. Allis, Philadelphia, gave ten dollars as a nucleus. Dr Allis died in 1921. Dr Walter J. Stein, Ardmore, is president of the society and Dr Edgar S. Buyers, Norristown, secretary. Dr Buyers is chairman of the board of trustees of the Medical Society of the State of Pennsylvania.

Society News—Among speakers at a meeting of the Sixth Council District of the Medical Society of the State of Pennsylvania in Philipsburg, June 4, were Drs John O. Bower, Philadelphia, on appendicitis mortality, Richard A. Kern, Philadelphia, clinical allergy, Chauncey L. Palmer, Pittsburgh, social security and Pennsylvania legislation, Alexander H. Colwell, Pittsburgh, president of the state society, the dual purpose of the medical society, scientific and economic. Walter F. Donaldson, Pittsburgh, secretary of the state society, responsibilities of membership, and John M. Quigley, Clearfield, history of medicine in Clearfield County. Drs William H. Morrow, Bellwood, and John I. Brockbank, DuBois, received certificates for fifty years of medical practice.

Philadelphia

Woman's Medical College News—Dr Martha Tracy, dean of the Woman's Medical College of Pennsylvania, after a year's leave of absence resumed her duties July 1. Dr Rose Hirschler has been appointed professor of dermatology, Dr M. Agnes Gowdey, assistant instructor in clinical obstetrics, and Dr Helen B. Thompson, assistant in clinical surgery.

Advisory Staff for Mental Hospital—Mayor Wilson has appointed an advisory staff to supervise treatment of patients at the Philadelphia Hospital for Mental Diseases at Byberry. They are Drs Wilbur P. Rickert, superintendent of the hospital, Frederick H. Allen, Charles W. Burr, Earl D. Bond, George Wilson, Frederic H. Leavitt and Wilmer H. Krusen.

Hospital News—Dr William H. Teller has been made emeritus surgeon of the Jewish Hospital and Dr Norman S. Rothschild has been elected to the staff in his place. Dr Frank

L. Tollweiler, Jenkintown has been elected head of the physical therapy department to fill the post vacated by Dr. Frank H. Krusen, who went to the Mayo Clinic, Rochester, Minn., several months ago. Dr. William Duane, Jr. has succeeded Dr. Nicholas Gotten as neurosurgeon at the hospital.

Dr. Reimann Appointed Professor at Jefferson—Dr. Hobart A. Reimann, associate professor of medicine at the University of Minnesota Medical School, Minneapolis, and Graduate School of Medicine, Minneapolis-Rochester, has been appointed Magee professor of practice of medicine and clinical medicine at Jefferson Medical College, Philadelphia, effective September 1. Dr. Reimann was associated with the Rockefeller Institute for Medical Research, New York, and Peiping Union Medical College, Peiping, China, before he went to Minnesota. The college also announced the following promotions: Drs. Martin E. Rehfuess to be professor of clinical medicine, Henry K. Mohler, clinical professor of therapeutics, and Baldwin L. Keves, clinical professor of psychiatry.

RHODE ISLAND

Society News—Dr. William A. Horan, Providence, addressed the Providence Medical Association in Providence May 4, on backache—A symposium on surgery of the biliary tract was presented at the quarterly meeting of the Washington County Medical Society, Westerly, R. I., July 8, by Drs. Frederic V. Hussey, Eliot A. Shaw, Meyer Saklad and Jesse P. Eddy III, all of Providence.

TENNESSEE

Promotions at Vanderbilt—The following physicians on the staff of Vanderbilt University School of Medicine, Nashville have been promoted to the positions indicated:

Dr. George Summers Johnson, professor of surgery
Dr. Thomas D. McKinney, professor of clinical surgery
Dr. Alvin E. Keller, professor of preventive medicine and public health
Dr. Christopher C. McClure, professor of radiology
Dr. Thomas C. Butler, assistant professor of pharmacology
Dr. Nathaniel Schorn Shofner, assistant professor of clinical surgery

Society News—Drs. Michael L. Mason, Chicago and Robert C. Derivaux, Nashville addressed the Sullivan-Johnson Counties Medical Society, Bristol, June 3, on "Infections of the Hand" and "Recent Advances in the Management of Diabetes Mellitus" respectively—Dr. Forrest S. LeTeller, Knoxville addressed the Knox County Medical Society, June 2, on "Conjunctivitis in the New-Born"—A program on maternal welfare was presented at a meeting of the Hardin, Lawrence, Lewis, Perry and Wayne Counties Medical Society May 26 at Waynesboro, by Drs. J. W. Erwin, Savannah, William T. Pride and R. A. Wallace Memphis. Samuel C. Cowan and Milton Smith, Lewis, Nashville—Dr. Benjamin C. Arnold, Jackson, addressed the Madison County Medical Society, Jackson June 2, on "Urethral Stones and Pyelitis."

WISCONSIN

Personal—Dr. Carl N. Neupert, Janesville has been appointed supervisor of public health service, a new position created under the social security plan for Wisconsin. His special work will be to establish contact with county medical societies to further tuberculin testing, reduction of gonorrhea incidence and programs of diphtheria prevention and smallpox vaccination.

Appointments to State Medical Board—Gov. Philip La Follette recently announced the following appointments to the state board of medical examiners: Dr. Henry O. McMahon, Milwaukee to succeed the late Dr. John E. Guy, Dr. Adam I. Gates, Tigerton to succeed Dr. John R. Venning, Fort Atkinson and Dr. Cornelius H. Cremer, Cashton to succeed Dr. Robert E. Flynn, La Crosse. Dr. Henry J. Gramling, Milwaukee was reappointed.

State Radiologic Meeting—The twelfth annual meeting of the section on radiology of the State Medical Society of Wisconsin was held in Kenosha June 5-6. A symposium on tuberculosis was presented by Dr. Carroll E. Cook, Chicago. Harold M. Coor, Stevens Point, Marcus Fernan Nunez and Forrester Raine, Milwaukee. Among other speakers were Dr. Henry Schmitz, Chicago, "Prevention and Treatment of Skin Reactions," Robert S. Landauer, Ph.D., Chicago, "Physical Problems in X-Ray Therapy" and Dr. Chester H. Warfield, Chicago, "Bone Tumors." Dr. Hans W. Hefke, Milwaukee was elected president and Dr. Russell F. Wilson, Beloit secretary.

Physicians for Fifty Years—Drs. Albert J. Hodgson and Joseph B. Noble, Waukesha, were guests of the Waukesha County Medical Society at a dinner at The Spa Waukesha, June 3, in honor of the fiftieth anniversary of their medical practice, the *Wisconsin Medical Journal* reports. Drs. Richard E. Davies and Frederick J. Woodhead, Waukesha, paid tribute to the guests of honor and Dr. Arthur W. Rogers, Oconomowoc, councilor of the first district, also made a short address. Dr. Hodgson and Dr. Noble were born in 1858 and both were graduated from Rush Medical College, Chicago, in 1886. Dr. Hodgson founded The Spa twenty-six years ago, he has been retired from active practice for many years. Dr. Noble has been physician to the state industrial school for fifteen years. Dr. Frank L. Grover, Hartland, president of the county society, had charge of arrangements.

Conference on Industrial Medicine—An industrial medical conference will be held at Wausau, July 27-28, under the auspices of Employers Mutuals insurance firms of Wausau in commemoration of their twenty-fifth anniversary. Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, will be the speaker at the banquet Monday evening, July 27, at the Rothschild Pavilion, near Wausau, on "Medical Organization and the Nature of Medical Practice." At the medical sessions at the Grand Theater, speakers will include:

Mr. Voyta Wrabetz, chairman of the industrial commission of Wisconsin, "The Relationship of the Medical Profession to the Compensation Law"
Dr. John Albert Key, St. Louis, "Internal Derangements of the Knee"
Dr. Edwin W. Ryerson, Chicago, "Injuries and Disabilities of the Shoulder Joint"
Dr. Alfred W. Adson, Rochester, Minn., "Surgical Treatment of Peripheral Nerve Injuries"
Dr. Erwin R. Schmidt, Madison, "Modern Treatment of Brain Injuries."
Dr. John W. Powers, Milwaukee, "Treatment of Compound Fractures and Contaminated Wounds."

PUERTO RICO

University News—Five students from the University of Cincinnati are doing special work at the School of Tropical Medicine, University of Puerto Rico, San Juan. Dr. Thomas J. LeBlanc, professor of preventive medicine, University of Cincinnati School of Medicine is in charge of the work of these students. They are Dr. Armin T. Wilson and Messrs. Calvin F. Warner, William M. Fischbach, Homer H. Kohler and Kenneth Hausfeld.

GENERAL

Bequests and Donations—The following bequests and donations have recently been announced:

St. Luke's Hospital, New York will eventually receive \$3,000,000 from the estate of the late Mrs. Helen Slade Ogilvie after the death of her daughter. Neurological Institute of New York will also receive \$10,000.
Northern Westchester Hospital, Mount Kisco, \$4,000 by the will of the late Charles A. Halstead.
Tarrytown Hospital Association, \$1,000 from the estate of Edith C. Batt.
New York Eye and Ear Infirmary, Presbyterian Hospital and Roosevelt Hospital, \$10,000 each from the will of the late Samuel Hopkins.
Pennsylvania Hospital, Philadelphia, \$12,000 by the will of the late Miss Rebecca A. Hough.
Methodist Episcopal Hospital, Philadelphia, \$25,000 by the will of Ida Simpson.
Presbyterian Hospital, Chicago, \$25,000.
Hospital Association of Lake Forest, Ill., \$10,000 by the will of the late C. H. McCormick.
Montefiore Hospital, New York, \$5,000 by the will of the late Mrs. Bella Kaufman.
Tacoma General Hospital, Tacoma, Wash., will benefit from the will of the late H. A. Rust, who provided that the income from half his estate of \$60,000 be given to the hospital after the death of his youngest grandchild to maintain a free ward for indigent children.

Changes in Status of Licensure—The state board of medical education and licensure of Pennsylvania has reported the following action taken at a meeting June 26:

Dr. Charles W. Dubin, Alexandroff, Philadelphia, license revoked because of his conviction of violation of the Harrison Narcotic Act.
Dr. Thomas Henry McWhorter, Philadelphia, license revoked because of violation of the narcotic law and association with unethical practitioners.
Dr. James Edwin Frey, now of Joplin, Mo., license revoked because of his conviction in Montana of violation of the narcotic law.

The board of medical examiners of Oklahoma reports the following action taken at a meeting June 11:

Dr. Horace Porter Routh, Tulsa, license suspended for five years for violation of narcotic laws.
Dr. Alonzo B. C. Davis, Oklahoma City, license revoked for unprofessional conduct having performed criminal abortions.
Dr. Guy E. Brewer Garber, license revoked for unprofessional conduct having performed criminal abortions.
Dr. Franklyn Albert Howell, Oklahoma City, license revoked for violation of narcotic laws.
Dr. Young Anderson Howell, Mountain View, license suspended for one year for violation of narcotic laws.

The State Medical Board of the Arkansas Medical Society reports the following action taken at a recent meeting

Dr Charles Othello Ozias Eureka Springs license revoked for advertising a special ability to treat or cure chronic and incurable diseases.

Dr Hektoen Named Chairman of National Research Council—Dr Ludvig Hektoen, Chicago, has been appointed chairman of the National Research Council to succeed Frank R Lillie, Ph.D., Chicago. For three terms of one year each, Dr Hektoen has been chairman of the division of medical sciences of the council, which has headquarters in Washington, D C, and acts in an advisory capacity to the federal government in research matters. In 1887 Dr Hektoen graduated from the College of Physicians and Surgeons of Chicago. He has served as pathologist to Cook County Hospital, lecturer in pathology at Rush, physician to the coroner's office, professor of pathology at his alma mater, and professor of morbid anatomy and since 1898 as professor of pathology at Rush. From 1901 to 1934 he was professor and head of the department of pathology, Division of Biological Sciences, University of Chicago, retiring in the latter year to become professor emeritus. Since 1902 he has been director of the McCormick Institute for Medical Research. He has been editor of the *Journal of Infectious Diseases* since 1904 and of the *Archives of Pathology* since 1926. Societies of which he has been president include the Chicago Medical Society, 1919-1921, Chicago Pathological Society, 1898-1902, Association of American Pathologists and Bacteriologists, 1901, Society of American Bacteriologists, 1929, Society of Immunologists, 1927, Institute of Medicine of Chicago, 1929. In 1909 he was vice president of the American Association for the Advancement of Science and for several years has been chairman of the Committee on Scientific Research of the American Medical Association. He has received various honorary degrees and has written numerous articles on pathology, bacteriology and immunology.

Society News—The sixteenth annual meeting of the American Society for the Hard of Hearing was held in Boston May 26-30, with 575 registrants, the largest number on record. It was voted to hold biennial conferences hereafter, with zone conferences in alternate years. There are now 156 local societies in the United States.—Dr Marion C Pruntt, Atlanta, Ga, was elected president of the American Proctologic Society at the annual meeting in Kansas City in May. Dr Clement J DeBere, Chicago, was elected vice president and Dr Curtice Rosser, Dallas, was reelected secretary. The next meeting will be held in Atlantic City in June 1937.—The first National Conference on Educational Broadcasting will be held in Washington, D C, December 10-12. C S Marsh of the American Council on Education, 744 Jackson Place, Washington is executive secretary of the planning committee. All organizations interested in radio as a social force nationally or regionally, are invited to participate.—The American Congress of Physical Therapy will hold its fifteenth annual clinical and scientific session at the Waldorf Astoria, New York, September 7-11.—Dr Earle G Brown, secretary of the Kansas Board of Health, Topeka was elected president of the State and Provincial Health Authorities of North America at its fifty-first annual meeting in Vancouver, B C, June 23.—The Biological Photographic Association invites all photographers and scientists interested to attend the sixth annual convention in Boston, September 24-26, at the Hotel Lenox. Active membership is open to those whose duties include biologic photography, any one interested may become an associate member. The president is Louis Schmidt Rockefeller Institute for Medical Research, New York, and the secretary, Miss Anne Shuras, University of Pittsburgh School of Medicine.

CANADA

Personal—Sir Frederick Banting, professor of medical research, University of Toronto Faculty of Medicine, Toronto, has been elected to fellowship in the Royal College of Physicians London.—Dr Maude E Abbott, assistant professor of medicine and curator of the museum of the history of medicine at McGill University Faculty of Medicine is retiring this year, according to the *Canadian Medical Association Journal*.

University Graduate Courses—The Medical Faculty of Queen's University, Kingston, announces a graduate course in medicine, surgery, gynecology, bacteriology, radiology and special apparatus, September 7-11.—The University of Toronto Faculty of Medicine will offer a course in general surgery of the abdomen to physicians who have had satisfactory training in surgery. The course will begin September 28 and continue for a week at the Toronto General Hospital.

St Michael's Hospital, Hospital for Sick Children and the Toronto Western Hospital and at Banting Institute.—The University of Western Ontario, London, announces its annual refresher course for September 14-18.

Government Services

Changes in Public Health Service

Dr Erval R Coffey has been promoted and commissioned as surgeon and Drs Frederick T Foard and Winfield Kennedy Sharp Jr have been appointed and commissioned as surgeons in the regular corps of the public health service. Other changes include the following transfers:

Medical Intern Marion T Yates relieved at Chicago and assigned to U S Hospital for Defective Delinquents Springfield Mo for duty.

Medical Intern Emanuel Rollins relieved at U S Marine Hospital San Francisco and assigned to U S Hospital for Defective Delinquents.

Medical Intern Howard T White relieved at U S Marine Hospital St. Louis and assigned to U S Marine Hospital Stapleton N Y.

Medical Intern Earl F Gates relieved at U S Marine Hospital San Francisco and assigned to Detroit.

Appointment of Medical Officers in Regular Army

The following named first lieutenants, medical corps reserve, have been tendered appointment as first lieutenants, medical corps, regular army, with rank from July 1, 1936: Waldron Lewis Morse, Canton, Maine, Charles Bateman Perkins, Seattle, Clarence Asa Tinsman, Roxbury, Va, Gustave Freeman, Chicago, Fred James Black, Detroit, Samuel Henry Worthen Jr, Afton, Wyo, Robert Hough Jordan, Farmingdale, N Y, Clark Bolton Meador, Grand Canyon, Ariz, John Chisholm Fitzpatrick, Jamestown, N D, Levi Martin Browning, Wauwatosa, Wis. John William Kemble, Rochester, Minn, Raymond McKinley Williams, Tahlequah, Okla, Benjamin Anderson Strickland Jr, Baltimore, John William Raulston, Sheffield, Ala. Charles Henry Moseley, El Paso, Texas, William Ferrall Cook, El Paso, Erving Francis Geever, El Paso, Conn Lewis Milburn Jr, El Paso, James Thomas McGibony, San Antonio, Robert Henry Blount, San Antonio, John Kemp Davis, San Francisco, Louis Frederick Hubener, San Antonio, Wilbur Carmen Berry, San Antonio, Karl Herbert Houghton, San Francisco, Albert Charles Krukowski, San Antonio, Kenneth Somers, San Francisco, and Edward Sigerfoos, Denver.

Summary of Legislation Affecting Army Medical Department

The Seventy-Fourth Congress enacted legislation of far reaching benefit and importance to the Medical Department of the U S Army. Medical Reserve Officers Training Corps units, which have been discontinued for several years because of prohibitive legislation are being reestablished as a result of provisions of the War Department Appropriation Act. Instruction will begin in October in many of these units. Fifty officers will be added to the Medical Corps, the first increase since 1920. An increase in the enlisted force from 118,000 to 165,000 has brought about a serious shortage in medical and dental officers. Funds for maintenance of army hospitals have been increased and the appropriation for the purchase of medical and hospital supplies is the largest for this purpose in the history of the army in peace time. The sum of \$20,660 was appropriated for purchase of books for the surgeon general's library and \$37,000 was set aside for publication of the *Index Catalogue*, which has been suspended for two years. Adequate appropriations have also been provided for administration of the Army Medical Museum and for research by the medical department. Opportunity for practical training for medical department reserve officers will be improved by the increase in the appropriation for training of the officers' reserve corps. It is anticipated that the medical officers training camp at Carlisle, Pa, will be larger than in many years.

CORRECTION

Intravenous Therapy—In Queries and Minor Notes in THE JOURNAL, July 4 page 60, it was stated that Dutton's book on 'Intravenous Therapy' published by the F A Davis Company, Philadelphia in 1925 is the most extensive book on the subject available at present. Mention should have been made of a later volume on 'Parenteral Therapy' by Dutton and Lake, published by C C. Thomas Springfield Ill, in 1936.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 6, 1936

Reform of the Medical Curriculum

The General Medical Council is the body which regulates medical education. The council appointed a curriculum committee, which a year ago presented a report, which was circulated to the licensing bodies and the medical schools for their observations. In addition, observations were furnished by the minister of health, a special committee on medical education appointed by the British Medical Association, the council of the Section of Radiology of the Royal Society of Medicine, and the general council of the Trades Union Congress. Following the receipt of the observations made by the licensing bodies and medical schools a second interim report was made by the curriculum committee and was also submitted. Observations were received from twenty-two of the twenty-three licensing bodies and seventeen of the twenty-five medical schools. These were carefully considered by the committee with the result that new resolutions in regard to the medical curriculum have now been adopted by the council. These will come into operation Jan. 1, 1938, as regulations for medical education.

PREREGISTRATION REQUIREMENTS

Every applicant for registration as a medical student must pass (1) a recognized preliminary examination in general education and (2) in chemistry, physics and biology, including the fundamental facts of vegetable and animal structure, life history and function, and an introduction to the study of embryology. The examination in biology may be taken either before or after registration as a student.

THE MEDICAL CURRICULUM

The period of study must not be less than five academic years. The first two years should be devoted to professional scientific subjects, with an introduction to clinical methods. The last three years should be devoted to clinical subjects, with the clinical application of the professional scientific subjects. Throughout the whole period the student's attention should be directed to the importance of the measures by which normal health may be assessed and maintained, and to the principles and practice of the prevention of disease.

PERIOD OF PROFESSIONAL SCIENTIFIC SUBJECTS (FIRST AND SECOND YEARS)

The courses should include (1) dissection of the entire cadaver, (2) anatomy of the living body, (3) elements of human embryology, (4) histology, (5) the elements of genetics, (6) the principles of general physiology, the chemistry and physics of bodily functions to be studied as far as possible in man, (7) the elements of normal psychology, (8) methods of clinical examination including the ophthalmoscope and the examination of body fluids, (9) normal reactions of the body to injury and infections as an introduction to general pathology and bacteriology, and (10) an introduction to pharmacology.

PERIOD OF CLINICAL STUDIES (THIRD, FOURTH AND FIFTH YEARS)

A minimum period of three years should be given to clinical study at an approved hospital after passing the examination held at the close of the second year. The subjects are as follows:

1. Medicine including (a) systematic instruction in principles and practice, (b) a clinical clerkship in hospital wards for not less than one month in residence in a

hospital or conveniently nearby, during which the student is attached to the medical wards, (d) a clinical clerkship for not less than one month in a children's ward or hospital, (e) regular attendance at an outpatient department for three months, (f) regular instruction and demonstration in applied anatomy and physiology during the period of clinical studies, to be carried out by the teachers of anatomy, physiology and the clinical subjects, (g) methods of treatment, including dietetics, therapeutics and prescribing, physical therapy and principles of nursing, (h) diseases of children and child welfare, acute infectious diseases, tuberculosis, industrial diseases, psychology and mental disorder and deficiency, diseases of the skin, radiology and vaccination.

2. Surgery, including (a) systematic instruction in principles and practice, (b) assistantship to a surgeon for six months, (c) not less than one month's residence in a hospital, (d) regular attendance in a surgical outpatient department for three months, (e) instruction in surgical methods, including physical therapy, (f) instruction in minor operative surgery on the living, (g) administration of anesthetics, (h) a course of operative surgery, (i) applied anatomy and physiology, (j) surgery of infancy and childhood, ophthalmology, diseases of eye, ear, nose and throat, radiology, venereal diseases, orthopedics and dental diseases.

3. Midwifery, infant hygiene and diseases of women, including (a) systematic instruction in midwifery and gynecology, applied anatomy and physiology of pregnancy and labor, (b) clinical lectures and demonstrations, attendance on a maternity ward and inpatient and outpatient gynecologic practice for six months, (c) not less than two months as resident pupil in a maternity ward, where the student should attend not less than twenty cases, (d) instruction in antepartum and postpartum care, management of the puerperium and care of the new born infant.

4. Pathology and bacteriology, including courses in general and special pathology and morbid anatomy, clinical and chemical pathology, general and clinical bacteriology, immunology and immunization.

5. Pharmacology and materia medica, including pharmacy.

6. Hygiene and public health.

7. Forensic medicine.

8. Legal and ethical obligations of physicians.

The First Antigas School

The extensive measures which are being taken by the government for the protection of the civilian population against aerial gas attacks have been described in previous letters. The first civilian antigas school has been opened in Gloucestershire, a western county and therefore a long distance for aircraft coming from the continent to travel. The school has been established to give instruction in antigas measures to members of the public services concerned with civil air raid precautions. Later, facilities will be provided for the training of instructors of certain classes of industrial and commercial undertakings of importance. The instruction will be undertaken by the government, and it will then be for the local authorities to arrange for instruction to be given locally by men trained in the school. The equipment and cost of instruction and accommodation is provided by the government, but each student is asked to pay £1 50 a day for his food. Each course will last ten working days and be taken by thirty students, the syllabus embracing gases likely to be encountered in air attacks, technical measures of individual and collective protection, administrative and special measures of protection, and guidance in the organization and teaching of local instruction classes. Special courses are provided for the training of instructors primarily concerned in police and fire department duties and first aid and rescue work. The London police and fire departments have already had their instructors

trained, and their program involves the training of 30,000 policemen by April of next year. Special courses of a week's duration are to be provided for physicians and nurses concerned with treatment as distinguished from first aid, and others for the identification of gases. There are also courses for the training of qualified chemists in the detection and identification of gases.

Organization for Protection of Intellectual Liberty

In no country in the world is intellectual freedom greater or safer than in England, but its recent destruction over a large part of the European continent has led leading men to form an organization for the protection of freedom of thought. They include professors, scientists and writers. Prominent among them are men well known in the biologic and medical spheres. The president is Mr. Aldous Huxley, and that great name is represented also by his brother the biologist Julian Huxley. Another biologist is J. B. S. Haldane (son of the late J. S. Haldane). Most eminent of all is Sir Gowland Hopkins, late president of the Royal Society and the father of modern biochemistry. On the literary side are the Greek scholar Gilbert Murray, the military writer Capt. Liddell Hart, the international historian and authority on foreign policy C. K. Webster, and Miss Rose Macaulay. The church is represented by the dean of Canterbury and the law by Sir William Jowitt. An executive committee is organizing committees of scientists, artists, writers and others to undertake lecturing and propaganda work of all kinds. Membership is to be recruited from all the professions and the universities. Events in Germany and elsewhere have shown how easy it is to destroy intellectual freedom. In that country one of the most deplorable incidents was the complete impotence of the intellectuals against the attack. The only effective resistance was made by the Lutheran church. A rather different but analogous organization has been formed by the intellectuals in France, the Comité de vigilance, to protect the country against fascist dictatorship.

PARIS

(From Our Regular Correspondent)

June 27, 1936

Hyperinsulinism Due to Adenoma of Islands of Langerhans

The first operation for the clinical syndrome due to hyperinsulinism was reported from the Mayo Clinic in 1926. Since then, others have been reported by American surgeons but few from Europe. Such a case was reported at the April 22 meeting of the Académie de chirurgie de Paris by a surgeon of Prague, Jirasek, and two associates. An engineer, aged 28, noticed in 1928, following rapid ingestion of food, that he staggered as if intoxicated. Similar attacks were rare during the next few years, but at intervals, it was impossible to awaken him and he would sleep for thirty-six hours. Various diagnoses had been made before he was seen by Brenner, a neurologist of Prague, early in 1933. The clinical features were those of mental confusion, rapid increase in weight, amnesia at intervals and a marked hypoglycemia. Postranecky, an associate of Jirasek, found a basal metabolism of -8 per cent and a constant hypoglycemia (42 mg. per hundred cubic centimeters) in the morning before taking food. Further study showed that a complex which is considered as being typical of hyperinsulinism existed, i. e., a constant secretion of insulin not bearing any relation to periods of digestion or fasting. The patient was thus always in danger of attacks due to hypoglycemia. Administration of hypophyseal and thyroid extracts was of no avail and operation was decided on. In view of the prolonged duration, a malignant neoplasm in the pancreas was excluded by Jirasek before operation and the diagnosis of an

adenoma of the islands of Langerhans seemed the most plausible diagnosis. The operation was performed Dec. 15, 1934 and a nodule the size of a lentil and the shape of a hazelnut was found in the tail of the pancreas. Microscopic study of the excised tumor by Siki revealed it to be an adenoma in the stroma of which were amyloid deposits. The parenchyma of the tumor corresponded in appearance to the cells of the islands of Langerhans. During the first five days after the operation there was a marked glycosuria and hyperglycemia. Following this transitory complication the reactions following the administration of dextrose alone, of insulin and of the two combined, were found to be normal. Since the operation, no attacks due to a hypoglycemia have occurred. No discomfort is experienced even after not eating for a prolonged period. The authors emphasize that one ought always to consider a hypoglycemia or even an adenoma of the islands of Langerhans when the clinical picture is that of brief periods of mental confusion, transitory aphasia or pareses or when epileptiform attacks occur in which porriomania or paroxysmal hypersomnias are noteworthy features. The importance from the medicolegal standpoint of these attacks due to a hypoglycemia cannot be underestimated. After an automobile or machinery accident, those who are responsible are unable to explain how they occurred, in view of the previous experience of the individual as a chauffeur or engineer.

Resection of Pancreas for Chronic Pancreatitis

At the April 22 meeting of the Académie de chirurgie of Paris, Mallet-Guy, a surgeon of Lyons, reported three cases in which the body of the pancreas was resected for chronic pancreatitis. The first case had been presented in May 1935. There was a history of a previous operation, by another surgeon, for a suspected perforation of a gastric ulcer, but no such condition was found. At a second operation, performed by Mallet-Guy, an edematous pancreatitis was found. In spite of drainage, the clinical signs, such as recurrent acute pain over the pancreatic region, digestive disturbances and emaciation, continued. At the third intervention, a walnut-sized area of chronic pancreatitis embedded in cicatricial tissue having been encountered in the body and tail of the pancreas, this portion was resected. An uneventful recovery with disappearance of all clinical signs followed. The resected area measured 8 by 4 cm., and microscopic examination revealed complete replacement of the glandular acini by fibrous tissue with occasional small cyst formation.

In the second case the history resembled that of a gastric ulcer over a period of eighteen years. When the patient was first seen by Mallet-Guy the symptoms were those of an acute pancreatitis. After the acute symptoms subsided, the head of the pancreas was found to be normal in appearance and consistency but the body itself was indurated. There were three large calculi in the gallbladder. The portion of the pancreas in which the area of chronic induration had been found was resected and the gallbladder drained after removal of the calculi. Microscopic examination of the specimen, which measured 85 cm. in length, revealed a sclerocystic pancreatitis. All the digestive symptoms disappeared after the operation.

In the third case the history was that of recurrent attacks of severe pain referred to the left half of the abdomen. During one of these attacks a diagnosis of acute ileus had been made. Soon after admission to the hospital, two attacks of severe pain accompanied by high temperature occurred. A hard mass could be felt in the upper part of the abdomen of the greatly emaciated woman. A diagnosis of chronic pancreatitis was made before operation, at which a greatly indurated pancreas was found that corresponded to the mass felt before operation. The body of the pancreas was also resected in this case without any difficulty. Nothing abnormal was found in the biliary tract. The resected portion of the body of the pancreas revealed, as

in the other two cases, on histologic study diffuse sclerocystic changes. The only postoperative incident was a marked transitory hyperglycemia. The resected specimen measured 8 cm in length.

Mallet-Guy stated that many cases of chronic pancreatitis are not recognized clinically, so that the condition of this viscus should be examined during every operation in the upper part of the abdomen in which no other lesion is found to explain the clinical symptoms. Resection of the body of the pancreas does not present insurmountable technical difficulty and, judging by the end results in his three cases, does not appear to be followed by any demonstrable disturbance of metabolism. In the discussion Brocq said that in the majority of cases of chronic pancreatitis the induration due to the sclerotic changes is a diffuse one and that a resection of the left half of the pancreas as was carried out by Mallet-Guy, was possible. If the induration was found to be circumscribed, a cuneiform resection could be performed.

Postoperative Hyperglycemia

The question as to the influence of operations on the urea content of the blood has been the subject of research during the past few years in French hospitals. One of the latest contributions to postoperative blood changes is that of Lambret and Driessens, presented at the April 1 meeting of the Académie de chirurgie of Paris. An increase in blood sugar is constantly observed after operations. Those which have the most influence, i. e., give rise to a hyperglycemia, are operations which have the influence of a trauma on the nervous system and on the development of polypeptides in other tissues. This hyperglycemia would appear to be due to a disturbance of the sympathetic nerves and of the adrenals. Clinical and experimental research have made it possible to combat a postoperative hyperglycemia by the simultaneous intravenous administration of a hypertonic (30 per cent) solution of dextrose, a 20 per cent solution of sodium chloride and insulin. The dextrose appears to excite a production of insulin in addition to that which is injected. The insulin acts on the blood sugar and the proteolysis. Thus the glycogen reserve in the liver is maintained.

In the discussion Fredet called attention to the work of Roscher, published in 1933, in which the author found that after ether or ethyl chloride anesthesia an increase of from 50 to 80 per cent of the normal blood sugar occurs. There is only a slight hyperglycemia following spinal anesthesia and none at all when local anesthesia is employed. Two theories have been proposed to explain this hyperglycemia when volatile anesthetics are employed: (a) an excessive mobilization of the glycogen reserves of the body and (b) an increased oxidation in the tissues. A diminution of the glycogen reserve of the liver has been observed in all the cases following the use of ether or ethyl chloride.

Complete Auriculoventricular Dissociation

At the March 13 meeting of the Société médicale des hôpitaux of Paris Saulie Cattani and Bachmann reported the case of a woman aged 71 who had been treated for recurrent attacks of vertigo less frequently of syncope, accompanied by bradycardia (pulse from 28 to 32) since 1931. At the time of admission in 1935 the pulse was 40 and the blood pressure 300 systolic 140 diastolic. Electrocardiography revealed a complete auriculoventricular dissociation without notable deformity of the ventricular complex. At intervals an auricular fibrillation appeared which persisted during two or three at times even ten cardiac cycles and then the dissociation recurred. The particular feature of this rare case is the paroxysmal character of the auricular flutter. The authors could not find a similar reported case. The prognosis of these

cases of complete block with flutter presents great difficulty, especially if, as in this case, there is an accompanying hypertension.

The Frei Test in Lymphogranuloma

Frei of Breslau found in 1925 that pus from a case of lymphogranuloma had antigenic properties and hence could be employed in the form of a skin test to detect a specific cutaneous allergy in individuals who had a lymphogranulomatosis in the past or were still infected with the virus of the Nicolas Favre disease. Doubt arose as to the value of the Frei reaction when Clement-Simon, Braley and Minck in 1935 reported that in fifty prostitutes taken at random the skin test was positive in 8 per cent who did not present any evidence of having Nicolas Favre disease. Other dermatologists have had a similar experience but the percentage was much lower. Kleeberg was one of the first to show that a positive Frei reaction could be found in carriers of the virus of lymphogranuloma. In addition, the skin sensibility persists for a long time in persons who have had the disease, hence it would not be unusual for prostitutes to be either carriers or apparently cured individuals.

In order to study the question further as to the reliability of the Frei test, Escher and Chaglassian, two dermatologists at the faculty of the American College at Beyrouth, Syria, examined eighty-one prostitutes admitted to the venereal disease service of the Beyrouth hospital, for gonorrhea, cervical erosions and syphilis in the course of treatment. None of these had any discernible signs of the presence of Nicolas-Favre disease. With the exception of one case, the skin reaction in all of the eighty was negative. In this single case, a slightly infiltrated papule appeared which persisted for four days and which, other tests showed, was a doubtful reaction.

In their paper, presented by Levaditi at the April 21 meeting of the Academy of Medicine of Paris, Escher and Chaglassian stated that the Frei reaction can be considered positive only if a papule with a red dome and surrounding infiltration at 4 to 5 mm appears, which persists for eight to ten days. Even if the doubtful case is included, the reaction was positive in only 1.02 per cent of eighty-one prostitutes chosen at random and not presenting any evidence of the present or past history of having had Nicolas-Favre disease or lymphogranuloma.

Pancreatic Lithiasis and Diabetes

Pancreatic lesions have been the subject of a number of papers at meetings of various Paris societies. Marcel Labbé read a paper March 20 before the Société médicale des hôpitaux in which he stated that pancreatic lithiasis is rare and is associated with diabetes in a third of the cases. Labbé's recent patient was a man, aged 32, who in 1928 had severe pain in the right side of the abdomen accompanied by vomiting but no rise of temperature. A diagnosis of biliary colic had been made. Several similar attacks occurred the following year, but in one of these the pain was referred to the left lumbar region. In 1930 a very severe attack of pain accompanied by jaundice of a week's duration was noted. Following this attack the patient began to lose weight. This continued for the next two years. In 1932 he had a severe attack of pain accompanied by high temperature but no jaundice, and a marked glycosuria was found. In 1933 this condition was noted again, but no further attacks occurred until 1934. From this time on until first seen the attacks of pain recurred more frequently. Labbé in July 1934 found a polyuria (3,000 cc.), a glycosuria of 241 Gm and an x-ray shadow the size of a small olive over the head of the pancreas. A hyperglycemia persisted in spite of diet and insulin, accompanied by marked emaciation and fever of a non-remittent type. At operation by Lardennois a calculus 11 mm. in length was removed through an incision over the anterior surface of the head of the pancreas. The patient died three days after the operation.

A second case was cited in which the two conditions (lithiasis and diabetes) were associated, the patient dying of a pulmonary tuberculosis. At necropsy an atrophic sclerosis and numerous pea-sized calculi in all parts of the pancreas were found.

Labbé stated that the chief clinical features of a pancreatic lithiasis associated with diabetes are (a) the pain, usually referred to the epigastric and left hypochondriac regions, (b) symptoms due to absence of pancreatic digestion such as fatty stools and diminution of the pancreatic ferments in the secretion obtained with the duodenal tube, (c) the shadows of the calculi and (d) the diabetes.

Excess of Deaths Over Births

The "provisional" statistics for 1935 as reported from the ninety departments of France show that the number of deaths exceeded the number of births in the year 1935. There were 298,192 marriages in 1934 and 284,604 in 1935. As to births, there were 677,365 in 1934 as compared to 638,881 in 1935. The number of deaths was 634,525 in 1934 and 658,357 in 1935. The natality, i. e., the excess of births over deaths, showed a plus figure of 42,840 in 1934 and a minus figure of 19,476 in 1935.

BERLIN

(From Our Regular Correspondent)

May 18, 1936

The Place of Nonspecifics in the Treatment of Syphilis

An extensive discussion developed not long ago in the Hamburg Medical Society between Mulzer, professor of venereology, and Nonne, professor of neurology. Mulzer said that recent syphilis can virtually always be cured by specific chemotherapy, assuming that treatment is timely and energetic. Cases of long standing are not likely to respond to chemotherapy alone, but when it is supplemented by certain nonspecific measures favorable results may be achieved. It is well known too that stubborn cases in which the Wassermann reaction and changes in the cerebrospinal fluid have remained positive over a number of years occasionally show favorable response to heterogeneous nonspecific influences. Not one of the nonspecific methods, however, is reliable enough to permit of systematic application. Only two such procedures have given satisfactory results in cases of persistent positive Wassermann reaction and fluid changes that no longer respond to the ordinary therapy. The first is malariotherapy, which may be combined with the customary chemotherapy without interrupting it. Malariotherapy is superior to the substitute methods formerly recommended in its stead. Nevertheless Mulzer is now, as before, striving to perfect analogous procedures involving febrifacient vaccines. In his characteristic manner, Mulzer completely rejects the drugless methods of so-called Nature Medicine when applied to the treatment of syphilis, he has tested the most various procedures of "Nature Medicine" without obtaining any favorable results whatever.

The remarks of the neurologist Professor Nonne furnished an interesting pendant to the foregoing. He reported several atypical cases of hereditary syphilis in the second and third generations, which wandered completely away from the orthodox of the textbooks. In his forty six years of research, Nonne was able to determine numerous cases in which permanent cures of primary and secondary syphilis were effected without resort to or after quite inadequate treatment with anti-syphilitics. The patients usually came of healthy resistant stock and had acquired the infection at a youthful and vigorous age. Nonne also found that in hundreds of cases tabes and paralysis develop even when the patient has undergone intensive or at least not insufficient treatment. The importance of the individual constitution has long been recognized in the treatment of syphilis. It is an old proposition, too, that mercury and iodine are not specific remedies but rather function as alternatives

which prepare the way for better therapeutic action by the organism itself. In cerebrospinal syphilis the so called anti-syphilitics are of value only if the disease is of the gummosis type. This type however, according to Nonne's investigation, has become a rarity in recent decades. Tabes also is today less frequent, a fact confirmed by other authors, but the same certainly cannot be said of paralysis. Nonne does not consider it proved that syphilis is 100 per cent curable if energetically and properly attacked in its seronegative stage, he has observed a number of cases in which, on the basis of the foregoing concept, a marriage license was granted and subsequently both wife and children were infected with syphilis.

Of further interest were the points raised by Professor Mulzer in his concluding remarks. He emphasized that under no circumstances is treatment by injection indicated. If permanent cure is to be effected, a rigorous course of therapy must be instituted, one based on administration of the most powerful medicaments available, namely, arsphenamine and compounds of bismuth. In the treatment with arsphenamine, the administration of subtherapeutic doses is inadvisable. The greater incidence of neurorelapse in former times is attributable to inadequate treatment. Today, as the result of intensive treatment of early syphilis, neurorelapse has become quite a rarity. It is important that all syphilitic patients undergo Quincke's puncture every year or so according to the degree of infection present. The results of these tests should serve as an indication in questions of whether or not a patient should marry. Scruples against lumbar puncture are nowadays baseless, trouble is hardly ever encountered if the proper cannula is used. The appearance of a mercurial or arsphenamine dermatitis exerts virtually no influence on the subsequent course of the disease. Mulzer expressly warns that a positive Wassermann reaction should be regarded more or less as a "physical defect" and hence should be lightly evaluated. Thus Mulzer holds the opposite of the opinion that a positive Wassermann reaction is a certain indication of an active or latent syphilis which is likely to "unmask" itself at any time. The attempt should be made to make the positive reaction in the blood serum disappear by nonspecific means rather than by fruitless chemotherapy procedures. The combined use of arsphenamine treatment and malariotherapy is at present the only method of this nature that can be called reliable.

New Data on the Origin of Man

Hans Weinert, anthropologist, recently pointed out to the medical society in Kiel that data concerning the origin of man, already in the possession of specialized science, have yet to become common knowledge. Although the original views of Darwin and of Haeckel based on the so-called descent from the apes have in many respects undergone revision and expansion, the assertion that science should reject as false this earlier theory of the evolutionary process is out of the question. Within the great order of Primates the anthropoid apes occupy a wholly unique place full of amazing significance for the natural history of the human race. Weinert described the results of investigations in the spheres of comparative anatomy and physiology, this material represented in part data that have been available for some time although not well known. In the light of present day theories of heredity it would appear certain that among the anthropoid apes the orang-utan must figure prominently in evolutionary history, since this species, if the results of recent investigations are to be credited, occupies a place much nearer the lower apes than to the anthropoid gorilla and chimpanzee. The two latter African anthropoids possess in their turn so many inherited characters similar to the human as to point to a common relationship. In 1932 Weinert classified the three species gorilla-chimpanzee-man together as Sumnoprimates, namely, the most highly developed of the

Primates Then within this suborder of Summoprimates differentiation of characters was determined among all three species (the two apes and man) which seemed to place the chimpanzee nearer to man than to the other anthropoid apes. Weinert condenses his conclusion, or "anthropopithecus theory," as follows: "There remains extant today an animal species that possesses several inherited characters in common, not with other animals, but with our own human kind. This species is the African chimpanzee. This is not saying we are descended from chimpanzees but it does mean that there once was an ape-man species the descendants of which still exist today in the chimpanzee and in man, while all other existing species of anthropoid apes became differentiated from this intermediate type at an earlier date and hence fail to exhibit today the chimpanzee-human characters." It is certain that such a species existed at one time but it is impossible to state whether it constituted a race of anthropoid apes or was already a race of ape-men.

The Elimination and Accumulation of Digitalis Glucosides

Professor Lendle of the University Institute of Pharmacology lately discussed before the Berlin Medical Society a new method of testing the volumetric determination of elimination and accumulation of digitalis glucosides. By a procedure of his own device which makes use of "critical infusion velocity" it was possible to determine the amount of glucoside detoxicated by the organism per kilogram and per unit of time. In rabbits this value amounted per hour to 20 per cent of the lethal dose of g-strophanthin and digitoxin. In other animals, different values were determined both in general and for individual glucosides. In his investigations of the tendency to accumulate Lendle used a combination of the methods of Fränkl and Hatcher. For seven days cats were subjected to small dosages of glucoside subcutaneously injected, on the seventh day the effective residuum of the administered glucoside still present in the organism was determined by titration of the 'full lethal dose.' This means that an amount of the glucoside in question was injected sufficient to cause the death of the animal, and this amount compared with what would normally constitute a lethal dose. Cumulative after-effects still showed themselves in these experiments when 3 per cent of the lethal dose of digitoxin was administered daily. A daily injection of 75 per cent of the lethal dose of k-strophanthin produced similar results. An increase in the daily dosages caused a constant corresponding rise in the cumulative effect, and the accumulation thus attained a higher value as it generally corresponded to the sum of the partial doses administered. Accumulation cannot therefore be considered as merely a chemical storing up. Since injuries to the heart muscle could not with certainty be histologically determined in these cases, such lesions cannot be considered as a cause of the cumulative effect. This demonstration of the intensified effect by distribution of the dosage over a number of days justifies the assumption that the cumulative effect of digitalis is not connected with the phenomena of concentration alone but belongs rather with those of the allopathically acting substances. Accordingly the accumulation should no longer be considered solely from the toxicologic point of view but as a prerequisite to uniform digitalization as well especially if treatment is to be carried on for a considerable period.

The Dental Physicians' Campaign Against the 'Dentists'

The fight waged by the dental physicians (zahnärzte) against the dental technicians the so-called dentists (dentisten) has been mentioned previously (THE JOURNAL, May 18, 1935, p. 1837). A few days ago a conference to discuss more effective organization among dental physicians and better means

of extending their practice was held at the ministry of the interior. This is significant. The "dentists," who as a class possess no scientific preparatory training, are able to work for less remuneration than the dental physicians and moreover are not amenable to a licensing control. The national fuhrer of dental physicians accordingly demands the institution of a numerus clausus and a division of the reich into "dental physician districts." The "young dental physicians" will be requested to engage in country practice for from five to seven years before settling in the cities. How successful this offensive of the dental physicians will be is difficult to predict, since among the poorer classes there exists considerable sentiment in favor of the 'dentists,' and the National Socialist party, which certainly is in sympathy with the Nature Cure movement, could readily apply to the dental physician question the party's frequently skeptical attitude toward the exclusiveness of scientifically trained medical men.

Of further interest are the likewise recent arguments of the national fuhrer of dental physicians before the dental physicians of Berlin. Dental caries is at present the fourth most common of diseases. Yet the campaign against this disease is being obstructed by this assumption of the professional function of the dental physicians by the "dentists" and is further complicated by the inadequate preparatory training of the latter group. A comprehensive program of dental hygiene for children can be carried out only by one single closed professional group the members of which conceive of their calling not as a means to pecuniary gain but as a mission of service in the interest of the German national health. A modern dental physician must be concerned not only with a tooth to be filled but with the diseased surroundings as well. Another important task is to be the standardization of the training and professional status of the dental physician. The success of these endeavors remains doubtful in view of the tendency dominant in Germany at present to prefer more or less paramedical methods and practitioners.

JAPAN

(From Our Regular Correspondent)

May 20, 1936.

Children with Poor Vision

Not until 1932 did the Tokyo municipal officials, for the first time, undertake to investigate the vision of school children. In the following year the first eyesight class was attached to a certain primary school on a small scale. The so-called poor vision in this country means vision that cannot be improved by any glasses. The Ophthalmic Association of Japan has defined it as follows: Children with poor vision of low degree are those who cannot see clearly even with the aid of glasses; the 0.3 in the international vision test chart, while children with a higher degree are those who can barely discern figures 1 meter distant. They are divided into two classes, A and B. Class A contains those who, with glasses, cannot clearly see the 0.3 in the international chart and can discern figures 2 meters distant. Class B includes those who, with the aid of glasses, cannot discern figures 2 meters distant. The Education Office ordered the local government to examine the vision of school children throughout the country last year. Among 3,740,215 boys and 3,625,813 girls examined they found 4,257 boys (1.25 per thousand) and 5,237 girls (1.44 per thousand) with poor vision. These figures contain 4,258 boys of class A and 4,765 girls of class B. The number of children who were allowed to postpone entering the primary school on account of poor vision was 114 forty-seven of whom were boys and sixty-seven girls. The number with poor vision increases as the school year advances. There are, for instance in the sixth year class which is the highest grade in the first primary course, more than three times as many with poor vision as in

the first year class Generally speaking, there are more weak-sighted girls than boys The causes of poor vision are first those of hereditary nature, then comes trachoma, then near-sightedness of high degree, and finally physical weakness Several classes for poor children with defective vision are to be established in Tokyo and in other great cities in the near future

Diabetes in the Japanese

In the thirty-third general meeting of the Society of Internal Medicine of Japan, April 1, in Tokyo, Prof Dr Kozo Sakaguchi of the Tokyo Imperial University read a paper on glycosuria and diabetes in the Japanese While in this country some research workers report that diabetes is on the increase, those statistics are all derived from the results of examination of patients in the larger hospitals in great cities Generally speaking, the Japanese have a milder attack of diabetes than do Europeans or Americans Consequently, most of the patients are unaware of their condition until they are forced to have their urine examined on account of some other sickness Thus reports of an increase in this disease must be well analyzed before it is believed It has much to do with the number of urine examinations, which were made less often formerly, while nowadays all practitioners make more examinations of urine The number of insured persons was only a little over 1,000 in 1881, but they numbered more than 8,000,000 in 1932 The physical examination made on application for insurance often reveals diabetes, to the applicant's surprise It may safely be said that diabetes in Japan is not showing a tendency to increase.

Semicentennial of Issue of Japanese Pharmacopoeia

The semicentennial of the issue of the Japanese pharmacopoeia was celebrated April 13 in Tokyo under the joint auspices of the Japan Pharmacology Society, the Japan Pharmacutists Association, and the four guilds of drug manufacturers Prof Dr K. Keimatsu of the Tokyo Imperial University acted as chairman.

Prizes Awarded

The Imperial Academy at a general meeting awarded its Imperial Gift for 1935 to Dr Takaoki Sasaki, the chief of the research section of the Kyoundo Hospital, and Dr Tomizo Yoshida, assistant professor in the Nagasaki Medical College, in recognition of their achievements in producing tumors The Academic Prize was awarded to Prof Dr Masaji Tomita of the Taiwan Medical College in recognition of his researches on the metabolism of an embryo Prof Dr Michizo Asano of the Nagasaki Medical College is to be given the same prize in recognition of his research on fatty acids

Professor Mita Retires

Prof Dr Sadanori Mita of the Tokyo Imperial University has reached the age limit and has retired He entered the medical college of the university as a student in 1897 Graduating with honors in 1901, he was appointed an assistant in the department of medical chemistry under the late Dr Kumagawa He was transferred to the department of legal medicine in 1904 In 1907 he was ordered abroad and went to Germany and France for three years Returning home he was awarded the highest title as a doctor, the "Igaku-Hakushu" In 1918 he was promoted to professor and held the chair of serologic chemistry, in 1924, when Dr Katayama retired, he held the chair of legal medicine as well For more than thirty years he devoted himself wholly to this university He turned out more than 250 doctors under his tuition All of the chairs in the departments of legal medicine in any medical university in this country are occupied by his followers He is expected to go to the Taiwan Imperial University as dean He is to be succeeded by Prof Dr S Furuhashi of the Kanazawa Medical College, who is one of his most prominent followers

Marriages

PERRY SANBORN BOYNTON JR, New York, to Miss Mary Ellen Heiss of East Orange, N J, June 13

WILLIAM DAVIS, Elyria, Ohio, to Miss Dorothy Garrett of New York, in Crestline, Ohio, June 20

THOMAS D ARMSTRONG Rochester, Minn, to Miss Isabel Foster of Shelbyville, Ill, June 4

ROBERT E DOWNING, Terre Haute, Ind, to Miss Mildred Pinnell of Kansas, Ill, June 10

GUY WINSTON HORSLEY, Richmond, Va, to Miss Mary Clare Wright in Petersburg, June 10

GURNEY TAYLOR New York, to Miss Renee Brebion of Greenwich, Conn, June 13

ALBERT S BACON, Albany, Ga, to Miss Sarah McLedon of Atlanta in Griffin, June 14

CHARLES ALLISON, Kankakee, Ill, to Miss Harriett Rossi of Braidwood, recently

HOWARD T WHITE, Stapleton, N Y, to Miss Helen Marjorie Terry, June 23

Deaths

Henry Sewall ♂ professor of medicine, emeritus, University of Colorado School of Medicine, Denver, died July 8 of coronary thrombosis with infarct and terminal cardiac rupture, aged 81 A native of Winchester, Va Dr Sewall received the degree of doctor of philosophy in 1879 at Johns Hopkins University, Baltimore, where he taught biology from 1876 to 1881 In 1882 he went to the University of Michigan Department of Medicine and Surgery as professor of physiology In 1889 he received the degree of doctor of medicine from the University of Denver Medical Department and was professor of physiology from 1890 to 1908 He became professor of medicine at the University of Colorado School of Medicine in 1911 and professor emeritus in 1920 Dr Sewall served as assistant health commissioner of Denver from 1891 to 1893 and for the next six years as secretary of the Colorado State Board of Health, and from 1915 to 1919 as a member of the National Board of Medical Examiners He had been president of the Medical Society of the City and County of Denver (1916), the Colorado State Medical Society (1924), Denver Academy of Medicine (1903-1905), American Climatological Society (1915) Association of American Physicians (1916) and the National Tuberculosis Association (1927) In 1930 the National Tuberculosis Association presented to him the Trudeau Medal and in 1931 he received the medal awarded by the Kober Foundation through the Association of American Physicians The University of Michigan conferred on Dr Sewall an honorary degree of doctor of medicine in 1888 and of doctor of science in 1912, Wesleyan University conferred on him the degree of doctor of science in 1926 and the University of Colorado in 1927 He was a member of the editorial board of the *American Review of Tuberculosis* from its inception in 1917 until his death, was the author of many articles on tuberculosis, immunology and clinical medicine and from its establishment in 1919 was a member of the research advisory board and an active investigator in the research department of the National Jewish Hospital, Denver

Alden Humphrey Williams, Grand Rapids, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899, fellow of the American College of Physicians member and past president of the Radiological Society of North America, past president of the Kent County Medical Society member of the staff of the Blodgett Memorial Hospital and Butterworth Hospital aged 58, died, June 10, of coronary occlusion

John Monroe Sigman, Macon, Ga, University of Georgia Medical Department, Augusta, 1904 member of the Medical Association of Georgia, served during the World War for many years a national guard officer, on the staff of the Macon Hospital aged 55, died, April 10 in the Veterans Administration Facility Atlanta, of an infection of the leg complicating diabetes mellitus

Harry Montrose Slade, Reisterstown, Md, University of Maryland School of Medicine, Baltimore, 1884 member of the Medical and Chirurgical Faculty of Maryland, county health officer from 1912 to 1924 district health officer from 1901 to 1926, aged 74, died April 15, in the Maryland General Hospital, Baltimore, of arteriosclerotic heart disease

Walter Klingeman Long ⊕ Hampton Iowa, Northwestern University Medical School Chicago 1906, formerly secretary of the Franklin County Medical Society, served during the World War, director of the laboratory and x-ray department of the Lutheran Hospital, aged 60, died, April 3, of pneumonia and abscess of the liver

Edwin Clyde Morgan ⊕ Clay Center Kan, Northwestern University Medical School, Chicago, 1910, formerly secretary of the Clay County Medical Society, member of the Kansas Board of Registration and Examination, served during the World War, aged 51, died, April 27, of chronic myocarditis and nephritis

David Hirst Mills ⊕ Oneonta, N Y University and Bellevue Hospital Medical College, New York, 1911, past president of the Otsego County Medical Society, served during the World War, on the staff of the Aurelia Osborn Fox Memorial Hospital, aged 50, died, April 15, of coronary embolism and acute tonsillitis

William Turner Van Pelt ⊕ Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1885 served during the World War, aged 71, formerly on the staffs of the Episcopal Hospital Wills Hospital and St Joseph's Hospital, member of the board of managers of the Chestnut Hill Hospital, where he died, April 26, of heart disease

Andrew James McGraw, Taunton, Mass, College of Physicians and Surgeons, Baltimore, 1906, member of the Massachusetts Medical Society, for many years mayor of Taunton, for twelve years a member of the school committee, served during the World War, aged 54, died April 20

Edwin Seymour Miller, Flagstaff, Ariz, University of Buffalo School of Medicine, 1879, served for a time as county health officer and as head of the city municipal health department for many years local surgeon for the Atchison, Topeka and Santa Fe Railroad, aged 78, died, April 29

Albert Edwin White, Houston, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1908, member of the State Medical Association of Texas, served during the World War, aged 54, died, April 12, in St Joseph's Infirmary, of cerebral thrombosis

S T D Lancaster, Spartanburg S C, Medical College of South Carolina, Charleston, 1879, member of the South Carolina Medical Association, for many years a member of the state legislature, aged 78, died, April 27, in the Mary Black Hospital, of pneumonia

Charles Henry Lefcoe, Philadelphia, Jefferson Medical College of Philadelphia, 1897 at one time associate in pediatrics and instructor and demonstrator in clinical medicine at his alma mater, aged 60, died, April 4, of coronary thrombosis and pulmonary edema.

William Homan Roe ⊕ Patchogue, N Y, College of Physicians and Surgeons, Medical Department of Columbia College New York, 1894, for many years health officer of the town of Brookhaven, aged 65, died, April 14, of arteriosclerosis and heart disease.

John Patrick Lenahan, Bellows Falls, Vt, University of Vermont College of Medicine Burlington, 1902 member of the Vermont State Medical Society, member of the school board aged 58 died April 2, of complications following an operation for appendicitis

William E Washburn, Kewanee, Ill., Hospital College of Medicine Louisville, Ky, 1899, member of the Illinois State Medical Society aged 65 on the staffs of St Francis Hospital and the Kewanee Public Hospital, where he died April 27, of pneumonia.

James Holland McCorkle, Gordon Texas University of Tennessee Medical Department Nashville, 1880 member of the State Medical Association of Texas past president of the Palo Pinto County Medical Society, aged 80, died April 17, of pneumonia.

John Calhoun Marshall, Checotah Okla Medico-Chirurgical College of Kansas City Mo 1904 member of the Oklahoma State Medical Association past president of the McIntosh County Medical Society aged 52, died April 11, of chronic nephritis

Charles Storer Knight Portland Me. Harvard University Medical School Boston 1896 member of the Maine Medical Association on the staff of St Barnabas Hospital and the Farrington Hospital, aged 63 died April 12 of cancer of the stomach.

John Bates Lyon, River Forest Ill Rush Medical College Chicago 1901 on the staff of the Garfield Park Hospital Chi-

cago, formerly on the staff of the Oak Park (Ill) Hospital, aged 56, died, April 24, of carcinoma of the lungs and of the cheek

George Walter Lewis, Belle Vernon, Pa, Jefferson Medical College of Philadelphia, 1917, served during the World War, aged 42, died, April 2, in the McKeesport (Pa) Hospital of sinus infection, otitis media and rheumatic fever

George U Lipshulch, Oak Park, Ill, National Medical University, Chicago, 1906, served during the World War, formerly member of the state legislature, aged 55, died suddenly, April 7, in Chicago, of coronary thrombosis

Robert Lee McWhorter, Gaylesville, Ala Medical College of Alabama, Mobile, 1887, member of the Medical Association of the State of Alabama, aged 71 died, April 5, in a hospital at Rome, Ga., of bronchopneumonia

Edward Johnson Logan ⊕ Providence, R I, Jefferson Medical College of Philadelphia, 1903, on the staffs of St Joseph's and Homeopathic hospitals, aged 67, died, April 8, of chronic myocarditis and chronic nephritis

Adalbert Alexander Vass ⊕ Richmond Hill, N Y, Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása, Budapest, Hungary, 1912, on the staff of the Wickersham Hospital, New York, aged 47, died, April 26

Michael Joseph Maguire ⊕ Yakima, Wash St Louis University School of Medicine, 1913, aged 52, died April 13, in St. Vincent's Hospital, Portland, Ore, of bronchial asthma, pulmonary edema and cardiac dilatation

Franklin A Marsh, Alameda, Calif, State University of Iowa College of Homeopathic Medicine, Iowa City, 1889, member of the Idaho State Medical Association, aged 79, died, April 1, of uremia and arteriosclerosis

John Stanislaus Kelly, Quincy, Mass, Middlesex College of Medicine and Surgery, Cambridge 1921, aged 49, died, April 20 in the City Hospital, Boston, of injuries received when he was struck by an automobile.

John A McLeod, Brooklyn, Long Island College Hospital Brooklyn, 1889, member of the Medical Society of the State of New York, aged 76, died, April 7, in the Long Island College Hospital, of heart disease

James Matthias Kibler, Newberry, S C, University of Maryland School of Medicine, Baltimore, 1886 member of the South Carolina Medical Association, aged 76, died, April 19, of chronic nephritis

William Thomas Sellers, Mobile, Ala, Tulane University of Louisiana School of Medicine, New Orleans, 1933, aged 26, died, April 27, in the United States Naval Hospital, Pensacola Fla, of pneumonia

George Philip Shirmer, Mount Vernon, N Y, Bellevue Hospital Medical College, 1873, aged 83, died April 10 in the Mount Vernon Hospital, of injuries received when he was struck by an automobile.

Moses Joseph Konikow, Brookline, Mass Universität Bern Medizinische Fakultät, Bern, Switzerland 1893, member of the Massachusetts Medical Society, aged 68, hanged himself, April 26

Francis Cassat Warne, Chicago, Northwestern University Medical School, Chicago, 1893, formerly a surgeon for the Illinois Central Railroad, aged 77, died, April 18, of cerebral hemorrhage.

George McCulloch, Humeston, Iowa, Rush Medical College, Chicago, 1873 formerly member of the state legislature for many years bank president, aged 87, died, April 12, of pneumonia

Charles Louis McEveety, New York, Long Island College Hospital, Brooklyn, 1909, aged 49, formerly roentgenologist at the Union Hospital, where he died, April 22 of pneumonia

William W Mitchell, Greenfield Tenn University of Tennessee Medical Department, Nashville, 1898, aged 73 died April 1, at the Methodist Hospital, Memphis of Parkinson's disease.

Edward Mark Russell, Springfield Mass McGill University Faculty of Medicine Montreal Que, 1901 aged 67, died April 21, in the Mercy Hospital, of acute appendicitis

Stephen McReynolds, Terrell Texas Vanderbilt University School of Medicine, Nashville Tenn 1884 aged 76 died suddenly, April 10 of coronary thrombosis

Julius Wesselowski ⊕ Jewell Kan University Medical College of Kansas City, Mo, 1885 aged 78 died April 17 of coronary occlusion

Correspondence

DISLOCATIONS OF KNEE JOINT

To the Editor—Under Correspondence in *THE JOURNAL*, May 9 page 1679, we note the comments of Dr Fichman on our article entitled "Dislocations of the Knee Joint" (*THE JOURNAL*, April 11, p 1252)

Dr Fichman states that our statement that "the records of many large hospitals failed to show a single case of a complete dislocation of the knee" is not in accord with the surgical literature. In answer to this we quote from Dr Fichman's own article on "Dislocations of the Knee Joint" (*THE JOURNAL*, Oct 5, 1935, p 1111), wherein he quoted the following: "Dr Ritter failed to find a single case of a dislocated knee among 23 000 accident cases at the Reconstruction Hospital." In an extensive review of the literature on dislocations of the knee we find that many articles begin with the statement as to the rarity of this condition. It was not our entire purpose to assume that we were reporting an unusual condition when we reported this case of a complete lateral dislocation of the knee but to emphasize certain important procedures in the postoperative care.

We are sure Dr Fichman did not intend to leave one with the impression that the procedure of reduction which he used was original, because such procedure, to our knowledge, has been used for many years. Besides, our patient was admitted to the hospital and reduction done Nov 1, 1934, over two months before Dr Fichman's case was first seen by him.

Our treatment was different from Dr Fichman's as regards immobilization. We applied a hip spica for six weeks while in Dr Fichman's case immobilization was done only in a posterior splint for ten days, when it was removed at intervals for active motion. Functional improvement in our case has taken place since the publication of our article, especially flexion of the leg at the knee. We want to congratulate Dr Fichman on his patient's excellent functional results.

We wish to emphasize again that having a photograph of our patient before reduction was unique. We have not, as stated in our article, found in the literature a photograph of a lateral displacement of the knee joint previous to reduction. It is not out of the ordinary that the roentgenogram in our case should be similar to Dr Fichman's because most complete lateral dislocations of the knee joint, as well as all other complete dislocations of the knee joint, have marked similarity, so far as x-ray observations are concerned.

Owing to the fact that space prevented the full publication of our bibliography in *THE JOURNAL* it was unfortunate that Dr Fichman's article was not referred to. Reference to his report does appear in the reprints of our article, however.

H EARLE CONWELL, M D
R H ALLDREDGE, M D
Employees Hospital Fairfield Ala

EXPERT GARGLING

To the Editor—Gargling with colored fluids, as suggested by Dr Walker of England in *THE JOURNAL*, June 27, page 2253, will readily prove that, to gargle well the person should first swallow the fluid he is about to gargle with the mouth wide open, head well back and then gargle it around as is the usual practice, as long as his breath will permit, he can reach thus the entire posterior pharyngeal surfaces. If his mouth is wide open when he swallows, the fluid cannot go down below the pharynx. If it does, the mouth must have closed in some way. Furthermore, if the gargler while letting the air bubble up through the fluids in his throat, making that melodious sound

of a babbling brook in a great hurry, will allow the air to go through his nose instead of his wide open mouth, and at the same time nod his head forward as he spits the fluid out, some of the fluid will readily come out through the nose. Thus he will reach mouth, pharynx, nasopharynx and accessible parts of the nose, all by one comprehensive act.

HENRY L SWAIN, M D, New Haven, Conn

AIR-TIGHT JOINT IN ANESTHETIC MASK

To the Editor—Anesthetists who use Dr Ralph Waters' closed soda lime absorption technic have been plagued by the tendency of most masks to leak between the rubber rim and the body as soon as slight stretching of the rubber has occurred. I have tried various things to achieve an air-tight joint, from sections of inner tubing to folded adhesive tape. The latter is the most successful but has obvious disadvantages. A device more sanitary and almost as effective is a couple of curved half inch strips of blotting paper slipped between the rubber rim and the celluloid or metal body, and moistened with water.

MARGARET F BENJAMIN, M D, Muncie, Ind

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

DERMATITIS IN BANANA INDUSTRY

To the Editor—Can you give me any information regarding a dermatitis in individuals who are handling bananas caused by contact either with the outer skin or the juices or the combination of these factors?

HARRY L BAEZ, M D, Pittsburgh

ANSWER.—A contact dermatitis from the uncontaminated pulp of the banana almost invariably is of allergic nature. The sensitizing agent leading to the allergic dermatitis may be different in the skin and in the pulp. Allergic manifestations from fruit are preeminently related to the skin. Patch tests with small portions of the banana pulp or the banana peel may be applied to establish the actuality of an allergic state.

Bananas are likely to harbor various forms of fungi. During the period of growth, various insecticides and disinfectants may be applied to the banana tree. Arsenical mixtures are in some use, as are also phenolic solutions. Conceivably the presence of such agents might account for a contact dermatitis when the skin of the worker touches the banana stalk or rinds. At the present time various gases are being used for the artificial ripening of bananas. There is no proof that these gases or vapors are productive of any skin diseases, but the possibility exists. One cause of dermatitis among banana handlers is the coarse twine made of jute, used for hanging the banana bunch. A jute dermatitis is a well known minor disease entity.

In the case of almost all fruit handling on a commercial scale industrial skin diseases may arise. This fact has given rise to the general term "fruit dermatitis." This term embraces a number of unrelated types of the skin disorders, some from yeasts and fungi, others from germicides and insecticides, and still others from waxes sometimes utilized in the preservation of natural fruits. Mention is now made of two reported occurrences of fruit dermatitis. Mackay and Ireland (Investigation into the Fruit Industry Health Bulletin Victoria, Australia, July-September 1928, p 481, abstr *J Indust Hyg* 11 164, 1929) have found that various forms of skin diseases exist among the handlers of peaches, lemons and crystallized fruits. Kingery and Thienes (Mycotic Paronychia and Dermatitis, *Arch Dermat & Syph* 11 186 [Feb] 1925), in investigating an epidemic of fruit dermatitis, encountered yeasts which when cultured led to a similar dermatitis when applied to the skin of animals and nonexposed workers. These authors concluded that at least certain forms of fruit dermatitis may be classed as dermatomycoses.

TREATMENT OF ACROMEGALY

To the Editor—Please give me any information you have on the present treatment of acromegaly. The patient in question is approximately 50 years old. The roentgenogram of the sella was negative and there were no changes in the visual fields. The main indication of change in the pituitary gland is exhibited in the change in the form and size of the extremities and the facial expression. The metabolic rate was -3 . The general physical condition was negative except for some enlargement of the inguinal glands. The blood pressure was 130 systolic 100 diastolic. The patient was operated on at another institution for anal contraction, anal abscess and a fistula. From the latter operation he had apparently entirely recovered. Before coming to me he had amniotin injections which he thought gave him results for a time but he has discontinued this treatment because he is positive that it is not doing him good any longer. After coming to me his main symptom has been severe headaches occurring at forty-eight hour intervals coming on in the middle of the night or early in the morning and lasting until about noon. He also has been unable to sleep except for a few hours early in the morning. He has been nervous and fearful of the outlook. He has been told that if this disease is not arrested he will become blind. He has been advised at the hospital where he had the first examination and the rectal operation to return to that institution for a course of roentgen treatments. I have been able to reduce the patient's headache from forty-eight to ninety-six hour intervals and he has been sleeping better. What information can you give me on the possible success of a course of roentgen treatments? If you have any information of value can you tell me what dosage and at what intervals treatment is given? Have you any other suggestions as to treatment in this case? Please omit name.

M. D. Illinois

ANSWER—The treatment of acromegaly is still in its empirical phase, the object of which is to decrease the amount of pituitary secretion. This disease is often associated with other glandular disturbances, and for this reason a number of glandular extracts, such as thyroid and estrogenic preparations, have been administered for the specific purpose of reducing the activity of the pituitary gland. Unfortunately, no specific therapy has yet been determined. In some instances high-voltage roentgen therapy has been effective in controlling the symptoms, in other instances the patient has been subjected to a craniotomy and an intracapsular enucleation of the pituitary with the implantation of radon seeds into the capsule. The latter procedure has been most effective in controlling the growth of the anterior lobe and bringing about a cessation of symptoms. The intracranial approach is a major procedure and is rarely resorted to unless visual disturbances occur, and then by all means, an intracapsular enucleation should be employed in conjunction with the insertion of radon seeds.

FATIGUE AND BASAL METABOLIC RATE

To the Editor—I have a patient who manifests extreme fatigue. The only positive manifestation is a basal metabolic rate of -20 . There are no physical evidences of myxedema outside of a slight fullness of the thyroid. The physical examination and x-ray studies are essentially negative. Please discuss possibilities. Omit name. M. D. New York.

ANSWER—In the majority of cases in which there is a deviation from the normal of the basal metabolic rate, the thyroid gland is at fault. A rate as low as 20 per cent below normal is probably significant. A variation of 10 or 15 per cent above or below is usually considered the normal range. It may be that there is less normal variation below than above. The clinical symptoms and a careful evaluation of all the facts are necessary for diagnosis. The basal metabolic rate, while an important guide, is not of itself diagnostic and can be considered only in conjunction with other evidences of disorder.

Fatigue is a common complaint in hypothyroidism. In mild cases there may be no other finding than a depressed basal metabolism. In fact, many of the clinical symptoms are dependent on impaired heat production. Myxedema as a fully developed syndrome may not be present. Dry skin and hair, poor tolerance of cold, and tolerance of heat are significant. The patient is not comfortable at room temperatures that are not too low for other members of the family. The pulse is usually slow. These people tend to be sluggish both mentally and physically, but often the condition has continued for long periods and they are not conscious of their condition. These symptoms may not be present. Some thin individuals with low metabolism and fatigue have accelerated heart rates and yet improve on thyroid therapy. These cases may not actually be primary thyroid disorders even though they respond to thyroid administration.

In the case described the therapeutic result of carefully observed thyroid administration might be the final diagnostic criterion.

Other glandular disorders must be considered. Simmonds disease (pituitary cachexia) is characterized by low basal metabolism in addition to weakness, weight loss, dry skin, alopecia and aged appearance. Early in the course of the dis-

ease, these symptoms may not be fully developed. The advanced case of Addison's disease is easily identified, but early atypical examples may show only weakness, weight loss, hypotension and low metabolic rate.

That low basal metabolism is usual in inanition as well as in actual starvation cannot be doubted. This was amply demonstrated in central Europe during the World War and has been shown in famine studies elsewhere. Wasting, debilitating non-febrile diseases may show variations both above and below normal. In diabetes the rate is more often moderately depressed than elevated, except in acidosis.

It has been suggested that neurosis and anxiety states may present both fatigue and low metabolism, and even that fatigue resulting from overwork or insufficient sleep may lower the basal energy production.

SENSITIVITY TO ARSPHENAMINE

To the Editor—What can be used in the place of neoarsphenamine in a patient who has become sensitized to the drug? The reaction consists of prostration, fever, sweating, nausea and vomiting following within fifteen minutes to a half hour after administration. Care has been taken to use only double distilled water in sterile ampules, to use the solution immediately and to inject it slowly. Several different batches of the drug have been tried but all with the same result. The patient is a girl aged 19 years weighing about 120 pounds (54 Kg.). She presented herself for treatment at the appearance of a secondary rash. She also had alternate courses of bismuth solution in olive oil (twelve injections of 1 cc. intramuscularly) and 0.45 Gm. of neoarsphenamine (6 10 cc. of water). She had had about eighteen injections of neoarsphenamine when the trouble developed—in other words, three courses of the drug given at five day intervals. The drug was withdrawn immediately and she was kept on the bismuth preparation for an interval of six weeks after which three injections have been attempted but always with the same result. At present she shows no evidence that she has become saturated with the drug bismuth there being no evidence of a deposit in the mucous membranes and no primary manifestations to indicate renal damage. Please advise. Kindly omit name. M. D. Minnesota.

ANSWER—Some patients develop a definite intolerance for the type of arsphenamine they are receiving, so that by changing to another type the course may be completed satisfactorily. When patients become reactive to neoarsphenamine, the use of arsphenamine given slowly and well diluted may be well tolerated. Also the use of one of the brands of arsphenamine for intramuscular use might be tried. The danger of argyria from silver arsphenamine preparations is great enough to interdict its use. Occasionally by using a neoarsphenamine made by a different manufacturer, reactions of the type described can be avoided. The use of dextrose either by vein or by mouth previous to the injection may prevent such reactions, which must be looked on as forewarnings of intolerance to the drug, which may increase with each injection. If the patient is found to be reactive to several of the various types and brands of arsphenamine, it is then necessary to limit subsequent treatment to a bismuth or mercurial preparation.

USE OF DEXTROSE INTRAVENOUSLY IN SHOCK

To the Editor—I have noticed repeatedly drops in blood pressure following intravenous injections of dextrose. I know of course, that the percentage of the solution figures in this drop. I should like to have information concerning the treatment especially of shock with dextrose in other words the effect of intravenous dextrose on blood pressure according to solutions of various percentages also whether or not it is advisable in the treatment of shock, especially traumatic and postoperative shock. What other solution is preferable? What are the contraindications to the use of dextrose? Is it advisable to use insulin with dextrose regularly? J. E. STAFFILL, M.D. Jenkins Ky.

ANSWER—Whether a rise or a fall in blood pressure will occur following intravenous injection of dextrose depends on a number of factors. In the first place, excessively rapid injection of the solution produces what has been called speed shock (Hyman and Hirschfeld *THE JOURNAL* Feb 4 1933, p. 305). When dextrose is given at the proper rate, literally drop by drop this form of unfavorable reaction is prevented. When it is given by drip phlebotomy, the effect on the blood pressure is entirely dependent on the progress of the patient's condition rather than on the treatment. Aside from supplying water and sodium chloride—the latter is important and should be provided in the solution—during a state when there is a drain on the system without chance for replenishment through the ordinary channels, the dextrose may antagonize starvation, acidosis and that is all the good dextrose-saline solution can do in shock. As this is therefore merely a matter of replacement of nutritional essentials, it has no place in the early treatment of shock. Indeed this irksome procedure may aggravate the condition by its psychic trauma. When blood has been lost it may be of detriment rather than of advantage, as it is likely to lower still further the percentage of corpuscles in the circula-

lating blood This is one of the reasons why blood transfusion is so much more important in the treatment of shock, especially that following hemorrhage, than the infusion of any other kind of fluid When there has been a great loss of salt from the system, as by excessive emesis, hypertonic (10 per cent) sodium chloride solution may be the most important emergency remedy Hypertonic dextrose solution should be avoided, as it causes crenation and possible destruction of blood corpuscles when none can be spared, and it will still further increase the existing state of hypohydration of the tissues The employment of 7 per cent acacia solution in shock is still *sub judice* It has not made a place for itself in spite of recommendation by high authorities One should therefore employ drip phlebotomy, using equal parts of 5 per cent dextrose and 0.9 per cent sodium chloride solution, as the first offering of diet to a patient who is emerging from shock and who is presumably or actually in such a condition that he is not likely to benefit from the ingestion of fluid by mouth Excepting in a case of diabetes mellitus, insulin should be employed only when sugar appears in the urine of a patient who is given dextrose phlebotomy and then only in guarded dosage to make hypoglycemia impossible.

INDUSTRIAL HAZARD OF COPPER PLATING

To the Editor—I have a patient who is employed in electroplating copper After the plating the copper is dipped in a solution of two parts of sulfuric and one part of nitric acid He has been doing the work for three months exposed to the fumes of sulfur dioxide and nitrogen peroxide, which occur following the dipping process For the past ten days he has had nosebleeds and complains of a marked loss of appetite and energy The patient has a marked pallor of face and moderate pallor of the conjunctivae and of the mucous membranes of the mouth There are two ulcers on each side of the nasal septum The blood count is red blood cells 3,100,000 hemoglobin 60 per cent, white blood cells 9,200 polymorphonuclears 74 per cent, lymphocytes 26 per cent Will you kindly explain the action of these vapors and treatment of the condition? I would also be interested in literature on industrial hazards in copper plating following this dipping process. Kindly omit name

M D, New York.

ANSWER.—Granting that this condition is the result of exposure in electroplating and is not the result of extraneous causes, it is at once to be recognized that the atmosphere of a plating room may represent a complex mixture of gases vapors and mists Rarely is it true that only one type of plating is carried out in any given plant. Simultaneously plating operations may include nickel, cadmium, chromium, copper and, rarely, lead and zinc. In the preparation stage of the metal various acids, alkalis and cyanides may find application. Furthermore, both the metals and pickling agents may contain impurities A diagnosis of "mixed intoxication" becomes warranted at times in this industry Conceivably arsenic may be present, which in combination with the hydrogen produced in the plating process may lead to arsenureted hydrogen, whereupon an anemia may arise as part of the general chronic arsenic poisoning It is more likely that the anemia may be traced to the action of acids and alkalis together with heterogeneous agents on the teeth, the alimentary tract and the mucous membranes in general This may eventuate in damaged teeth, respiratory disease and digestive disturbances, to the end that a secondary anemia may appear

The ulceration of the nasal membranes and the nosebleed are ready results from almost any severe exposure to acid or alkali vapors Sulfur dioxide on contact with the membranes quickly is changed to sulfurous or sulfuric acid, and the oxides of nitrogen thus may become nitrous or nitric acid. Ulceration from cyanogen compounds also occurs

The problem of control of the abnormal states caused by such hazards chiefly is one of eliminating the exposure. Palliative treatment is almost worthless so long as exposure is perpetuated. Exhaust systems with lateral intakes at the edges of plating and pickling tanks are highly regarded for protective purposes in plating plants In some instances special metals may be required in the building of exhaust systems, since the life of ordinary sheet metal may be short when exposed to various alkalis and acids

If further physical examination of the patient leads to suspicion that arsenic may be the guilty agent, appropriate steps should be taken to prove the presence of arsenic in the work-room atmosphere or as an impurity of some used material

Extensive information on the hazards of plating may be found in the following standard publications

- International Labor Office Occupation and Health Geneva 1930
Hamilton Alice Industrial Poisons in the United States New York
Macmillan Company 1929
Hamilton Alice Industrial Toxicology New York, Harper &
Brothers 1934
Kober G M and Hayhurst E R Industrial Health Philadelphia
P Blakiston's Sons and Co. 1924

CONSTIPATION IN INFANCY

To the Editor—A child aged 22 months weighing 28 pounds (13 Kg) and measuring 34 inches (86 cm) has been having periodic digestive upsets ever since the eruption of his teeth when he was 5 months old He has sixteen teeth now He was a full term baby in persistent occipitoposterior presentation delivered with the aid of low forceps He was bottle fed of which he was weaned at eight months His weight at 1 year was 24 pounds (11 Kg) and at birth was 7 pounds 10 ounces (3.5 Kg) He was fed orange juice after he was 4 weeks of age and every effort of giving him cod liver oil or viosterol would upset him The bowel movements would become loose and green with some mucus and a very foul odor Often they would be constipated Stool examinations were negative for blood or worms He has been getting ultraviolet and natural sunlight treatment, but still shows very slight traces of rickets At 6 months cereals were introduced and later eggs vegetables fruits and meats His stool has not been normal for months but in the last four weeks he has shown definite anorexia belches often does not vomit and suffers from constipation The stool is especially foul and at times is black it is well formed and often consists of fecal masses the size of hazelnuts I have stopped the eggs and meats completely, have limited vegetables to potatoes and have prescribed milk cereals and bread and have found him showing definite improvement However after two weeks, when the eggs and the meats were reintroduced the old condition returned The child otherwise is mentally and physically well and has not had any other illness I will appreciate your advice in this stubborn and discouraging case of chronic digestive disturbance. I would add that several good pediatricians have seen the patient with me. Their advice did not materially alter the treatment and all expressed the opinion that the child would outgrow the condition. Please omit name.

M D, New York

ANSWER.—Constipation is noted as the chief disturbing factor in this case. Certain dietary changes may aid in overcoming the difficulty If the foods are still being finely strained, it might be advisable to resort to a coarser diet. If the quantity of milk in the diet is excessive, the amount should be reduced, and pulpy fruits and more bulky vegetables should be given The addition of carbohydrates in the form of molasses, honey and jelly will increase fermentation and aid peristalsis Coarser cereals, bran and whole wheat bread are advised Plenty of water should be offered between meals Agar-agar, an indigestible carbohydrate obtained from seaweed, has the ability to absorb large amounts of water and forms a bulky mass in the intestinal tract, thus stimulating peristaltic movements Cathartics are habit forming and contraindicated At 22 months the child should be trained in regular habits of evacuation With proper instruction he should be taught the habit of going to stool and the correct muscular coordination for proper evacuation. If a proper dietary regimen and adequate habit training do not alleviate the constipation, obstructive causes should be sought for and eliminated

RELATION OF HEART LESION TO TONSILLECTOMY

To the Editor—I recently saw a 9 year old girl with a mitral valve lesion due to rheumatic fever and a septicemia The father of the girl said that doctors had attributed her valve lesion to having a tonsillectomy at 4 years of age. I know that one does not take tonsils out before the age of 6 usually but is there any evidence that tonsillectomy alone will cause a heart lesion? I have a boy at present 5 years of age who cannot eat solid foods and can hardly breathe. I intended to take his tonsils out next month but the boy's father overheard our conversation Would you kindly give me the indications for tonsillectomy in youngsters under 6? Please do not publish my name

M D., Michigan

ANSWER.—Tonsillar infections may and perhaps often do cause infections of other parts of the body, such as the joints and the endocardium, but it is inconceivable how the removal of tonsils as such could cause a heart lesion Perhaps in many instances involvement of the heart and other structures is present in cases of chronic tonsillitis, but attention is called to the lesion after the tonsils have been removed, and then erroneously the condition found may be ascribed to tonsillectomy though the operation itself was not the cause There are no definite age limits at which tonsillectomy may be done. It is a question of clinical history which is the deciding factor If there is sufficient evidence of infection in the tonsils causing injury to the patient the tonsils may be removed when the child is even only 12, 15 or 18 months of age. On the other hand, indications for tonsillectomy are usually present in the majority of cases during the ages of 3 to 8 or 10 years, but no definite time limit can be set, and indication for operation is governed by the signs and symptoms in each individual instance. There are many indications for tonsillectomy, such as repeated attacks of tonsillitis, particularly with the attacks becoming more frequent or more severe as time goes on such marked hypertrophy as to interfere seriously with breathing or swallowing, definite and repeated involvement of the regional cervical lymph glands with acute exacerbations, definite signs of focal infection in the kidneys, heart and so on coincident with or following the attacks of acute tonsillitis, tumors of the tonsils, interference with proper speech by large tonsils, or a long standing reflex cough

due to submerged tonsils in which all other possible causes for a cough have been eliminated. The presence of caseous plugs in the crypts causing fetor ex ore or giving rise to a bad taste serves as an indication for tonsillectomy.

USE OF CORBUS-FERRY FILTRATE IN GONORRHEA

To the Editor—Two years ago a married man aged 31 came to me with an acute gonorrheal urethritis. The infection remained in the anterior urethra throughout the treatment which consisted of the usual instillations of mild antiseptic solutions and some of the commonly used urinary antiseptics by mouth. After about eight weeks the infection cleared up completely as evidenced by negative smears after prostatic massage and the introduction of sounds. In December 1935 the patient again appeared with an anterior urethritis which on examination and smear proved to be a recent gonorrheal infection. Having read the very favorable literature regarding the latest treatment of gonorrhea with gonococcus filtrate I persuaded the patient to have me use this new method in the treatment of his infection this time. On about the fifth day of the appearance of the discharge I gave him the first injection of gonococcus filtrate 0.05 cc intradermally. There was a skin reaction about 1½ inches in diameter. A few days after the injection a positive urethritis also was present. December 31 he received a second injection 0.075 cc. with a reaction 2 inches in diameter. Jan. 7, 1936 he received a third injection of 0.1 cc. with a 3 inch reaction. During this time I had also been using the mild instillations just as I had the first time he had gonorrhea. January 12 he became ill with a temperature of 101 and was ordered to bed. The next day an acute prostatitis was discovered. January 18 while still in bed he developed an acute epididymitis of the left testicle. Conservative treatment was used and he went to work January 27 feeling much better although the left testicle was still swollen. From then on the urine started clearing and the discharge diminished. February 5 a fourth injection of gonococcus filtrate was given (only 0.05 cc.) with a resultant reaction 3 inches in diameter. Today he appeared in my office with an acute epididymitis of the right testicle. He feels strongly (as do I reluctantly) that the gonococcus filtrate has given him all this trouble at this infectious period. I wonder if there have been others who have had the same experience. I know that I have followed the technique carefully. I am going to be more watchful henceforth of the adage. Be not the first by whom the new is tried nor yet the last to lay the old aside in medical practice. But this has been a rather sad experience for both my patient and myself. If this should be printed please omit my name.

M D Illinois

ANSWER—Despite the enthusiastic reports of a few urologists and the impossible claims of the manufacturer's representatives, the experiences of this patient are not unique. The most striking published report of grief from the use of Corbus-Ferry gonococcus filtrate is to be found in an article by Dr. H. M. Spence in the *Oklahoma State Medical Association Journal* (28:442 [Dec.] 1935) abstr. *THE JOURNAL* February 8, p. 498. A recent survey of a number of urologists regarding their opinions of it based on actual trial showed that, with but few exceptions, its use had been discontinued either because of lack of therapeutic results or the too common precipitation of serious complications following its administration.

TREATMENT OF PINWORM INFESTATION

To the Editor—I have been consulted by a woman aged 29 who has been infested with pinworms (*Oxyuris vermicularis*) for the last four years. During this time she has taken treatment for the condition more or less constantly and has been prescribed for by at least half a dozen physicians. A careful check up on prescriptions given her show that she has taken every vermifuge recommended for the condition at least once but even so she continues to pass one or two worms at a time at frequent intervals. The diagnosis has been confirmed by microscopic examination which shows typical male and female worms and ova. Proctoscopic examination is essentially negative. Vaginal examination is negative. The patient has been told about the usual method of reinfection and has almost developed a phobia for the condition and washes her hands continually in bichloride solution. No other member of the family shows any evidence of infestation. During the past four years the patient has lived in three states and numerous communities which I believe proves that she is carrying her own source of reinfection. Any further suggestions as to treatment will be appreciated. Please omit name.

M D Kansas

ANSWER—The relative futility of "washing hands continually in mercury bichloride solution" and the proper hygiene for such cases is so well brought out in Harry Beckman's *Treatment in General Practice* (Philadelphia: W. B. Saunders Company, 1934) that one can do no better than to quote verbatim:

The length of the life cycle of *Oxyuris* from the time the eggs are ingested to the time the females crawl out of the anal opening is a little more than two weeks. It therefore the conveyance of eggs from anus to mouth by contaminated fingers can be absolutely prevented for a period of two to three weeks the infestation will be cured. This apparently simple feat is extremely difficult to accomplish. The treatment should begin with a full bath with soap and water. Special attention being paid to the anal region. After this the anal region and perineum are to be anointed with an ointment composed of 2 per

cent of ammoniated mercury in equal parts of lanolin and petrolatum, a pad of cotton applied, and the child clothed in heavy drawers that are closed front and back. After each defecation the anal region is to be thoroughly washed with soap and water, the ointment and a fresh pad applied, and the drawers put on again. At night, when the itching is at its worst, the following anesthetic preparation may be substituted for the mercury ointment:

| | Gm or Cc | |
|-------------------------------------|----------|---------|
| R. Ethyl aminobenzoate (benzocaine) | 3.0 | gr. xlv |
| Salicylic acid | 0.75 | gr. xij |
| Hydrous wool fat (lanolin) | 15.0 | ℥ss |
| Petrolatum to make | 30.0 | ℥i |
| Label: Apply as directed | | |

"It may be necessary to tie the hands, especially at night, so that they cannot be carried to the site of itching. In any case, the cleansing of the hands is of the utmost importance since ordinary washing will not suffice to rid them of the eggs. They must be thoroughly and frequently scrubbed with brush, soap and water, and the nails kept scrupulously clean. Daily full baths are desirable. If several children are closely associated, all must be simultaneously treated else mutual reinfection will be certain to take place. Bed sheets should be boiled at least twice weekly."

Internal and rectal treatments are secondary in importance to this regimen.

ANEMIA IN BLOOD DONORS

To the Editor—I have under my care a white man aged 26 weighing 150 pounds (68 Kg.) giving a history suggestive of gastric ulcer. The history reveals the astonishing information that the patient has served as a blood donor in one of our larger university hospitals for the past thirteen months. During this period he has given blood for twenty-two transfusions averaging 250 cc. to a transfusion. 1. What is the total volume of blood normally present in a 150 pound white man? 2. What is the weight of the blood in such a person? 3. What is the possible etiologic factor in the gastric ulcer? 4. What possible damage might result from repeatedly acting as a donor in so short a time? Please omit name.

M D New York

ANSWER—1. According to the usual methods of calculation, the total volume of blood in a healthy man weighing 150 pounds (roughly 70 Kg.), would be from 3,500 to 5,400 cc. There is reason to believe that the blood volume would probably remain fairly constant after repeated bleeding of say 250 cc. at intervals of about two weeks.

2. The weight of the blood in such a person according to current concepts would be from 3.5 to 4.9 Kg., which would be the equivalent of from 3,500 to 4,900 cc. in volume as the average specific gravity of human blood is about 1.055.

3. On general principles it cannot be questioned that the debility following loss of blood may favor the development as well as the recurrence of gastric and other ulcers.

4. Experience indicates that there would be danger of grave secondary anemia from the loss of 250 cc of blood about every two weeks for a period of thirteen months.

ERYSIPELOID

To the Editor—I am a physician for a rendering plant where dead horses, cows and other animals are handled. Employees have an inflammatory condition usually of the hands and I am at a loss to make a proper diagnosis. The condition comes about often by the entrance of some organism through the slightest scratch of the skin. It appears somewhat like erysipelas and seldom suppurates. It generally runs a course of about three weeks. I hope that you will be able to suggest the various possibilities as to the etiologic organisms. Please do not mention my name in publication.

M D Michigan

ANSWER—The skin disease described is undoubtedly erysipelas which is caused by *Bacillus erysipellatus suis* the same that is responsible for swine erysipelas "diamond skin disease." The organism is widely disseminated in nature as a saprophyte and pathogen. It is estimated that 50 per cent of healthy swine are carriers of this infection and it is frequently found in dead animal or vegetable matter. Its virulence and its morphology are changed by passage through animals.

The disease in man, who is relatively immune is usually mild as described in the query. Sharply circumscribed round or polycyclic red or bluish patches appear on the fingers at the site of some small wound and slowly spread seldom going beyond the wrist. After a few weeks it subsides the color changes to yellowish and the lesions disappear usually without scaling. There are as a rule no subjective symptoms, but deep pain, burning or itching may be felt.

The disease as it is seen among fishermen infected from the slime about the fish may be more severe with swelling of the part lymphangitis, swollen and tender lymph glands and even at times mild constitutional symptoms.

Rarely the acute septicemic form occurs, with diffuse erythema and severe illness, even fatal in rare instances. A chronic form with arthritis and a peculiar vegetative endocarditis also occur. These are reported from Germany but are almost unknown in this country. Not only are fishermen, handlers of swine and pork, cannerymen of fish, veterinarians, and those who handle dead animals infected, but accidental cases occur from handling rabbits, dead or alive, from the sting of a jelly fish, and even from wounds from the spines of dried fish.

A vaccine killed at 70 C causes in healthy rabbits, according to W. Jadassohn (*Handbuch der Haut und Geschlechts Krankheiten* 2:412) only a slight reaction. In rabbits that had recovered from erysipelas, a marked reaction was the response.

The treatment includes rest and the application of heat and ultraviolet rays. Most efficacious is the serum of animals immunized to swine erysipelas. This often causes serum sickness. It has been found, however, that small doses, 5 cc. injected subcutaneously in many points about the lesions, will cause a prompt regression. Occasionally it is necessary to repeat the injections after a few days. See Klauder, J. V., and Harkins, M. J. *Erysipelas in the United States*, *THE JOURNAL*, April 11, 1931, page 1205. Direct communication with Dr. Klauder, 1934 Spruce Street, Philadelphia, is suggested.

UNDULANT FEVER

To the Editor—I have a boy aged 12 in my practice with undulant fever. He has probably had it about two months. He is not nor has he been acutely ill but his temperature has been 100 F or a little over every night for at least six weeks. His physical examination is entirely negative. He feels fairly well in the morning but in the afternoon when his temperature goes up he is listless and weak. His blood serum agglutinates *Brucella abortus* in a dilution of 1:10,000. The white blood count is 6,400 with 81 per cent small lymphocytes. Are any of the various serums or vaccines that have been recommended worth using in such a case as this? Please omit name.

M D, Massachusetts

ANSWER—*Brucella melitensis* (abortus) vaccine (N N R) appears to exert a favorable influence on cases of brucellosis (undulant fever) of the type described. The vaccine is available through the usual trade sources. In view of the age of the patient it would seem advisable to begin the treatment with smaller doses than the 0.25 cc. doses ordinarily recommended. The dosage of the vaccine should be gradually increased, at intervals of three days, to approximately 1 cc. As the dosage is increased, a febrile reaction ordinarily occurs. The injection of a like amount of the vaccine three days later will ordinarily not produce so marked a reaction. If a second marked febrile reaction should occur, the dosage should be reduced to half of the amount that produced the reactions for at least two injections, after which the dosage may usually be increased without the development of severe reactions. Following the development of a systemic febrile reaction the fever usually exhibits a declining trend. The response to vaccine therapy has been best in those patients who have experienced one or two systemic reactions. The average course of vaccine therapy requires approximately 10 cc. of the vaccine. Dr. Lee Foshay of the department of bacteriology, University of Cincinnati has developed an antiabortus serum that is apparently effective during the first three months of the disease. I. F. Huddleson of Michigan State College East Lansing, Mich., has utilized a broth filtrate of *Brucella* organisms known as "brucellin," in the therapy of brucellosis with apparently good results.

SUBINVOLUTION OF UTERUS NOT RELATED TO MONSTROSITIES

To the Editor—I have a woman patient who previous to her last pregnancy had a subinvolved uterus. She recently delivered at term a monster which died after delivery. I am anxious that complete involution should take place this time. Would you advise me as to the treatment of choice in such cases of subinvolution of the uterus? Please omit name and address.

M D Oklahoma.

ANSWER—There is no positive evidence that subinvolution is one of the causes for monstrosities. These are usually due to some defect in the germ plasma. Certain kinds of monstrosities and possibly some defects of germ plasma are due to diseases of the uterus particularly endometritis—the real endometritis not the hypertrophy that has recently been found to result from abnormal hypophyseal action. It is probable also that subinvolution which was formerly ascribed to infection and laceration of the cervix may also be due to abnormal functioning of the pituitary gland. Ergot preparations, hot douches, diathermy and other heat application methods, uterine massage and active outdoor exercise have all been employed in the treatment of subinvolution. No one has yet tried endocrine therapy and a few experiments in this direction might add to our knowledge.

CARCINOMA OF OVARY

To the Editor—1 What is the frequency of carcinoma of the ovary in females prior to the establishment of the menstrual cycle (age 13 years)? 2 What is the frequency of the usual type of malignant tumor of the ovary in the same case as 1? 3 What is the prognosis as to removal of an unruptured ovary? 4 As to removal of a ruptured ovary? May I have an early reply? Kindly omit name.

M D, Massachusetts

ANSWER—1 and 2 In a collection of 1,764 cases of tumors of the ovary, Olshausen found sixty-one cases below the age of 10 years. Hubert in 1901 reported 175 cases of tumors of the ovary up to the age of 17 years. He found 115 benign and sixty malignant tumors. Of the malignant tumors, twenty-eight were carcinoma (solid and cystic) and thirty-two sarcoma. Other statistics of 202 cystic tumors of the ovary in children showed 35 per cent cystomas, 31 per cent dermoids and 34 per cent malignant tumors. Sarcomas are more common in children than carcinomas.

3 and 4 The prognosis of ovariectomy depends entirely on the degree of malignancy of the tumor. The operation itself has a very low risk. Doederlein reports a mortality of 13 per cent in 452 operations for benign lesions and a mortality of 15 per cent in seventy ovariectomies because of carcinoma or sarcoma. Segalowitz found a mortality of 53 per cent in a collection of 1,134 ovariectomies for benign lesions and a mortality of 179 per cent in 356 malignant conditions. Rupture of a cystic ovary (spontaneous or during operation) does not influence the prognosis of benign cysts. In malignant lesions the consequent spreading of malignant material through the peritoneal cavity makes the prognosis very much worse.

BLOOD TRANSFUSION FROM SYPHILITIC PATIENT

To the Editor—Would you please let me know whether a blood transfusion can be given by a donor who has had secondary syphilis, who has had adequate treatment on modern lines and whose blood and spinal Wassermann reactions are persistently negative? Please omit name.

M D, Massachusetts

ANSWER—Under ordinary conditions one would not accept such an individual as a blood donor. All prospective donors should be questioned as to whether they have ever had syphilis, malaria and other infectious diseases regardless of negative tests at the time.

Under unusual conditions, such as an emergency or when there is an unusual blood group in which a delay necessary to obtain another donor might result in serious complications or death to a patient, one would advise the use of such a donor.

It is probable that any danger to the patient would be slight compared to the deprivation of blood, and there certainly would be much less risk than is entailed in many surgical and even medical methods of treatment.

DANGERS OF INFECTION FROM EMBALMED BODIES

To the Editor—To what extent are the present methods of embalming an absolute safeguard against the spread of disease? Are there any disease conditions wherein for contagious reasons it would be inadvisable to reopen the casket at the church or the grave for the benefit of relatives and friends? If you reply through *THE JOURNAL* please omit name.

M D Missouri

ANSWER—Undoubtedly thorough cleansing of the body externally, including its surroundings, and injection of the vascular system with embalming fluid containing an adequate amount of formaldehyde will disinfect the body sufficiently to prevent the spread of infectious materials. In general, health departments, however, in order to secure the maximum safety after taking into consideration all the circumstances surrounding deaths from acute infections, have adopted rules that do not permit public funerals in deaths from certain acute infectious diseases.

TRANSMISSION OF TAPEWORM FROM DOG

To the Editor—I have a small dog which occasionally becomes infested with tapeworm. He is often fed bits from the table at meal time. Will you kindly inform me whether there is danger of transmission of the canine variety of tapeworm to man and whether man is susceptible?

REGINALD K. FRANCIS M D Inglewood Calif

ANSWER—As the dog harbors a number of tapeworms of different genera some of which can live in man as adults (intestinal infections) or as larvae (somatic infections) it is impossible to answer the question without knowing the species of worm involved. It is probable that the tapeworm referred to is *Dipylidium caninum* in which the larvae develop in the dog louse or flea and in which human infestations are acquired by the accidental swallowing of these insects. Less than a hundred such infestations of man are known and they are exceedingly rare in the United States.

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Iowa February Examination

Mr H W Grete director, Division of Licensure and Registration reports the written examination held in Des Moines Feb 25-27 1936 The examination covered 8 subjects and included 100 questions An average of 75 per cent was required to pass Five candidates were examined all of whom passed The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| Creighton Univ. School of Medicine | | (1935) | 71 |
| University of Toronto Faculty of Medicine | | (1923) | 88.3 |

Arizona April Examination

Dr J H Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held in Phoenix April 7-8, 1936 The examination covered 10 subjects and included 100 questions An average of 75 per cent was required to pass Three candidates were examined, all of whom passed. The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| University of Kansas School of Medicine | | (1935) | 79.9 |
| St. Louis University School of Medicine | | (1935) | 81.8 |
| University of Tennessee College of Medicine | | (1935) | 85.2 |

Idaho April Examination

Hon. Emmitt Pfost, Commissioner of Law Enforcement reports the oral and written examination held in Boise, April 7-8, 1936 The examination covered 13 subjects and included 130 questions An average of 75 per cent was required to pass Four candidates were examined, all of whom passed. Eleven physicians were licensed by endorsement. The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|--|--------|-------------------|----------|
| Rush Medical College | | (1920) | 75 |
| University of Minnesota Medical School | | (1934) | 84 |
| University of Oregon Medical School | | (1930) 90, (1933) | 87 |

| School | LICENSED BY ENDORSEMENT | Year Grad | Per Cent |
|---|-------------------------|---------------------------|-------------------|
| University of Colorado School of Medicine | | (1934) Colorado | (1930) Washington |
| University of Illinois College of Medicine | | (1933) | Illinois |
| State University of Iowa College of Medicine | | (1931) (1933) (1934) Iowa | (1908) |
| University of Nebraska College of Medicine | | (1933) | Nebraska |
| Western Reserve University School of Medicine | | (1933) | Ohio |
| University of Oregon Medical School | | (1932) | Utah |

Colorado April Report

Dr Harvey W Snyder, secretary, Colorado State Board of Medical Examiners, reports the written and practical examination held in Denver, April 8-10, 1936 The examination covered 8 subjects and included 80 questions An average of 75 per cent was required to pass Six candidates were examined, all of whom passed Ten physicians were licensed by endorsement The following schools were represented

| School | PASSED | Year Grad | Number Passed |
|---|--------|-----------|---------------|
| Tulane University of Louisiana School of Medicine | | (1935) | 1 |
| University of Tennessee College of Medicine | | (1935) | 1 |
| Osteopaths* | | | 4 |

| School | LICENSED BY ENDORSEMENT | Year Grad | Per Cent |
|---|-------------------------|---------------|------------|
| College of Medical " | | (1925) | California |
| School of Med of th | | (5) | Illinois |
| Indiana University | | (8) | Indiana |
| University of Louis | | (12) | Kentucky |
| Johns Hopkins University School of Medicine | | (1933) | Maryland |
| Washington University School of Medicine | | (1933) | Missouri |
| University of Nebraska College of Medicine | | (1929) (1933) | Nebraska |
| University of Oklahoma School of Medicine | | (1931) | Oklahoma |
| University of Pennsylvania School of Medicine | | (1931) | Penna. |

* Licensed to practice medicine and surgery

New Hampshire March Examination

Dr Charles Duncan, secretary, New Hampshire Board of Registration in Medicine reports the examination held in Concord, March 12-13, 1936 Twelve physicians were examined all of whom passed The following schools were represented

| School | PASSED | Year Grad | Number Passed |
|--|--------|-----------------|---------------|
| Harvard University Medical School | | (1933) (1934) | 3 |
| Tufts College Medical School | | (1934) (1935) 4 | 5 |
| Laval University Faculty of Medicine | | (1932) | 1 |
| McGill University Faculty of Medicine | | (1935) | 1 |
| Friedrich Wilhelms-Universität Medizinische Fakultät Berlin | | (1893)* | 1 |
| Schlesische Friedrich Wilhelms Universität Medizinische Fakultät Breslau | | (1927)* | 1 |

Seven physicians were licensed by reciprocity and 3 physicians were licensed by endorsement from February 6 through May 25 The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--------------------------------------|-------------------------|-----------|------------------|
| Boston University School of Medicine | | (1933) | Maine |
| Harvard University Medical School | | (1933) | Maine |

| | | | |
|---|-------------------------|--------|----------|
| Tufts College Medical School | (1928), | (1931) | Mass |
| University of Vermont College of Medicine | (1933) | (1933) | Vermont |
| Medical College of Virginia | | (1933) | Virginia |
| Year Endorsement | | | |
| School | LICENSED BY ENDORSEMENT | Grad | of |
| University of Pennsylvania School of Medicine | | (1934) | N B M Ex |
| McGill University Faculty of Medicine | (1932) | (1934) | N B M Ex |
| * Verification of graduation in process | | | |

Book Notices

The Adrenals By Arthur Grollman Ph D M D Associate Professor of Pharmacology and Experimental Therapeutics in the Medical School of The Johns Hopkins University Cloth. Price \$5 Pp 410 with 17 illustrations. Baltimore Williams & Wilkins Company 1936

This is chiefly a compilation, with little if any critical analysis, of literature covering some prominent phases of the subject. A bibliography of 704 references is appended. In view of the fact that this corresponds to not more than about a tenth of the total number of published articles on the adrenals (as a conservative estimate), the author may be congratulated for his courage in undertaking to sift out of so enormous a mass of heterogeneous material that which he considers worthy of record. In view of the superabundance of available literature, an onus probandi rests on the author of a monograph to establish its *raison d'être*. Its merit may be judged by its content of new or unpublished material, critical analysis of existing literature, especially controversial subjects, elaboration and discussion of the author's own original contributions and of his experience in the field, and other similar considerations. These form the basis of the present review.

Half of the space in the book is devoted to historical, anatomical and clinical material. In addition, some forty-two pages are devoted to chemistry and pharmacology of epinephrine. This seems entirely out of proportion to the space devoted to the physiology and pathology of an organ whose obscure function in health and disease has been a challenge to investigators for nearly a century. At any rate, the subjects are sufficiently and more extensively treated in existing available works.

The outstanding new contribution is represented by the coinage of the term "androgenic" to designate a zone in the adrenal cortex already well named as the "juxtamedullary" zone. The latter indicates its anatomic position while the former implies a functional distinction that is far from being established. According to information obtained from the Council on Pharmacy and Chemistry the term androgenic has been employed previously, by others, to designate activity of substances, termed "androgens," that are extracted from testes and from urine. Although pathologic manifestations involving secondary sex characters are known in which neoplastic development in the adrenal may be found in this zone, it appears unwarranted to designate specifically this portion of the adrenal by a term which has sex functional implications, unless such function is adequately proved. The author leans strongly for support on this pathologic evidence but overlooks the significance of the fact that the juxtamedullary zone undergoes or has undergone regression at the period when secondary sex characters are manifested, the very period when one should expect continued presence or hyperplasia of cells that are endowed with androgenic potentiality.

A number of inaccuracies occur, e g (p 88), referring to the intestinal strip as a reagent for detecting epinephrine, it is stated that "Cannon and Hoskins claim this test to be sensitive to epinephrine in a dilution of 1 to 400 millions." This cannot be found in the paper by Cannon and Hoskins referred to, although in a previous paper by Cannon and de la Paz there is evidence that their intestinal strips reacted to epinephrine concentrations of from 1 to 1 million to 1 to 3 million, while Magnus obtained reactions with 1 to 20 million. Another, more glaring inaccuracy is the statement (p 98) "Stewart and Rogoff's failure to demonstrate that sensory stimulation does not increase the secretion of epinephrine was due probably to the experimental methods which these authors utilized." Such a statement is absurd, since the literature clearly shows that Stewart and Rogoff have consistently found the exact opposite of what is here alleged from their experiments. Indeed, this is one of the principal points of difference between them and Cannon, in their long standing controversy.

Regarding this controversy, which has held the interest of physiologists for many years, the author has almost nothing to say. Cannon's theory of emergency function of the adrenals is scarcely given mention, although this is not only the most prominent but the most seriously contested theory of adrenal function. During many years Cannon and his pupils have ably and intensively labored to support the theory while, with equal ability and intensity, Stewart and Rogoff have elaborated experimental evidence controverting it. This important phase of the subject relating to adrenal function is evaded by assuming the safe position that Cannon may be both right and wrong, with the statement (p 110) "Cannon and his collaborators are probably correct in assuming an increased output of epinephrine under various conditions in which epinephrine by its pharmacodynamic reactions would be useful to the organism in an emergency. It is very doubtful, however, if the amounts of epinephrine secreted under these conditions would suffice to be of any significance to the organism as demanded by Cannon's theory." The supposed relation of "sympathin" to various reactions attributable to epinephrine and also its relation to the emergency theory is apparently not considered. The author appears satisfied that "different methods" can account for wide differences in a "normal" rate of secretion, although the figure for the normal rate alleged by one author is about 100 times that of the figure given by another. The significance of such improbable functional variations and of the relation of these quantitative discrepancies in a normal phenomenon to functional concepts is not adequately considered.

The chapter on the adrenal cortex is not less incomplete than that on the medulla. Without depreciating the value of the author's own contributions in this field, it may be said that, since his work is too recent (since 1933) to have the advantage of confirmation, undue emphasis and disproportionate space have been given to it. Premature credence is given also to some physiologic, chemical and clinical concepts that are by no means adequately established. The original work of Rogoff and Stewart on the adrenal cortex and their demonstration of the possibility of obtaining active cortical extracts is not mentioned, and while oral administration of active cortical material is recommended in the treatment of Addison's disease, it apparently relates to the unproved 'charcoal' product described by the author and not to the product of proved merit reported by Rogoff in a relatively large, controlled series of cases of Addison's disease. The section devoted to clinical considerations is much too brief to be very useful. In spite of fairly good compilation of general conclusions existing in papers representing a prominent portion of the literature on the subject, it seems that the publishers are hardly justified in representing the book as "a complete monograph on the adrenals."

Traité d'embryologie des vertébrés Par A Brachet professeur à l'Université de Bruxelles. Revue et complétée par A Dalcq et P Gérard professeurs à l'Université de Bruxelles. Second édition. Cloth. Price 130 francs. Pp 690 with 603 illustrations. Paris Masson & Cie 1935

Brachet's book on the embryology of vertebrates was published in 1921. It was a welcome contribution to the science of anatomy. Agassiz proclaimed long ago that many of the most significant and illuminating facts of comparative anatomy must lie in comparative embryology. They throw light on the course of evolution, the principles of structure and the nature of organs. Brachet's work was characterized by method, logic and clarity of statement. His book was not simply a storehouse of facts, it was a clear logical, thought provoking interpretation of them. His mental qualities together with his winning personality won for Brachet world wide respect and popularity among anatomists and zoologists and his book was welcomed. It was devoted purely to general morphogenesis in contrast with most books in the field which, written by anatomists, made embryology ancillary to organogenesis or histogenesis. In 1930 Brachet began work on a second edition but shortly afterward was stricken by his final illness. The work was then taken over by his colleagues in the University of Brussels, Professors Dalcq and Gerard. They revised and completed it along the lines projected by the author. The first part 356 pages, deals with general embryology—sex cells, blastulation, gastrulation and germ layers. The second part, 317 pages deals with the embryology of special regions and organs. New facts requiring modification of the older inter-

pretations have necessitated the rewriting of the chapters on gastrulation, formation of the embryo, and origin of gonocytes. Professors Dalcq and Gerard have done their work well. The new edition like the old, excels in the logic and clarity of its presentation and interpretation. Many new illustrations in black and white have been added, drawn mainly by the same artist, Van Wetter. The form and printing are in the excellent style characteristic of the publisher.

Allergy of the Nose and Paranasal Sinuses. A Monograph on the Subject of Allergy as Related to Otolaryngology. By French K. Hansel, M.D., M.S., Assistant Professor of Clinical Otolaryngology, Washington University School of Medicine. Cloth. Price \$10. Pp. 820, with 61 illustrations. St. Louis: C. V. Mosby Company, 1936.

Hansel's monograph is written not for the general practitioner but for the specialist in otolaryngology or allergy who is interested in the details of these related fields. It does not limit itself to allergy of the nose and paranasal sinuses. Bronchial asthma, gastro-intestinal allergy and migraine are as thoroughly treated. The one field covered too briefly is that of the dermatologic conditions. The literature is almost completely reviewed without editorial comment except at the end of certain chapters when the data are either conflicting or confusing. In such cases the author summarizes the data critically under the term "discussion." The first four chapters are devoted to such fundamental discussion as the physiology of the nose and paranasal sinuses, the biochemistry of the secretion, and the bacteriology of the nose and paranasal sinuses. An equally adequate treatment is then given to allergy in general. The rest of the book is devoted to clinical considerations of interest to the allergist and otolaryngologist. The chapter on roentgen examination of the paranasal sinuses is particularly well illustrated, with emphasis on the value of radiopaque substances. The treatment of hay fever is thoroughly considered in the last hundred pages. Hansel is to be congratulated on accomplishing more than the title implies. His book is the most authoritative and comprehensive one on the subject. In a field where the allergist should be a rhinologist and the rhinologist an allergist, he has covered the subject so thoroughly that it may well be a bridge of understanding between the two specialties.

Sammlung psychiatrischer und neurologischer Einzeldarstellungen. Herausgegeben von Prof. Dr. A. Bostroem und Prof. Dr. J. Lange. Band IX: Wach und Wahrträumen bei Gesunden und Kranken. Von Prof. Dr. F. Kehler, Direktor der Psychiatrischen und Nervenkl. der Universität Münster in Westfalen. Paper. Price 4.80 marks. Pp. 72, with 1 illustration. Leipzig: Georg Thieme, 1935.

This monograph deals with dreamlike experiences that occur in an altered state of consciousness, but in the waking state, and also with prophetic dreams or dreams of second sight. For the former common usage would permit the term "day dream," but the author specifically objects to this term as the dreamlike experiences dealt with are independent of time of day or night and must be distinguished from dreams by the fact that actually the subject is in the waking state despite changes in consciousness in muscular tension and in reduction of responsiveness to sensory stimuli approaching that found during sleep. The author describes various states of abstraction or preoccupation, such as the hypnotic trance, fascination and ecstatic states and distinguishes these from the day dream or waking dream. The waking dream is to be distinguished from the dream of the sleeping state among other considerations by the fact that the latter are not susceptible to the will of the dreamer, while the former to an appreciable degree may be induced or dissipated at will by the subject.

The waking dream is not characterized by the dissociation and incoherence that characterizes the sleeping dream. The waking dreams are pictorial. They are pseudohallucinatory in character—the subject is always correctly oriented as to their unreality. The content of the waking dreams may represent any of the conceptions or ideas of the waking or sleeping state. The dreams are emotionally positively and agreeably charged and gratify definite urges or impulses. They may be characterized as psychic devices for self gratification through phantasy images. With some individuals the content of the dream is sexual and the excitation and gratification sexual in character. The dream may be fairy tale like in character or may at times pertain to actual past experiences of the subject.

The author also discusses "wahrträume," or "true" dreams that is, the occurrence in a dreamlike state of a historical event of which the subject has no adequate knowledge, or of an event that occurs at the same or at a future time. He describes prophetic dreams and "second sight." The close relation of these to the waking dream is traced. The author feels that no scientifically adequate researches covering these phenomena have been as yet reported. He discusses its occurrence among normal and psychopathic subjects. The occurrence of the waking dream is dependent on instinctual drives or impulses, deriving its energy from forces dependent on the peculiar personality of the subject. Waking dreams are a peculiar development of the child's impulse to play. The author believes that this phenomenon can be included with other "instinct anomalies" and may be regarded in the same light as the well known deviations in the instinctual life, such as sexual perversions, opium and other drug addictions, and criminal instinctual acts. He reports a case from his own experience in which, over a period of years, the patient compulsively indulged in primarily wishful phantasy, to the exclusion of actual accomplishment. The author insists that he is dealing with a case that belongs to a distinctive psychopathic type, belonging to the group "constitutionally psychopathic" individuals. He emphasizes hereditary determination in his own case and summarizes the peculiarities as weakness of sense of reality, feelings of inferiority, incapacity for self determination, weak gregarious tendencies, weak sexual impulses, emphasized phantasy, poor capacity for concentration, and generally weak will. He emphasizes the passivity evidenced by his patient and other members of the family.

Descriptively, the author's treatment of his subject and material is splendid, and quite complete. From a dynamic psychologic point of view his discussion is suggestive but incomplete. If he is correct in relating the cases evidencing the phenomenon he discusses to other forms of addiction, it is likely that the particular passive need for and the neurotic utility of indulgence in the phantasy could be more sharply defined through psychoanalytic studies. The author is well aware of the compensatory and wishful character of the waking dreams in his cases, but how and why the subjects have been driven into the given patterns described is not stated and probably could not be adequately stated without psychoanalytic study. It is doubtful that the designation of a distinctive psychopathic type is warranted, since probably all gradations of the phenomena described can be observed with widely varying degrees of constitutional deviation.

The Postgraduate Instruction of Health Officers and Nurses with an Appendix Giving Suggestions for the Preparation of Sanitation Personnel. By Henry E. Meleney, M.D., Associate Professor of Preventive Medicine and Public Health, Vanderbilt University School of Medicine, and Walter S. Leathers, M.D., Professor of Preventive Medicine and Public Health and Dean, Vanderbilt University School of Medicine. Paper. Pp. 73. New York: Commonwealth Fund, 1936.

This monograph is a description of the cooperative project in postgraduate instruction of health officers and nurses that is being carried out by Vanderbilt University, the state health department of Tennessee and the county health departments of Rutherford, Williamson, Gibson, Sullivan and Davidson all in Tennessee. It is a recognition of the fact that public health work depends in the last analysis not on organization but on the qualifications of personnel. "It is obvious," say the authors, "that any physician who is placed in charge of a full-time health department at the present time should have had some kind of preliminary instruction in public health administration." The same is true, of course, of nurses. The prospective and indeed imminent expansion of state and local public health work as a result of federal aid through the Social Security Act has already created a large demand for qualified workers in public health. The only way in which new positions in the public health field can now be filled with qualified personnel is by robbing some other organization. It is one of the paradoxes of this depression that in the midst of widespread unemployment there is a serious lack of qualified personnel for desirable jobs waiting to be filled. Moreover there is certainly no excess of available educational facilities in this country for the training of public health personnel. The schools of public health that are organized for postgraduate training of physicians and nurses who seek to qualify

for public health positions are strained to the limit of their resources. Standards set by committees of state and territorial health officers advising the United States Public Health Service and the United States Children's Bureau have been established on a plane lower than was admittedly desirable, because the committees were forced to recognize the dearth of qualified personnel and the lack of adequate accommodations for large numbers of trainees. In the light of these circumstances, the experiment in Tennessee on the eminently practical basis that has been established should be watched with interest. Perhaps the most constructive benefit that might arise out of federal aid to local and state-wide public health work will be the better training of personnel. Whatever may be the ultimate fate of federal subsidies, public health organizations and the public whom they serve will derive a lasting benefit from improvement in the training and qualifications of public health workers.

A Classification for Medical Libraries with Introduction Local List Index of Parasites and General Index. By Cyril C. Barnard B.A. Univ. Dipl. in Librarianship F.L.A. Librarian London School of Hygiene and Tropical Medicine. Being a Thesis Approved for the Diploma with Honours of the Library Association (1931). Cloth Price 10s 6d Pp 142 London Percy Lund Humphries & Co Ltd, 1936

This adds another to the several classification schemes now available for medical literature. The author states that it was submitted to the Library Association (British) and approved for the diploma with honors in 1931. For financial reasons it was not published until this year. Now it is printed in type-writer type by means of the replica process, a method of printing known in this country as the planograph process. This work represents the result of twenty-one years of practical experience by the author in four medical libraries of widely different types. The principle underlying this scheme is that of specific entry, namely, one place for each topic, under which are grouped all its aspects. This, of course, is contrary to the principle adopted by the Dewey system, in which works on the anatomy, physiology, pathology and surgery of an organ are distributed in four different places. The system of notation adopted is the same as that used by Cutter, pure alphabetical notation with the exception of the local or geographic list, which is numerical. The author freely admits that considerable help was derived in developing his final scheme from the Boston Medical Library classification, which did not come to his notice until 1927, several years after his initial plan. The chief advantages claimed for his classification over the Boston scheme are (1) the greater power of expansion from the use of Cutter's notation, which makes it easier to insert new topics at the most appropriate place, and (2) the more logical basis for the arrangement of specific infectious diseases. Perhaps the greatest advantage of all in this new classification system is its excellent index, a feature which all other special medical classifications have neglected to provide.

Bewildered Patient. By Marlan S. Newcomer M.D. Cloth Price \$1.75 Pp 325 Boston Hale Cushman & Flint 1936

There is a great deal of useful information in this book, and in general the patient might be expected to benefit from its reading. The book is well written. There are certain errors which ought not to have crept in, as, for example, the author's endorsement of the idea that taking of sugar in an emergency gives an immediate increase of available energy in the presence of serious fatigue. There is a reference to milk as a perfect food, which also should have been qualified. The discussion of vitamin A and its relation to resistance is subject to interpretation favorable to certain commercial claims for vitamin A which have not been acceptable to the Council on Pharmacy and Chemistry of the American Medical Association. Neither would the Council agree that it is desirable to increase the amount of vitamin D in many foods by treating them with ultraviolet rays. The Committee on the Costs of Medical Care is referred to as a Committee of the American Medical Association, the Metropolitan Life Insurance Company and other organizations! On the other hand the chapter on what a physician can do for his patient is excellent. The inaccuracies that have been mentioned are small and few in number and are the more unfortunate because they mar an excellent work which as a whole will serve to do much to clear up the confusion of the bewildered patient.

Painful and Dangerous Diseases of the Ear. A Text Book for Students and General Practitioners. By R. R. Woods M.B. F.R.C.S.I. Surgeon in charge of the Ear, Nose and Throat Department Sir Patrick Dun's Hospital Dublin. Cloth Price \$5.25 Pp 188 with 43 illustrations New York & London Oxford University Press 1936

The author states that what he believes is much needed is "detailed instruction concerning such painful or immediately dangerous conditions as occur in general practice, while leaving more specialized and less urgent matter if it is to be learned at all, to postgraduate study." This little work is systematically arranged. A chapter on essential anatomy of the various parts of the ear is followed by one on instruments, method of examination, syringing and cleaning of the ear which topics constitute the first part of the book. The author gives important points regarding the handling of appliances such as the aural speculum and the otoscope, in order that no pain or discomfort may be occasioned the patient. In the second part under the heading of acute uncomplicated aural inflammations the subjects of acute otitis externa and acute otitis media are discussed. Next come differential diagnosis of earache, acute otitis media in infants, and chronic suppurative otitis. The third part of the book is devoted to acute mastoiditis, and the fourth part to intracranial complications of ear infections. The book in a brief way gives definite information, which should be of special value to students and of more value to general practitioners and in some cases may even be used to advantage by those who are entering on the specialty of otology. The illustrations are clear and of a practical character.

Preventive Medicine and Hygiene. By Milton J. Rosenau Professor of Preventive Medicine and Hygiene Harvard Medical School. Sixth edition. Cloth Price \$10 Pp 1481 with 147 illustrations New York & London D. Appleton Century Company Inc 1935

This standard textbook on preventive medicine and hygiene, the first edition of which appeared in 1913, is distinguished in its latest edition, as always, by its completeness, its clear and useful descriptions of disease, and the technics of prevention. Numerous authorities have been consulted and have made contributions in special fields. The discussions of subjects that have come into prominence in preventive medicine and hygiene are particularly valuable. Notable are the sections on food poisonings, tularemia, air conditioning, radiation and mental hygiene. No health officer or public health department can function effectively without adequate information such as is contained in compact and convenient form in this book. A complete index adds greatly to the usefulness of the volume both for reference use and as a textbook. The bibliographies are extensive and cover source material in many languages. The book should have a place in the libraries of medical schools, health departments and other public health agencies, and in the library of the progressive physician. For the public library with limited funds this would make a comprehensive and useful reference work. The book contains relatively few illustrations, but these are well selected. There are many charts and useful statistical tables.

Thérapeutique hydro climatologique des maladies du foie et des voies biliaires. Par Paul Carnot professeur de clinique médicale à la Faculté de médecine de Paris Maurice Villaret professeur à la Faculté de médecine de Paris et René Caschera chef de clinique à la Faculté de médecine de Paris. Paper Price 20 francs Pp 152 with 4 illustrations Paris Masson & Cie 1935

This volume discusses briefly an ancient method for the treatment of the diseases of the liver and bile tracts and their associated gastro-intestinal complications by the use of various mineral waters. Empirically it has been known for centuries that these waters are of definite benefit in the treatment of chronic cholecystitis liver 'sclerosis', hepatic congestions and icterus. An attempt is made to summarize the clinical and experimental data collected over a long period. The analyses of the waters at the various French spas are given together with indications for their use in the various diseases. The more important places in France are listed and included is a brief description of the waters and a summary of the diseases for which they are apparently suited. A high degree of enthusiasm is expressed and probably should be taken with some reservation. The volume will be of some benefit to the physician in this country who is suggesting French spas for therapeutic reasons.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Privileged Communications Testimony of Physician in Absence of Jury.—During the trial of a personal injury action, a physician who had examined the plaintiff was permitted, on behalf of the defendant, to testify, in the absence of the jury, concerning the plaintiff's physical condition at the time of the examination. Later this same witness was permitted to answer hypothetical questions based on the previously given testimony. The admission of this testimony, said the Supreme Court of Mississippi, constituted error. Section 1536, Code of Mississippi, 1930, accords a privileged status to matters ascertained by a physician during the course of his examination of a patient. The fact that the disclosure in the present case was in the absence of the jury was considered immaterial. The policy of the privileged communications statute, said the Supreme Court, should be strictly observed. It is neither permissible to disclose such communications before a court in the absence of the jury, nor may hypothetical questions be asked a physician as an expert embracing matters testified to by him, without the consent of the patient. Although in the opinion of the court the testimony of the physician was inadmissible, the judgment of the trial court for the defendant was affirmed because it was the only one that could have been rendered on the facts in the case.—*Powell v Newman Lumber Co (Miss)* 165 So 299

Workmen's Compensation Acts Death in Relation to Trauma and Preexisting Leukemia.—Henry was employed at the defendants dairy farm. On July 10 and 11 he was treated for a condition on his right hip resembling a boil and for an encrusted lesion on his right ankle. At this time it was suspected that he had leukemia. On July 17, a calf kicked or stepped on his left ankle inflicting a scratch. The area surrounding the scratch became red and swollen. On July 31 he sustained a contusion of the chest and a general shaking up when a cow butted him. An ulcer developed on his left ankle which resulted in gangrene of his left leg, septicemia set in, and he died on August 12. The claimant, Henry's widow, applied for compensation under the workmen's compensation act. The commissioner found "The leukemic condition which [decedent] had was aggravated by the sepsis in his left ankle following the injury of July 17th and by the general shaking up and bruising of July 31st" and "although monocytic leukemia is in itself fatal, the decedent's death was hastened by the sepsis and by the shaking up and bruising which was followed by the septicemia." The commissioner concluded that the traumas were the immediate and proximate cause of Henry's death and awarded compensation for a period of 312 weeks. The superior court, on appeal, sustained the award in part but remanded the case for a finding as to the expectancy of life in monocytic leukemia so that an apportionment of compensation might be made under section 5223 of the workmen's compensation act which provides "In the case of aggravation of a pre-existing disease, compensation shall be allowed only for such proportion of the disability or death due to the aggravation of such pre-existing disease as may be reasonably attributed to the injury on which the claim is based. The claimant and the defendants thereupon appealed to the Supreme Court of Errors of Connecticut.

The defendants contended that even if injuries and septicemia had occurred which they denied Henry's death was caused solely by leukemia without aggravation by such injuries. The claimant however contended that the superior court had erroneously construed the commissioner's finding to mean that the cause of death was leukemia aggravated and accelerated by bodily injury rather than injury with leukemia merely a contributing cause. The Supreme Court of Errors held that the commissioner's finding should be interpreted as meaning that Henry was afflicted with a disease which would ultimately be fatal but that by reason of his injuries his death occurred

earlier than it would normally. The section pertaining to apportionment of compensation, said the court, applies whether the immediate cause of incapacity or death is the preexisting disease aggravated by injury, or whether the cause is the injury the incapacity from which has been increased by the preexisting disease or the death from which has been accelerated by it. However, the existence of a constitutional condition or latent tendency predisposing an employee to an injury does not subject him or his dependents to an apportionment unless there is a preexisting disease which, operating in conjunction with the injury, does in fact increase the incapacity or accelerate the death. Furthermore, in the opinion of the court, the evidence indicated that the maximum expectancy of life in monocytic leukemia was much less than the period covered by the award.

The Supreme Court of Errors could find no error in the judgment of the superior court and therefore affirmed it.—*Henry v Keegan (Conn)* 183, A 14

Workmen's Compensation Acts Rupture of Intestine Allegedly Due to Trauma.—The claimant, Pipkin, originally applied to the workmen's compensation commission for compensation for a hernia which he alleged resulted from accidental injuries sustained in the course of his employment. The deputy commissioner denied compensation because the claimant had failed to prove that the descent of the hernia had immediately followed the cause as was required by the workmen's compensation act. Subsequently, the claimant again applied to the commission for compensation, claiming that the accident to which he had previously attributed the hernia had caused a rupture of his small intestine. The commissioner awarded him compensation on this claim. This award was affirmed by the court of common pleas, whereupon the employer appealed to the supreme court of New Jersey.

The claimant testified that while lifting heavy barrels he felt a strain or "kink" in the region of his stomach and that later on in the same day a lighter barrel slipped from his grasp, struck him in the right abdominal region and caused him great pain in his groin. The claimant thereafter noticed a "big red mark" on his abdomen. He quit work and went home. That evening he entered a hospital, where, on the following morning, he underwent an operation for a rupture of the small intestine. The medical witness for the claimant testified that the rupture of the intestine was the result either "of a strangulation or a blow," and that "it could have been" the proximate result of the accident. The claimant must do more, said the court, than show that the condition "could have been" the result of the accident. While the claimant's evidence was meager and uncertain, leaving the matter in the realm of doubt and speculation, the testimony presented by the employer was definite and persuasive that the ruptured intestine was not caused by the accident. In the opinion of the supreme court the claimant was not entitled to compensation, and the judgment of the lower court awarding compensation was reversed.—*Wolfe & Co v Pipkin (N J)* 183 A 187

Society Proceedings

COMING MEETINGS

American Association of Obstetricians Gynecologists and Abdominal Surgeons Bretton Woods N H Sept 14-16 Dr James R. Bloss
418 Eleventh St Huntington W Va Secretary
American Congress of Physical Therapy New York Sept 8-11 Dr Nathan H. Palmer 921 Canal Street New Orleans Secretary
Colorado State Medical Society Greenwood Springs Sept 9-12 Mr Harvey T. Sethman 1612 Tremont Place Denver Executive Secretary
Idaho State Medical Association Boise Aug 31 Sept 4 Dr Harold W. Stone 105 North Eighth St. Boise Secretary
National Medical Association Philadelphia Aug 16-22 Dr W. Harry Barnes 1315 North 15th St. Philadelphia Acting Secretary
Northern Minnesota Medical Association Fergus Falls Aug 31 Sept 1 Dr Oscar O. Larsen Detroit Lakes Secretary
Washington State Medical Association Yakima Aug 31 Sept 2 Dr Vernon W. Spickard 1303 Fourth Avenue Seattle Secretary
Wisconsin State Medical Society of Madison Sept. 8-11 Mr J. G. Crownhart 119 East Washington Avenue Madison Secretary
Wyoming State Medical Society Cody Aug 24-25 Dr Earl Whedon 59 North Main Street Sheridan Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American J Digestive Diseases and Nutrition, Chicago

3: 149-212 (May) 1936

- Gastroscopic Observation Concerned with Gross Anatomy of Stomach. The Musculus Sphincter Antri. Observation of Position of Stomach. The Mucosal Folds. R. Schindler. Chicago—p. 149.
- Relationship of Histologic and Gastroscopic Findings in Diagnosis of Chronic Gastritis. Brief Review. R. Schindler. Chicago—p. 153.
- *Intra-gastric Photography. R. Finkelstein. Brooklyn—p. 155.
- The Origin, Fate and Significance of Serum Enzymes. A. W. Oelgoetz. P. A. Oelgoetz and J. Wittelkind. Columbus, Ohio—p. 159.
- *Daily Variations in Concentrations of Acid and Pepsin in Gastric Juice of Three Persons Observed for Two Months. W. C. Alvarez. Frances R. Vanzant and A. E. Osterberg. Rochester, Minn.—p. 162.
- Influence of Mucotinsulfuric Acid on Peptic Digestion. S. A. Komarov, Montreal—p. 164.
- Pyloroplasty. Gastro-Enterostomy and Partial Parasympathetic Denervation of Pyloric Sphincter and Their Relation to Emptying Time of Stomach. G. Cnsler and E. J. Van Lier. Morgantown, W. Va.—p. 167.
- Extensive Resection of Small Intestine in Rat with Especial Reference to Anemia. H. L. Alt. Chicago—p. 169.
- Studies on Auto-digestion. VI. Digestion of Living Tissues in Stomach Juice (Claude Bernard's Experiment). M. H. Maskin. R. Callahan and H. Necheles. Chicago—p. 174.
- Survey of 490 Diabetic Admissions to General Hospitals. L. C. McGee. Elkins, W. Va.—p. 178.
- Radiologic Demonstration of Allergic Reaction in Mucosa and Musculature of Colon. L. P. Gay. St. Louis—p. 181.
- Phenolphthalein Administration to Nursing Women. B. Fantus and J. M. Dymewicz. Chicago—p. 184.
- Pathologic Physiology of Stomach Following Subtotal Gastrectomy for Gastrointestinal Ulcer. F. Milanes. Havana, Cuba—p. 186.
- Anal Cryptitis. P. C. Blaisdell. Pasadena, Calif.—p. 188.

Intra-gastric Photography.—Finkelstein has used intra-gastric photography in 216 patients, roentgenography and intra-gastric photography agreed in the examination of 153 patients. Of these, fifty were reported as normal, fifty-two suffered from carcinoma of the stomach and fifty-one showed the presence of gastric ulcer. In seven patients the roentgenologist suspected carcinoma. However, the intra-gastric pictures were definitely positive. Three of these patients were operated on and the diagnosis was confirmed. In the remainder of the series, both methods differed in their diagnostic pointings. In fifteen of these patients, the intra-gastric pictures showed the presence of ulcer, most of the ulcers being quite shallow. Thirteen of these patients were roentgenographed, with the diagnosis of pyloric carcinoma in two and with negative results in the remainder. Three of this series were operated on and the diagnoses by intra-gastric photography were confirmed. In the remaining ten patients, the diagnosis was substantiated by the history and subsequent clinical course. Chronic gastritis was diagnosed twenty-eight times. In twenty-seven instances the roentgen reports were negative. In one patient the report was carcinoma of the stomach. Operation proved the presence of marked hypertrophic gastritis with no evidence of carcinoma. Three cases of gastric carcinoma were diagnosed correctly by intra-gastric photography. This observation was proved by operation on two patients, the third died with evidence of carcinoma and metastases. In two of these subjects the roentgen diagnosis was gastric ulcer, in one 'no defect' was noted. On the other hand in eight patients the roentgen examination showed the presence of ulcer which was not the diagnosis after intra-gastric photography. One of these patients was operated on but no ulcer was found. In two patients who had been operated on previously for gastric ulcer and a gastro-enterostomy performed, the roentgenograms showed patent stomas. The intra-gastric films however failed to reveal the site of the gastro-enterostomy. Intra-gastric photography should prove useful in the diagnosis of early gastric tumors especially malignant ones,

at a stage when it is difficult to demonstrate them roentgenographically. The procedure is very useful in the diagnosis of chronic gastritis in which roentgenograms are practically of no value. It should be possible to differentiate the atrophic from the hypertrophic type of chronic gastritis by means of these photographs.

Variations in Acid and Pepsin in Gastric Juice.—While studying the effect of a diet deficient in vitamin B₁, Alvarez and his associates had the opportunity of studying for two months the concentrations of acid and pepsin in the gastric juice removed almost every day from the stomachs of two women and one man. There were marked daily variations in the concentration of acid and pepsin in the gastric juice of the three persons. At times when these variations were great one gastric analysis or even three or four analyses made on successive days would have given a decidedly misleading idea of the usual ability of the particular stomach to secrete acid and pepsin. The variability in gastric secretion was different. The evidence suggests that the greatest degrees of variability are to be found in nervous, impressionable and temperamental persons who react too much to their environment. It is conceivable that the big daily changes in the digestive power of the gastric juice which take place in nervous persons can at times have deleterious effects on the mucous membranes of the stomach and the duodenum.

American Journal of Surgery, New York

32: 195-390 (May) 1936

- Postoperative Atelectasis. F. Christopher. Evanston, Ill. and J. M. Shaffer. Dayton, Ohio—p. 197.
- Diaphragmatic Hernia. Its Varieties and Surgical Treatment of Hiatus Type. P. E. Truesdale. Fall River, Mass.—p. 204.
- Regional Anesthesia. A Few General Considerations. H. S. Ruth and J. A. Stiles. Philadelphia—p. 217.
- Renal Arteriography. Preliminary Report of Experimental Study. R. B. Henline and S. W. Moore. New York—p. 222.
- Simplified Local Vaginal Hysterectomy. Indications and Contraindications. A. Sampolinski. Chicago—p. 230.
- Single Incision Transabdominal Extraperitoneal Approach to Lumbar Ganglions. C. E. Rees. San Diego, Calif.—p. 234.
- Low Mortality of Early Operation for Perforated Gastric and Duodenal Ulcer. B. T. Tilton. New York—p. 238.
- Delayed Operation in Acute Cholecystitis. Report of 134 Operations on Biliary Tract, Covering a Period of Five Years. H. L. Bass and C. E. Bird. Louisville, Ky.—p. 241.
- Nonpadded Plaster Cast for Lower Extremity. R. A. Griswold. Louisville, Ky.—p. 247.
- Infections of Parotid Gland. Further Studies on Etiology and Treatment. Sialograms of Normal and Abnormal Glands and Ducts Including Tumors. W. H. Hobbs and H. Snierson. Binghamton, N. Y.—p. 258.
- *Prevention of Gas Pains. L. E. Mahoney. Los Angeles—p. 272.
- Fractures of Shaft and Neck of Femur. Report of 119 Cases. I. E. Sims. Brooklyn and C. J. Delaney. New York—p. 277.
- Etiology of Cholelithiasis. Experiments of the Author. H. A. Petersen. Houston, Texas—p. 291.
- Contributing Factors of Peritoneal Infection in Closed Incisions of Abdomen. R. M. Harbin. Rome, Ga.—p. 298.
- Anorectal Fistula. Anatomic Considerations and Treatment. R. V. Gorsch. New York—p. 302.
- *Modern Method for Prevention of Postoperative Distention. Report of Eighty-Eight Cases. W. R. Lewis and E. L. Axelman. Philadelphia—p. 308.
- Protein Metabolism. Disturbances Under Conditions of Shock and Surgical Interference. A. Lurie. Moscow, U. S. S. R.—p. 313.
- Frost Bite. T. Kaplan. New York—p. 318.
- *Antobemotransfusion in Preventing Postoperative Lung Complications. M. W. Mettenleiter. New York—p. 321.
- Application of Adhesive Plaster. G. Zechel. Chicago—p. 324.

Prevention of Gas Pains.—Mahoney, granting that the operation is well planned and properly executed, believes that the further step to be taken to minimize abdominal postoperative discomfort is a general solid diet with modifications necessitated by different temperaments and varying conditions. The human intestinal tract is a muscular tube the mucous membrane of which secretes digestive ferments and the motility of which is largely dependent on these ferments and the presence and character of the food material in the intestine. Activity of the liver, the chemical engine of the body and the secretion of bile is greatly influenced by the amount and the variety of ingested food. Whenever starvation supervenes and the usual hospital liquid diet is really semistarvation, the bacteria normally present in the intestine increase enormously and produce large amounts of flatus. If lack of the food to which the upper intestine is accustomed continues for more than a very few

hours, those species of bacteria normally resident in the colon and cecum ascend into the ileum and jejunum and there proliferate, giving rise to huge amounts of gas and to symptoms of toxemia from absorption. Practically all successful medical treatments for colonic stasis appear to depend for their efficacy on lowering or modifying the bacterial content of the colon. The factors in health and normal well being that keep down the growth of these organisms are bile, the hydrochloric acid of the stomach and the digestive ferments, powerfully aided by the peristaltic action of the intestine, which endeavors to move the food taken in by mouth as far as the ileocecal valve in about six hours or less. Necessarily if starvation or semi-starvation is added in the form of the usual hospital "liquid diet" to the systemic shock of an abdominal operation, the secretion of hydrochloric acid, bile and the digestive ferments is decreased, or perhaps these activities are altogether abolished temporarily, and in addition peristaltic action is greatly diminished thus the multiplication of putrefactive and gas producing organisms is favored and everything possible is done to produce abdominal distention in the mild case and adynamic ileus in the severe one. Patients are urged to eat solid food soon after operation, usually the next morning. If not nauseated, they are served a tray the evening of the operative day and encouraged to partake of dry toast, jello, cream of wheat and similar articles. Water is permitted by mouth in such amounts as the patient may desire as soon as the nausea has disappeared. By permitting the early ingestion of water, forcing the feeding of solid food and adding to the feces a bulky ingredient which possesses lubricating properties, other beneficial side effects are obtained. Loss of weight is diminished and the fear of the insertion of the needle for administering fluids is abolished.

Prevention of Postoperative Distention.—In reviewing their eighty-eight cases, which form the basis of their report, Lewis and Axelman find that dimethyl carbamic ester of hydroxyphenyl-trimethyl ammonium methyl sulfite, the physostigmine derivative (prostigmine) prophylactic, has been most valuable in combating the much dreaded symptoms of postoperative distention and gas pains. In comparing these case records with an analogous series prior to their use of the prophylactic, they have found that distention and gas pains have been reduced to a negligible minimum. Prior to its use fully 60 to 75 per cent of their cases would show either subjective symptoms of gas pain or objective signs of gastrointestinal atony or both. Prior to the use of this product the glandular preparations were generally employed, but the results were not sufficiently uniform to warrant continuation of their use. With inhalation anesthetics, the first injection of the prophylactic is given from three to four hours after operation, followed by a second injection four hours later, four injections are given at intervals of four hours the first day after operation. The last dose is followed immediately by a low soapuds enema. This technic has proved effective in preventing postoperative intestinal atony. Most gratifying to the patient and the nurse, as well as the surgeon, is the elimination of repeated high compound enemas for the relief of this painful and annoying condition. With this method of administering the prophylactic peristalsis has been established within twenty-four hours after operation, whereas prior to its use in abdominal cases peristalsis was not established until after a period of forty-eight and in some cases seventy-two hours. Its use has not been attended by any untoward effects by way of systemic or local reaction, the blood pressure is not affected and cardiac action is not interrupted in any way.

Postoperative Lung Complications.—Mettenleiter employed autohemotransfusion in 300 surgical cases, injecting 20 cc. of fresh blood intramuscularly immediately after operation. No lung complications, such as postoperative bronchitis or pneumonia, were observed. Only one patient developed a small thrombotic area in one lung five days after operation. The operations performed were gastro-enterostomies, cholecystectomies, appendectomies, hysterectomies, ovariectomies, herniotomies, thyroidectomies, mastectomies and the like under general anesthesia with gas and ether tribrom-ethanol as base and local anesthesia. The absence of lung involvements indicates that autohemotherapy and not the type of anesthesia applied accounted for the good results. There is sometimes a negli-

gible amount of blood left in the wound, and it has been suggested that the absorption of this blood may render an additional autotransfusion unnecessary. The physicochemical changes in the whole blood and in the serum are so delicate and occur so rapidly that no comparison can be made between blood drawn from a vein and reinjected intramuscularly and blood left in a wound to be absorbed. These two processes are entirely different.

Archives of Internal Medicine, Chicago

57 837 1060 (May) 1936

- Clinical Observations on Nontropical Sprue. A. M. Snell Rochester Minn.—p 837
- Effect of Total Thyroidectomy in Man. Laboratory Studies and Observations of Clinical Effects in Thirty-Nine Cases. M. T. Schnitzer L. H. Van Ralte and E. C. Cutler, Boston.—p 857
- Experimental Renal Insufficiency Produced by Partial Nephrectomy. IV. Creatine Content of Hypertensive Hypertrophied Hearts of Rats Fed Whole Dried Meat. A. Chanutin and S. Ludewig University Va.—p 887
- Cooperative Clinical Studies in Treatment of Syphilis. Cardiovascular Syphilis. I. Uncomplicated Syphilitic Aortitis. Its Symptomatology, Diagnosis, Progression and Treatment. H. N. Cole, Cleveland, and Lida J. Usilton Washington D. C.—p 893
- Id. II. Syphilitic Aortic Regurgitation. Its Treatment and Outcome. H. N. Cole, Cleveland and Lida J. Usilton Washington, D. C.—p 910
- Id. III. Aneurysm. Its Symptomatology, Diagnosis, Treatment and Outcome. H. N. Cole, Cleveland, and Lida J. Usilton, Washington, D. C.—p 919
- Mechanism of Acute Experimental Heart Failure. T. R. Harrison B. Friedman and H. Resnik Jr., Nashville Tenn.—p 927
- Optimal Time to Administer Insulin. A. Sundon Jr. Philadelphia.—p 949
- Classification of Chronic Gastritis with Especial Reference to Gastroscopic Method. Study Based on 1,200 Cases. R. Schindler and Marie Ortmyer, Chicago.—p 959
- *Roentgenologic Observations on Various Types of Chronic Arthritis. G. D. Taylor, Montreal A. B. Ferguson H. Kasabach and M. H. Dawson, New York.—p 979
- Medullary Tumor of Adrenal Glands with Hypertension and Juvenile Arteriosclerosis. D. N. Kremer, Philadelphia.—p 999
- *Disturbance of Action of Respiratory Muscles as Contributing Cause of Dyspnea. A. Courmand H. J. Brock I. Rappaport and D. W. Richards Jr. New York.—p 1008
- *Daily Variation of Sugar Content of Blood and Urine During Treatment of Diabetes Mellitus. F. L. Rogers Lincoln Neb.—p 1027
- Presence in Normal Human Urine of Reticulocyte-Stimulating Principle for the Pigeon. G. E. Wakerlin and H. D. Bruner, Louisville Ky.—p 1032
- Liver and Biliary Tract. Review of Certain Recent Contributions. C. H. Greene New York.—p 1039

Roentgenologic Observations in Arthritis.—Taylor and his associates selected for roentgen study, because of characteristic clinical and laboratory observations, fifty-nine cases of rheumatoid arthritis, thirty-two of osteo-arthritis, twelve of gout, eleven of gonococcal arthritis, thirty-two of tuberculous arthritis, eleven of rheumatoid spondylitis (Marie-Strümpell) and eleven of Still's disease. Systemic decalcification was present throughout the skeleton in 95 per cent of the cases of rheumatoid arthritis but was best seen in the bones of the hands and feet. Atrophic destruction of bone was noted in 85 per cent of the cases. Marked production of bone, with lipping or osteophytes, was noted in all the cases of osteo-arthritis. Swelling of the soft tissues was present in 67 per cent of the cases of gout, effusion in 75 per cent and atrophic destruction of bone, or punched-out areas, in 83 per cent. In the early stage of gonococcal arthritis, swelling of the soft tissue is usually marked, it subsides within a few days or a few weeks. Local decalcification and slight effusion were noted in 64 per cent of the cases and decreased in the later stages of the disease in which 82 per cent of the patients showed narrowing of the joint space, 36 per cent a moderate degree of active destruction of bone and 45 per cent comparatively early healing with fibrous or bony ankylosis. In tuberculous arthritis, regional decalcification was present in 78 per cent of the cases and local decalcification in 72 per cent, and both persisted through the entire course of the disease. The roentgenologic observations in the cases of rheumatoid spondylitis were similar to those noted in cases of rheumatoid arthritis, except for the anatomic distribution. Systemic decalcification was present in 100 per cent of the cases. The roentgenologic observations in Still's disease were identical with those noted in cases of rheumatoid arthritis. There was however the frequent additional presence of epiphyseal overdevelopment because of the younger age

of the patients. The shadows made by the soft tissues are of the utmost importance in the differential diagnosis of the various forms of chronic arthritis. For example, the swelling of the soft tissues in cases of gout is so characteristically eccentric to the joint that it is possible to make a reasonably certain diagnosis on the basis of this one feature. To determine the degree and extent of changes in the soft tissue, it is necessary to have anteroposterior and lateral views of corresponding joints of the extremities. Atrophic destruction of bone occurs as frequently in rheumatoid arthritis as it does in gout. However, the size of the areas in rheumatoid arthritis is rarely as large as that seen in gout in an advanced stage. Roentgenograms may show little or no change in the early stages of rheumatoid arthritis, osteo-arthritis, rheumatoid spondylitis (Marie-Strümpell), gout, Still's disease or tuberculous arthritis. In the early stages of gonococcal arthritis, however, the roentgenograms are frequently of the greatest assistance in establishing a diagnosis. The appearance of a joint with gonococcal involvement of a duration of six weeks may closely resemble the appearance of a joint with tuberculous involvement of a duration of six months. The results of the study offer considerable evidence in support of the clinical conception that rheumatoid arthritis, Still's disease and rheumatoid spondylitis (Marie-Strümpell) are intimately related. The roentgenologic picture of Still's disease has been found to be identical with that of rheumatoid arthritis in adults, while the picture presented by rheumatoid spondylitis (Marie-Strümpell) differs from that of rheumatoid arthritis only in the anatomic distribution of the articular involvement. Rheumatoid arthritis and osteo-arthritis appear to be distinct entities on roentgen examination. Even in cases in which the two types occur in the same patient or even in the same joint it is usually possible to demonstrate the characteristic changes of each type of arthritis in the roentgenogram. There appears to be some relationship, as yet unexplained, between gonococcal infection and the arthritic changes observed in the metatarsophalangeal joints, certain types of calcaneal spurs and some types of spondylitis. An occasional puzzling case has been encountered in which the presence of a gonococcal infection has apparently modified the appearance of coexisting rheumatoid arthritis. No single roentgenologic feature is a diagnostic criterion for any one type of chronic arthritis.

Respiratory Muscles and Dyspnea—Cournand and his co workers show that, in one particular form of pulmonary fibrosis, dyspnea during mild exertion was apparently due in large part to a hypertonic state of the respiratory muscles and to a disturbance of the normal synergic relations between various groups of them. If their deductions are correct, this disturbance of action of the muscles of respiration takes its place among the numerous other factors which contribute to the causation of dyspnea and adds further to the general concept of dyspnea as a subjective sensation brought on whenever the mechanical apparatus for respiration is unable to provide easily the pulmonary ventilation required by the person's immediate physicochemical and metabolic state.

Variation of Blood and Urine Sugar During Treatment of Diabetes Mellitus—Rogers determined the daily quantitative variation in the sugar content of the blood and in the amount of sugar excreted in twenty-four in cases of diabetes mellitus. In nine cases the variation was slight in seven it was marked enough to interfere with satisfactory treatment when the injections of insulin were given before meals. The variation consisted in an early morning rise in the blood sugar content a parallel rise in the amount of sugar excreted and an afternoon fall in both. Meals did not seem to affect the curves. As a rule the variation was found in young patients with severe diabetes, while older patients with milder forms of the disease often failed to show it. The administration of insulin in anticipation of the early morning rise has resulted in more satisfactory control than could be obtained otherwise but there was no evidence that the total requirement of insulin could be reduced by this method of administration, as stressed by Möllerström. A single dose of insulin given in anticipation of the peak failed to control the condition adequately throughout the twenty-four hours. One patient showing the variation was restudied after a year and similar variability was found indicat-

ing permanence. Accurate establishment of the existence of a definite and constant early morning rise in the blood sugar level should always precede the giving of large doses of insulin in the early morning.

Journal of Bacteriology, Baltimore

31: 441-574 (May) 1936

- Kinetics of Lysis of *Escherichia coli*. C. E. Clifton and G. Morrow. Palo Alto, Calif.—p. 441.
- Dissociation and Lactase Activity in Slow Lactose-Fermenting Bacteria of Intestinal Origin. A. D. Hershey and J. Bronfenbrenner. St. Louis—p. 453.
- Bacteriophage as Related to Root Nodule Bacteria of Alfalfa. S. C. Vandecaveye and H. Katznelson. Pullman, Wash.—p. 465.
- Action of Aldehydes on Certain Cultures of *Streptococcus liquefaciens* in Milk. B. W. Hammer. Ames, Iowa—p. 479.
- Effect of Chemical Constitution of Soaps on Their Germicidal Properties. M. Bayless. Minneapolis—p. 489.
- Rice Bran Extracts and Growth of Microorganisms. R. W. Dunn and A. J. Salle. Berkeley, Calif.—p. 505.
- Status of Generic Term *Bacterium* Ehrenberg 1828. R. S. Breed and H. J. Conn. Geneva, N. Y.—p. 517.
- Conditions Affecting Production of Toxin and Porphyrins by *Diphtheria bacillus*. Note. Mary W. Wheeler and M. O. L. Crowe, Albany, N. Y.—p. 519.
- Incidence and Significance of Presence of *Borrelia vincenti* and Other *Spirochaetaceae* on Beverage Glasses. D. C. Lyons. Jackson, Mich.—p. 523.
- Experimental Poliomyelitis Induced by Intracutaneous Inoculation Strain of Virus Apparently Peculiarly Infective When Injected by This Route. J. D. Trask and J. R. Paul. New Haven, Conn.—p. 527.
- Suggested Standard Method for Investigation of Electrophoresis. L. S. Moyer. New Haven, Conn.—p. 531.
- Oxygen Uptake of Marine Bacteria. F. H. Johnson. Princeton, N. J.—p. 547.
- Studies on Anaerobic Bacteria. IX. Antigenic Relations of *Clostridium bifermentans* and *Clostridium centrosporogenes*. Elizabeth McCoy and L. S. McClung. Madison, Wis.—p. 557.

Journal of Clinical Investigation, New York

15: 241-334 (May) 1936

- *Studies on Hypochromic Anemia in Dogs. I. Evaluation of Standard Bread Diet and of Meat Diet on Formation of Hemoglobin Before and After Gastrectomy. F. Kellogg, S. R. Mettler and Katherine Purviance. San Francisco—p. 241.
- Adenoma of Pancreatic Islet Cells with Hypoglycemia and Hyperinsulinism. Report of Case with Studies on Blood Sugar and Metabolism Before and After Operative Removal of Tumor. S. H. Liu, H. H. Loucks, S. K. Chou and K. C. Chen. Peiping, China—p. 249.
- The Volume of Extracellular Fluids of Body. P. H. Laviates, J. Bourdillon and K. A. Klinghoffer. New Haven, Conn.—p. 261.
- Studies of Variations in Antistreptolysin Titer of Blood Serum from Patients with Hemorrhagic Nephritis. I. Control Observations on Healthy Individuals and Patients Suffering from Diseases Other Than Streptococcal Infections. W. T. Longcope. Baltimore, with technical assistance of C. Skala—p. 269.
- Id. II. Observations on Patients Suffering from Streptococcal Infections. Rheumatic Fever and Acute and Chronic Hemorrhagic Nephritis. W. T. Longcope. Baltimore, with technical assistance of C. Skala—p. 277.
- Effect of Epinephrine on Blood Lipoids of Normal Man. E. F. Gildea and Evelyn B. Man. New Haven, Conn.—p. 295.
- *Observations on Fate of Sodium Sulfate Injected Intravenously in Man. J. Bourdillon and P. H. Laviates. New Haven, Conn.—p. 301.
- Comparison of Electrophoretic Mobilities and Sedimentation Velocities of Red Cells from Normal and Pregnant Human Subjects. Betty R. Monaghan, C. Wegner and H. L. White. St. Louis—p. 313.
- Effect of Toxemias of Pregnancy on Renal Function. C. A. Elden, F. D. Sinclair Jr. and W. C. Rogers. Rochester, N. Y.—p. 317.
- *Parathyroid Hormone in Blood of Pregnant Women. B. Hamilton, Laura Dasef, W. J. Highman Jr. and C. Schwartz. Chicago—p. 323.
- Concerning Naturally Occurring Porphyrins. IV. Urinary Porphyrin in Lead Poisoning as Contrasted with That Excreted Normally and in Other Diseases. C. J. Watson. Minneapolis—p. 327.

Relationship of Diet, Digestion and Hemoglobin in Hypochromic Anemia Before and After Gastrectomy—Kellogg and his co workers determined the relationship between diet, digestion and hemoglobin production by producing an artificial gastric achylia in the dog by gastrectomy and hypochromic anemia by repeated bleeding. The feeding of beef to dogs having a hypochromic anemia induced by bleeding resulted in a marked rise in hemoglobin output. When, however, the stomachs of these dogs were removed and anastomoses made between the esophagus and the duodenum, the regenerative power of hemoglobin was apparently greatly reduced. Before gastrectomy the output of hemoglobin averaged 1.95 Gm daily, while the dogs were on the beef diet whereas after the operation there was an average output of only 0.08 Gm. It seems probable therefore that the gastrectomized dogs are unable to obtain from beef substances essential to the synthesis of hemo-

globin The weekly withdrawal of from 100 to 200 cc. of blood containing from 10 to 20 Gm of hemoglobin over a period of from three to eight months was necessary before the reserves were depleted—a total of approximately 400 Gm. of hemoglobin. These figures varied somewhat with the individual animal. The amount of hemoglobin appears all the more significant when compared to the total hemoglobin in circulation. Such a dog, at a weight of 16 Kg, may have a circulatory blood volume of 1,200 cc. If his hemoglobin level is 50 per cent, 12×0.42 equals 70.8 Gm of hemoglobin in circulation. The authors' normal dogs on a beef diet may be expected to produce this amount of hemoglobin in five weeks. From the experiments it would appear that, once an anemia is induced and the iron reserves are depleted, this state will persist when normal gastric secretion is lacking. Clinically, this suggests that any process depleting iron stores, such as deficient diet, prolonged and profuse menses and frequent pregnancy, in a patient with achlorhydria may lead to a hypochromic anemia, owing to the failure to get from food and to utilize properly hemoglobin-building materials.

Fate of Sodium Sulfate Injected Intravenously—Bourdillon and Lavietes investigated the fate of sodium sulfate in hypertonic solutions injected intravenously in man as regards its diffusion into body fluids, its effect on some of the electrolytes of blood and its excretion. The subjects were healthy men and women and patients with chronic nephritis. Doses injected ranged from 1.3 to 20 Gm and were in most cases accompanied by sodium thiocyanate. In some cases, potassium thiocyanate was given orally twelve hours before. The sodium ion and the sulfate ion were excreted at the same rate, and the amount of salt injected could probably be recovered totally in urine. The rate of sulfate excretion appeared to be simply proportional to the concentration of sulfate in serum. The figures obtained for the diffusion of sulfate suggest that, like thiocyanate, it is distributed only in the interstitial fluid. The larger doses of sulfate were found to cause usually a dilution of interstitial fluid and a shrinkage of red corpuscles, these phenomena being interpreted as a readjustment of the osmotic equilibrium, necessitated by the fact that neither sulfate nor sodium can penetrate cells.

Parathyroid Hormone in Blood of Pregnant Women—Hamilton and his associates determined the amount of parathyroid hormone in the blood of women by observing the rise of the rabbit's serum calcium after the injection of woman's blood. Of the thirty nonpregnant cases twenty-seven gave either a decrease, no rise or a very small rise in the rabbit's serum calcium. Quite similar results were obtained with the blood from women pregnant less than fifteen weeks. Abnormally great rises were obtained when the blood of women pregnant from fifteen to twenty-four and twenty-four to thirty-four weeks was injected, indicating that during this period of pregnancy an increase in the amount of parathyroid hormone present in the blood is rather common. Toward the end of pregnancy, however, this is much less common, as only three out of thirteen cases showed an abnormal rise, and still more rarely does such a response occur during the lactating period of from six to eight weeks. A curve based on these studies gives an approximate idea of the degree of hyperparathyroidism during different periods of pregnancy. According to Hoffmann the most potent extract can be prepared from the blood of women in the tenth month of pregnancy, the authors' observations indicate that the blood is richer in parathyroid hormone during the seventh month than at any other time, and that in the tenth month the hormone content has usually returned to normal amounts. The curves of a comparison between the calcium requirements of the fetus and the nursing infant and the parathyroid hormone content of the blood of pregnant and lactating women show a rough parallelism on the whole they are both rising until the thirty-fourth week of pregnancy. At that time, however, they diverge sharply, the hormone content returning to normal, while the calcium requirements show a marked increase. It is possible that the increasing demands of the growing fetus with respect to calcium furnish a stimulus to the parathyroids. If this is true, during the last weeks of pregnancy and during lactation this stimulus, for some unknown reason ceases to be effective also during this period there seems to be some tendency toward true tetany with lowering of the serum calcium. It is probable

that in the presence of an abnormal calcium metabolism (as in rickets) or unusual demands on the calcium metabolism (as in pregnancy) an insufficient amount of hyperactivity might also result in tetany.

Journal of Lab and Clinical Medicine, St. Louis

21: 775-882 (May) 1936

- Bacteriologic Studies of Urine Utilizing Selective Method of Culturing M. Solis Cohen Philadelphia.—p 775
- Weight Loss of Tubes of Certain Pathogenic Fungi Growing on a Specific Medium J W Williams and L Green, Cambridge, Mass.—p 785
- Hemoglobin Values in Normal Adults Over a Period of Time. Winfred Ingersoll Madison Wis.—p 787
- Studies on Trichomonas Vaginalis in Vitro H A Shelanski Philadelphia.—p 790
- Meningitis in a New Born Infant Due to Slow Lactose-Fermenting Organism Belonging to Colon Bacillus Group Case M E Mulbert and W B Seelye, Seattle.—p 793
- Phosphorus Metabolism VI Changes and Relationships in Blood Phosphorus of Rats Subjected to Blood Regeneration by Repeated Bleedings G E Youngburg and Mamie V Youngburg Buffalo.—p 798
- *Methods for Determining Erythrocyte Permeability J Koopman and I D Falker New York.—p 808
- Leukopenic Index II Concerning Nature of Food Sensitization in Intractable Allergic Diseases H J Rinkel, Kansas City Mo.—p 814
- Safely Induced Fever Therapy in Diabetic Individual B Y Glassberg St. Louis.—p 820
- Selective Elimination of Neutral Red Through the Gastric Mucosa Experimental Approach. S Morrison R E Gardner and D L Reeves Baltimore.—p 822
- *Importance of Oxyntic Cell in Pernicious Anemia S Morrison, Baltimore.—p 828
- Adaptability of Lidberg Paraffin Embedding Oven for Various Types of Tissue Work. C L Mattas Scranton Pa.—p 830
- Method for Measuring Fragility of Erythrocytes in Salt Solution. R T Beebe and E P Hanley Albany N Y.—p 833
- Diagnosis of Carcinoma of Stomach from Fragment of Tumor Obtained During Routine Gastric Analysis L G Jekel, St. Louis.—p 836
- Method of Staining Protozoa in Bulk. W S Stone Washington, D C.—p 839
- Rapid Presumptive Diagnosis of Lymphogranuloma Inguinale Specific Intradermal Test with Antilymphogranuloma Inguinale Goat Serum. J T Tamura Cincinnati.—p 842
- Comparison of Ziehl-Neelsen and Spengler Techniques of Staining Tubercle Bacillus. H Wald and Charlotte C Van Winkle, Oak Terrace, Minn.—p 844
- Frozen Stopcocks C E Scovern Jr Chicago.—p 847
- Comparison of Mediums for Plating Lactobacillus Acidophilus D B Sabine Yonkers N Y.—p 848
- Method of Three Color Photography Adapted to Photomicrography Lantern Slides and Paper Prints O R Hyndman, Iowa City and T Putnam Boston.—p 850
- Inexpensive Laboratory Timing Device. N A David and R. A. Lincoln, Morgantown, W Va.—p 860
- Improved Electropolygraph R. A Wand London Ont.—p 864
- Muscle Nerve Stimulating Accessory for Harvard Kymographs O G Harne and C. E. Butts Baltimore.—p 869

Methods for Determining Erythrocyte Permeability—Koopman and Falker developed rapid tests for determining the permeability of erythrocytes to any substance that does not react with them. 1 The substance to be tested is dissolved in physiologic solution of sodium chloride. This solution is added to washed erythrocytes. If the cells are permeable to the substance tested, after the substance enters the cells, on the sudden addition of a large quantity of physiologic solution of sodium chloride, hemolysis will take place. Hemolysis will take place only when after the addition of physiologic solution of sodium chloride the difference between the amounts of substance outside and inside the cell causes sufficient pressure within the cells to burst them. 2 When the molar weight of any solute in water equals or exceeds the molar weight of physiologic solution of sodium chloride, the osmotic pressure of such solutes is adequate to prevent hemolysis, excepting in those instances in which erythrocytes are permeable to the solutes. In these instances the rate of hemolysis is directly proportional to the permeability of the erythrocytes. These tests are not applicable to substances which either injure or fix the cells. The authors think that hemolysis is an all-or none phenomenon and that cells hemolyze in hypotonic solutions because of the pressure of the electrolytes in the cells rather than the absorption of water by the cells.

Importance of Oxyntic Cell in Pernicious Anemia—Morrison has been able to demonstrate that neutral red is eliminated selectively by the oxyntic cell of the stomach and that its quantitative excretion runs parallel with the hydro-

chloric acid secretion, i. e., it appears earlier and is excreted in larger quantities in hyperchlorhydrias than in hypochlorhydrias or normal acidities. Neutral red excretion also differentiates true from false achylia, because it appears in the latter but not in the former. These results have been so definite that they have been used clinically, the correlations were made on human beings. His work leads him to believe that the intrinsic factor is a product of the oxyntic cell not only because its secretions parallel one another in the overwhelming majority of cases of pernicious anemia but also because neutral red is eliminated by the oxyntic cell and is at the same time absent only in true achylia. An understanding of the function of this cell may elucidate the mechanism of the production of pernicious anemia.

Kansas Medical Society Journal, Topeka

37: 177-220 (May) 1936

- Food Allergy H. J. Rinkel Kansas City Mo.—p. 177
Factors Determining Time of Operation on Patients with Hyperthyroidism C. A. Gripkey, Kansas City—p. 184
*Precancerous Dermatoses J. G. Missildine and J. V. Van Cleave, Wichita—p. 187
*New Departure in Treatment of Typhoid Group Infections M. O. Nyberg Wichita—p. 190
Malignant Thyroid Adenoma in Lung Causing Empyema J. E. Wolfe, Wichita—p. 191
Congenital Heart Deformity J. G. Evans Kansas City—p. 193

Precancerous Dermatoses—Missildine and Van Cleave point out that the term "precancerous" is attached to a group of skin manifestations which, if followed to the end product of their development, may result in malignant degenerative tumors of the skin. A great many lesions, such as verruca seborrhoeica and keratosis senilis, although clinically benign, already show malignant degeneration of their cellular constituents when examined under the microscope. Included in this group are keratosis senilis, verruca seborrhoeica, leukoplakia, radiodermatitis, xeroderma pigmentosum, cornu cutaneum, the precancerous melanoses, kraurosis vulvae and Bowen's precancerous dermatosis. With the exception of Bowen's disease, all the foregoing are truly precancerous. Recent investigation tends to show that this disease starts as true cancer cells and should be excluded from the precancerous classification. Other investigators contend that many cases are on record in which malignant degeneration occurred only years after the first appearance of the disease, and that it should continue to be considered precancerous. Only early recognition and proper treatment of precancerous lesions will substantially reduce the incidence of this dreaded disease. It is often impossible to detect lesions of the viscera, but those of the skin or orificial mucosa can be easily recognized and most of them can be treated successfully.

Treatment of Typhoid Group Infections—When the diagnosis of typhoid or of paratyphoid A or B is established, Nyberg gives the patient 10 cc. of a 1 per cent solution of mercurochrome intravenously. He gives one 3 grain (0.2 Gm.) enterically coated tablet of mercurochrome every four hours orally. Eight hours following the intravenous injection of mercurochrome 1,200 cc. of physiologic solution of sodium chloride is given intravenously. Not less than one hour should be consumed in administering it. This treatment is repeated daily for three days, the tablets are given for two weeks longer before stool cultures are made and, if the stools remain positive for typhoid or paratyphoid organisms their administration is continued. Two cases are reported in which treatment was successful.

Michigan State M. Society Journal, Grand Rapids

35: 293-358 (May) 1936

- Surgery of Childhood G. C. Penberthy Detroit—p. 293
Incidence, Differential Diagnosis and Immediate and Remote Prognosis of Toxemias of Late Pregnancy C. H. Peckham Baltimore—p. 301
Do the People of Michigan Want a Guaranty of Good Medical Service? H. H. Cummings Ann Arbor—p. 309
Teaching and Learning J. E. Davis Detroit—p. 311
Human Botryomycosis Case Report. A. E. Aronstam Detroit—p. 315
Circumcision of Glans Penis Review of Literature Case Report. O. Van Der Velde, Holland—p. 317
Diseases of the Prostate Gland G. J. Thompson, Rochester Minn.—p. 320
Hypertension Etiology and Effects. F. A. Weiser Detroit—p. 323
Uterus Didelphys. A. W. Sanders Detroit—p. 326
Cancer Survey of Michigan F. L. Rector New York—p. 328

Military Surgeon, Washington, D. C.

78: 329-412 (May) 1936

- Field Chlorination of Water Factors Influencing Use of Stahle Calcium Hypochlorite in Water Sterilizing Bag L. A. Fox—p. 329
Experimental Resurvey of Basic Factors Concerned in Prophylaxis in Syphilis J. F. Mahoney—p. 351
Captain Ezra Z. Derr Medical Corps United States Navy, Retired The Last Medical Officer of Old Ironsides L. H. Roddis—p. 363
Cigaretts as Cause of Irritation W. F. Greenwald—p. 366
Mosquitoes of Fort DuPont Del. D. W. Cairns—p. 369
The Medical Reserve Corps B. Friedlaender—p. 387
Dr. William Beaumont (Extracted from The Old St. Louis Arsenal) M. A. Reasoner—p. 389

Minnesota Medicine, St. Paul

10: 269-342 (May) 1936

- Treatment of Overflow Incontinence of Neurogenic Vesical Dysfunction C. D. Creevy Minneapolis—p. 269
Radiation Therapy R. G. Alkison Minneapolis—p. 274
Mortality in Appendicitis Study of Two Hundred and Twenty Nine Cases Taken from Surgical Services of the Ancker Hospital E. M. Jones St. Paul—p. 278
Tarsal Scaphoid Fractures and Subastragoloid Joint R. L. Gorrell and F. L. Wilson Stuart, Neb.—p. 280
Ankle Joint Fractures O. W. Parker Ely—p. 284
Physiologic Factors Relating to Surgery of Colon L. M. Larson Minneapolis—p. 289
Myoclonus Epilepticus in Children Report of Case E. H. Harris, Hubbard Woods Ill.—p. 293

Nebraska State Medical Journal, Lincoln

21: 161-200 (May) 1936

- The Autopsy G. W. Covey Lincoln—p. 161
Protamine Insulinate Preliminary Report. F. Conlin Omaha—p. 165
Present Status of Tests for Acute Alcoholism B. C. Russum Omaha—p. 167
The Future in the Practice of Medicine M. C. Smith Curtis—p. 172
Fractures and Dislocations of Cervical Spine H. F. Johnson Omaha—p. 175
Diagnosis and Treatment of Anemia V. Hemolytic Anemia J. C. Sharpe Omaha—p. 179
The Doctor and His Education. W. J. Hammill Omaha—p. 181
Cardiac Clinic Number II Rheumatic Heart Disease Etiologic Factors and Incidence C. E. Thompson and F. W. Nicholas Omaha—p. 185
Carcinoma of Penis. M. Emmert Omaha—p. 187

21: 201-240 (June) 1936

- *Prevention and Treatment of Scarlet Fever J. P. Koehler Milwaukee—p. 201
New Activities of the State Medical Society of Wisconsin R. M. Carter Green Bay Wis.—p. 209
The Future in the Practice of Medicine M. C. Smith Curtis—p. 212
Classification and Nonsurgical Treatment of Cataract D. D. Sanderson Lincoln—p. 216
Diagnosis and Treatment of Anemia VI. Aplastic Anemia J. C. Sharpe Omaha—p. 219

Prevention and Treatment of Scarlet Fever—Koehler considers the following a successful, safe and practical program for the control of scarlet fever. 1. An intelligent quarantine, based on scientific knowledge and practical experience instead of on tradition and expediency, should be established. 2. All school children less than 7 years of age should be isolated during a serious scarlet fever epidemic for at least six weeks unless such children are immune to scarlet fever as shown by a negative Dick test. 3. All susceptible children in homes with scarlet fever should be immunized as soon as they have passed the incubation period. Statistics show that approximately 25 per cent of all scarlet fever cases are secondary cases in families developing during or after release from quarantine of the primary case. Permitting infectious convalescent scarlet fever patients to return to their homes without the susceptible children in such homes having been immunized first is nothing short of criminal, and yet that is what is being done. 4. The value of throat cultures should be honestly appraised. If a negative throat culture does not always mean that a former patient is no longer infectious, the patient as well as the members of his family should be so informed instead of all being given a false sense of security. At the present time, cultures are not sufficiently reliable to justify unrestricted confidence in them. 5. An intensive scarlet fever immunization program should be in effect for all susceptible children similar to the present diphtheria and smallpox preventive programs. 6. Scarlet fever convalescent serum should be available for the treatment of the more severe types of scarlet fever cases.

New England Journal of Medicine, Boston

214: 913 960 (May 7) 1936

- What We Have Learned from the Toad Concerning Hypophyseal Functions B A Houssay, Buenos Aires, Argentina, South America.—p 913
- Study of Use of Coramine in Dealing with Effects of Barbituric Acid Derivatives P G Schnbe, Dorchester Centre, Mass.—p 926
- Frequency of Active Tuberculosis in Hospital for Mental Diseases with Especial Reference to Schizophrenia. D Rothschild and M L Sharp, Foxborough, Mass.—p 929
- Congenital Defect of Pectoral Muscles R R Little, North Reading, Mass.—p 934
- Acute, Ulcerative Terminal Ileitis and Colitis Case Report T F Corriden, Northampton Mass.—p 936

New York State Journal of Medicine, New York

36 757 842 (May 15) 1936

- Stutter Type Personality and Stuttering J S Greene, New York.—p 757
- Diagnostic Significance of Pain F J Kalteyer Philadelphia.—p 766
- Nails and Their Diseases. M J Cantor Brooklyn.—p 773
- Clinical Pathologic Study of Meningitis M Helfand New York.—p 781
- Hypothyroidism H L Frosch, New York.—p 785
- *Studies in Eczematizing Properties of Soaps J W Jordan H L Walker and E D Osborne Buffalo.—p 791
- The Problem of the Broken Hip J J Moorhead, New York.—p 796
- Simple, Inexpensive Apparatus for Producing an Artificial Pneumothorax N Strauss and G H Kojac, Bronx New York.—p 801
- Study of One Hundred Cases with Administration of Drug (Salpyrine) Containing the Benzene Ring C H Nammack and Nielsina Thorsteinson, New York.—p 803
- Advantages of Single Beginning Diabetic Diet for Adults J R Scott, New York.—p 805
- The Gloved Hand Forearm Splint in Treatment of Colles Fracture N H Rachlin, Brooklyn.—p 807
- Physical and Physiologic Growth as Factor in Child Adjustment I S Wile, New York.—p 809
- Institutional Outbreak of Bacillary Dysentery Park Hiss Type Case Report I Miller, Port Richmond.—p 813
- Acute Reflex Bone Atrophy (Sudeck's Disease) Short Summary of Literature and Two Typical Cases E K Cravener Schenectady.—p 815
- Between Mental Health and Mental Disease B Liber New York.—p 820

Eczematizing Properties of Soaps—Jordan and his associates performed 2,300 patch tests on 115 patients with dilutions of 1 100 and 1 400 of eight widely used toilet soaps and two laundry soaps. Approximately 14 per cent of individuals with normal skins reacted to dilute soap solutions. A positive patch test, therefore, does not always mean that an individual will develop an eczema when exposed to a substance giving such a test. Approximately 50 per cent of the subjects with a dermatitis reacted to dilute soap solutions. Four of seven individuals with other forms of allergy reacted to dilute soap solutions. These results indicate that polysensitivity is common among eczematous patients and that a careful history of allergy is of great importance in the interpretation of patch tests. A soap dilution of at least 1 100 and preferably also a dilution 1 400 should be employed in the performance of the patch test. Mild erythema without papules or vesicles should not be regarded as a positive reaction. The alkali content of soap in solution is of minor importance in the production of eczema. The fatty acids formed on hydrolytic dissociation together with the many miscellaneous ingredients of soaps, most of which are known eczematizing agents, seem the most likely etiologic factors in the production of eczema due to soap. Soaps are definitely the cause of some cases of contact eczema and a contributing factor in many others. Patch tests properly performed and interpreted should be of great aid in the diagnosis of soap eczema.

36 843 898 (June 1) 1936

- The Clinician's Function in Medicine Horder London England.—p 843
- The Problem of Tuberculosis K Fischel Saranac Lake.—p 849
- Surgical Motion Pictures Simplified. B M Bosworth New York.—p 856
- Silicosis Diagnostic Difficulties E Mayer New York.—p 857
- Silicosis Present Knowledge Summarized for Practicing Physician D M Brumfield, Saranac Lake.—p 861
- Petrous Pyramid Snppuration Histopathology J G Druss New York.—p 869
- *Treatment of Vincent's Angina with Acetarsone. C H Maxwell Jr Anburn.—p 874

Treatment of Vincent's Angina with Acetarsone—Maxwell treated fifteen cases of Vincent's infection of the gums or fauces with 10 per cent arsphenamine in glycerin, locally,

plus a mouthwash and gargle of sodium perborate. Results were satisfactory in all but two cases. Twenty-eight patients received acetarsone by mouth, in addition. All made recoveries distinctly more rapidly than when acetarsone was not used. Thirty six cases were treated with acetarsone by mouth, mercural solution usually being employed locally in addition to a sodium perborate mouthwash. Recovery was as rapid as in the preceding group. Ten cases were treated only with acetarsone by ingestion and as a paste gently massaged into the affected part. All improved rapidly. The most rapid recoveries were in this group. One chronic case of gingivitis previously unsuccessfully treated with neoarsphenamine intravenously improved but was not cured with acetarsone.

Northwest Medicine, Seattle

35: 163 202 (May) 1936

- Response of Body to Infection Immunity and Fever L A Crandall Jr Chicago.—p 163
- Surgical Treatment of Tumors of Posterior Fossa. P G Flothow Seattle.—p 168
- Röntgen Therapy in Malignancy Its Indications and Limitations. F E Butler and J M Woolley, Portland, Ore.—p 172
- Hopeful Aspects of Rheumatism C P Wilson, Portland Ore.—p 175
- Carpal Fracture Dislocation D G Leavitt and H L Leavitt, Seattle.—p 178
- Silicosis Pneumococcosis Its Clinical and Industrial Aspects H. M. F Behneman San Francisco.—p 180
- Incidence of First Infection Type of Tuberculosis in Children J A Myers Minneapolis.—p 184
- Neuroma of Appendix M Norgore, Seattle.—p 188

Oklahoma State Medical Assn. Journal, McAlester

20 157 190 (May) 1936

- Some Important Contributions to Medical Science by Military Surgeons R U Patterson, Oklahoma City.—p 157
- Prevention of Complications of Diabetes Mellitus D F Keltz Oklahoma City.—p 166
- Recent Advances in Deep X Ray Therapy W E Eastland, Oklahoma City.—p 170
- Epigastric Hernia H L Farris, Tulsa.—p 173
- Convergence Insufficiency A W McAlester 3d Kansas City, Mo.—p 175

Public Health Reports, Washington, D C

51: 535 566 (May 1) 1936

- Significance of Infant Mortality Rates M Derryberry and E Van Buskirk.—p 545
- Choice of Rat Poison in Antiplague Work Rat Poisons Used by the National Antiplague Services of Ecuador, Peru Chile and the Argentine Republic J D Long.—p 551

Review of Gastroenterology, New York

3: 98 205 (June) 1936

- Analysis of Complications Occurring in Series of Patients with Pernicious Anemia W P Murphy and Isabel Howard Boston.—p 98
- Role of Deficiency Disease in Diseases of Gastro-Intestinal Tract. C L Hartsock Cleveland.—p 111
- *Acute Gonococcal Perihepatitis New Syndrome of Right Upper Quadrant Abdominal Pain in Young Women T Fitz Hugh Jr., Philadelphia.—p 125
- Pathologic Physiology of Icterus III Jaundice in Clinical Entities N W Elton Reading Pa.—p 132
- Abdominal Signs and Symptoms of Thoracic Disease H Brooks New York.—p 143
- The Management of Idiopathic Ulcerative Colitis So-Called Vicer's Colitis and Spastic Conditions of Gastro-Intestinal Tract Pergam Hydrochloride, a New Antispasmodic Remedy H I Goldstein Camden N J.—p 150
- Gastrophotography General Information Concerning Endogastric Photography and Its Technique J R Goyena J P Islenghi and H Hofmann Buenos Aires Argentina South America.—p 158

Acute Gonococcal Perihepatitis—Fitz-Hugh bases his discussion of the syndrome of acute gonococcal perihepatitis in young women on a study of seven cases. The age incidence was 17 to 34, four were single, two were married and one was divorced, five were seen in private practice and two in ward practice. The chief complaint is invariably severe pain in the right upper part of the abdomen. The presenting symptoms are usually so like those of acute inflammation of the gallbladder that this diagnosis has been entertained by experienced physicians in every case that the author has seen despite the relative youthfulness of these patients. The true nature of the process, however may be suspected when the background of the story is brought out viz. during the preceding month or two the

patient has had some low abdominal pain, bloating and nausea, with sometimes slight leukorrhea or dysuria and perhaps a little fever. Usually after a period of a few days to a few weeks quiescence the patient is seized with sudden severe upper abdominal pain, which quickly localizes in the right upper quadrant. It is always worse in front under the rib margin but may also be very intense posteriorly. It is sometimes referred to the region of the right shoulder. Coughing, sneezing, straining, laughing and twisting the trunk make the pain worse. Gaseous distress, belching and nausea are common. Vomiting, malaise, feverishness, headache and night sweats are noted by some. In the acute phase the initial temperature records range from 99 to 102 F. There is always very marked rigidity and tenderness involving the right upper part of the abdomen anteriorly (and sometimes laterally). Limitation of movement of the right diaphragmatic leaflet with signs suggesting right basal pneumonitis and poor aeration of the right pulmonary base may usually be demonstrated. Usually slight tenderness is demonstrable in the lower part of the abdomen. The leukocyte count is normal or moderately elevated. Red cells and hemoglobin are normal or moderately reduced. The sedimentation rate is uniformly accelerated. Smears from the peritoneal exudate are positive for the gonococcus. Smears from the urethra or the cervix were positive for the gonococcus in all cases (except in case 1, in which positive peritoneal smears were obtained). The gonococcus complement fixation test is of no value in these cases. All gave negative Wassermann reactions. Roentgen examination may exclude other conditions such as right basal pneumonitis, gallbladder disease, renal disease and duodenal ulcer. The etiologic agent is obviously the gonococcus, although cultural identification has not been undertaken. The characteristic lesion is a slightly moist inflammation of the peritoneum of the anterior surface of the liver and the adjacent peritoneal surface of the anterior abdominal wall, with injection of the vessels and a grayish flaky or granular exudate. The acute phenomena of perihepatitis begin to subside within a week or two of onset. The outlook is uniformly good, although reinfection of the perihepatic tissues may occur and "violin string adhesions" eventuate. Treatment includes rest in bed, precautions against infection, heat locally, liquid diet and sedatives. Later on the pelvic residue of gonorrhea may require gynecologic attention. Acute gonococcal perihepatitis should be considered in the diagnosis of any case of severe acute pain in the right upper quadrant of the abdomen in young women.

Rhode Island Medical Journal, Providence

19 59-82 (May) 1936

Diaphragmatic Respiration Recorded by Synchronous Pneumograph
A. H. Miller Providence—p 59

Southwestern Medicine, Phoenix, Ariz

20: 161-204 (May) 1936

- Social Medical Relationship J. D. Hamer Phoenix, Ariz—p 161
The Cardiovascular System in Relation to Surgery V. C. Hunt
Los Angeles—p 163
Intestinal Obstruction V. C. Hunt Los Angeles—p 167
Adverse Results from Bromide Therapy A. C. Kingsley Phoenix
Ariz—p 170
Primary Carcinoma of the Gallbladder Case Report W. L. Brown
C. P. Brown and J. L. Murphy El Paso Texas—p 172
Traumatic Aneurysm of the Arch of the Aorta with Rupture into
Esophagus M. P. S. Spearman El Paso Texas—p 174
Rupture of the Heart G. O. Bassett and Z. M. Flinn Prescott, Ariz
—p 175
Treatment of Acute Empyema G. Thorngate Phoenix Ariz—p 176
Double Empyema in Child Drainage Recovery C. N. Ploussard
Phoenix, Ariz—p 178
Inferior Midwifery Case Report M. K. Wylder Albuquerque N. M.
—p 178
Acute Unilateral Exophthalmus Case Report D. E. Brinkerhoff
Phoenix Ariz—p 179
Relief of Pain in Obstetrics B. Herzberg Phoenix Ariz—p 179
Pecan Kernel in Bronchus of Baby Bronchoscope Removal Death.
M. Rohb Phoenix Ariz—p 181
Extensive Injuries Case Report G. French Phoenix Ariz—p 182
Allergy Is a Problem for Every Physician O. H. Brown Phoenix
Ariz—p 183
Allergy Problem of Immunity Digestion Endocrines and Metabolism.
O. H. Brown Phoenix Ariz—p 184

Adverse Results from Bromide Therapy—Kingslev points out that as bromides are used only for preexisting conditions mental changes from their use are superimposed on

psychoneuroses or psychoses. Alcoholism, beginning dementia paralytica, various toxic states, cerebral arteriosclerosis and general debility are predisposing to bromide intoxication. State hospital authorities have recognized a great increase in bromide mental disturbance, probably the result of the present economic depression. Only recently have laboratory methods been devised by which the bromide in the blood may be correctly estimated. The blood bromide may vary from 2 to 300 mg per hundred cubic centimeters of blood. Rapidity of elimination of the drug is important. High concentrations may be found even after discontinuance of it, because ingestion of large amounts extended over a long period, 200 mg soon after its discontinuance means far less than 25 mg from a month to six weeks later. Cases have been reported in which mental symptoms appeared only after withdrawal, and a few observers suggest that withdrawal should be gradual. The general opinion is that it is safe to discontinue the drug suddenly. Custodial or nursing care is always necessary in the more profound states. The bromide must be withdrawn immediately. Thorough elimination should be established and proper nourishment, fluids and sodium chloride from 12 to 16 Gm daily, should be given. About 1 Gm of sodium chloride neutralizes 58 Gm of bromides.

Wisconsin Medical Journal, Madison

35 329-412 (May) 1936

- Silicosis Some Remarks on Nature of Condition in Man N. Enzer
Milwaukee—p 345
Silicotuberculosis Roentgenologic Aspects of Differential Diagnosis
J. E. Habbe, Milwaukee—p 349
The Silicosis Problem Some Medical and Social Phases. O. A. Sander
Milwaukee—p 354
Some Problems Relating to the Care of the Insane in Wisconsin
G. E. Seaman Winneago—p 361
Serial Pyelography S. J. Silbar and H. B. Podlasky Milwaukee—
p 365
Postmortem Examinations in the Practice of Medicine H. E. Robertson
Rochester Minn—p 370

Serial Pyelography—Silbar and Podlasky worked out a method of serial pyelography based on the precepts laid down by Thomas D. Moore. The apparatus used may be constructed for approximately a dollar and consists of a metal pan and two sheets of lead. The pan and lead sheets should be so designed that they conform to whatever Bucky diaphragm one has in the x-ray department. The measurements are important because it is necessary to center properly in order to avoid grid lines from the Bucky and also to avoid distortion. The technic is that of catheterization of the ureters and kidney, the catheter being inserted to just within the pyelo-ureteral junction. Then 4 cc. of a 40 per cent solution of sodium iodide is used. Sodium iodide in this strength is preferable because it may be used in small amounts, thereby avoiding the distortion accompanying the injection of large amounts of weak mediums. The patient is put in the Trendelenburg position, and 25 cc. of the solution is injected into the pelvis. Then 2.5 cc. is injected as the catheter is slowly withdrawn from the ureter and bladder. A period of two minutes is allowed to elapse before the first film is taken with the patient in the horizontal position. Another one is taken in two and one-half minutes and the last two and one-half minutes later. This may be varied so that one or more of the films may be taken in an expiratory phase and others in an inspiratory phase. If ptosis is to be considered, the patient may have his first picture taken in the Trendelenburg position and the second in the upright, as the apparatus lends itself to any movement of the Bucky. The method is of value because 1. It shows the kidney, ureters and bladder in both respiratory phases. 2. Anatomic parts can be seen filled and emptied. 3. Each kidney and ureter may be safely studied serially and separately, while the other half of the body is protected by lead. 4. Owing to the small areas exposed details of kidney outlines seem to be improved. 5. Permanent visualization of deformities or defects being always an asset, it is possible to be more certain about the presence or location of ureteral strictures or kinks. 6. Exposures to show defects that are suggestive of pathologic changes can be repeated. 7. The patient remains in one position during the examination. This is helpful when it is necessary to make comparison of all serial films.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

11:149-96 (April) 1936

- Further Observations on Pink Disease. J V Braithwaite—p 49
Oxydase Reaction of Human Milk. O S Rougitch and E. Dumitrescu—p 61
Epituberculosis. M de Bruin—p 65
*Encephalography in the Investigation of Certain Cerebral Conditions in Childhood. Part I. Members of the Staff of the Royal Aberdeen Hospital for Sick Children.—p 77
Diagnosis of Pulmonary Middle Lobe Disease in Children. A M Gill and J E G Pearson.—p 87

Encephalography in Childhood Cerebral Conditions—

The members of the staff of the Royal Aberdeen Hospital for Sick Children state that in the interpretation of encephalograms of cerebral lesions the following should be considered: 1 The size of the ventricles, whether increased on one or on both sides. Increase in the size of the ventricles may be of an obstructive nature, owing either to the presence of a lesion which prevents the free egress of cerebrospinal fluid or to failure of the absorbing mechanism, so that the whole cerebrospinal circulation is stagnant. On the other hand, it may be of a compensatory type and result from an attempt to take the place of an atrophic area of the ventricular wall. In the first type, the dilatation will obviously be bilateral and symmetrical, in the second, the dilatation is apt to produce a pouching of one ventricle, over an area corresponding to the loss of cerebral substance, an appearance which has been termed "wandering" ventricle. Space-occupying lesions in the hemispheres will produce lateral deviations of the ventricular system. 2 The size of the basal cisterns, which is increased in cases of failure of absorption of the cerebrospinal fluid. 3 The distribution of the pathways over the hemispheres, whether this is more extensive (for example, encroaching on the occipital lobe) or partly absent, in areas of adhesive leptomeningitis. 4 The width of the pathways over the hemispheres. Normally this is about 3 mm. When convolutional atrophy is present, it may be greatly increased.

British Journal of Anaesthesia, Manchester

13:89-140 (April) 1936

- Anesthetics in Thoracic Surgery with Especial Reference to Lobectomy. I W Magill.—p 92
Anesthetic Deaths in Melbourne 1929-1934. G Kaye.—p 110
Combined Evipan-Novocain Anesthesia. G Bankoff.—p 128

British Journal of Surgery, Bristol

23:697-900 (April) 1936

- Radiography of Duodenal Cap. G R. M. Cordiner and G T Calthrop.—p 700
Encrustation of Bladder as Result of Alkaline Cystitis. H G Letcher and N M Matheson.—p 716
Spontaneous Rupture of Extensor Pollicis Longus Tendon Associated with Colles Fracture. T Moore.—p 721
Solitary Plasmocytoma of Long Bones. J T Chesterman.—p 727
*Bladder Function in Spinal Injury. K. H. Watkins.—p 734
Spinal Tumor. Case. T Satakopan and N M Rao.—p 760
Carcinoid Tumor of Lower Ileum. W Q Wood.—p 764
Colloid Tumor of Urachus Invading Bladder. R. C. Begg.—p 769
Illustrating Latency of Large Renal Calculi and Their Relation to Pregnancy. Two Cases. J Cook.—p 773
Duodenal Diverticulum Removed by Operation. Three Cases. H N Fletcher and L I M Castleden.—p 776
Fractures of Neck of Femur. R. Watson Jones.—p 787
Cystadenoma of Pancreas. Two Cases. R. M. Jones.—p 809
Prostatectomy with Closure. Addenda and Some Observations. S H Harris.—p 816

Bladder Function in Spinal Injury—Watkins undertook a study to determine the exact behavior of the bladder in cases of injury to the sacral segments of the spinal cord or cauda equina and also in cases of complete transverse lesions of the spinal cord. The investigation revealed clearly the fundamental importance to bladder function of active sacral spinal segments. The influence of these segments below a complete transverse lesion is such as to promote a perfect reflex micturition, which differs essentially from the normal in its entire independence from voluntary control. The behavior of the bladder in lesions of the conus and cauda equina is evidence of a limited degree of function mediated by the peripheral nerve ganglions. This

function is not, however, of itself efficient in evacuating urine from the bladder, for even when the internal sphincter is widely relaxed and the detrusor in contraction there may be no escape of fluid from the bladder. It can only be concluded, therefore, that its peripheral innervation alone determines a very ineffective function of the bladder. It is without doubt the existence of a considerable mechanical resistance in the region of the triangular ligament which deprives this function of the bladder of most of its effect. But it is in virtue of this resistance combined with the patient's ability to expel urine by straining with his abdominal muscles which provides him with the means of living in relative comfort. This patient is therefore in much better circumstance than the patient with a lesion of the transverse cord who, though he has a perfect reflex micturition, is not able to control it.

British Medical Journal, London

1:827-868 (April 25) 1936

- The Problem of Toxic Goiter. J Morley.—p 827
Diagnosis of Physical Disorders in the Insane. Ruby O Stern, J McLeman and B F M Bond.—p 832
Mental Disorder Associated with Child Bearing. J S Harris.—p 835
Albers-Schönberg's Disease. Case. J H Kretzmar and R. A. Roberts.—p 837
Insertion of Smith-Petersen Nail into Femoral Neck. H. A. Brittain.—p 838
Myositis Ossificans Multiplex. G Hamada.—p 840

Journal of Anatomy, London

70:323-446 (April) 1936

- Effects of Estrone on Prostate and Uterus Masculinus of Various Species of Primate. S Zuckerman and A S Parkes.—p 323
Growth of Reproductive and Endocrine Organs of Guinea Pig. Ruth Deanesly and I W Rowlands.—p 331
Anatomic and Histologic Studies of an Intersexual Lesser Shrew (Sorex Minutus L.) with Especial Reference to Effects of Male Hormones on Uterus and Vagina. F W R Brambell and Kathleen Hall.—p 339
Innervation of Dentin. W Lewinsky and D Stewart.—p 349
Comparative Histophysiology of Vertebrate Nephron. P Gérard.—p 354
Variations in Cortical Lipoid of Rabbit Suprarenal with Sex and Age. R Whitehead.—p 380
Studies on Cardiac Anatomy of Elephant. I Coronary Blood Vessels. W C O Hill.—p 386
Skulls from Purari Plateau New Guinea. F Wood Jones.—p 405
Observations on Lower End of Femur from American Indians and Modern Canadians. M A. H. Siddiqui.—p 410
Structure and Development of Urethral Sinus in Male White Mouse, with Notes on Its Occurrence in Other Rodents. Kathleen Hall.—p 413
Abnormal Pronuclei in the Ferret. W J Hamilton.—p 429
Union of Certain Epiphyses in Mixed Female Population in Rangoon. J H Barrett.—p 432
Remnants of Venous Valves in Adult Heart. N Pan.—p 435
Unusual Congenital Malformation. Note. M N De and H K. Dutta.—p 439

Lancet, London

1:987-1046 (May 2) 1936

- The Prevention of Cancer. W S Handley.—p 987
*The Possible Role of the Anterior Pituitary in Human Diabetes. O L V de Wesselow and W J Griffiths.—p 991
Acute Febrile Anemia Due to Dental Sepsis. Case. P C. Gibson.—p 994
Decline and Fall of the Undescended Testis. E McLellan.—p 999
Treatment of Undulant Fever with Fuadin. C Z Neumann.—p 1001
Staphylococcus Leukocidin (Neisser Wechsberg Type) and Antileukocidin. Joyce Wright.—p 1002
Late Ether Convulsions. Study Based on Four Cases. R F Woolmer and S Taylor.—p 1005

The Anterior Pituitary and Human Diabetes—To obtain insight into the problem of whether the anterior pituitary plays a part in diabetes, de Wesselow and Griffiths studied the effect of a preceding injection of "diabetic" blood as compared with "normal" blood on the response of the rabbit to insulin. The animals were starved for eighteen hours before the experiment. Inspection of the curves shows that after injection of 10 cc. of plasma obtained from nine nondiabetic middle aged subjects and seven young diabetic patients, all but two of whom had been receiving insulin for some time, there was no appreciable alteration in the form of the blood sugar curve during the period following injection of insulin. In the case of sixteen elderly diabetic subjects with abnormally high blood pressures, the majority of whom were overweight (only three were receiv

ing insulin, the remainder being treated dietetically), however, it would appear that a preliminary injection of the plasma into the animals resulted in an early arrest of the fall in blood sugar after insulin, associated with this premature arrest there was a very definite tendency for the blood sugar to be higher than the control values during the remainder of the experiment. This effect of a diminished fall and a more rapid restoration of the blood sugar after injection of the plasma of these patients was particularly evident in six of the foregoing sixteen patients. During the second period of thirty minutes following the injection of insulin the blood sugar had already begun to rise and after sixty minutes the average blood sugar exceeded the initial value, in these respects the curves obtained after injection of plasma were in sharp contrast to those of the first two groups of patients. The conclusion is that the blood plasma of some elderly, obese, glycosuric patients was found to diminish the hypoglycemic action of insulin in a manner closely resembling that observed by other workers with extracts of the anterior pituitary gland. The knowledge of the metabolic disturbances in diabetes will undoubtedly be considerably extended as the thesis that the anterior pituitary gland and the pancreas act antagonistically in the control of carbohydrate metabolism is developed. It would appear that any alteration in the balance of these opposed influences must lead to abnormal carbohydrate metabolism.

Medical Journal of Australia, Sydney

1: 525 558 (April 18) 1936

- Study of Children and Their Diseases E H M Stephen—p 525
Some Suggestions on the Prevention of Maternal Morbidity with Especial Relation to Queensland C V W Brown—p 529
Surgeon Alexander Collier R N 1793 1835 C Bryan—p 537
The Ultraviolet Component of Sunlight in Sydney F W Clements and H V Golding—p 540

Quarterly Journal of Medicine, Oxford

5 141 286 (April) 1936

- *Modified Vanadate Serum Malignancy Test (Bendien Lowe) Account of Examination of Four Hundred and Fifty Serums. R. E Jones and D L Woodhouse.—p 141
Mechanism of Production of Cerebrospinal Fluid Comparative Study of Sugar Nonprotein Nitrogen and Inorganic Phosphorus Content of Blood and Cerebrospinal Fluid H Cohen—p 159
Effect of Induced Hyperglycemia on Glucose Content of Cerebrospinal Fluid. H Cohen and J Libman—p 169
Glucose Content of Cerebrospinal Fluid After Withdrawal H Cohen and J Libman—p 183
Therapeutic Pyrexia by Means of Short Radio Waves. F J Nattraas and S F Evans—p 187
*Quinidine Treatment of Auricular Fibrillation M Campbell and F W Gordon.—p 205
Studies in Celiac Disease Eleanor Badenoch and N Morris—p 227
Studies in Pneumonia with Especial Reference to Agglutinins G J Langley W Mackay and L Stent.—p 251
Wells Disease in Fish Workers Clinical Chemical and Bacteriologic Study of Forty Cases. L S P Davidson and J Smith—p 263

Modified Vanadate Serum Malignancy Test (Bendien-Lowe)—Jones and Woodhouse examined more than 450 serums from patients, approximately half of which were suffering from some type of malignant neoplasm and half from nonmalignant pathologic conditions, together with a few normal serums by the modified vanadate reaction. About 75 per cent of correct diagnoses have been obtained for both classes when all doubtful instances have been rigorously excluded. The results have been examined with regard to the type of precipitation, the age and sex of patients and notes of typical cases are included in which the vanadate test was found to agree with the observations at postmortem examination or operation, in spite of previous clinical evidence to the contrary. Also some cases are described in which the reaction was found to differ grossly from the pathologic observations. Apart from the value of this serologic test in distinguishing between malignant and nonmalignant conditions, considerable success has been claimed (Lowe) in its application for purposes of prognosis following treatment by observing the response of the patient's serum to the surgical or therapeutic measures adopted, as denoted by the zone of precipitation and the type of ratio evinced during a number of successive serum examinations, it is specially valuable as capable of giving evidence of the recurrence of malignant disease before this has manifested itself clinically. In eight cases repeated examina-

tion of the serums were carried out during and after treatment. Although the observations are limited, they seem to afford definite encouragement in this field.

Quinidine Treatment of Auricular Fibrillation—Campbell and Gordon investigated the after-results of treatment with quinidine in two series of patients, one first treated in 1923-1928 and the other in 1929-1934, almost all have been followed up to December 1934, or until fibrillation recurred. Quinidine restored normal rhythm in 64 per cent of 135 cases. In 34 per cent it is still maintained after an average period of nearly four years. In 30 per cent it was restored, but fibrillation recurred after an average period of two years. In 36 per cent quinidine failed to restore normal rhythm or did so for such a short time that it was of no practical importance. Of the earlier series 25 per cent still maintain normal rhythm after nine years, and 39 per cent of the later series after two years. The duration of fibrillation before treatment, the size of the heart and the etiology are all important in estimating the chance of restoring normal rhythm and of maintaining it for a long period. When fibrillation is present without mitral stenosis or a goiter, the selection of cases may be made more leniently, and under favorable circumstances the rhythm may remain normal for ten years or longer. In 39 per cent it is still maintained after an average of five years. In the fifteen who could be classified as having no signs of heart disease except the arrhythmia, it is still maintained in 70 per cent after the same period. After-treatment is not generally needed for more than three months, but, if relapse occurs on omitting quinidine, a second course should be given and, if successful, quinidine should be continued for longer. In those who have relapsed the average period of restored rhythm was more than two years. Thorough digitalization is important before starting treatment by quinidine. Any infection, even a trivial one, may prevent success. Except for the possibility of embolism, which is not a grave risk, serious complications are rare. Satisfactory results are obtained by paying attention to the absence of congestive failure, of a greatly enlarged heart or of a long history of fibrillation. The case is eminently suitable for treatment with quinidine if there have been no signs of failure, if the heart is only slightly enlarged (less than 13 cm maximal transverse diameter in a patient weighing about 140 pounds, or 63.5 Kg), and if fibrillation has been established less than one month. The case is not suitable if there has been gross congestive failure, if any signs of failure persist after treatment with rest and digitalis, if the heart is greatly enlarged, or if fibrillation has been established for six months. The presence of any one of these three usually means that treatment with digitalis should be preferred. When there is mitral stenosis, these conditions must be strictly observed.

Journal of Oriental Medicine, Dairen, South Manchuria

24: 47 62 (April) 1936

- Investigations on Amebic Dysentery IV Experimental Studies of Amebic Dysentery in Dogs Second Report. Amebic Dysentery of Dogs in Chronic Stadium and Significance of Dogs in the Spread of This Disease M Kubo—p 47
Lymphogranulomatosis Inguinale (Maladie de Nicolas-Favre) Report I Experimental Studies of Lymphogranulomatosis Inguinale K Tasaka—p 49
Id. Report II Formol Gel Reaction (F G R.) K Tasaka—p 51
Supernumerary Conic Protrusions of Human Premolars T Hosaka—p 52
Supernumerary Protrusions in Human Molars with Consideration of Unknown Protrusions in Japanese. T Hosaka—p 53
Studies on Trichomonas Vaginalis Donné VI Hydrogen Ion Concentration of the Cytoplasm of Trichomonas Vaginalis K Matsuda—p 54
Id. VII Inoculation of Trichomonas Vaginalis in the Human Vagina K Matsuda—p 55
Lithiasis of Vesical Diverticulum. M Motohata.—p 56
Investigations on Amebic Dysentery VI Observations of Biologic Characters of Endamoeba Histolytica Part I Migration Velocity of Endamoeba Histolytica M Yosezato—p 57
Study of Medical Meteorology in Minkden Part III Wavelength of Ultraviolet Rays M Endo and T Akazawa—p 58
Operation for Primitive Gallbladder Cancer T Nakajima—p 59
Pigment Affinity of Typhoid Dysentery and Colon Bacilli and Staphylococcus Part IV Studies on Vital Staining of Bacteria K Fukumoto—p 60
Early Tissue Reactions in Various Intestines of Guinea Pigs and Distribution of Bacteria, Due to Intravenous Injections of Acid Fast Bacteria. A Hayashi Y Hisamochi and M Yamamoto—p 61
General Tie Case. T Z. Sai T Takeno H Urabe, T Nakahara and C I Chi—p 62

Gynécology, Paris

35: 257 320 (May) 1936

- *Complex Tumor of Female Genital Apparatus V Le Lorier and P Isidor—p 257
Therapeutic Action of Mud Sitz Bath on Erosion of Uterine Cervix. C. Uhma—p 281

Complex Tumor of Female Genital Apparatus—Le Lorier and Isidor describe a tumor of complex cellular structure of the female genital apparatus. It was associated with morphologic anomalies of nonmalignant nature. The most important observations were evolutionary changes of the uterine glandular epithelium, special characteristics of the epithelium of the tubes, the proliferative tendency of the epithelium of the cystic cavities of the cortex of the right ovary, and the nature of the stroma of the neoplastic uterine and peritoneal buds. On the other hand, the evolution toward the epithelial type of uterine, tubular and ovarian serosa, with a tendency to papillary vegetation, was marked. The existence of adenomatous formations of the myometrium, the particular structure of certain regions of the endometrial epithelium and the existence of a complex formation of the ovarian cortex developing in some regions toward an epithelial type and in others toward a fibroblastic type added to the difficulty of the study. These characteristics led the authors toward the conception that the neoplasm represented an embryonal tumor of renal blastoma type and that the indifferent elements constituted both an evolutionary form of uterine and tubular tumors and disemphyoblastic formations. It is, however, impossible to determine the exact manner in which these processes developed.

Lyon Chirurgical

33: 257 384 (May June) 1936

- Lithiasis of Intrahepatic Biliary Passages. P Santy and P Mallet-Guy—p 257
*Value of Tourniquet Lobectomies and Pneumonectomies in Exeresis for Bronchopulmonary Cancer A Bonniot and M Dargent—p 282
Immediate Early Cardiac Accidents in Traumatic Arteriovenous Fistulas. Tixier and Arnulf—p 297

Lobectomy and Pneumonectomy in Bronchopulmonary Cancer—Bonniot and Dargent discuss the tourniquet method of Shenstone as a means of performing extensive removal of lung tissue for bronchopulmonary cancer. Because the intervention must be generous, more extensive removal toward the hilus is preferable to subtotal lobectomy or pneumonectomy with a tourniquet. There are two principal objectives, removal of the ganglions and resection of the bronchi well above the tumor growth. In spite of some of the advantages of this procedure, no cancer involving the lobar bronchi can be treated in this way. Cancers of the bronchial stem and the first centimeters of lobar bronchi are unremovable by tourniquet pneumonectomy. This is a common variety of bronchial cancer, but, with the exceptions given, total pneumonectomy with separate ligation of the anatomic elements by the anterior route allows high section of the bronchial tree and is quite successful. The operation is long and difficult but has given good results in the hands of surgeons who have tried radical procedures against bronchopulmonary cancer.

Paris Médical

1: 461-476 (May 30) 1936

- Recurrent and Alternating Ocular Paralysis J A. Chavany—p 461
*Study of Primary Benign Lymphocytic Meningitis S Livierato and A Simoneto—p 465
Malignant Intermediary Anemia Clinical Forms P Chevallier—p 467

Primary Benign Lymphocytic Meningitis—The clinical picture of the disease observed in five patients by Livierato and Simoneto is similar to that of tuberculous meningitis. The duration of the disease varied from fourteen to twenty-eight days. Lumbar puncture performed from time to time produced a temporary amelioration of the subjective and objective symptoms. All the patients made a complete recovery without residual signs in the nervous system. The cerebrospinal fluid was negative from a bacteriologic standpoint. Inoculation of guinea pigs for tubercle bacilli also gave negative results. The most remarkable result of the examination of the fluid was the discrepancy between the number of white cells and the quantity of albumin. The lymphocytes were markedly increased, with a tendency to further progression in this direction, while

the albumin was either normal or only slightly increased. Blood cultures and examination of the blood for malaria were negative. Intracranial injection of cerebrospinal fluid into dogs and rabbits gave negative results. Because of these observations the authors believe that the disease lies in the class of meningitis close to that of poliomyelitis or epidemic encephalitis.

Policlínico, Rome

43: 955 1010 (May 25) 1936 Practical Section

- *Pathogenicity of Chilomastix Mesnili A M Cicchitto—p 955
Large Solitary Fibromyxolipomatous Polyp of Rectum Case. D Saleano—p 969

Pathogenicity of Chilomastix Mesnili—Cicchitto states that Chilomastix mesnili is a pathogenic protozoan. In thirty-one patients (white and Negro) suffering from either gastrointestinal or intestinal disturbances the cause of the disease proved to be a pure Chilomastix mesnili infestation. Flies and beetles are the transmitting agents. The administration of antiprotozoal treatment results in disappearance of Chilomastix from the feces of the patient and in recovery of the latter. Chilomastix mesnili may be harmless in certain cases and conditions, while in others, especially in tropical countries, it may cause, alone or in association with other intestinal parasites, gastrocolonic diseases of different intensity. The number of parasites, their type, the constitution, a diminished resistance of the individual due to intestinal, infectious and recurrent diseases, diet, hygiene and climatic and environmental conditions account for the transformation of a harmless into a pathogenic type of the protozoa and also for the evolution of the infestation. The diagnosis is made by the repeated coprologic examination. Two forms, acute and subacute, are the most frequent. The former is of a colonic dysenteriform type, while the latter, which is the most frequent, has the characteristics of a subacute colitis. Intestinal toxemia, which complicates certain cases of Chilomastix infestation, is due to assimilation of toxic products from the intestinal pathologic flora. Certain parasitic associated infestations, such as those with Blastocystis or Endamoeba coli, give origin to the development of an intestinal syndrome clinically similar to that caused by Endamoeba histolytica. The symptoms of the infestation, especially if it is of a pure parasitic origin, in patients in tropical countries are those of a liver rather than an intestinal disease. There is oxaluria in Chilomastix infestation. Eosinophilia is rare. The presence of anachlorhydria is unrelated to the infestation. Chilomastix, as a pathogenic agent for the development of the gastrocolonic disturbances, stimulates the pathogenicity of the intestinal flora, previously normal, and has a slight mechanical, toxic and irritating action on the intestine, which favors the participation of colon bacilli and enterococci in the evolution of the gastrocolonic syndrome. The administration of acetarsone and chiniofon by mouth and in enemas is the specific treatment.

Rassegna di Studi Psichiatrici, Siena

25: 125 282 (March April) 1936

- *Bulgarian Treatment in Neurologic and Psychic Sequels of Epidemic Encephalitis. A D Ormea and E Broggi—p 125
Hallucinations. Second Report. C. E. Roberts and G. Fiore—p 151
Growing of Finger Nails in Diseases of Nervous System. G. Treves—p 166
Liver in Process of Combustion of Alcohol. C. Poli—p 206
Protridemia in Dementia Praecox. M. Contini—p 223
Extracranial Trauma from Accident During Work and Manic-Depressive Psychosis. Case. P. Gori—p 239

"Bulgarian Treatment" in Neurologic and Psychic Sequels of Epidemic Encephalitis—The history, technique and results of the "Bulgarian treatment" in neurologic and psychic sequels of epidemic encephalitis have been reported for the last two years in several Italian journals. The treatment consists essentially in the daily administration of a 5 per cent decoction of Atropa belladonna in white wine, administered three times a day in doses of 5 cc. to patients under 15 years of age and of 15 cc. to patients over 15. The other constituents of the treatment (pills made of Atropa belladonna root and charcoal and the root of Acorus calamus to be chewed by the patient several times a day to stimulate salivation) are useless. The treatment includes also the administration of a hypotonic diet, suppression of stimulants, hygienic practices, gymnastics, reeducation of patients and sometimes orthopedic corrections. The statistics of the Italians are high and include

all forms (slight, moderate and grave) of postencephalic parkinsonism and other postencephalic mental and nervous sequels, in all of which the symptomatic benefit of the treatment was more or less marked, except in certain grave cases. D'Ormea and Broggi resorted to the treatment in fifty cases of neurologic and mental sequels of epidemic encephalitis and report 65 per cent of satisfactory results. The effects of the treatment were in accordance with the intensity of encephalitis and of the sequels and also with the duration of the latter. The neurologic symptoms were more benefited from the treatment than the psychic ones. The disappearance of tremor in cases of average intensity permitted some patients to return to trade work. Oculogyric crises did not develop during the administration of the treatment, although in some cases the doses of Atropa belladonna should be given fractionally to avoid their appearance. Choreic movements and spasms did not improve. The better results of the treatment were in hypertonia and its allied symptoms. Psychic symptoms improved only when they were slight. As a rule grave mental disturbances improve slightly or not at all. The treatment is useless in patients having intense articular deformities and muscular degenerations and it is contraindicated in emaciated, cachectic and openly intolerant patients. The possible dangers of intoxication are controllable by careful determination of the optimal individual dose. The treatment is delicate and should be given only in hospitals with the patient under constant supervision. In some cases there is a tendency to lose weight during the treatment, which may be prevented by the administration of intravenous injections of a lecithin preparation or by treatment with iodine. The best results of the treatment are obtained in patients under the age of 20 and in forms of average intensity and of short duration. The treatment is symptomatic, but it is the best of its type given heretofore. The roots of Italian Atropa belladonna give results as satisfactory as those of Bulgarian Atropa, reducing the cost of the treatment in Italy.

Progresos de la Clínica, Madrid

44: 341-424 (May) 1936

- Modern Conceptions on Indications for Operation in Renal Tuberculosis L de la Peña—p 341
Rupture of Placenta Hemorrhagic Gestosis and C Avitaminosis J Botella Llusá—p 345
Physiopathology of Digestive Tract J A Sánchez Martínez—p 348
Circulatory System in Diabetes Mellitus. M Quero Morente—p 374
Hydrarthrosis and Pathogenesis of Malignant Tumors L Alvargonzález—p 394

Circulatory System in Diabetes Mellitus—Quero Morente studied the circulatory system in eighty-seven patients suffering from diabetes mellitus, all but fourteen of whom were past 40. In the group of seventy-three patients past 40 the following cardiovascular complications had taken place: aortic atheroma with a frequency of 44 per cent, retinitis 8.2 per cent, renal sclerosis 3 per cent, circulatory insufficiency of the extremities 5.4 per cent, gangrene of the extremities 1.3 per cent, hemiplegia 2.7 per cent, and cardiac decompensation 7 per cent. A syndrome of angina pectoris existed in seventeen patients of the group and was of the painless type in six cases (myocardial infarct without angina). Frank arterial hypertension was found in 28.3 per cent of the cases. Changes in the electrocardiogram were seen in fifty-seven patients of the group (a proportion of 78 per cent): 8.2 per cent of which showed the presence of bundle-branch heart block. The author says that young diabetic patients suffer only from metabolic disturbances, they frequently have diminished blood pressure but no cardiovascular complications. Diabetic patients past 40, on the other hand, have hypertension and suffer from grave cardiovascular complications, especially arteriosclerosis. The most frequent types of anginal and myocardial complications are typical angina pectoris, painless myocardial infarct, angina from coronary sclerosis, vasomotor angina from hypertension and angina from the administration of insulin. The roentgenograms most frequently seen are those of aortic atheroma, increase of the transverse diameter of the heart, mitralization of the heart and either dilatation of the organ or diminution of its size. Heart alterations which fail to appear in electrocardiograms taken with the patient at rest make their appearance in electrocardiograms taken after physical exertion. Both hypertension and diabetes originate in a lesion or a dysfunction of the sympathetic diencephalic centers which are concerned with the

regulation of blood pressure and of sugar metabolism. Arteriosclerosis originates mainly in hypertension. Age and other metabolic disturbances and dietetic disorders are secondary pathogenic factors of arteriosclerosis. Insulin promotes the utilization of blood sugar by the heart of diabetic patients, but, because of the fact that it causes hypoglycemia and increases the output of blood from the heart, a crisis of angina pectoris may follow its administration. This is a warning of the danger of administering insulin in cases of so called comatous collapse (which is nothing more than a sudden myocardial insufficiency) or of myocardial infarct without any angina, erroneously diagnosed as atypical diabetic coma. In the two former conditions the administration of insulin results in aggravation of the myocardial disorder and greatly endangers the patient's life.

Revista Médica del Rosario, Rosario de Santa Fe

26: 171-258 (March) 1936 Partial Index

- Pathologic Anatomy of Multiple Neurofibromas. J M Cid—p 171
*Resection of Subclavian Nerve to Obtain Paralysis of Hemidiaphragm J Benzádon—p 22
Elimination of Sodium Methanol Sulfoxylate Through Digestive Tract. T C Minnhaar—p 228
Roentgen Visualization of Afferent Loop in Gastrectomized Patients Clinical Value. J O Bnstos—p 235
Nonregenerative Agranulocytic Anemia Case. A Robiolo and E A Travella—p 245

Paralysis of Hemidiaphragm—Benzádon points out that, according to Goetze's statistics, the motor fibers of the diaphragm pass through the phrenic nerve in only 32 per cent of the cases, and in the remaining 68 per cent through the anastomoses of the nerve, namely, those from the subclavian nerve and, rarely, from an accessory phrenic nerve. The author advises resection of the phrenic, subclavian and accessory phrenic nerves in order to paralyze the hemidiaphragm on the side of the resected nerves. The technic of the operation is easy. It consists in locating and resecting the nerves through an incision from 3 to 5 cm in length, which is made at two and a half fingerbreadths above the clavicle. The resection includes 3 cm of the phrenic and 4 cm of the subclavian nerves. The operation is performed under local epinephrine anesthesia.

Archiv fur Kinderheilkunde, Stuttgart

108 65-128 (May 19) 1936

- *Endogenic Reinfection by Bronchial Perforation K Dietl—p 65
Cerebellar Tumors with Almost Normal Cerebrospinal Fluid in Children P von Kiss and I Fényes—p 71
Differential Diagnosis in Mute Children Gertrud Lasch—p 78
Growth Process During Nursing Age. E Zeitner—p 95
Gold Therapy of Tuberculous Disorders in Children G Popoviciu and O Mihalescu—p 112

Endogenic Reinfection by Bronchial Perforation—Dietl reports the case of a girl, now 15, who at the age of 8 had given a positive tuberculin reaction without manifestations of tuberculosis. During the spring of 1935 a bronchial perforation developed with circumscribed atelectasis in the left lower lobe. This resulted in endogenic reinfection. The obstructing plug, which contained numerous bacilli, was gradually expelled. The atelectasis subsided and the normal status was apparently reestablished. During the fall of 1935 there developed, as the result of bronchial reinfection, disseminating foci in the left lower lobe and an accompanying perifocal pleurisy. The roentgenogram of one of these foci, with its soft and roundish outline, resembled the usually isolated foci found as a rule in the infraclavicular region and generally referred to as early infiltrate. In this connection, the author points out that the development of the so-called early infiltrate, which at present is generally regarded as the beginning point of the phthisis—that progresses from the apex in the caudal direction, has been ascribed by some to a bronchial perforation. In view of this, he raises the question whether the round infiltration in the case under consideration might be an early infiltrate. He thinks that the localization in the lower lobe does not necessarily exclude it and that its appearance favors it. Most early infiltrates (but not all) break down, but in the reported case the infiltrate showed no sign of breaking down. Moreover, the girl had no fever and felt well. The author concludes that it cannot be said definitely that the focus is an early infiltrate, but neither can this be definitely denied. The case demonstrates the mechanism of the formation of a new focus by way of endogenic reinfection.

Medizinische Klinik, Berlin

32: 621 652 (May 8) 1936 Partial Index

- Diseases of Deciduous Teeth K Ruphins —p 621
 *Circulatory and Cardiac Impairments in Case of Carbon Monoxide Poisoning S Litzner —p 630
 Pemphigus Vegetans in Child R Bezecny —p 632
 Action of Artificial Respiration K Thiel —p 633
 New Results in Sphere of Research on Blood Groups W Neugebauer —p 636

Carbon Monoxide Poisoning—According to Litzner, the entire vascular system is more or less involved in cases of carbon monoxide poisoning. The general vascular atony should be counteracted by medicaments for the peripheral circulation. The author thinks that the changes in the heart itself have not been given sufficient attention. He shows that, as the result of the impairment of the vascular supply of the heart, temporary changes develop and also occasionally permanent organic lesions, which may involve the musculature as well as the cardiac conduction system. He describes a case in which sinus bradycardia, arrhythmia and ventricular extrasystole appeared after carbon monoxide poisoning. These changes disappeared again in the course of several weeks. There also existed a dilatation of the left ventricle. The author advises that cardiac changes should be watched for in cases of carbon monoxide poisoning.

Münchener medizinische Wochenschrift, Munich

83 755 794 (May 8) 1936 Partial Index

- Premature Detachment of Placenta E. Vogt —p 755
 *Beriberi in Human Subjects Produced by Excessive Consumption of Sugar W Stepp and H Schroeder —p 763
 Blindness and Concussion of Brain T Sutter —p 766
 *Nonspecific Treatment of Allergy and Protection of Liver H Kämmerer —p 768
 *Treatment of Flatfoot by Exercise. O Kolb —p 774

Beriberi Produced by Excessive Consumption of Sugar—After pointing out that beriberi occurs chiefly in eastern Asia and that its classic form is practically unknown in Europe, Stepp and Schroeder mention as the chief symptoms manifestations on the part of the nervous system, paralyses, severe sensory disturbances, generalized edema, cardiac dilatation and gastro-intestinal disturbances. They report the history of a patient with severe retention of water and cardiac dilatation, in whom they finally discovered a relative B₁ avitaminosis. The problem was solved when it was learned from the wife of the patient that for about a year the man had consumed daily from 500 to 1,500 Gm of sugar. The intravenous administration of vitamin B₁ was followed by diuresis and the patient was freed from his severe thirst. Whereas in the water tests that were made before the medication with vitamin B₁ the patient had retained large amounts of the fluid, he now eliminated the entire amount. The normalization of the water exchange was accompanied by an improvement in the general condition. The edemas and the dyspnea disappeared. The examination of the patient's carbohydrate metabolism failed because he had consumed secretly 500 Gm of sugar and later had an attack of hypoglycemia. In discussing the pathogenesis of B₁ avitaminosis following excessive intake of carbohydrates, the author cites experimental studies on animals which proved that the addition of pure dextrose to the ordinary foods may produce a B₁ avitaminosis. After showing that in the reported case the disorder was actually a relative beriberi the authors say that, although B₁ avitaminosis has been produced in animals by the administration of large amounts of sugar, such cases have not been reported as yet in human beings.

Nonspecific Treatment of Allergy and Protection of Liver—Kämmerer says that the so-called shock organs are not the same in the different species of animals so that the shock reactions differ. In guinea-pigs, spasms develop in the smooth musculature of the bronchi, in rabbits the pulmonary arteries develop spasms whereas in dogs the liver is the shock organ during an anaphylactic attack the liver is congested and there is blood stasis in the abdominal viscera. It is suggested that the capillary endothelium of the liver is affected by the shock and that the shock is elicited by the encounter of an antigen and a reaction body in these cells. In this process the liver cells are supposedly greatly impaired so that large quantities of histamine-like substances develop. The author assumes that in human subjects it is likewise the liver which

plays the chief part during shock or during the defense against foreign antigen. To be sure, the site at which the antigen enters the organism doubtless determines the predominance of the one or the other shock organ. With antigens that enter the human organism by way of the respiratory tract, the capillary endothelium of the lung is doubtless severely involved, whereas the liver is the most severely affected organ in case of food allergy. In case of severe allergic reactions, several organs are involved, as is indicated by the appearance of asthma in case of allergy for egg white. The author shows that investigators on food allergy have demonstrated that enteral sensitization is largely dependent on the functional adequacy of the liver in the digestion of foreign proteins, and that insufficiency of the liver is one of the chief causes of an allergic diathesis. He shows that the liver has a regulatory function in the water exchange and that water tests are a more reliable indicator of the hepatic function than are levulose and dye tests, moreover, the water exchange is frequently impaired in patients with allergic disturbances. He advises that patients with allergic attacks should be subjected to various hepatic tests and that in the treatment of allergic disorders the liver should be given attention. He stresses the importance of dietetic measures, particularly those providing an adequate glycogen supply of the hepatic cell. On the other hand, the diet should restrict animal proteins, alcohol, salt and condiments. He thinks that Carlsbad, Vichy and other waters may prove helpful and that high calcium and vitamin contents of the diet are important.

Treatment of Flatfoot by Exercise—Kolb calls attention to an exercise first recommended by Silberhorn, which aims at strengthening certain muscles and is most effective with a simple apparatus devised by Silberhorn. The legs must be held apart for a distance of from 15 to 20 cm. This is accomplished by heel holders and a board that is placed between the legs below the knees. The toes are placed in holders to which a ring is fastened, which in turn is hooked onto spiral springs that draw the toes outward. The exercise consists in drawing the toes of the two feet together and then again yielding them to the traction of the springs. During the time the toes are drawn inward, the inside of the foot is lifted up and the sole of the foot is arched. That the muscles which elevate the arch of the foot are greatly influenced by this exercise is indicated by the fact that they are extremely painful at the beginning of the exercises but later this pain disappears. The treatment is most effective in children, but even in adults it is helpful in counteracting the difficulties caused by flatfoot, in that it strengthens the muscles.

Zeitschrift für klinische Medizin, Berlin

129 637 785 (April 18) 1936 Partial Index

- Is There a Serous Hepatitis with Tuberculous Etiology? W Berger O Ruml and F Hausbrandt —p 637
 *Hemorrhagic Diathesis and Vitamin C Demonstration of Hypovitaminosis from Urine. L. Armentano —p 685
 Circulatory Insufficiency and Oxygen Deficiency R. Herbst and K. Mangold —p 710
 *Influence of Copper on Carbohydrate Metabolism of Human Subjects H. Schnetz —p 739
 Clinical Electrocardiography Studies on Behavior of Type of Electrocardiogram in Patients with Emphysema G. Schlomka and G. Gauss —p 760

Hemorrhagic Diathesis and Vitamin C—Armentano points out that the spontaneous hemorrhages play an important part in C avitaminosis, especially scurvy, and that, because of this, vitamin C has been used in the treatment of disorders that are accompanied by hemorrhagic tendencies. He shows that there are a number of intermediate stages of hypovitaminosis between the state of normal vitamin supply and scurvy. The reduction of the capillary resistance and of the quantity of cevitamic acid in the urine indicates severe degrees of hypovitaminosis. Milder forms of vitamin deficiency can be detected only by means of tolerance tests with vitamin C. To be sure not every reduction in the capillary resistance indicates a hypovitaminosis. The hemorrhagic tendency of diabetic patients and apparently also a large number of hemorrhagic diathesis cannot be ascribed directly to a deficiency in cevitamic acid. In tests on normal persons it was found that the administration of cevitamic acid does not increase the number of thrombocytes this applied also in some pathologic cases. The author points out that, in the course of infectious diseases and after

a one-sided diet has been taken for long periods, a hypovitaminosis may develop that does not necessarily become manifest in a hemorrhagic tendency. In such cases, adequate supplies of vitamin should be given.

Influence of Copper on Carbohydrate Metabolism—Schnetz studied the influence of orally administered copper on the blood sugar content. He found that in normal persons epinephrine hyperglycemia as well as dextrose hyperglycemia could be inhibited by the daily administration of 20 mg of copper (in pills). Equivalent quantities of iron were found to exert no influence on these forms of hyperglycemia. The inhibiting effect of copper in the induced hyperglycemia as well as the anti-infectious, antianemic and roborating actions of copper induced the author to try copper medication in several cases of severe diabetes mellitus. He found that with copper therapy the doses of insulin could be greatly reduced, for the sugar content of the blood and the urine declined and the general condition was greatly improved under the influence of copper. The inhibiting action of copper seems to influence only the increased sugar content, for the normal sugar content is neither increased nor reduced by copper medication. The fact that only the increased sugar content is influenced seems to indicate that the effect of copper medication is largely due to the action of the liver. The author gained the impression that individualization of the dosage is highly important in copper medication of hyperglycemia and that the action of copper is restricted to certain degrees of hyperglycemia. In two cases of mild to average severe diabetes, the author found that insulin therapy could be entirely replaced by copper treatment.

Zentralblatt für Gynäkologie, Leipzig

GO: 1025 1088 (May 2) 1936

Clinical Aspects of Disgerminoma G Doderlein—p 1027
Ectopyema in Cervical Cyst in Case of Uterus Bicornis Unicollis. R Freisfeld—p 1030

Neus as Late Result of Sterilization Operation (Madlener Walther) K Hartmann—p 1033

*Recognition of Overdue Pregnancy H von Brücke—p 1038
*Estrogenic Substance in Treatment of Milk Fistula and Mastitis W Lindemann—p 1045

*Experimental Adenomyosis Following Interruption of Pregnancy by Curettage in Rabbits W Zaleski—p 1046

Recognition of Overdue Pregnancy—Von Brücke describes the case of a woman who came to the clinic when, according to her statement, 321 days had passed since the last menstruation. She stated that during the last two weeks the fetal movements had become less frequent. However, since the fetus did not show excessive size and since there were no irregularities in the fetal heart action, the woman's statement seemed to lack definite proof and a cesarean section was not suggested. Attempts were made to induce labor by means of hot baths, enemas, castor oil, quinine and pituitary extract, but without success. These measures were continued for two days, but on the third day the fetus died. On the following day labor pains set in and the delivery was terminated by cranioclasia. The author stresses the great importance of roentgenoscopy of the fetus in determining the degree of maturity in cases in which prolongation of pregnancy is suspected but in which the size of the fetus does not indicate it. In the reported case a roentgenogram of the dead fetus after birth revealed that the bone nuclei of the knee joints were much larger than is the case in infants that are born at the normal term, for they were about as large as those found in the second month of life. As past-term infants often die during birth, the author says that a cesarean operation may be advisable but that the medicinal induction of labor should as a rule be tried first.

Estrogenic Substance in Treatment of Milk Fistula and Mastitis—Lindemann points out that incisions in cases of mastitis often result in the development of milk fistulas. He reports the case of a woman in whom a milk fistula with profuse secretion proved refractory to all therapeutic measures. In the hope of being able to influence the condition by hormone action, the author injected 50,000 mouse units of estrogenic substance intramuscularly. Two days later, the profuse milk secretion showed a considerable decrease and the accompanying eczema a great improvement.

Adenomyosis Following Interruption of Pregnancy by Curettage—Zaleski subjected ten nonpregnant rabbits to laparotomy, in the course of which he scraped one horn of

the uterus with a sharp curet but left the other unimpaired. After from sixty to ninety days he made microscopic studies on the uterus of these animals, but he never detected signs of an adenomyosis. In a second series of experiments he interrupted the pregnancy of seven rabbits by means of curettage. Examinations made from fifty to 240 days later disclosed in four of the seven rabbits foci that greatly resembled adenomyosis. He concludes that his observations give experimental proof that in rabbits the interruption of a pregnancy by means of curettage often results in adenomyosis. Although he admits that animal experiments are not applicable to human subjects without restriction, he thinks that under certain conditions curettage of the human uterus may likewise cause the development of adenomyosis. He recommends clinical observations in this direction.

Wiener medizinische Wochenschrift, Vienna

86: 537 564 (May 16) 1936 Partial Index

*Therapy of Thrombophlebitis and of Thrombo-Embolism C. Ewald—p 537

Diagnostic Mistake in Renal Calculus Caused by Use of Roentgen Paper R Paschke and F Fleischner—p 540

Action of Diathermy in Cases of Projectiles in Brain H Hoff and P Schilder—p 541

Protein Therapy in Suppurating Infections F Schurer von Waldheim—p 543

Therapy of Thrombophlebitis and Thrombo-Embolism—Ewald evaluates the various remedies that have been suggested as prophylactics and mentions some predisposing factors. He calls attention to the fact that many of the patients who die as the result of an embolism are of a short, rather obese, type. Cachexia, on the other hand, predisposes a patient to thrombo-embolism. The diagnosis of the mild, deep venous thromboses, which lead to embolism most frequently, is rather difficult. But these thromboses should be searched for every day, particularly during the first few days after the operation, as they are most likely to develop during this time. To be sure, embolisms occur even in the course of the operation, and in these cases the thrombosis can hardly be ascribed to the operation. The thrombosis may appear with and without signs of inflammation. Recognition is especially difficult in the latter case and careful examination is necessary. Once thrombosis has been recognized, the chief effort should be to prevent the detachment of the ascending clot, for this, and not so much the obstructing portion, presents the danger. Complete rest and correct bedding are of great importance. The author recommends support for the lower part of the legs, so that the knees are bent at a right angle, and elastic bandages. The bandage must be put on with extreme caution. If the embolism has produced a pulmonary infarct, the treatment must follow the rules of internal medicine, but, if the embolism obliterates the pulmonary artery, delay involves danger. Since Trendelenburg recommended excision of the thrombus from the pulmonary artery, the decision on the proper treatment has become rather difficult, because it happens that patients who seemed dead recover without intervention, on the other hand, by an expectant attitude the right time for an intervention may be missed.

86 565 592 (May 23) 1936

Pathologic Physiology of Formation of Calcium O. Furth—p 565

Pathology and Therapy of Electrical Injuries S. Jelinek—p 567

Experimental Studies on Problem of Cerebral Hypertension H. Hoff—p 569

*Treatment of Tuberculous Hemoptysis with Parathyroid Extract K. Fang—p 571

*Blood Chlorides in Malaria Therapy Edith Klemperer—p 572

Therapy of Thrombophlebitis and of Thrombo-Embolism C. Ewald—p 574

Treatment of Tuberculous Hemoptysis with Parathyroid Extract—According to Fang, most clinicians differentiate two types of tuberculous hemoptysis, the type that results from the rupture of a larger pulmonary vessel (rhesis) and the type that takes place through the intact vascular wall (diapedesis). Rhesis is frequently refractory to all therapeutic interventions and ends fatally, but in some instances pneumothorax treatment, phrenicectomy or thoracoplasty may be helpful. In diapedesis, however, in which a disturbance in the coagulation of the blood plays a part, hemostatic remedies are advisable. The favorable results produced by parathyroid extract in various types of hemorrhages induced the author to try this treatment in pulmonary hemorrhages of tuberculous

patients He reports his observations in 102 cases The success of the treatment was complete in eighty-one cases, moderate in eight, doubtful in nine and failed completely in four cases of rheixis The usual mode of administration was by intramuscular injection (rarely intravenously) As a rule, 1 cc was given three or four times daily The injections were usually continued for another day after the hemorrhage had ceased They were always well tolerated

Blood Chlorides in Malariotherapy—Klemperer, at the suggestion of Wagner-Jauregg, studied the chloride content of the blood of patients undergoing malariotherapy Tests were made on the whole blood as well as on the serum She says that the chloride content of blood and serum was reduced in only a small number of the examined patients Moreover, this reduction is comparatively slight, so that it can readily be compensated by the reserves of the organism

Acta Chirurgica Scandinavica, Stockholm

78 1 288 (May 26) 1936 Partial Index

- Filling of Tuberculous Pulmonary Lesions Technic and Results N Backer Grondahl—p 1
Percutaneous Nailing of Fractures of Femoral Neck O Lunden—p 28
Use of Morphine After Abdominal Operations O Sjögqvist—p 33
Xanthoma Two Cases O Perslow—p 71
*Embolectomies Forty Five Cases J Hindmarsh and I Sandberg—p 81
Intoxication in Intestinal Strangulation Experimental Study H Wahren—p 121
*End Results in Gastric Surgery with Especial Reference to "Resection for Exclusion." S Friberg—p 157

Embolectomies—According to Hindmarsh and Sandberg, forty-five embolectomies for embolism of the large vessels of the extremities were performed at the Maria Hospital in Stockholm between 1912 and 1934 Thirty of these were performed by Einar Key, who was the first in Sweden to perform a successful embolectomy, twenty-three years previously A follow-up study was made of forty patients, on whom forty-five embolectomies were performed There were fourteen men and twenty-six women Chronic heart disease was the cause of embolism in 77 per cent of the patients, in six embolism complicated an operation, an obstetric delivery or an infection, and in three the cause was not ascertained Adequate circulation in the involved limb was reestablished in eighteen patients (58.1 per cent) operated on within the first ten hours after the onset of the symptoms Normal circulation was reestablished in five (35.7 per cent) of fourteen operated on after this period Of the forty-five embolectomies, recovery occurred in seventeen (37.8 per cent) In six other cases the local effect was successful but the patients succumbed to the original disease. Thus the embolectomy alone was successful in twenty-three cases (51.1 per cent) These patients have regained normally functioning limbs The operations failed to save ten patients from a subsequent amputation of the limb Two thirds of the patients on whom a successful operation was performed did not survive the ten year limit. The authors emphasize that the high early and late mortality rate is due not to the operation of embolectomy but to the original disease

End Results in Gastric Surgery—Friberg submits a follow-up study of 398 cases of gastroduodenal ulcer in which operation was performed at the Västerås and Köping (Sweden) hospitals Particular emphasis was laid on the results in sixty-eight cases in which the operation of "resection for exclusion" had been performed In this procedure, advocated principally by Finsterer, no attempt is made to resect the ulcer situated in the duodenum or in the pylorus in order to avoid injuring the pancreatic or the common bile duct in the case of a low duodenal ulcer, or because of mechanical difficulties presented by a large callous ulcer The antrum and a portion of the corpus are resected with the view of lowering the acidity The continuity is restored by an end to side gastrojejunostomy The primary mortality for this group amounted to 4.4 per cent, while that for radical resection was 12.6 per cent. There was no instance of a recurrent or of a peptic jejunal ulcer in the group of "resections for exclusion" A permanent cure was obtained in 87.7 per cent which is as good as that obtained by the method of radical partial gastric resection and better than that obtained by the operation of gastro-enterostomy No difference in the results was observed in the cases in which the pylorus was resected and those in which it had been retained.

Hospitalstidende, Copenhagen

79 425-452 (April 28) 1936

- *Celiac Disease Mildrid Andersen—p 434
Blood Picture After Thoracocautery P Mourier—p 441

Celiac Disease—Andersen describes the case of a boy, aged 8, small for his age, red haired and freckled, with a history of digestive disturbances since early childhood and pathologic amounts of fat in the feces The fasting blood sugar is normal, the blood sugar curve is low after the oral tolerance test with dextrose, abnormally short after intravenous tolerance test and normal after injection of epinephrine Roentgen examination shows passage too rapid in the small intestine and too slow in the large intestine There are achylia, marked anemia, low blood pressure, flabby musculature, meteorism of the abdomen and retarded development of the ossification centers. The diagnosis of celiac disease is based on the increased fat elimination and the appearance of the feces before remission and on the typical low blood sugar curve, the symptom complex for idiopathic steatorrhea (celiac disease, tropical and nontropical sprue) Anemia, usually hypochromatic, is constant, and retarded growth is also an important symptom The disorder occurs predominantly in blond children, in Fanconi's twenty eight cases, twenty-four of the children were blond, three red haired and one dark. The course is typically remittent, markedly chronic and capricious The mortality is about one third, death being due sometimes to cachexia, more often to complications The author is inclined to regard the intestinal disturbance as primary The abnormal blood curve, low blood pressure, pigmentation, muscular weakness and the delayed appearance of ossification centers and retarded growth apparently point to an impaired function of the anterior lobe of the pituitary, the thyroid and the adrenals, the intestinal disorder is thought to cause disturbances in the little known endocrine apparatus of the duodenum, leading to interruption of the correlation of the organs of internal secretion.

79 453 480 (May 5) 1936

- Injuries to Central Nervous System in the New Born from Birth Trauma E Rydberg—p 453
Technic of Cholecystography F Sjögaard—p 467
*Contribution to Casuistic Pulmonary Sequestrums. A Bertelsen—p 474

Pulmonary Sequestrums—Bertelsen emphasizes that age is a factor in the pathogenesis of pulmonary sequestrums In fourteen of the eighteen cases found by him in the literature in which the age was specified, eleven belonged in the older age group and three patients were between the ages of 5 and 11 The tendency to thrombosis, possibly due to weakness, is an important factor in some instances, in others the cause may be loosening of lung tissue in closely located pulmonary abscesses The start, as in his patient, a girl aged 5, is usually a fibrous pneumonia without crisis, constant high fever and continued pulmonary symptoms indicating a local complication Diagnosis may not be made until after death, but symptoms of local abscesses may appear and more often empyema may develop After thoracotomy, spontaneous expulsion of the sequestrum may lead to diagnosis, as in his case. The prognosis is grave Of the eighteen cases, fourteen were fatal, in two of the cases with recovery the sequestrum was removed spontaneously through a thoracotomy, and in two by operation The course described may suggest the complication, in which case an attempt should be made to verify the diagnosis by roentgen examination, which may sometimes reveal a sequestrum

79 481 508 (May 12) 1936

- Paroxysmal Tachycardia of Gallavardin's Type Case A L. Nielsen—p 481
Parkes Weber Dimitria's Disease Case Annie Schondel and L. Laursen—p 489
*Some Chloride Ion Determinations in Cerebrospinal Fluid from Different Parts of Cerebrospinal Cavity Compared with Blood Serum H. Christiansen—p 496
Pellagra in Patient with Gallstones Case S. Harild—p 504

Chloride Ion Determinations in Cerebrospinal Fluid—In Christiansen's twenty-three fluids from the cerebral ventricles eight lumbar fluids and one cistern fluid the lowest chloride value was 413.2 mg per hundred cubic centimeters, the highest 468.1 most of the values varying from 430 to 450 mg per hundred cubic centimeters He says that the results confirm that the chloride content everywhere in the cerebrospinal fluid (in neurologic patients) is about 20 per cent higher than the corresponding values in serum from venous blood from the arm.

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THE COMMON COLD

CHAIRMAN'S ADDRESS

WILLIAM J KERR, M.D.
SAN FRANCISCO

It is my purpose to discuss the disorder which in our time bears the designation of "the common cold." This malady directly accounts for frequent periods of indisposition and incapacitation of people everywhere and, through complications, results in untold suffering and sacrifice of human life. The economic loss in time and in wages is greater in this condition than in any other disease that affects the population at large.

When attempting to define the common cold, one is at once beset with difficulties. The terms "cold in the head," acute rhinitis and coryza are used interchangeably. The layman uses the term "a cold" to designate almost any type of inflammation in the body but more often for any respiratory disturbance from "cold in the head" to pharyngitis, tonsillitis, laryngitis, tracheitis, bronchitis, sinusitis, hay fever and disease of the middle ear. The physician likewise may use the term "a cold" rather loosely to designate inflammations in any part of the respiratory tract and accessory structures. The condition is often mistaken for influenza, or la grippe, particularly during epidemic periods of the latter. Influenza is frequently mistaken for a "simple cold," and serious complications may result from lack of proper treatment. The most frequent confusion is with hay fever. The basis of differentiation between inflammations due to some infectious agent and those due to other causes is not well established. Reactions to foreign proteins (hay fever) and chemical irritants and other less well defined physical and emotional disturbances are recognized but not always differentiated.

PATHOGENESIS OF THE COMMON COLD

A workable definition of the common cold could be stated as follows: an acute disorder presenting its most obvious symptoms in the nasal passages, occurring most frequently in the fall and early spring in temperate climates, and attacking great numbers of the population almost simultaneously. The attack is initiated by general sensations of coldness or chilliness. The local symptoms in order of appearance are sneezing, a profuse watery nasal discharge and stuffiness in the nasal passages. At this stage the subject passes increased amounts of pale urine of low specific gravity.

From the Department of Medicine, University of California Medical School.

Address of the chairman of the Section on Practice of Medicine, read before the joint meeting of the Section on Practice of Medicine and the Section on Pharmacology and Therapeutics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

At the onset the nasal mucous membranes are drier than usual, and there is a sensation of irritation in the upper air passages. There may be headaches and malaise. When the subject complains of general sensations of coldness or chilliness the skin is cold and blanched and "goose-flesh" appears readily on exposure. The dryness of the nose gives way in a few hours to a copious secretion of irritating watery fluid, accompanied by paroxysms of sneezing. At this stage the mucous membranes of the nose, especially on the turbinates, are swollen and injected. There is almost always a reduction of the oral temperature in the early part of the course, in my experience for the first twenty-four to forty-eight hours fever rarely occurs, in uncomplicated cases. The stuffiness of the nose increases and soon causes practically complete obstruction to the passage of air. After two or three days the irritating secretions gradually become thicker and more cloudy because of the exfoliation of cells from the injured mucous membranes. The secretions tend to become purulent when the obstructed accessory nasal sinuses begin to drain. The subject may be obliged to breathe through the mouth during the stage of congestion and obstruction.

When recovery takes place, the general sensations of chilliness and lack of perspiration associated with a constriction of the peripheral vascular system give way to feelings of warmth and returning moisture to the skin. The peripheral vascular system resumes a more normal functioning state and the urine now becomes more scanty and highly colored. The course of illness is variable in length but as a rule the symptoms terminate in a few days (from three days to two weeks), depending on the effectiveness of treatment and the occurrence of complications. A fact usually lost sight of is that the common cold runs its course in from three to five days. The complications prolong the period of recovery and are confused with the initial disorder.

The lack of a lasting protection against subsequent attacks of the disorder is characteristic and unique.

Some may take issue with this definition of the common cold. It should be noted that no etiologic factors have been specified. These will now be discussed.

Until about the turn of the century it was generally accepted by medical authorities that exposure to chilling, such as by drafts, wet feet and damp clothing, was the cause of the common cold. Subjects who became overheated and perspired freely were thought to be more susceptible to overcooling. Fatigue and feasting also were considered as etiologic factors. Toward the end of the last century the development of knowledge in bacteriology was rapid and enthusiasm carried many workers far afield. The medical profession seemed willing to accept a bacterial origin for most diseases,

including lead poisoning, cancer, chronic arthritis, beriberi and pernicious anemia. That supposition overran fact we can now testify. On investigation of the upper respiratory passages, a host of bacteria were found, each of which, in turn, came under suspicion as the cause of the common cold. After much study of these micro-organisms it was concluded that they were not primary etiologic factors, it was assumed that if they contributed to the symptoms in any way it was only in a secondary capacity. The "soil" was thought to be prepared in some fashion for the invasion of organisms already present. Obstruction of the atria of the accessory nasal sinuses was thought to provide suitable conditions for bacterial growth behind the obstruction.

On the mistaken hypothesis that the common and visible bacteria discovered in the respiratory passages were of etiologic significance, the medical profession and the public have used many types of respiratory or "cold" vaccines for the prevention of the common cold. There is no proof that such vaccines exert any specific protective action, and if there is any value in the procedure it is likely that immunity is enhanced against the action of these organisms only as secondary invaders or for some other reason still undetermined. Perhaps the only virtue in the periodic use of such vaccines lies in a nonspecific action of foreign protein on the autonomic nervous system. This action is demonstrated in testing the peripheral vessels for spasm, and its effects may be more enduring than is known at present. If the peripheral vessels are more permanently relaxed, the effects of cooling may be minimized.

In recent years Dochez has advanced the hypothesis that the common cold is due to a filtrable virus and in support of this view has presented data on careful and extensive experimental study. It is quite likely that this worker is able to transmit and to grow in tissue culture an agent which produces symptoms resembling those of a common cold, but that this agent is the universal primary cause of the common cold may be doubted. The question may be raised: Do the products of disintegration of the tissue cultures themselves cause sufficient irritation to reproduce the local symptoms of a "cold"? Likewise can molecular substances akin to ferments and bacteriophage, standing somewhere between organic chemical substances and living things be excluded? May they not under suitable cultural conditions in mediums containing mammalian tissues be susceptible of reproduction in experimental subjects and animals and give local symptoms?

The recent studies on influenza by Laidlaw, Andrewes and Smith in England and Shope and Francis and Magill in this country mark an advance in the study of respiratory diseases. A filtrable virus appears to be the etiologic factor. At last it may be possible to isolate one of the agents that attacks the mucous membranes of the respiratory tract. The development of immune reactions in those recovering from influenza is demonstrated. This should make it possible to identify influenza and narrow the group for further consideration. There is apparently no close immunologic relationship between the virus described in influenza and that reported by Dochez in the common cold.

The science of bacteriology deals with the small living things found in our environment and with the biologic reactions to them which is called immunity. Is it not evident that there are other environmental factors which influence our existence? To continue life as a biologic unit we must be in balance with our environ-

ment. Our means for protection are multiple but our ability to adapt ourselves to changing conditions of temperature and humidity is among the more remarkable of our protective mechanisms.

It is unfortunate that so much effort has been expended on the bacteriologic study of the respiratory diseases and so little on the study of fundamental physiologic mechanisms that may be at fault. Those of the greatest interest are in the nose and the skin. The remarkable structure called the erectile tissue situated on the turbinate bones in the nose lies in the direct pathway for the air entering the nasal passages. It is richly vascular and is intimately connected with the autonomic nervous system. Its chief function is to prepare the air for the deeper reaches of the respiratory tract, through its power to warm and humidify the air. This special tissue is remarkably adaptable and highly sensitive to many influences. When it fails to function properly, the unprepared air may injure the tissues beyond and probably does so, as will be discussed later. The mutual relationships of this mechanism with the functions of the skin, lungs and kidneys in regulating heat and water in the body are not completely understood, but that they are important cannot be questioned.

It may be assumed from present knowledge that there are a number of agents which may cause disturbances in the erectile tissue of the nose. One need mention only the rhinitis seen in iodism, the hay fever caused by pollens and danders, and the local effects on the nasal mucous membranes of contact with fumes, dusts and other irritating substances. War gases and dusts from the prairies are examples of the last group. Deflection of the septum, which brings the swollen mucous membranes in one passage in close apposition to the lateral wall, may provoke unilateral symptoms. In a number of the infectious diseases, notably syphilis and measles, marked rhinitis may occur. Influenza does not, as a rule, begin with an acute rhinitis. In this disease the pharynx is usually reddened and the nasal passages may be irritated, but obstruction and abundant secretion are uncommon.

It is well known that exposure to cooling after being overheated, or excessive cooling of the extremities particularly after wetting of the feet or sitting in a draft will in most subjects cause nasal obstruction, sneezing and watery secretions. Of this there can be no doubt from the experience of generations of people everywhere. The faulty methods of heating our homes, offices and workshops, with lack of proper humidification, result in atmospheric conditions that overwork the nasal humidifier and irritate the mucous membranes.

It may be assumed that anything which causes congestion of the erectile tissue and thereby obstructs the nose will cause sneezing and the outpouring of a thin, watery secretion which is not specific for the causative agent. Most of the confusion in diagnosis has come because of the failure to recognize this fact. When the patient presents himself with rhinitis, there is no characteristic symptom by which one type can be readily distinguished from another. A "cold in the head" means only that he has a rhinitis or coryza. It may be stated, advisedly, that there are also no absolute physical guides in the differential diagnosis of rhinitis. It would perhaps, interest physicians and specialists in diseases of the nose and throat to examine patients objectively as we have done, without recourse to histories, and to follow them through attacks of rhinitis. No agreement can be reached as to what is a common cold and what is an allergic state in the nose from the physical exam-

ination alone. This difficulty is to be anticipated since the objective signs result from disturbances in a tissue that has a well defined physiologic reaction. A subject with hypersensitiveness to pollens or other allergens may also experience reactions to other agents, be they dusts, viruses, physiologic alterations in the mucous membranes from exposure to cold, or other causes.

The general symptoms of the common cold are as important as the local symptoms. These are associated with constriction of the vessels in the skin, with coldness, and with decreased sweating which results in the increased secretion of urine that is pale and of low specific gravity. Cold weather does not contract or irritate the bladder, it only makes the kidneys a substitute for the skin as an outlet for water from the body. Fever is not an early sign, and, as I have shown, the temperature is usually subnormal for the first twenty-four to forty-eight hours.

If the known infectious diseases that produce respiratory symptoms, such as measles, syphilis and influenza, are excluded, it will be found that there remains a very large group of acute disorders which may be classed as rhinitis. Through history and skin testing a considerable number of reactors to allergens can be recognized. Among these persons will be found many who suffer from symptoms of rhinitis during the fall and spring months when colds are frequent. They may have increased susceptibility to changes in temperature as well as hypersensitiveness to allergens. Subjects with chronic disorders of the sinuses and with deflected septums likewise have symptoms of rhinitis when sudden changes of temperature occur. The majority of the population, however, experience from two to four "colds" a year, and it is not clear that they belong to any of these groups.

It is my opinion that they develop a type of rhinitis which may be designated as the common cold, resulting from exposure to sudden cooling of the body due to faulty adaptation to their environment. The rhinitis arises through swelling of the nasal mucous membrane when the periphery contracts on cooling of the skin. Individual differences in the capacity to react to cooling may account for the frequent occurrence of colds in some people and the infrequency of attacks in others. The great prevalence of colds in the fall months may be explained by lack of protection against overcooling due to peripheral vascular relaxation during the summer months. The inability of residents in the tropics to adjust themselves quickly to temperate climates is an expression of extreme peripheral relaxation. In the spring months the deceptive warmth of a sunny day leads to untimely shedding of warmer clothing, and overcooling may result. The excessive amount of heat required to change water from the solid (ice) to the liquid state should also be taken into account. The familiar expression that the blood gets thicker in the winter months is probably based on the observation that the cold air is then tolerated better, and this is almost certainly due to the stimulation during the cold weather, of the local vascular reflexes to cooling.

The clinical features of the common cold are not characteristic of an infection. There is ordinarily no fever in the early stages. In a given individual the clinical course is usually the same in successive attacks beginning usually with rhinitis and followed by sore throat, laryngitis, tracheitis and bronchitis. In most subjects the rhinitis appears first, and in many there is a gradual descent in the respiratory tract. These events may be explained by conditions existing in the indi-

vidual. If the nasal mucous membranes fail to function, the unprepared air injures the deeper tissues and symptoms arise from inflammation in the pharynx (including the tonsils) or in the larynx, trachea or bronchi. It is not necessary to assume that bacteria or viruses play any part in this sequence of events. It is well known that irritating gases, dusts and liquids may be primary causes of injury to the respiratory mucous membranes. Mouth breathing, as a result of obstruction of the nasal passages, permits unprepared air to injure the mucous membranes of the mouth, tongue, pharynx and lower respiratory passages in patients, and it is reasonable to suppose that it does so, also, in persons suffering from rhinitis.

Studies that have been made in our clinic show the well known seasonal prevalence of the common cold, but careful statistical analysis by weekly periods fails to show any positive correlation with the cooling power of the air. It is possible that, if all the circumstances could be controlled and analyzed, such a correlation would be shown to exist. Daily reports would probably be of greater significance. To date, no surveys on the incidence of the common cold have been of great value because of the difficulties inherent in establishing the diagnosis and in securing the complete cooperation of any large group of the population for a long period of time.

During the past few years, in an investigation undertaken with my associate John B. Lagen, attempts were made to reproduce the common cold so that the physiologic mechanisms involved could be studied. We selected groups of subjects who were known to have frequent attacks of the common cold and who had not suffered from it in recent months. We placed them in a room where ideal environmental conditions for comfort could be maintained (temperature 71° F, humidity 55 per cent). We exposed successive groups to different individuals suffering from the common cold in the acute stages. The exposure was intimate and continued for several hours in the groups studied early in our investigations, but in the groups studied later, in addition to intimate contact, fresh secretions were injected into the conjunctival sacs, and thermometers and drinking glasses were contaminated with the secretions. In a total of nineteen subjects in five groups, and exposed to five sufferers, not one positive result was obtained. This does not prove that there is no type of rhinitis which is contagious, but it does suggest that colds are not so readily transmitted as many assert. Acute colds are nasty, but the element of fear in the presence of the miserable sufferer is one of our modern bogies. In families, on numerous occasions, only certain members suffer from repeated colds. Isolated groups or individuals may suffer from the common cold and if in these instances infection plays any role it must be assumed that some other factor made possible the attack by the infective agent. Some have asserted that explorers into arctic and antarctic regions are immune to colds, yet report was made by radio of an outbreak among Byrd's associates at Little America after isolation of about a year. This outbreak was attributed to opening a box of clothing. Also, Ellsworth was reported to be suffering from a cold when he and his pilot were rescued after a period of nearly two months removed from all contact with the outside world. There may be several factors to explain the relative freedom from colds among people in the arctic regions, explorers who make such journeys are in good physical

condition, including their reactions against cooling, they make elaborate preparations to protect themselves from the cold, they escape from some of the hazards of improper heating and ventilation of our modern homes, and their habits in eating and of drinking spiritous liquors are probably more rational than our own

TREATMENT

It is of interest to review the methods of treatment of the common cold. The prophylactic use of respiratory vaccines has already been mentioned, and it may be assumed that there is nothing specific in their action. In the treatment of the acute attack, several measures are of value. These may be grouped under two general heads: first, those measures which constrict the mucous membranes of the nose and permit the passage of air over them, second, those which open the peripheral vessels. In the first category will be found the shrinking solutions and applications, in the second, a warm room and warm bed, a hot bath, the mustard foot-bath, hot drinks, alcohol (given to the state of diplopia), acetylsalicylic acid, quinine, powder of ipecac and opium, papaverine and many another drug. Our chief concern in treatment is with the complications that result from the obstruction of the sinuses and the irritation of the lower respiratory passages. That the etiology of pneumonia is related to the effects of overcooling is indicated from the experimental studies of Robertson, who was able to reproduce the disease in animals only after the use of a drug (morphine) that caused a great reduction in the temperature of the body.

I am not in a position to state categorically that the common cold is due to a failure to make prompt adjustment to sudden changes in the temperature of our environment. However, there is evidence based on common experience and common sense that this is true. The general symptoms are those of constriction of the peripheral vessels. The local symptoms are related to disturbances of the erectile tissue of the nose, and the local reactions are nonspecific in character. If a filtrable virus is capable of causing rhinitis, it should not be concluded that it is necessarily the cause of the frequently recurrent attacks of the common cold. The absence of a lasting immunity would make the common cold unique among diseases known to be due to a filtrable virus.

I suspect that too much attention has been given to the minute living things in our environment, and too little study made of other elements of our environment which we must combat in order to live. It is as reasonable to suppose that changes in weather with universal exposure to unfavorable atmospheric conditions would cause an almost simultaneous outbreak of symptoms due to faulty adjustment to them. Chills and frozen fingers are not deemed contagious because an outbreak follows the onset of cold weather. Clouds of war gas and the menacing dust storm do not affect all persons equally and simultaneously. The same rules should be applied in considering the etiology of the common cold.

We are continuing our studies on the physiologic mechanism which I have discussed. We hope to be able to determine the interrelationships. Subjects known to be susceptible to the common cold will be exposed to environmental changes which may be expected to reproduce general and local symptoms characteristic of the common cold.

Since it is apparent that no rational means are available to prevent or treat the common cold on the basis of the hypothesis of infectious origin isn't it timely to go back to fundamentals and start anew?

THE VALUE OF PSYCHOANALYSIS AS A THERAPEUTIC PROCEDURE

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Exponents of specialized therapeutic procedures must recognize certain definite obligations to their medical colleagues. These obligations include (a) controlled reports of clinical results, (b) discussions of failures and limitations, (c) the gratuitous training of younger practitioners, and (d) the application of the special technic for medical indications, irrespective of economic factors.

These comments are pertinent to the present attempt to evaluate psychoanalysis as a therapeutic procedure.

The literature of psychoanalysis, opulent in its imagery and broad vistas of potentialities, offers little tangible clinical information. There have appeared an abundance of abstract discussions of life and death, war and peace, politics and criminology, art and letters, education and pedagogy, love and hate, wit and humor, the conscious and the subconscious. But analyses of individual case histories, reports of failures, confessions of limitations, end results after a lapse of a reasonable span of time, allowances for the spontaneous course of disease (as in the manic-depressive psychoses), considerations of external factors such as arise in the life circumstances of any individual, attempts to adjudge the value of the results in terms of the time and money consumed—all these are conspicuously absent from the writings of men and women whose life work is devoted to the study and teachings of integrated cerebration. In a recent compilation of the literature by Dunbar,¹ containing 432 pages of print and 2,251 selected references, eleven pages are devoted to therapeutic considerations, without a single word relative to indications, contraindications, results or cost of therapy.

The Psychoanalytic Society has sharply limited its membership by adopting most rigorous professional standards. This has correctly made for responsibility and high quality of service in a field where charlatanism is rife. The limitation in the number of analysts has other aspects, however, for it has set up an economic structure for psychoanalysis which has given rise to great distrust. The first economic barrier is established for the young men in training. The Psychoanalytic Society demands a didactic analysis before election to membership. In violation of the hippocratic oath, these didactic analyses are not done gratuitously. Medical students and young practitioners of medicine are notoriously penurious and, until the economic barrier is broken down, many competent and serious students will be unable to meet the qualifications necessary for entrance into the Psychoanalytic Society. Money becomes a factor far too important in the training of these specialists. The limitation in number also serves to increase the premium which the accepted psychoanalysts place on their own services. Hence, in actual practice, the economic factor plays the greatest role in the selection of patients. Lawrence Kubie,² one of the wisest and sanest of the psychoanalytic school, has honestly and courageously, discussed these problems.

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1 Dunbar, H. F. *Emotions and Bodily Changes (A Survey of Literature on Psychosomatic Interrelationships 1910-1933)*. Columbia University Press 1935.

2 Kubie, L. S. *Practical Aspects of Psychoanalysis*. New York, W. W. Norton & Co. Inc. 1936.

He estimates that the average fee for psychoanalysis in New York City is less than \$10 per hour. It is my experience that this figure represents a fair average. At 250 to 270 sessions a year the annual cost averages from \$2,500 to \$3,000. As an analysis is rarely terminated sooner than in eighteen months and in my experience more nearly two years, the total fee for the analysis may be estimated at an average of between \$5,000 and \$6,000. This would seem to limit sharply the availability of a therapeutic procedure. The rigidity of the economic arrangements demanded by many psychoanalysts results in further sacrifice on the part of the patient. At times the fee is requested in advance. No change in the analytic hour is tolerated. Payment is demanded for canceled time. Courtesies to fellow practitioners are waived. Patients usually report that the first interview with the analyst is taken up with the matter of finance. The acceptance of the patient by the analyst is often dependent on the size of the fee which the patient can pay in proportion to the premium which the psychoanalyst places on his free time.

The explanations which the analysts offer for their economic standards seem to be sheer rationalization. They aver that cooperation is not complete unless the patient makes a significant economic sacrifice. That this excuse has little justification in fact is illustrated by the experience of one reputable analyst of my acquaintance who has successfully handled five patients who paid him no significant fee. The psychoanalysts state further as explanation for their economic demand that diminished income affects adversely the analyst himself. Kubie states (page 190) that the very basis of the psychoanalyst's economic security may be seriously threatened and that he can make himself secure only by overworking, i.e. by taking on more patients than it is desirable for a man to carry. Where an analyst can obtain a fee of approximately \$2,500 to \$3,000 a year from each average paying patient, I cannot understand how a normally balanced person, such as an analyst must be to conduct his work, can possibly have his sense of security undermined by taking on one or two free patients or an occasional student for didactic analysis. If this condition prevails, either the analyst is rationalizing his greed or else his lack of sense of security in himself and his work borders on a true neurosis and hence renders him unfit for the continuation of his vocation.

The medical limitations to psychoanalytic therapy seem less well defined. Kubie states that psychoanalysis may be applied directly to the investigation of all the psychoneuroses and to their treatment, to the study of human discontent, i.e. the masked neuroses of the so-called normal, to the neurotic disturbances of childhood to the frank psychoses or insanity. He states that while a "fine intelligence is an asset," formal education matters little. Age is no factor—infants, children, adolescents and patients of advanced years may be acceptable and there have been efforts to study primitive savages and even the mental defective. This effectively covers most of human society and its ills, and fails to reveal any broad medical explanation for the rejection of patients on grounds other than fiscal.

The reticence of the psychoanalyst toward the referring physician is another sore point in analytic practice. It is only exceptionally, and then on repeated demand that I have been able to obtain any intelligent information concerning the progress and welfare of my patients. The transplanted European psychoanalyst

will not only furnish no information but actively resents any such request from the practitioner. The analytic rationalization of this behavior is based on their belief that reports may modify the free flow of material from the patient and may, by possible breach of confidence, give rise to embarrassing situations. Tacitly, it is insinuated that the average medical man cannot grasp psychoanalytic methodology. It is my belief that the isolation of psychoanalysis from the rest of medicine, discussed editorially in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*,³ is due in large part not to the hostility of the large body of physicians but to the reticence and arrogance of the analysts.

I am convinced that these rationalizations are a smoke screen and reflect either on the integrity or stability of the analyst. In any field, free discussion between the specialist and the referring physician is conducive to a cordial interrelationship, a warm feeling of confidence, and is invaluable in the education of both physicians. Such an exchange of information cannot be other than helpful to the patient. If the validity of the objections of the analyst toward sharing information with the referring physician while the analysis is in progress is granted, what can possibly prevent these reports from arriving after the analysis has been terminated?

In sharp contrast to the taciturnity of the analysts toward the practitioner is their volubility in discussing their work privately in the living room, over dinner tables, before meetings of mothers, social service workers, zealous pedagogues, criminologists, the literati, the artists, the intelligentsia, and other noncritical groups who possess neither the knowledge nor the authority to question the delmeator of the beguiling peregrinations of the human mind and soul. The parlor analyst vies with the parlor communist and the parlor endocrinologist—though in some instances the triad is miraculously concentrated in a single superman of superior imagination.

These comments concerning the practices of the analysts must not be interpreted as hostility for the achievements of psychoanalysis as a therapeutic measure. Kessel and I⁴ have previously stated that Freud and his followers have made "monumental contributions to the study of mental processes," that "the Freudian school offers the most intelligent approach toward the successful management of many psychiatric problems," and that "in a broader sense the newer teachings have widely influenced the methods of thinking and approach to many of the problems that are met in everyday practice." It is because we have expected so much of psychoanalysis that we have been so keenly disappointed in our results with individual patients, and so critical of the individual analyst.

In 1933 my late colleague Dr. Leo Kessel and I⁴ reported the therapeutic result in thirty-three patients who had been referred for treatment to accredited analysts. I now report on ten additional patients—a group of forty-three in all.

Fifteen patients suffered from profound psychiatric disease. Six of the patients were manic depressive and five were schizophrenic. There were two homosexual, one constitutional inferior, and one chronic alcoholic patient.

³ Eightieth Birthday of Sigmund Freud, editorial, *J. A. M. A.* 106: 1663 (May 9) 1936.
⁴ Kessel, Leo and Hyman, H. T. The Value of Psychoanalysis as a Therapeutic Procedure, *J. A. M. A.* 101: 1612-1615 (Nov. 18) 1933.
An Evaluation of Psychoanalysis, editorial, *ibid.* p. 1643.

Two of the patients committed suicide—one manic depressive, the other constitutionally inferior. The alcoholic patient, two of the manic depressive, and three of the schizophrenic have been committed to institutions.

Four others in this group may be counted as failures. Two of these individuals were manic depressive, one was schizophrenic and one homosexual. Since the termination of the analysis, one of the manic depressive in the latter group has become fairly equilibrated, but this is definitely through *vis medicatrix naturae*. The analysis had been terminated while the patient was in a severe depression some years before the present spontaneous recovery developed.

Another group of two patients is still under treatment. One of these is schizophrenic and has been in analysis for four of the past seven years. His analyst and members of his family believe that he is developing some insight into his psychosis and that he may in some way be benefited. The fugues in the manic-depressive patient may not be quite as marked in the periods either of elation or of depression. The analyst and the family are encouraged. The patient can see no definite improvement, and the course of the disease seems to me not unlike the course in many patients similarly afflicted who are receiving no specific therapy.

The last patient in this group of the seriously ill has made a brilliant recovery. This individual was homosexual. As the result of the analysis the patient is now married, has two children, and is successful professionally. This was indeed a life salvaged from the depths. It is my belief that this patient could have been rehabilitated in no other way and that the recovery is a signal triumph for psychoanalytic therapy.

In this small group of fifteen patients with grave psychiatric disorder there are twelve dismal failures, in two patients the results are still questionable and there is one specific therapeutic triumph. It is unfortunate that where the need is greatest the outlook is least bright. While, in its present state, psychoanalysis is uncovering interesting mechanisms in the profound psychiatric states, therapy for the most part is a forlorn hope and an expensive experiment. It seems justified only when families demand desperate remedies and because neither internists nor neurologists have anything to offer these patients that has even this minimum of promise.

A second group of twenty-eight patients suffered psychiatric disorders that were less crippling, less ominous and in many cases less susceptible of definite classification. Included in this group were patients with hysteria, anxiety states, anxiety hysteria, mild depression, phobias and obsessions, impotence and frigidity, behavior problems, hypochondriasis and at least one instance of psychosomatic abnormality.

Every practitioner of experience has daily contacts both in private practice and in the hospital with large numbers of patients who present any of a protean group of subjective symptoms without objective signs. Whatever terminology is used for these symptom complexes, the fact remains that these patients are unhappy and miserable—usually inefficient. The physical examination reveals no significant or pertinent abnormality. In most instances the intelligent practitioner who knows the life situation of his patient can obtain a satisfactory adjustment and often complete control of the symptomatology by reassurance, rest and vacations, recreational or vocational activity, symptomatic therapy, the

correction of familial and economic situations where possible, and the judicious use of sedation, physical therapy and hydrotherapy. The exhibition of ordinary human sympathy and understanding is the most valuable modality in the therapeutic armamentarium. In a certain number of instances, however, the symptomatology is obstinate, and this type of superficial therapy is ineffectual. Under these circumstances it has been our practice to refer the recalcitrant patient for analytic therapy. Hence the results obtained in this group by the analysts are the more notable.

This method of selection diminishes the number of individuals referred to the analysts, but it redounds the more to their credit when a therapeutic triumph is scored as the result of their specific therapy.

The analytic group will likely criticize this attitude and, as with the surgeons, they will ask for referred patients in the earlier phases of their difficulties. This, however, is wholly impractical, primarily for the economic reasons previously described and secondarily because reasonably satisfactory results may usually be obtained in the majority of instances by the simpler and less expensive methods that have been outlined.

Seventeen of the twenty-eight patients described were distinctly benefited by their analyses. In four instances the analytic cure could be applauded without reservation. This group included two patients with anxiety hysteria, one with an obsessional state and a phobia, and a fourth patient with psychosomatic disease. This last named individual, in addition to an anxiety state, had definite evidences of bronchial asthma and duodenal ulceration. Three years has elapsed since the termination of his therapy, and the splendid result that ensued psychically has also been apparent somatically. This is my one experience that is notable in the fascinating field where psyche and soma meet in related disturbances. This group, which would include certainly essential hypertension, exophthalmic goiter, probably gastroduodenal ulcer, certain types of colitis, and spastic constipation, might well prove a fertile field for the active cooperation of internist and analyst. Franz Alexander⁵ and his group in Chicago have studied similar disturbances, but their reports thus far have dealt with mechanisms rather than therapeutics.

Another thirteen patients were distinctly benefited by the analytic therapy. The results, however, in the latter subgroup were by no means as brilliant and clear cut as in the four patients previously described. These patients are better, they have benefited from their analyses, but in every instance the therapeutic result may possibly have been aided or brought about by alterations in the life situation. This group included three patients with behavior problems (lying, petty thievery, masturbation), one patient with a mild depression, five individuals with anxiety hysteria, one with claustrophobia, one with a characterological defect, two with masked neuroses, free from symptoms at the time of therapy and analyzed, for the most part, because their spouses had been successfully analyzed.

Eleven patients experienced no significant benefit from their analyses. These included one patient with impotence, one with frigidity, three who were hypochondriac, five individuals with anxiety neuroses, and one patient with an unclassifiable syndrome.

The previous statements concerning the limitations of psychoanalysis were confirmed anew. Besides the

5 Alexander Franz, Symposium on the Influence of Psychological Factors upon Gastrointestinal Disturbances, *Psychoanalytic Quarterly* 3, No. 4, October 1934.

economic limitation, age and intelligence were factors in prognosis. Before the middle twenties only the unusual individual can obtain any insight into the procedure. Beyond the age of 40 or 45 there seems to be little possibility of altering individuals. The successful patient must be the possessor of a plastic and a trained intelligence and, as a general rule, such patients have been recruited from the professions or the arts. The average man or woman is wholly unable to grasp or utilize this form of therapy. Those with profound and serious psychiatric disorders have neither the receptive attitude nor the moral fiber to profit from the information that is disclosed.

It would be unwise and unfair to attempt to summarize further the features of this presentation. The amount of the material is too small, though it has taken over fifteen years to collect these experiences. My own technical ignorance of the methodology of psychoanalysis is another vulnerable point in this discussion. It is, however, not too presumptuous to trust that the presentation of these tangible data may stir up sufficient debate and controversy to crystallize, for fellow practitioners, concrete indications and contraindications for a therapeutic procedure that offers great promise of fulfillment in the not too distant future.

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HEART DISEASE AND PREGNANCY

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Cardiac clinics are now part of the standing equipment of most obstetric services. While a general trend toward a more successful management of these cases is apparent, there is disagreement on almost every detail of the problem. This is partly because of insufficient individual experience and partly because statistical methods have been neglected in the analysis of collected data. Therefore the present study was undertaken for the purpose of gathering sufficient data on controversial issues, and of treating these data statistically. For the purpose of detailed study nearly 1,000 case reports were collected from the literature and, to a small extent (fifty), from the records of the St. Louis Maternity Hospital.¹ More than 300 of these cases were fatal.

PUBLIC HEALTH ASPECTS

It is difficult to learn the prevalence of rheumatic heart disease among pregnant women. It probably varies according to climate, race and social stratum. The recorded incidence further depends on the care with which the patients have been examined and the accuracy with which functional conditions have been excluded. The high incidence of rheumatic heart disease found post mortem in New York and Boston may be due to the inclusion of cases that were clinically unimportant. On physical examination of samples of the young adult population the incidence has been reported to be about 2 per cent. This figure is probably too high, for it is estimated that about 2 per cent of the general population suffers from organic heart disease. But as the incidence increases greatly with age, it necessarily must lessen with youth.

An attempt has been made to estimate the incidence of rheumatic heart disease among white women of child-bearing age in the United States. Figures obtained from the census and the mortality tables for 1930 were corrected for all obvious errors as far as these could be estimated. The result was a probable death rate from rheumatic heart disease of 30 per hundred thousand white women of that age. If these deaths represent a death rate among these cardiac patients of 5 per cent, the incidence would be 0.6 per cent.

The recorded incidence of heart disease among more than 500,000 obstetric admissions to many different clinics both in this country and abroad was 0.9 per cent.

Heart disease is an important factor in 7 per cent of all deaths from puerperal causes. As there are about 14,000 deaths from puerperal causes a year in this country, probably about 1,000 of these are associated with heart disease. If these 1,000 fatal cases represent 5 per cent of the total incidence, this figure would be 20,000. Now, 20,000 is 0.91 per cent of 2,200,000 (the total number of births in 1930).

It thus seems probable that in this country the problem of heart disease concerns about 20,000 women each year or somewhat less than 1 per cent of all puerperal cases.

PHYSIOLOGIC EFFECTS OF PREGNANCY ON THE CARDIOVASCULAR SYSTEM

While everybody concedes that cardiac work is increased during pregnancy, there is little agreement as to how this increase is brought about. The most obvious explanation would be that the increase in body weight constitutes an added load on the heart. But cases have been recorded in which pregnant cardiac patients were relieved of symptoms of cardiac insufficiency when the fetus died, though it was retained in the uterus. The effects of mechanical pressure have failed to explain the case. Vital capacity has been considered, but while the detailed evidence is contradictory it seems certain that pregnancy does not cause any marked impairment of it. Neither do the metabolic demands of the ovum seem sufficient to explain the increase in cardiac work. There are no structural changes in the peripheral circulation during pregnancy sufficient to add materially to the heart's work. Possibly the increased tendency to contraction of capillary loops which accompanied pregnancy may be important. This applies both to the frequency and to the duration of these contractions and may be related to the slight increase in blood pressure which commonly accompanies pregnancy. The increase in the heart's work may be associated with the increased metabolic rate of pregnancy, though an increase in metabolism need not necessarily add to the work of the heart. There is an extensive belief and some evidence that the increase in metabolism is the result of thyroid hyperfunction. If that is so it may well be a cause of cardiac overwork. The circulating blood volume is definitely increased in pregnancy but its relation to the other factors is not yet clear.

Theoretically, at least, the circulation may take care of added metabolic demands without increasing the work of the heart, namely, by increasing oxygen utilization. The evidence as to whether this occurs during pregnancy is contradictory. An increase in peripheral resistance would be met by more powerful contractions and the blood pressure would go up. This occurs within normal limits in pregnancy. All direct and indirect evidence points to an increase in cardiac output during

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¹ These were abstracted and analyzed by Dr. Birman.

pregnancy, that is, an increased minute volume. But it has not been decided whether this is brought about by increase in the heart rate or by increase in stroke volume or by a combination of the two. Pregnancy does not affect the blood velocity.

The increase in cardiac work during pregnancy results in cardiac hypertrophy to a degree which corresponds with the increase in body weight, that is, about 10 per cent. Probably there is also some dilatation of the heart, though this has not definitely been proved. This problem naturally is closely tied to that of stroke-volume. X-ray examination has so far been disappointing. The heart may undergo displacement and rotation which obscure both the shape and the measurements of the heart. Measurements generally show an increase in the shadow though to varying extent. By Kahlstorff's tridimensional method an enlargement of the cardiac volume has been found, amounting to some 10 per cent. In the electrocardiogram, pregnancy produced only unimportant changes in the electrical axis of the heart. During pregnancy, physical diagnosis is often made difficult by the presence of functional murmurs. Some of these seem to be intimately associated with the pregnant state, though the mechanism of their formation is obscure. The second pulmonic sound is also often accentuated in pregnancy.

The strain and other changes incident to pregnancy may sometimes produce signs and symptoms of advanced heart disease and failure, though there is no organic change in the heart. This so-called functional heart disease of pregnancy requires treatment which in most respects is similar to that of failure from organic heart disease.

HEART DISEASE AND PREGNANCY

The death rate among 2,400 pregnant cardiac patients admitted to various clinics was 5.8 per cent, or 50 per hundred thousand obstetric admissions. Among the 300 fatal cases previously mentioned, congestive failure was noted in about two thirds. It was the principal cause of death in one third. But, besides, the estimated death rate associated with childbirth from pneumonia, embolism, pulmonary infarction and sepsis is much increased among women with valvular disease of the heart. The estimated death rate from eclampsia and kidney disease does not seem to be affected by this complication. This is contrary to what was expected and to what has been stated elsewhere. Probably pulmonary complications and infections have a close causal relationship to congestive failure.

In most cases congestive failure occurs during pregnancy, but if the incidence is calculated not per phase of gestation but per time unit the greatest incidence of heart failure is during labor, thus the strain of labor is of real danger to the cardiac patient. The material did not justify the conclusion that the tendency to heart failure becomes greater as pregnancy advances. Many have stressed the importance of the occurrence of congestive failure early in pregnancy, though this relation may be coincidental.

The time of death in relation to the phase of gestation is more definite and therefore easier to determine. Especially in advanced pregnancy, women often deliver before they die; consequently the incidence of deaths expressed in relation to conception shows a steady increase throughout the period of gestation, but if it is expressed in relation to pregnancy it increases up to the seventh month and then decreases during the last months of pregnancy. It is not common for women

with heart disease to die undelivered after the seventh month of pregnancy. However, the greatest danger of death is during labor and during the first few hours after delivery. From then on the death rate rapidly declines except for a moderate increase during the second week of the puerperium. Then those die who developed pulmonary and other infections at the time of delivery.

The rate of decompensation and of death from heart disease increases rapidly with age. This also occurred in the present material of pregnant cardiac patients, but it could not be shown that the effect of increasing age on the death rate was altered by the state of pregnancy.

The prognosis is primarily determined by the state of the heart muscle, the greater the cardiac hypertrophy the gloomier the prospect, though some women with huge hearts go through childbirth without much trouble. The functional state of the cardiovascular system is important and the classification of the American Heart Association is finding increasing use in prognosis. Of the various valvular lesions, the combination of mitral and aortic lesions carries by far the highest death rate. The incidence of mitral stenosis was significantly higher among the fatal cases than among the women who survived, this may have been because mitral stenosis was a relatively serious lesion or because the diagnosis of mitral stenosis was missed clinically in many cases. The presence of auricular fibrillation in valvular heart disease increases greatly the chances of fatal outcome, perhaps because it here indicates that the disease is approaching the end of its course.

Isolated instances are recorded in which cardiac symptoms improved, but they generally get worse during pregnancy. It is frequently stated that pregnancy aggravates heart disease or that it shortens the life of the cardiac patient. In view of the fact that cardiac symptoms are not necessarily an expression of the pathologic organic changes in the heart, these two statements have not been proved. Actually they are difficult to test. Comparatively little is known of the life histories of cardiac patients, thus, controls are difficult to obtain. Simple follow-up studies are difficult to do because they may have to extend over many years. There is no evidence that the age at death is less among parous women, nor does it seem to be affected by increasing parity. There is no conclusive evidence that the period of survival after the first attack of rheumatic infection is shortened by pregnancy. The evil effects of pregnancy on heart disease seem chiefly to be that it may precipitate congestive failure when it is imminent and aggravate it when it is present.

A discussion of the treatment of this condition may be found elsewhere,² suffice it here to emphasize that proper care results in great saving of both maternal and fetal life.

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ABSTRACT OF DISCUSSION

DR. L. A. CALKINS, Kansas City, Mo. The combination of heart disease and pregnancy offers a real problem. The diagnosis of heart disease in pregnant women is relatively easy. The diagnosis is missed in a number of patients, yet in general the diagnosis in the ordinary sense of the word is relatively easy, but that is not the whole story. The difficulty is as Dr. Jensen has pointed out that the diagnosis doesn't remain the same throughout the whole of the pregnancy. Because one has come to a conclusion at six weeks or three months or six months that the particular heart disease will or will not do well in

this particular pregnancy is not conclusive, because it may change. It is necessary continually to reexamine, rediscover and change one's concept and therefore the prognosis. Those who are interested have repeatedly pointed out that many patients who show relatively little in the early months of pregnancy—not enough indeed to make a diagnosis of heart disease of any kind—will by the end of seven and one-half or eight months show plenty of signs. The main question is how these patients can best be handled. I have been surprised to hear an internist well versed in heart diseases make the statement that if all patients with severe mitral disease could be delivered by cesarean section there would be no mortality. This statement, of course, is far from the truth. What should be done? Probably, as Dr. Jensen has pointed out, following the test laid down by the American Heart Association, the response to exercise will best indicate the course of action. Those responding poorly should probably be subjected to cesarean section after partial digitalization. Those responding well to exercise will probably withstand the rigors of labor comparatively well.

DR. RALPH LUKART, Omaha. I concur in the need of a subspecialty—obstetric cardiology. I wish to emphasize this point because of the tendency to minimize the dangers of heart disease in pregnancy. As Dr. Jensen stated, selected cases with simple mitral stenosis may carry on through pregnancy and labor without great danger. A diseased heart associated with pregnancy which tolerates the daily duties should withstand the burden of labor equally well. If the patient exhibits shortness of breath and other signs of heart failure before labor, the probabilities of her getting into difficulties are increased. These clinical symptoms should be of greatest prognostic value to the obstetrician. There is additional risk to the patient directly proportionate as the following complications are superimposed on a mitral stenosis: hypertrophy, aortic lesions, auricular fibrillation and, finally, endocarditis or pericarditis with friction rub or both. Patients in the latter three groups and those who are decompensated should never be permitted to become pregnant. When an obstetrician is confronted with any of these conditions he should realize that the pregnancy is secondary. A cardiologist should also be in attendance throughout the pregnancy and the first few weeks post partum. There is no pregnancy in which intelligent antepartum care is more needed. There must be proper management of rest and exercise, and of the diet with weight control, in order to minimize the danger of toxemia complicating the heart disease. The group of fatal pregnant heart cases reported by Dr. Jensen revealed that a high percentage of the deaths occurred during labor. These statistics emphasize the necessity of having the patient in the best possible condition to meet the ordeal of labor and of making the delivery as free from burden to the patient as possible. Each case must be individualized. Normal rapid delivery via the birth canal without intervention is best, but if this tends to create difficulties and undue exhaustion, low cesarean section with spinal or local anesthesia offers the best chance for mother and baby. Every possible need for stimulants in case of collapse at the time of delivery should be anticipated.

DR. JULIUS JENSEN, St. Louis. I wish to emphasize antepartum care. It is important not to guess at the problem. Each case should be studied in detail and the importance of each factor involved evaluated. A good illustration of the results which can be obtained by proper treatment is that obtained in the Boston Lying-in Hospital, where the death rate has fallen from 12 per cent some years ago to 3 per cent at the present time. The physical examination may give confusing results. Dr. Rickard some years ago selected cases of pregnant women with mitral stenosis to be demonstrated to a class of post-graduate students because they presented typical physical signs but when they were shown to the students the signs had changed so much that it was difficult to convince the class that mitral heart disease was present. Therefore, repeated physical examinations are necessary. In heart disease rapid delivery is, as a rule, not to be recommended. In the past it was customary to handle an emergency with rapid delivery and often by brutal methods, the results were almost uniformly disastrous. Conservative management that avoids any unnecessary strain on the part of the mother will lead to much better results.

SALMONELLA SUIPESTIFER BACTEREMIA

WITH PERICARDITIS, PNEUMONITIS AND PLEURAL EFFUSION (REPORT OF A CASE)

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AND

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The rarity of reports of *Salmonella suispestifer* infection in human beings and the bizarre clinical picture usually present in the sporadic case prompt this report. For the past two decades this organism has been known to be pathogenic for man. Until the World War the *Salmonella suispestifer* organism was known to be the cause of hog cholera. Since that time there has been increasing evidence of its definite relationship to human disease. The disease in human beings may express itself in either epidemic or sporadic form. The epidemic type of *Salmonella suispestifer* infection was always associated with food poisoning. The sporadic case associated with bacteremia has been reported only since 1919. We report another case of *Salmonella suispestifer* bacteremia with unusual clinical features.

LITERATURE

Epidemics of gastro-enteritis were reported from southern Europe and Asia Minor by MacAdam,¹ and in Serbia by Hirschfeld.² The cause of these epidemics was found to be a bacillus similar to that of typhoid and was named the paratyphoid C bacillus. This bacillus was identified in 1920 by TenBroeck,³ and by Andrewes and Neave,⁴ as a member of the *Salmonella suispestifer* family. In 1922 Krumwiede and his associates⁵ reported an epidemic of acute gastro-enteritis after the ingestion of contaminated tapioca pudding. The same year Stewart and Litterer⁶ reported an outbreak after the ingestion of raw milk. Proof that the paratyphoid C organism was truly *Salmonella suispestifer* was established by Savage and White⁷ in 1925. They studied a family in which the intake of contaminated cheese produced an acute gastro-enteritis. From their studies they believe that the organism was of low virulence and that under special circumstances it could produce human infection. Several instances of *Salmonella suispestifer* infection were reported by Cowern⁸ in 1926, among travelers in areas in which "intestinal grip" was prevalent. Contaminated ice cream was held to be the source of infection in the Offenbach epidemic in 1927. More than 100 persons were affected, as reported by Braun and Mündel.⁹

From the Department of Internal Medicine (medical service of Dr. Irving Gray, Dr. Philip I. Nash, medical director) and the Department of Pathology (Dr. Harold Fink, pathologist), Coney Island Hospital.

¹ MacAdam, William. An Account of an Infection in Mesopotamia Due to a Bacillus of the Gaertner Paratyphoid Group. *J. Roy. Army Med. Corps* 33: 140, 1919.

² Hirschfeld L. A New Germ of Paratyphoid. *Lancet* 1: 296 (Feb. 22) 1919.

³ TenBroeck, C. Bacilli of the Hog Cholera Group (*Bacillus Cholerae-Suis*) in Man. *J. Exper. Med.* 32: 33 (July) 1920.

⁴ Andrewes F. W., and Neave S. Nature and Systematic Position of *B. Paratyphosus* C. *Brit. J. Exper. Path.* 2: 157 (Aug.) 1921.

⁵ Krumwiede, Charles. Provost, D. J. and Cooper G. M. Studies on the Paratyphoid Enteritidis Group. VII. Enteric Infection ("Food Poisoning") Due to Tapioca Pudding Contaminated with *B. Cholerae Suis* (*B. Suispestifer*). *J. M. Research* 43: 53 (Jan. March) 1922.

⁶ Stewart H. C., and Litterer William. An Outbreak of Gastro-Enteritis. *J. A. M. A.* 89: 1584 (Nov. 5) 1927.

⁷ Savage, W. G. and White P. B. An Investigation of the *Salmonella* Group with Special Reference to Food Poisoning. Medical Research Council special report series No. 91. London His Majesty's Stationery Office, 1925.

⁸ Cowern E. W. Intestinal Influenza and *B. Suispestifer*. *J. A. M. A.* 86: 58 (Jan. 2) 1926.

⁹ Braun H. and Mündel F. Ueber den Erreger der Offenbacher Speise-Epidemie. *Klin. Wchnschr.* 6: 1286 (July 2) 1927.

When the infection occurs in isolated instances, that is, the sporadic type, there may be either localized disease or a general bacteremia. A localized osteomyelitis due to *Salmonella suipestifer* involving the upper end of the humerus and the shoulder joint was reported by Gajzago and Göttsche¹⁰ in 1935. These authors mention the possibility of a preexisting infection of the blood stream. A comprehensive review of the bacteremias caused by *Salmonella suipestifer* infection was reported by Gouley and Israel¹¹ in 1934. It is with their permission that we publish table 1.

In each of these case reports the bacillus was found in pure culture in the blood, except for the case reported by Nabarro and White¹². In their case the organism was recovered from the fluid in a synovial sac. The case we are adding to this group of bacteremias is the first time an acute pericarditis has been reported complicating *Salmonella suipestifer* bacteremia. Approximately forty-eight hours after admission to the hospital the patient developed an effusion in the

Physical Examination.—The patient was well nourished, was acutely ill, with a moderate degree of cyanosis, and was breathing rapidly, with an expiratory grunt. The pertinent conditions observed were congestion of the pharynx, restriction of respiratory excursion of the chest and dullness at the right base, posteriorly, over which area a friction rub was heard. The heart action was rapid but otherwise showed no abnormalities and the abdominal examination was "negative." The spleen was not felt nor did it percuss enlarged. The blood pressure was 150 systolic, 100 diastolic.

Progress Notes.—First Week. A dusky cyanosis, rapid and shallow breathing, high fever and high pulse rate were all indicative of a critical illness. A to and fro friction rub was, for the first time, heard over the precordium on the third day. There were signs suggestive of fluid in the right pleural cavity and a pneumonitis and pleuritis over the right lower lobe. X-ray examination of the chest, at the bedside, showed signs suggestive of a pneumonitis involving both lower lobes, thickening of the right pleura and signs indicative of fluid in the right pleural cavity. The cardiac shadow was somewhat larger than usual (correct measurements could not be determined because a 6 foot film was not taken). On the fourth day a to and fro friction rub over the precordium was distinctly audible. Within

TABLE 1—*Salmonella Suipestifer* Bacteremias

| Year | Author | Cases | | Ultimate Course | | Symptomatology |
|--------|---|--------|----------|-----------------|------|--|
| | | Adults | Children | Recovered | Died | |
| 1919 | *MacAdam ¹ | 7 | | 5 | 2 | Mild typhoid and lobar pneumonia |
| 1920 | *Dudgeon and Urquhart Lancet 2:15 1920 | | 1 | 1 | | Mild typhoid |
| 1921 | *Andrews and Neave ⁴ | 1 | | 1 | | Influenza with pleural effusion and pyuria |
| 1922 | Mackenzie J Roy Army M Corps 39:51 1922 | 1 | | 1 | | Infection of upper respiratory tract |
| 1923 | *Wordley Brit M J 2:103 1923 | | 1 | 1 | | Bronchopneumonia |
| 1924 | Duncan J Hyg 22:402, 1924 | 1 | | 1 | | Mild typhoid |
| 1925 | Kopp Deutsche med Wchnschr 52:2156 1926 | 1 | | 1 | | Mild typhoid |
| 1926 | Shaw J Lab & Clin Med 12:141 1926 | 1 | | | 1 | Severe bronchopneumonia |
| 1927 | Hicks and Robertson China M J 41:789 1927 | 1 | | | 1 | Typhoid |
| 1928 | Bullowa ¹³ | 1 | | | 1 | Severe bronchopneumonia |
| 1929 | Bauer and McClintock J Infect Dis 44:292 1929 | 1 | | | 1 | Mild typhoid |
| 1929 | Nabarro and White ¹² | | 1 | 1 | | Chronic arthritis |
| 1929 | Dyke and Scott ¹⁴ | 1 | | | 1 | Mild typhoid |
| 1930 | Brannham Motyea | 1 | | | 1 | Severe infection of upper respiratory tract |
| 1931 | TenBroeck L J auc | 4 | 1 | 3 (ad) | 2 | Paratyphoid fever |
| 1932 | Rau Ztschr f Kinderh 52:510 1932 | | 1 | | 1 | Severe gastro-enteritis |
| 1932 | Kuttner and Zepp ¹⁴ | | 7 | 7 | | Fever abdominal pain and vomiting |
| 1932 | Haynes quoted by Kuttner and Zepp ¹⁴ | | 1 | 1 | | Paratyphoid fever |
| 1933 | Gouley and Israel ¹¹ | | 1 | 1 | | Mild typhoid and endocarditis |
| 1935 | Cohen Fluk and Gray | 1 | | 1 | | Pericarditis, pneumonitis and pleural effusion |
| Totals | | 22 | 14 | 26 | 11 | (Only one of eleven deaths in a child) |

* Cases reported as infections with paratyphoid C but organism was later shown to be *Salmonella suipestifer*.

† Case reported as infection with paratyphoid C but organism reacted like *Salmonella suipestifer*.

pericardium. Furthermore, she had a pneumonitis of the left lower lobe and a right-sided pleuritis with pleural effusion. Involvement of the pulmonary parenchyma and pleural effusion have been noted in previous instances. Gouley and Israel¹¹ report the occurrence of acute endocarditis in their patient. This is the first time that pericarditis has been encountered in *Salmonella suipestifer* bacteremia.

REPORT OF CASE

History.—E. D., a white woman, aged 36, admitted to the medical service, April 27, 1935, complained chiefly of pain in the right side of the chest and difficulty in breathing, of three days' duration. The family and past histories were essentially negative except for the fact that she had had three spontaneous abortions. Her present illness started with a sore throat two weeks prior to admission. Seventy-two hours before hospitalization the patient developed a severe pain in the right side of the chest, dry cough and profuse perspiration. She was sent to the hospital. There was no history of any gastro-intestinal disturbances nor was any member of the family ill either with an infection of the upper respiratory tract or with abdominal symptoms. On admission the temperature was 103 F, pulse 112 and respiration 36.

forty-eight hours there was increase in the precordial dullness suggestive of fluid in the pericardial sac. The pericardial rub was localized to the third and fourth intercostal spaces. The temperature ranged between 103 and 105 F. At the end of the first week there were definite signs of fluid in the right pleural cavity. Fifty cubic centimeters of clear yellow fluid was withdrawn from the right pleural cavity (positive Rivalta test). No organisms were found on direct smear. A culture was sterile.

Second Week. Pyrexia continued, ranging between 103 and 104 F. There was an increase in the cardiac dullness, both to the right and to the left. The friction rub was less audible and the heart sounds were more distant. X-ray examination confirmed the diagnosis of a pericardial effusion. Signs of pneumonitis were less marked, there was a moderate amount of fluid in the right pleural cavity. The patient's condition was still critical. The temperature, pulse and respiration remained elevated. A pericardial tap was done and 10 cc. of hemorrhagic fluid was obtained. Because of the character of the fluid no attempt was made to remove more than 10 cc. Several blood cultures taken to date were reported as sterile.

Third and Fourth Week. A blood culture taken forty-eight hours after admission was reported as positive (one colony of *Salmonella suipestifer* per cubic centimeter of blood). The clinical picture remained unchanged. The patient was critically ill with an acute pericarditis and pericardial effusion and also with an effusion in the right pleural cavity. The right pleural cavity was aspirated and 135 cc. of straw colored fluid was withdrawn. Ten days later 200 cc. of straw colored fluid was obtained on aspiration. The bronchopneumonic process in both

¹⁰ Gajzago D., and Göttsche O. Osteomyelitis *Smpestifer* Am J Dis Child 49:1270 (May) 1935.

¹¹ Gouley B. A. and Israel S. L. *Salmonella Suipestifer* Bacteremia with Acute Endocarditis Arch Int Med 53:699 (May) 1934.

¹² Nabarro D. White P. B. Dyke S. C. and Scott, W. M. Two Cases of Human Infection by the American Hog Cholera Bacillus Lancet 2:868 (Oct. 26) 1929.

lower lobes and the pleuritis of the left side of the chest appeared to be subsiding. Pyrexia continued. Signs of pericarditis with effusion continued. Electrocardiographic studies showed first stage heart block and a deep Q.

Fifth and Sixth Weeks. A blood culture taken on the ninth day after admission to the hospital was now reported positive. This was the second positive blood culture and showed the same organism as reported in the first blood culture. There were two colonies of *Salmonella suipestifer* per cubic centimeter of blood. The signs of pericardial and pleural effusion appeared to be diminishing. The pyrexia likewise was less marked, the temperature ranging at this time from 99 to 100 F. Clinically the patient was improving.

Seventh and Eighth Weeks. The temperature at the end of the eighth week was slightly elevated, ranging between 100.5 and 102 F. The urine, which previously showed no abnormalities, now was found to contain a few red blood cells and a few pus cells. These signs were present for approximately one week and gradually abated. Cystoscopic examination showed no abnormalities. Culture of the urine failed to reveal *Salmonella suipestifer*. X-ray examination of the chest corroborated the physical examination that the size of the heart had returned to normal and that the fluid in the right pleural cavity was completely absorbed. There was some thickening of the pleura over the right lower lobe.

Ninth and Tenth Weeks. The temperature, pulse and respiration were normal. The patient's condition was much improved. There was a rapid convalescence back to normal health. Seventy-four days after admission to the hospital the patient was discharged as recovered with a diagnosis of *Salmonella suipestifer* bacteremia with pericarditis, pneumonitis and pleuritis.

Laboratory Examinations.—With the exception of the blood study on admission, which showed a white blood count of 16,200 with 90 per cent polymorphonuclears, three subsequent blood examinations revealed a persistent leukopenia (5,200 with 82 per cent polymorphonuclears, 6,800 with 80 per cent polymorphonuclears, 7,850 with 64 per cent polymorphonuclears). The leukopenia was consistent with the observations of Gouley and Israel¹¹ who remarked on a similar condition in their patient. The Widal reaction was negative. The pleural fluid showed a positive Rivotla test (specific gravity 1.024). The microscopic examination of the fluid showed an occasional lymphocyte. The pericardial fluid was grossly bloody and clotted soon after removal. A guinea-pig inoculated with some of this fluid died five days later of extraneous causes.

Bacteriologic Examinations.—Blood cultures on two occasions showed gram-negative motile bacilli. These gave an agglutination reaction with typhoid and paratyphoid serums. Agglutination took place in the highest titer with paratyphoid B serum.

The sugar reactions of this organism are given in table 2. The organism was agglutinated by the patient's serum in a dilution of 1:640. Control bloods gave no agglutination.

TABLE 2—Sugar Reactions of Organism

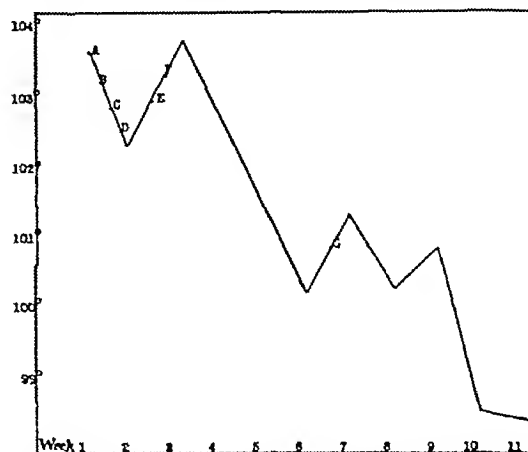
| Sugar | Reaction |
|------------------------|-----------------------------|
| Lactose | No fermentation |
| Dextrose | Acid and gas |
| Saccharose | No fermentation |
| Mannite | Acid and gas |
| Maltose | Acid and gas |
| Russell's double sugar | Slant acid Butt alkaline |

Gelatin was not liquefied. A hanging drop showed three plus motility. The Department of Health of the City of New York corroborated these sugar reactions and serologically identified the organism as *Salmonella suipestifer*.

COMMENT

The symptomatology of the infection due to *Salmonella suipestifer* bacteremia has been divided into three groups:¹¹ gastro-enteric, pulmonic and septic. Among the twenty-one cases of *Salmonella suipestifer* bacteremia in adults heretofore reported the predominant signs and symptoms were referable to the gastro-intestinal tract (sixteen cases). In the remain-

ing five the symptomatology was confined largely to the lungs and pleura. True lobar pneumonia due to *Salmonella suipestifer* was reported by Bullova,¹³ and was verified by blood culture, sputum and postmortem examinations. The endocarditis¹¹ developed in a child, aged 4 years, who was acutely ill for approximately two weeks with *Salmonella suipestifer* bacteremia. In a case reported by Andrewes and Neave,⁴ pyuria was present, although the predominant symp-



The weekly temperature curve. A first blood culture (reported as positive three weeks later) B, pneumonitis C, pericarditis (fourth day) D pleural effusion (right side of chest at end of first week) E second blood culture (reported as positive for weeks later) F pericardial tap G hematuria plus pyuria

toms were referable to the lungs. Their patient likewise had a pleural effusion. In one of the patients with *Salmonella suipestifer* bacteremia observed by Kuttner and Zepp¹⁴ a cystitis developed. Culture of the urine obtained on cystoscopy in our patient failed to show the organism.

Unlike the cases previously reported which usually showed a low white blood cell count in our patient during the first three days there was a moderate leukocytosis (14,000). Subsequently, despite the pyrexia, there was a leukopenia (between 6,000 and 8,000) and a practically normal differential count. Leukopenia is to be expected in the bacteremia caused by *Salmonella suipestifer*, since this organism is a member of the typhoid family. As Gouley and Israel¹¹ state:

Agglutination reactions with *suipestifer* should be borne in mind in any case of apparent typhoid or paratyphoid fever with a negative Widal reaction, but it must also be remembered that positive agglutination in high titer may not develop for many months. Moreover, a cross-agglutination between the patient's serum and paratyphoid bacillus B often occurs during the acute stage of infection caused by *suipestifer* a fact that obscured the true identity of the latter organism until the characteristic carbohydrate fermentations were discovered and standardized. The positive blood culture and the carbohydrate reactions, therefore, lead to an accurate diagnosis, it is obvious that the matter of recognition of *Salmonella suipestifer* requires a competent bacteriologist.

SUMMARY

This is the first case to be reported of sporadic *Salmonella suipestifer* bacteremia with acute pericarditis and pericardial effusion. The patient had a pneumonitis and pleural effusion also. Recovery was uneventful and not associated with any sequela.

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13 Bullova, Jesse. Bacillus *Suipestifer* (Hog Cholera) Infection of the Lung. *M. Clin. North America* 12: 691 (Nov.) 1928.
14 Kuttner, A. G. and Zepp, H. D. Bull. Johns Hopkins Hosp. 51: 373 (Dec.) 1932.

THE AUTONOMIC NERVOUS SYSTEM IN RELATION TO OTOLARYNGOLOGY

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The autonomic innervation of the mucous membranes and involuntary musculature of the upper respiratory tract the paranasal sinuses, the middle ear and the auditory tube includes both sympathetic and parasympathetic nerves. The sympathetic nerves are derived mainly from the superior cervical sympathetic ganglion, the parasympathetic nerves arise mainly in the sphenopalatine ganglion and the intrinsic ganglions of the pharynx and larynx. The preganglionic fibers that connect the superior cervical sympathetic ganglion with the central nervous system are components of the upper thoracic nerves. The sphenopalatine ganglion is connected with the brain stem through preganglionic components of the facial nerve, the intrinsic ganglions of the pharynx and larynx are connected through preganglionic components of the vagus nerve. The sympathetic fibers that reach the mucous membranes of the nose, the paranasal sinuses and the nasopharynx extend cephalad in the internal carotid plexus, join the sphenopalatine ganglion by way of the greater superficial petrosal nerve and the nerve of the pterygoid canal, and reach their peripheral distribution through nerves that arise from the sphenopalatine ganglion. Of those which supply the inferior portion of the pharynx, some join the pharyngeal plexus through separate sympathetic rami, others become incorporated in the pharyngeal branches of the vagus before reaching the pharynx and join the pharyngeal plexus with these nerves. The sympathetic fibers that supply the larynx reach it mainly through the pharyngeal plexus, but in part also through the laryngeal vagus branches. The parasympathetic fibers that supply the mucous membranes of the nose, the paranasal sinuses and the upper parts of the pharynx traverse the nasal, palatine and pharyngeal rami which arise directly from the sphenopalatine ganglion. Those which supply the inferior portion of the pharynx and larynx are derived mainly from the intrinsic ganglions.

The afferent or sensory, innervation of the mucous membranes of the nose, paranasal sinuses and nasopharynx includes mainly components of the trigeminal nerve. Afferent components of both the vagus and the upper thoracic spinal nerves also reach the area of distribution of the trigeminal by way of the plexuses on the common, internal and external carotid arteries.¹ Some of these terminate in the mucous membranes in question. The afferent innervation of the inferior portion of the pharynx includes components of both the glossopharyngeal and the vagus nerves, that of the larynx includes probably exclusively vagus components.

FUNCTIONAL REGULATION OF MUCOUS MEMBRANES

The functional state of the mucous membranes, including their secretory and ciliary activity, is regulated and controlled through the autonomic nerves and is intimately related to the functional state of the peripheral blood vessels. While the mucous membranes

are hyperemic, i. e., during intervals of capillary dilatation, the number of leukocytes in the blood in these vessels is markedly increased. The capillaries further more exhibit increased endothelial permeability, consequently, leukocytes escape from the vessels into the tissues and many of them reach the surface of the epithelium. While the mucous membranes are ischemic, i. e., during intervals of capillary constriction, the number of leukocytes in the blood is markedly diminished. Endothelial permeability also is decreased, consequently, few leukocytes escape from the vessels.

The general splanchnoperipheral interactions of the body are such that the autonomic status of the abdominal and pelvic organs is opposed to that of the extraperitoneal organs and tissues. By virtue of this relationship, the autonomic status of the buccal and respiratory mucous membranes corresponds to that of the skin. Under physiologic conditions, particularly during bodily rest, the blood supply of the abdominal and pelvic organs is more abundant than that of the extraperitoneal structures. During intervals of relatively high external temperature or muscular activity, the autonomic status is reversed, consequently, the splanchnoperipheral blood volume ratio is shifted in favor of the extraperitoneal structures. If the body is exposed to low temperatures, particularly in the absence of muscular activity, the skin becomes relatively ischemic, owing to peripheral vasoconstriction. Since the autonomic orientation of the buccal and respiratory mucous membranes corresponds to that of the skin, they also become ischemic.

Under ordinary physiologic conditions, the local resistance of the respiratory mucous membranes is sufficient to prevent infection, although infective organisms are always present. Prolonged ischemia of the mucous membranes reduces the local resistance and favors infection. This is well illustrated by infections of the upper respiratory tract following exposure to low temperature or drafts. That the reduction in the local resistance of the mucous membranes is not a direct effect of exposure to low temperature is evidenced by the fact that if, during such exposure, peripheral vasoconstriction is prevented by muscular activity, infection does not take place. Not infrequently respiratory infections are contracted in the absence of any appreciable lowering of the temperature of the mucous membranes beyond that which is attributable to the local ischemia.

The defensive inflammatory reactions of the mucous membranes elicited by the toxic substances resulting from infections depend on the autonomic status of the tissues as such. Since these reactions involve local vasodilatation, they are inhibited during the period of the general reaction to the infection, since that period is characterized by peripheral vasoconstriction. The tissues in the infected area later become oppositely oriented, local vasodilatation with leukocytosis takes place, tissue metabolism is accelerated, and the local resistance is greatly increased. The inflammatory reaction, therefore, differs only in degree from the normal physiologic response.

ALLERGY

The relatively high incidence of allergy in patients with sinusitis and lesions of the nasal mucosa strongly suggests the existence of certain common etiologic factors. That the autonomic nerves are at fault in allergic disorders is indicated by the sudden appearance of their manifestations, e. g. the localized collection of liquid as in angioneurotic edema or sudden bronchospasm as in asthma and the equally sudden disappearance of

From the St. Louis University School of Medicine.
Read before the Section on Laryngology, Otolaryngology and Rhinology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14 1936.
¹ Kuntz, Albert. Nerve Fibers of Spinal and Vagus Origin Associated with the Cephalic Sympathetic Nerves. *Ann. Otol., Rhin. & Laryng.* 42: 50-67 (March) 1934. *The Autonomic Nervous System*, ed. 2 Philadelphia, Lea & Febiger 1934.

symptoms in response to agents such as epinephrine, which act primarily on the autonomic nerves. The comparative absence of fever in allergic states also indicates metabolic changes that differ from those commonly associated with infections. The breaking down of the absorbed protein of the individual is disturbed and histamine-like substances are liberated, particularly in the skin and mucous membranes. These substances probably represent the immediate causes of the allergic reactions.

In cases of allergic rhinitis, the water content of the nasal secretion is increased and the calcium content is diminished. The mucous membranes are hyperemic, indicating vasodilatation with increased capillary permeability, accelerated tissue activity and hydration. This condition conforms to the "parasympathetic status" as defined by Petersen and Levinson.² The converse condition, namely, vasoconstriction with decreased capillary permeability, results in reduced cellular activity, decreased permeability of the cell membranes, hydration of the protoplasm, and calcium concentration. This condition conforms to the "sympathetic status" as defined by Petersen and Levinson.

The chemical alterations demonstrable in the nasal secretions in allergic states do not represent merely local changes. The reduction in the calcium content of the nasal secretion probably is an expression of a shift in the acid-base balance of the body fluids toward alkalinity. The acid-base balance, which is closely associated with the autonomic balance, therefore, must be regarded as an important factor in the etiology of allergy. This also is indicated by the fact that clinical improvement, in cases of allergic rhinitis, is accompanied by an increase in the calcium content of the secretion, indicating a shift in the acid-base balance toward the normal and, consequently, a shift in the autonomic balance in the same direction. In view of these considerations, therapeutic measures designed to restore the acid-base balance and consequently the autonomic balance seem to be indicated in allergic cases and in various other conditions in which the functional activity of the respiratory mucous membranes is disturbed.

REFLEX REGULATION OF THE CAVERNOUS TISSUE

The cavernous, or erectile, tissue in the nasal mucosa does not always conform to the vascular state of the adjacent mucous membrane, although its blood vessels and those of the adjacent mucous membrane are innervated by the same nerves. Various investigators, particularly Sternberg,³ have called attention to the facts that engorgement of the cavernous tissue frequently takes place while the mucous membrane is relatively ischemic and that not infrequently it contracts while the mucous membrane is markedly hyperemic. Application to the nasal mucosa of certain pharmacologic agents which regularly cause hyperemia of the mucous membrane results in contraction of the cavernous tissue, consequently it has been assumed that the vessels of the cavernous tissue react to nerve stimulation in a manner differing from that of the vessels of the adjacent mucous membrane.

According to the early studies of Zuckerkindl,⁴ the capillary bed in the cavernous tissue is interposed

between veins, whereas the capillary bed in the other parts of the nasal mucosa is interposed between arteries and veins. The blood that flows through the cavernous bodies is derived from the subepithelial capillary plexus and the more superficial portion of the periglandular plexus. In view of this arrangement, it seems not improbable that reflex stimulation which elicits vasoconstriction in the nasal mucosa might prevent emptying of the capillary bed in the cavernous tissue by contraction of the veins into which it drains. Reflex stimulation which elicits vasodilatation in the nasal mucosa, on the contrary, probably results in contraction of the cavernous tissue because the outflow of the blood is facilitated by the dilatation of the veins.

REFERRED PAINS

Pains associated with lesions in the nasal, paranasal and mastoid areas but localized in other cephalic areas and in the neck, upper thorax and upper extremities are not uncommon. These pains exhibit the characteristic features of referred pains and in many instances are accompanied by other referred phenomena. According to Head's theory, which is supported by extensive data and probably is applicable in all cases of referred pain, the areas in which such pains are localized always fall within segments of the body that are supplied by nerves which also supply afferent fibers to the site of the lesion.

Pains associated with lesions of the nasal and paranasal mucous membranes which are localized within the area of distribution of the trigeminal nerve, but not at the site of the lesion, obviously conform to Head's theory and consequently may be regarded as referred pains. Pain in the temporal region associated with a lesion of the sphenoid sinus and pain in the frontal region associated with a lesion of the maxillary sinus obviously can be explained most satisfactorily on this basis. Pain in the occipital region associated with a lesion of the nasal mucosa also conforms to Head's theory of the localization of referred pain, since the trigeminospinal tract descends to the level of the upper cervical nerves through which the occipital region receives its afferent innervation. The demonstration of afferent components of the upper thoracic nerves in the area of sensory distribution of the trigeminal nerve, previously referred to, furthermore affords the anatomic basis for the interpretation of pains in the lower cervical and upper thoracic segments and the upper extremity associated with lesions in the nasal, paranasal and mastoid areas as referred pains in conformity with Head's theory of localization.

The autonomic nerves undoubtedly play a role in the production of referred pains but not as conduction pathways for pain impulses. The assumption that reflex responses elicited by the stimulation of afferent fibers at the site of the lesion or adjacent to it, through the sympathetic nerves in the area in which the referred pain is localized, results in stimulation of pain receptors in that area is supported both by clinical and by experimental data. One of the common reflex responses in an area in which a referred pain is localized is vasoconstriction. Vasoconstriction, as is well known, not infrequently gives rise to pain, but there is no general agreement regarding the stimulating agent that acts on the pain receptors. Certain investigators, particularly Lewis, Pickering and Rothschild,⁵ Popper⁶ and Schret-

² Petersen W F and Levinson S A. The Skin Reactions Blood Chemistry and Physical Status of Normal Men and of Clinical Patients. *Arch. Path.* 9: 151 (Jan. pt. 2) 1930.

³ Sternberg H. Pharmakologische Reaktionen am Schwellkörper und subepithelialen Kapillarnetz der Nasenschleimhaut, zugleich ein Beitrag zur vasomotorischen Innervation dieses Gefäßsystems. *Monatschr. L. Ohrenh.* 63: 390-395 (April) 1929.

⁴ Zuckerkindl Emil. Normale und pathologische Anatomie der Nasenhöhle. Vienna and Leipzig 1893.

⁵ Lewis Thomas, Pickering G W and Rothschild P. Observations upon Muscular Pain in Intermittent Claudication. *Heart* 15: 359 383 (July) 1931.

⁶ Popper L. Ueber den Schmerz in den Extremitäten bei gestörter Blutzufuhr. *Klin. Wchnschr.* 12: 1962-1963 (Dec. 23) 1933.

zenmayr,⁷ have advanced data which seem to support the view that the stimulating agent giving rise to pain associated with ischemia is essentially chemical. Waterston⁸ has advanced certain data in support of the assumption that peripheral pain due to local injury also is caused by a chemical agent and that this substance is identical with that which is liberated by viscerocutaneous reflexes. According to Kissin,⁹ anoxemia is an important factor in the production of pain. Within certain limits the severity of the pain and the rapidity of its onset, in exercising muscle, varies with the degree of anoxemia. The stimulating agent seems to be accumulated products of muscular metabolism, the disposal of which requires oxygen. According to Katz, Lindner and Landt,¹⁰ the substance that stimulates the pain receptors is acid in nature and diffuses into the blood. It also is nonvolatile, since it is active after passing through the lungs.

The mechanisms through which the reflex phenomena associated with referred pains are brought about consist essentially of visceral or somatic afferent neurons through which afferent impulses are conducted from the site of the lesion into the cerebrospinal axis, visceral efferent neurons located in the intermediolateral cell column which conduct the impulses to the sympathetic trunk and sympathetic neurons located in the corresponding ganglions of the sympathetic trunk, through which efferent impulses are conducted to the smooth muscle in the area in which the referred pain is localized. The impulses arising in the pain receptors in this area owing to the stimulating effect of the reflex responses are conducted toward the center by the ordinary pain-conducting fibers. The components of referred pain that are due to the reflex phenomena in the area of reference, consequently, may be regarded as the direct result of pain impulses arising in this area.

According to the conception of the mechanisms of referred pain previously outlined the components of referred pains of nasal and paranasal origin localized within the area of distribution of the trigeminal nerve which are due to reflexes elicited through the sympathetic nerves may be explained as follows. Impulses arising at the site of the lesion are conducted into the brain stem through the corresponding division of the trigeminal nerve. The trigeminal fibers in question effect reflex connections with visceral efferent neurons in the upper thoracic segments of the spinal cord. The axons of these neurons join the sympathetic trunk and ascend to the superior cervical ganglion, where they effect synaptic connections with sympathetic neurons whose axons extend into the area in which the referred pain is localized. The impulses generated in the pain receptors in this area are conducted into the brain stem through the pain conducting trigeminal fibers with which it is supplied.

The mechanisms involved in the autonomic components of referred pains of nasal origin which are localized in the occipital region are essentially similar to those outlined, except with respect to the sympathetic and afferent nerve supply to the area in which the pain is localized. The sympathetic fibers in question join the upper thoracic nerves through their gray rami and reach

the occipital region through the occipital nerves. The pain impulses generated in this area are conducted into the spinal cord through the occipital and upper cervical nerves, and upward through the lateral spinothalamic tract of the opposite side.

The autonomic components of referred pains localized in the lower cervical and upper thoracic segments and the upper extremity which are due to lesions in the nasal, paranasal or mastoid areas can be explained most satisfactorily as follows. Impulses arising at the site of the lesion reach the upper thoracic segments of the spinal cord through afferent spinal nerve components which traverse the plexuses on the common and internal carotid arteries. These fibers effect connections with visceral efferent neurons in the spinal cord, through which the impulses are conducted into the corresponding ganglions of the sympathetic trunk, where they are transmitted to sympathetic neurons, through which they are conducted toward the periphery. The impulses that arise in the peripheral pain receptors are conducted into the spinal cord through afferent components of the corresponding spinal nerves and upward in the lateral spinothalamic tract on the contralateral side.

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ABSTRACT OF DISCUSSION

DR. LEO STONE Topeka Kan. The autonomic nervous system, in both its outflows, is subject to central control, probably in the diencephalon, and this autonomic center has direct connection with the cerebral cortex. It has been shown in recent years that there is probably autonomic representation in the cerebral cortex itself. The cerebral cortex may be assumed to be the principal site of mental processes, and thus, thought may be brought into relation with the autonomic nervous system as with allergy. That people of allergic diathesis are often intensely neurotic has long been recognized. Remarkable fluctuations in allergic illnesses on an emotional basis have been observed. However, only a few bold physicians have assumed that allergic manifestations, whether in the nose or in the bronchial tree, are predominantly neurotic. To make such an assumption is no startling when one realizes how closely many instances of allergy correspond to the conditioned reflex mechanism. Such a relationship is most clear in adult acquired sensitizations, especially in the marital and occupational spheres. Certainly it is not rash to assume that a whole constellation of events and circumstances may in some instances be represented by a precise physicochemical stimulus, even though one feels that such an interpretation is not exclusively explanatory. One cannot avoid the constitutional and familial factors which are so conspicuous among allergic subjects. Nor would any one wish to deprecate the importance and awful biologic directness of the anaphylactic phenomenon even though one may question how large and how fixed a part this plays in the everyday case of clinical human allergy. It would be wasteful and fanciful to wander far into the psychic life of a relatively well adjusted individual whose asthma or allergic rhinitis and perhaps coincident sinusitis can be relieved by the simple exclusion of one or more foods from his diet, by direct quantitative methods of desensitization, or by mechanical treatment of the paranasal sinuses themselves. It may however prove useful to remember that the cortical symbolic level may enter into what are apparently autonomous vasomotor reactions. An occasional resistant patient may merit careful investigation of the cortical aspects of his autonomic disorder, as in hysteria and such investigation may at times have a remarkable therapeutic effect.

DR. GORDON F. HARKNESS Davenport, Iowa. One must epitomize and keep in mind a few fundamentals. The autonomic nervous system of profound effect but not essential to life is essentially an efferent system, supplying a double innervation to viscera, smooth muscles and glands through its two subdivisions, namely the sympathetic and the parasympathetic. Many of the nerve tracts essential to their functioning are not known. The essential anatomic differences between the two subdivisions

7 Schretzenmayr, A. Ueber die mit Schmerzanfällen einhergehenden Erkrankungen des Gefäßsystems. *Klin. Wochenschr.* 12: 346-348 (March 4) 1935.

8 Waterston, D. Pain and the Mechanism of Its Production. *Brit. M. J.* 2: 1087-1089 (Dec. 15) 1934.

9 Kissin, M. The Production of Pain in Exercising Skeletal Muscle During Induced Anoxemia. *J. Clin. Investigation* 13: 37-45 (Jan.) 1934.

10 Katz, L., Lindner, E. and Landt, H. On the Nature of the Substance (S) Producing Pain in Contracting Skeletal Muscle. Its Bearing on the Problem of Angina Pectoris and Intermittent Claudication. *J. Clin. Investigation* 14: 807-822 (Nov.) 1935.

lies in the fact that in the sympathetic system the preganglionic components join the sympathetic trunk close to the vertebral column, while in the parasympathetic system the preganglionic components go directly to a peripheral ganglion. The superior cervical ganglion which supplies the sympathetic innervation within the head differs in that it receives no afferent fibers although its preganglionic fibers may come from as low as the seventh dorsal segment. The cephalic preganglionic fibers of the parasympathetics connect the ganglions with the brain stem and form components of the third seventh ninth tenth and eleventh cranial nerves. Since part of our knowledge is based on hypotheses, it is now proposed by some that a further subdivision be made in each system into motor and inhibitory groups. Surgical therapy as applied to the sympathetic system is an attempt to relieve symptoms by interrupting afferent and efferent stimuli from or to an organ or area. Surgery of the superior cervical ganglion supplies the cephalic sympathetic innervation. It should be remembered that it has branches that go to the esophagus the phrenic the superior laryngeal and the twelfth nerves and that it originates the superior cardiac nerve. What pharmacology may discover in the future may offer more in scientific application than the present-day conclusions from anatomic studies. I can only reiterate a conclusion stated three years ago relative to the autonomic nervous system and otolaryngology. 'The complexities of the chemistry of body metabolism obscure and make difficult a definite association of symptomatology with the autonomic nervous system. In its present development clinical application is disappointing but seems to possess future possibilities.

DR HARRIS H. VAIL Cincinnati. The present status of the autonomic nervous system in otolaryngology is still very much confused. Surgery on the cranial autonomic and sympathetic nervous systems is in the experimental stage because of conflicting theories lack of suitable material for experimentation and difficulty of interpreting results. Besides the involuntary nervous system in the head is so closely fused with the sensory system that selective surgery is almost impossible. Just consider the elaborate network the intricate pathways and the anastomoses between the sensory nerves of the head namely the trigeminus intermedius glossopharyngeus and vagus and the autonomic and sympathetic nerves. I feel that referred pain from deep nasal sinusitis is carried by the system formed by the nervus intermedius geniculate ganglion great superficial petrosal nerve and vidua nerve and the tie-ups these structures have with the trigeminus glossopharyngeus vagus and the sympathetic and autonomic network. Are there any diseases or conditions which can with certainty be said to result from irritation of the cranial and sympathetic nervous systems by any pathologic condition in the ear nose and throat? No. I should like to ask the author to explain why definite clinical improvement in hay fever cases is obtained by any method which temporarily destroys the close contact between the irritating substances and the nerve end organs in the nasal mucosa. I know that this can be answered by saying that this method prevents the sudden shift in acid-base equilibrium as it is a question of mechanical irritation and reflex response. It is true that some cases are benefited by nitrohydrochloric acid therapy but never by that procedure alone and the same holds for the calcium therapy. I believe all rhinologists have noted in cocaineizing an allergic nose when the mucosa is pale and boggy that the cocaine causes a shrinkage of the membranes with a return of a pink color to them. I am sure rhinologists have found a difference in the color of the mucosa on the two sides of the nose when at the same time one side may appear normal in color and the other side may show the allergic picture. Certainly these observations cannot be explained by an acid base shift which presumably affects all sympathetic and autonomic nerves alike. Allergic sinusitis from food allergy I believe more generally conforms to the idea which the author presents.

DR ALBERT KUNTZ St. Louis. It is important to think of the autonomic system as essentially an efferent system. All observations reported which seem to indicate afferent conduction within the autonomic system can be explained on the basis of those afferent fibers of the cerebrospinal system which are associated with the autonomic nerves. It has been pointed out that the autonomic system is not essential to life. Animals have

lived for many months, even years, with their sympathetic trunks removed. That of course effectively paralyzed the entire sympathetic division but not the parasympathetic. The parasympathetic nerves, however, probably are less important than the sympathetic so far as the life of the organism is concerned. The animals that have lived in the absence of their sympathetic trunks have existed under sheltered conditions. They probably would not have fared very well if they had had to make their way as most animals do. It is a different matter for a cat to live in the laboratory than in the back alley. The autonomic nerves play an important part in maintaining the chemical balance of the body fluids. Many questions regarding the acid-base balance and its relation to the autonomic balance remain unanswered, yet it is well to keep that relationship in mind. Along this line lies the hope for improvement in therapy. Little is known regarding the pathology of the autonomic nerves. Furthermore the essential relationships of the autonomic nerves to the central nervous system must be kept in mind particularly those centers within the brain stem that send impulses out through the autonomic nerves. It may be that in many instances the fault is not so much peripheral as it is central. On the other hand sympathetic ganglions removed by operation in cases of arthritis Raynaud's disease and certain other conditions reveal a pathologic condition. The most important changes that have been found include infiltration of the ganglions with white cells changes in the chromidial substance in the ganglion cells and in some cases, phagocytosis of the ganglion cells. I think it can quite safely be said that in all these cases there has been overstimulation of the sympathetic nerves. This also is indicated by the clinical symptoms. Although little can be based on our present knowledge of the pathologic changes found in autonomic ganglions it seems worth while that we should work further along these lines.

THE ETIOLOGY AND TREATMENT OF HEMORRHAGE OF THE NOSE AND THROAT

PRACTICAL CONSIDERATIONS IN RELATION TO OTOLARYNGOLOGY

HENRY M. GOODYEAR, M.D.

CINCINNATI

The value of thromboplastic agents in the treatment of hemorrhage is questioned by many laboratory workers and by some is reported as being nil. There are so many things which influence the time of coagulation that reservation must be given in measuring the evidence offered to support their real value. Experimentally the withdrawal of 4 cc. of blood from a rabbit may decrease the coagulation time for several days. Suffice it to say that any coagulant derived either from blood or from tissue should not be introduced into the vein unless it is protein free as evidenced by the absence of any coagulation on boiling.

The use of ovarian extract in hemophilia is strongly advocated by some and as strongly disapproved by others. The present evidence would indicate that it is worthy of a trial. However the most reliable aid in hemophilias at the time of operation is small blood transfusions one given forty-five minutes before operation and repeated in small amounts (from 150 to 200 cc.) every two or three days. The citrated blood is apparently as satisfactory as a direct transfusion and is easier to give.

Great care must be used always in giving transfusions to decrepit individuals with a low renal output, or in the presence of pulmonary or cerebral edema.

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Read before the Section on Laryngology Otolaryngology and Rhinology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

It is well to remember that transfusion has no value in purpura haemorrhagica. These cases are always accompanied by a loss of blood platelets and may be relieved only by splenectomy, as was recently demonstrated in one of my cases, a young woman who responded neither to thromboplastic agents nor to transfusions.

Hereditary hemorrhagic telangiectasis (Osler's disease) may occur in either the male or the female. The characteristic nevus, as noted in the mucous membrane

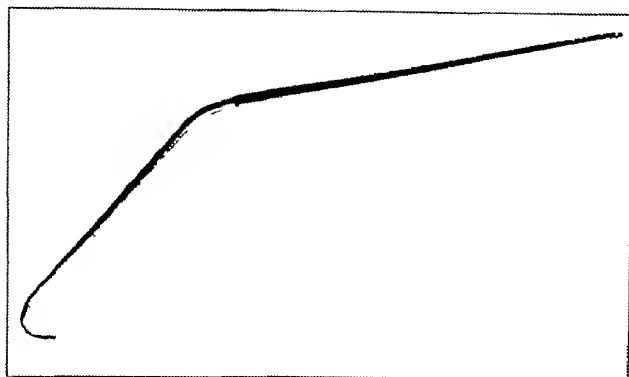


Fig. 1—Simple and effective soft palate retractor

of the nose, may also occur in the skin. The chronic acid head is the treatment of choice.¹ Recently I had a typical case under treatment in a man, aged 27.

Pressure on a purpuric spot will not cause it to disappear, the opposite is true of a nevus.

NASAL BLEEDING

Various authors state that at least 90 per cent of all nasal bleeding is from the anterior portion of the nasal septum. Often one sees blood pulsating from an open vessel in this area. I have found that the application of a 10 per cent solution of cocaine, followed by a small application of 50 per cent solution of silver nitrate held against the bleeding point has always been most satisfactory. If the bleeding does not stop immediately, sufficient reaction with swelling usually occurs within ten to fifteen minutes to occlude the bleeding point.

A bleeding vessel from the posterior floor of the nose is often difficult to locate. Here again an application of from 50 to 100 per cent solution of silver nitrate held with pressure against the posterior two thirds of the floor may strike the bleeding point. A swelling reaction quickly follows, often with cessation of bleeding, without resort to packing.

The use of continuous irrigation with ice water in bleeding from a point high or posterior in the nose is not to be forgotten, especially when high blood pressure is present.

Alexander in his clinic in Vienna, recommended the use of 5 cc of a 10 per cent salt solution in the vein for nose and tonsil bleeding. Often the bleeding stops within ten minutes.

From 10 to 20 cc of the patient's own blood given in the gluteal muscles often acts quickly. Skillern² reports this procedure in twenty minutes if the first injection fails.

Recently my colleague Dr. F. U. Swing experienced a general intractable oozing from both tonsil fossae shortly after operation. Packing thromboplastics and

transfusions failed. Finally 10 cc of warm whole blood from a donor was injected under the scapula with almost immediate cessation of hemorrhage.

Severe bleeding from the anterior or posterior ethmoid arteries in ethmoid operations can usually be controlled by packing.

SPHENOPALATINE ARTERY

The sphenopalatine artery runs under the mucosa on the anterior wall of the sphenoid and occasionally on the anterior floor of this sinus. It is this vessel that is most frequently injured in cutting down the anterior wall of the sphenoidal cavity.

Bleeding may occur immediately or days after the operation and usually streams from the nose in a most alarming manner, making it impossible to locate the bleeding point. It has been my experience that one half inch iodoform packing generously packed in the region of the mouth of the sphenoid has always been successful in these cases. I shall cite two rather recent examples.

CASE 1—Mrs. C. T. K., aged 39, underwent an operation in which the right sphenoid was opened with downward biting forceps. One hour later I saw the patient with blood streaming from the nose. She was pale and faint and had lost what looked like a pint or more of blood. A quantity of iodoform gauze was quickly inserted and pressure applied over the corresponding carotid artery. Bleeding ceased almost immediately and the packing was removed twenty-four hours later without further trouble.

CASE 2—Miss L. P., aged 28, had an ethmoid sphenoid operation. Severe bleeding occurred suddenly five days later. The condition was critical when seen. Iodoform packing stopped the bleeding which recurred on each attempt at removal until the seventh day, when all packing was removed.

Yankauer³ advocated the peeling off of the mucosa from the anterior surface of the sphenoid and then crushing the tissue, including the artery, with heavy



Fig. 2—Sigmoid tortuosity of left internal carotid (Skillern)

curved forceps, while E. Sewell and F. Smith advocate suture ligation in all complete external ethmoid sphenoid operations.

What branch of the carotid shall be ligated in intractable nasal hemorrhage? There are many reports of the ligation of the common carotid artery, but comparatively few reports of ligation of the external carotid.

¹ Hauser, K. M. Hereditary Hemorrhagic Telangiectasia. *Ann. Otol. Rhin. & Laryng.* 43: 721 (Sept.) 1934.
² Skillern. Personal communication to the author.

³ Yankauer, S. The Complete Sphenoid-Ethmoid Operation. *Laryngoscope* 31: 831 (Nov.) 1921.

In selecting the vessels to be ligated it is to be remembered that the entire blood supply of the nose is from the external carotid artery. The only exception is the upper part of the nose which is supplied by the anterior and posterior ethmoid branches of the ophthalmic, which in turn arises from the internal carotid artery.

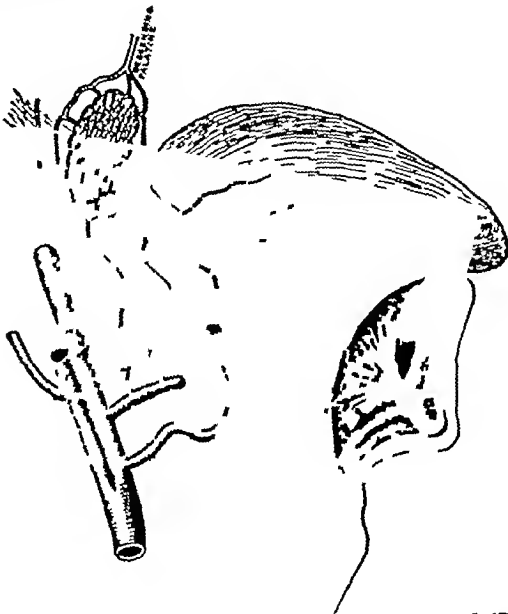


Fig 3—Diagram of the blood supply to the faucial tonsil (Davis)

Thus it is evident that the far less formidable procedure of tying the external carotid artery is the logical procedure in persistent nasal bleeding.

Collateral circulation is quickly established in from four to five days, and ligation of both sides, if necessary, would produce only temporary anemia.

CASE 3—A man aged 56 who was referred to me because of nasal bleeding, had a malignant neuro-ectodermal tumor in the sphenoid area. There were persistent nasal hemorrhages in which a ligation of the external carotid artery produced no apparent slowing of bleeding, but pressure on the opposite carotid caused the bleeding to stop.

ADENOID BLEEDING

Insufficient attention is given to adenoid bleeding at the time of tonsil and adenoid operations. Often the operator will meticulously dry the tonsil field yet let the patient leave the table with blood dripping from the nose. An adenoidectomy is as important as a tonsillectomy, and no adenoid operation should be considered complete without retraction of the soft palate and direct examination. Any bleeding points should be caught with curved artery forceps and the field completely dried before the patient leaves the table (fig 1).

Bleeding not infrequently occurs from six to ten days after the operation at which time the clot which usually extends into the pharynx should be removed and 1:1000 epinephrine dropped through the nose. The child is requested to sit up and bend slightly forward. If this treatment fails a gauze plug may be drawn into the nasopharynx or an anesthetic given and the area dealt with directly.

TONSIL BLEEDING

Not many laryngologists have had a death from hemorrhage following a tonsillectomy or incision of a peritonsillar abscess, yet such an accident is not unknown as is evidenced by a review of the literature.

Normally the internal carotid artery is one-half inch lateral to and three-fourths inch posterior to the tonsil. However, tortuosity of this vessel (fig 2) may bring it in intimate contact with the only interposing barrier, the superior constrictor muscle, which is often very thin, indeed almost wanting.⁴

In mammalia the internal carotid is often more tortuous than in man. Fisher⁵ quoting Chauveau, says that the internal carotid of the seal is actually forty times as long as the distance it has to traverse.

Schaeffer states that the internal maxillary and lingual arteries may be dangerously near the lower pole of the tonsil. Indeed, a high curving of the superior thyroid artery may be in contact with the inferior pole of a large tonsil, particularly in a high division of the common carotid.

There are five arteries supplying the tonsil, all branches of the external carotid artery, namely (1) facial, (2) lingual, (3) internal maxillary, (4) ascending pharyngeal and (5) descending palatine (fig 3).

Since all these vessels are from the external carotid this would be the vessel ultimately to be tied in an emergency.

In every hospital where tonsillectomies are performed, an emergency tray should be set up and ever ready. A number 4 pharyngeal mirror is unsurpassed for turning out the blood clot. One is pleasantly surprised at its smoothness. A tonsil syringe and an injection of procaine-epinephrine are great aids in clearing the field and add greatly to the comfort of the patient while a bleeding vessel is being dealt with.

Delayed postoperative hemorrhages are rather to be expected when nose and throat operations are done in the presence of an acute infection.

RETROPHARYNGEAL AND PERITONSILLAR ABSCESES

One may have treated many retropharyngeal and peritonsillar abscesses without mishap, but when a sudden, often fatal, hemorrhage does occur one is shocked.



Fig 4—Outline of retropharyngeal abscess in a child aged 11 months (Cincinnati General Hospital)

with the importance of having a definite idea as to diagnosis and treatment. The operator asks himself whether it is the internal or the external carotid artery that has been eroded and which vessel should be tied or should the common carotid be tied? In what cases will unnecessary ligation of a major vessel be avoided?

⁴ Schaeffer, J. P. Aberrant Vessels in Surgery of the Palatine and Pharyngeal Tonsils. *J. A. M. A.* 77: 14 (July 2) 1921.

⁵ Fisher, A. G. T. Sigmoid Tortuosity of the Internal Carotid Artery and Its Relation to Tonsil and Pharynx. *Lancet* 2: 128 1915.

In suppurative cellulitis following such illnesses as scarlet fever it is the internal jugular and not the carotid vessel that is usually eroded⁶

RETROPHARYNGEAL ABSCESS

Although retropharyngeal abscess is relatively infrequent (41 cases in 33,892 new cases admitted to the hospital for sick children, Toronto), more careful examination of the larynx in infants with fever, swellings in the neck and difficult breathing would reduce complications.

I would emphasize lateral roentgenograms of the neck in infants, the outline of precervical swellings (fig. 4) is impressive.

The incision of the abscess should not be taken lightly, as is attested by the number of deaths reported at operation. I have made it a practice to aspirate first with a large syringe and needle. I have removed as much as 20 cc of pus before making the incision, thus greatly reducing the danger of immediate complications.

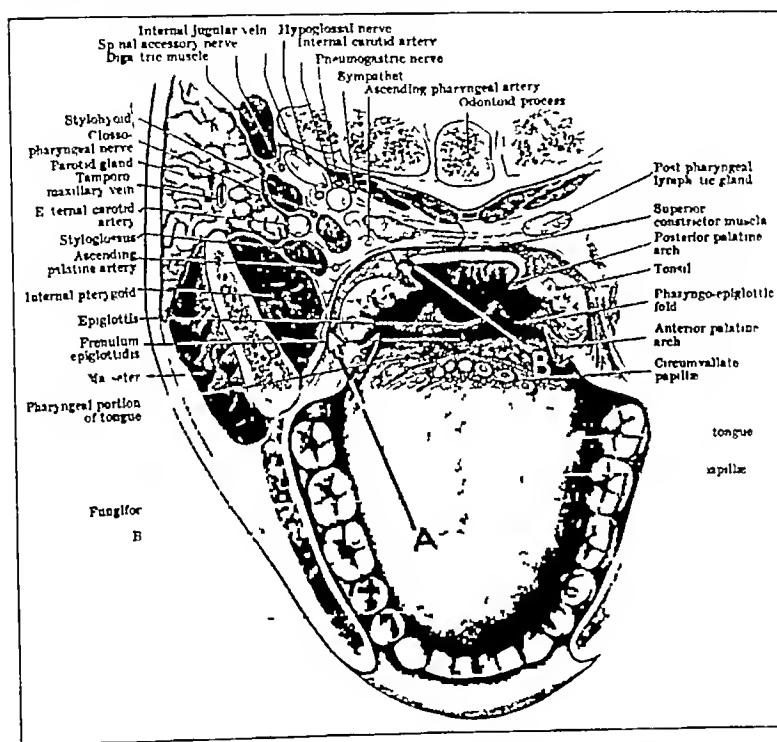


Fig. 5—Horizontal section through mouth and pharynx at the level of the tonsils. Arrows A and B indicate point of entrance to the pharyngomaxillary space used respectively in two of my cases.

Immediate pressure over the carotid artery, on the side of the abscess at the time of bleeding, may save the patient while preparations are being made to ligate the common carotid artery. This occurred in one of my recent cases.

CASE 4—A child, aged 4 years, had a retropharyngeal abscess which had been opened and rather a sharp hemorrhage of several ounces of blood occurred during the night. At 11 o'clock the following morning a sudden severe hemorrhage occurred and respiration ceased. A tracheotomy was done and artificial respiration started. Bleeding was checked by pressure on the carotid but recurred as soon as the pressure was released. With the bleeding retarded I was able to ligate the common carotid. The recovery was excellent.

When sudden severe expulsion of blood occurs in the presence of a retropharyngeal swelling either

before or after incision, no time should be lost in ligating the common carotid on the same side, for at any moment the hemorrhage may recur with fatal results.

A number of cases in the literature are reported in which sudden, severe hemorrhage has occurred through the external auditory meatus, a grave symptom, the abscess eroding into the external auditory canal or into the eustachian tube. Immediate ligation of the common carotid is indicated.

PERITONSILLAR AND PHARYNGOMAXILLARY SUPPURATIONS

Bleeding from a tonsillar infection with moderate intermittent attacks of bleeding, with no definite pharyngomaxillary symptoms, justifies the removal of the tonsils and a search for the bleeding point.

CASE 5—A man aged 22, had a history of sore throat, difficulty in swallowing, and pain over the right side of the neck.

Pain and difficult swallowing were allayed, but eight days after onset from 2 to 4 ounces (60 to 120 cc) of fresh blood was expectorated. These hemorrhages recurred at intervals of from six to twelve hours for four days. There was no definite peritonsillar swelling so I decided to remove the tonsil, which was large, under local anesthesia. There was no bleeding requiring ligation and no further incident of bleeding in the recovery.

Peritonsillar abscesses usually occupy the supratonsillar space and can be drained by the usual incision. This is the case with marked peritonsillar swelling, which I increase but get little or no pus and which often gives distressing neck complications later.

I believe that more frequent radical and early removal of a tonsil should be resorted to in cases in which no relief is given by incision and general distress and neck symptoms continue or increase out of all proportion to the usual reaction to a peritonsillar infection.

CASE 6—A man exhibited a peritonsillar swelling which was incised without relief. Marked swelling of the neck occurred with symptoms of jugular thrombosis. Dr. Iglauder explored the neck but no abscess or infected vessel was found. The tonsil was then removed and a quantity of pus obtained.

Early drainage of the pharyngomaxillary space, once pus is established, is important in saving the carotid vessels from erosion. This space when distended can be readily opened through the throat (fig. 5), as I was able to demonstrate in two of my private cases.

Repeated sudden hemorrhages of from 4 to 8 ounces (120 to 240 cc) of blood in the presence of a peritonsillar infection with definite swelling in the neck often increases as soon as the hemorrhage stops indicating erosion of a major vessel, and no time should be lost in ligation before a final and fatal hemorrhage ensues. The common carotid should be ligated. Statistics show that this is the only effective treatment.

Back circulation may occur through the external carotid after the common carotid has been tied, which happened in one of my cases necessitating a second operation to ligate the external vessel.

LIGATION

The terms external and internal carotid are rather misleading, applying rather to their relation to the inside and outside of the skull than to their relative

⁶ Salinger, Samuel and Pearlman, S. J. Hemorrhage from Pharyngeal and Peritonsillar Abscesses. Arch. Otolaryng. 18:464 (Oct.) 1933.
⁷ Wishart, D. E. S. Retropharyngeal Abscess and Erosion of Internal Carotid Artery with Pathological Specimen. Canad. M. A. J. 13:635 (Sept.) 1923.

positions in the neck. Textbooks do not emphasize the point that the internal carotid actually lies more superficial than the external at and just above the point of bifurcation (fig 6). Thus I have seen this vessel mistaken for the carotid at operation, and not until the dissection was carried deeper and medially was the external carotid with its branches identified.

The incision should extend from the angle of the jaw downward along the anterior border of the sternomastoid muscle for a distance of from 2 to 3 inches (5 to 7.5 cm). Mosher⁸ stated that the important landmark is the tip of the great horn of the hyoid bone, the external carotid lying external to it.

Most textbooks indicate that the bifurcation of the common carotid is at the upper border of the thyroid cartilage, but it is well to remember that the bifurcation may occur even above the angle of the jaw, as was



Fig 6—Dissection showing the lateral prominence of the internal carotid artery. A common carotid B external carotid C internal carotid D ascending pharyngeal E internal jugular vein and F facial vein.

evident in one of my recent dissections. This would have been of tremendous importance to one who was attempting to ligate this vessel. Barnhill⁹ reported that thirteen of twenty-three cadavers showed bifurcations above the thyroid bone and two under the angle of the jaw.

SUMMARY

- 1 Reservation must be given in measuring the true value of thromboplastic agents.
- 2 Ovarian extract is worthy of a trial in hemophilia; however, blood transfusions are the most reliable.
- 3 Blood transfusions have no value in purpura haemorrhagica; splenectomy may offer the only relief.
- 4 Hemorrhagic telangiectasia responds best to the chromic acid bead.

⁸ Mosher H P. The Submaxillary Approach to Deep Pus in the Neck. *Tr Am Acad. Ophth & Otolaryng* 1929.

⁹ Barnhill J F. read before the American Laryngology, Rhinology and Otolaryngology Society in June 1915.

5 Ten per cent cocaine followed by 50 per cent solution of silver nitrate is most satisfactory in hemorrhage from the anterior nasal septum.

6 Gauze packing in the region of the anterior wall of the sphenoid is effective in bleeding from an injured sphenopalatine artery.

7 In intractable nasal hemorrhages the external carotid artery should be ligated.

8 Insufficient attention is given to adenoid bleeding at the time of operation. No adenoid operation should be considered complete without retraction of the soft palate and direct examination for bleeding points.

9 Since all branches supplying the tonsils are from the external carotid artery, this would be the vessel ultimately to be tied in an emergency.

10 In suppurative cellulitis following such illnesses as scarlet fever, it is the internal jugular vein and not the carotid vessels which is eroded.

11 Retropharyngeal abscess is relatively infrequent and always a potentially dangerous complication, as is attested by the number of deaths reported. The pus should be aspirated first and then the incision should be made.

12 Immediate pressure over the carotid artery, on the side of the abscess at the time of bleeding, may save the patient during the preparation to ligate.

13 Bleeding from a tonsillar infection with moderate intermittent attacks of bleeding with no definite pharyngomaxillary symptoms, justifies the removal of the tonsil and a search for the bleeding point.

14 When sudden severe expulsion of blood occurs in the presence of a retropharyngeal or peritonsillar swelling, either before or after incision, no time should be lost in ligating the common carotid artery on the same side, for at any moment the hemorrhage may recur with fatal results.

15 When the pharyngomaxillary space is distended with pus it can be drained by incision anterior to the anterior tonsillar pillar, or by incision posterior to the posterior tonsillar pillar.

16 Radical removal of the tonsil is justified after incision of a peritonsillar abscess when little or no pus is found and general distress and neck complications increase rather than diminish. Drainage of a hidden pocket may be thus established.

17 Back circulation may occur through the external carotid after ligation of the common carotid artery.

18 When incision is made for ligation it is the internal carotid that usually comes into view first, before the external carotid is located.

19 Bifurcation often occurs high, even about the angle of the jaw.

556 Doctors Building

ABSTRACT OF DISCUSSION

DR FRANK R. SPENCER, Boulder, Colo. Some years ago I found repeated transfusions of no value in purpura haemorrhagica. Nothing was of any real value. Bleeding began forty-eight hours after tonsillectomy. There were hemorrhages under the skin in the lungs, in the intestine in the urinary bladder and from the tonsillar fossae until the fatal termination. Surgical diathermy is usually more satisfactory for treatment of the hereditary hemorrhagic telangiectasia than the cautery. I have not been successful in controlling hemorrhage from Kiesselbach's plexus with 50 per cent silver nitrate except in mild cases. The actual cautery and surgical diathermy are quicker in their action and more permanent. Hurd has shown that salt pork may be used to advantage for the control of epistaxis, especially when other remedies are not available. I have not had occasion to try this nor have I used Alexanders

injection of salt solution. The injection of from 10 to 20 cc of the patient's own blood in the gluteal muscle is much better than thromboplastic agents. I prefer to control primary tonsillar hemorrhages by suturing the bleeding points at the time of the operation as advocated by Crowe, McReynolds and others except that I try to draw the bottom of the tonsillar fossa together by a few purse string sutures. This avoids most of the delayed primary and secondary hemorrhages. It makes the necessity for ligation of the external carotid rare. Batson's dissections show that in rare cases ligation of the external carotid, or even the common carotid, will not control the hemorrhage, because of anomalous arteries. Ligation of the external carotid artery for severe hemorrhage following a retropharyngeal or peritonsillar abscess should be done earlier than it usually is. Early removal of the tonsils in patients with peritonsillar abscess should be resorted to much more frequently than it is. Tonsillectomy will avoid most of the deep cervical infections. Mosher's demonstrations of the surgical importance of the pharyngomaxillary fossa, the anatomy and surgical approach with ligation of the internal jugular in some cases, have greatly improved the care of these patients. One of the greatest difficulties is that these cases are seen too late.

DR SAM E. ROBERTS, Kansas City, Mo. In the second paragraph of his paper Dr Goodyear made a statement which I am sure he does not mean. He suggested the use of ovarian extract and multiple small transfusions before and after operating on the patient with hemophilia. I do not believe that Dr Goodyear operates on hemophilic patients. In my twenty-five years I have managed to steer clear of them. I usually resort to the procedures Dr Goodyear suggested, the silver nitrate, perhaps a little trichloroacetic acid but when the minor means do not stop the bleeding I resort to Monsel's solution. I know there are those in this group who would say that is damaging to the ciliated epithelium. I have used it many years and have seen no permanent harm. I am going to continue using it. It is an effective remedy. I have found the injection of from 20 to 30 cc. of freshly removed human blood into the gluteal muscles of the patient quite effective in controlling the bleeding. I frequently resort to this method in the delayed hemorrhages when the patient is at home or away from the hospital where typing cannot be carried out. I think that many tonsillar hemorrhages might be prevented if immediately after the tonsil is enucleated it is placed back in the tonsillar fossa and held there firmly for two or three minutes. This gives the contact of tissue juices which is quite effective. On the assumption that bleeding occurs after the patient has left the operating room, the routine that I observe is as follows. First to clear out the clot with a ball of cotton dipped in hydrogen peroxide until the whole fossa can be seen. Frequently this is enough to stop the bleeding. If it doesn't stop then pressure from three to five minutes and if this doesn't stop it a Monsel pack is left in place twenty-four hours. I am a firm believer in early transfusions. In all my cases in which I suspect bleeding I have the blood typed before operation. Most of my hemorrhages, however, are surprises the same as yours. You don't expect them but they still bleed so the ones I type seldom have any bleeding.

DR. THOMAS C. GALLOWAY, Evanston, Ill. Among other less common causes of hemorrhage are malignant growths especially transitional cell carcinoma of the pharynx, which may give troublesome hemorrhage from a small growth, leukemia, and uremia which has seldom received mention but which Dr R. A. Jaffe at Cook County Hospital believes relatively common. It is one cause of intractable nasal hemorrhage. I think it should be reiterated that hemorrhage from the posterolateral pharyngeal wall which is sudden and profuse almost certainly must come from the internal carotid artery. Such hemorrhage requires immediate ligation of the internal or common carotid artery. The morbidity of such ligations as given by DeCosta is 25 per cent and the mortality is about 3 per cent. I have ligated the common or internal carotid eight times with one death. Dr Goodyear mentioned bleeding from the external auditory canal as usually meaning involvement of the internal jugular vein and I think he is right. If the hemorrhage is rather profuse and it occurs in relation to deep sepsis even though it can be temporarily controlled it is dangerous and should be treated with much consideration. He suggests liga-

tion of the common carotid. In a recent case I was unable to control it by such ligation, apparently because of the free collateral circulation through the other venous channels of the skull. Dr L. F. McBride had such a case in which he did the much more rational procedure, of exposing and packing the sigmoid sinus, with adequate control. This seems more satisfactory and less dangerous than the ligation of the common carotid artery.

DR HENRY M. GOODYEAR, Cincinnati. Dr Spencer spoke of purpura haemorrhagica, which of course, is not relieved by transfusions, and, as happened in one of my cases this past winter, after trying various things, splenectomy became imperative. Concerning substances for bleeding from the anterior portion of the septum many have been recommended. I use a small applicator with 50 per cent silver nitrate, and so far I have not had any cases in which it did not succeed when the bleeding point was evident. So far as bleeding in uremia is concerned, I have had no experience.

DISSEMINATED POLYPOSIS OF THE COLON

A NEW SURGICAL TREATMENT IN SELECTED CASES

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In the nomenclature of intestinal tumors the term "polyp" is useful in describing what is seen with the unaided eye. That is, it is a gross anatomic term and is not intended to indicate the probable histologic structure of the tumor. Polyps of the rectum and colon vary in size from small excrescences on the mucous surface (fig. 1) to pediculate tumors of varying size (fig. 2). Between these two extremes there are many variations in the gross appearances of these tumors. If histologic examination reveals that the polyp is an adenoma, it is proper to designate the condition as "adenomatosis of the colon." The general employment of the term "adenomatosis" to designate a polyposis of the colon is likely to create confusion unless microscopic examination has revealed the adenomatous nature of the lesion. Not all polyps of the colon are adenomas.

The classification of polyps of the colon is not all that is to be desired, as the present knowledge of their cause is not sufficient to permit them to be classified. For the sake of clearness the so-called classifications of polyps of the colon proposed both by Erdmann and Morris¹ and by Wesson and Barger² should be mentioned. Erdmann and Morris divided polyps of the colon into two groups: (1) those which are congenital or adolescent in origin and (2) those which are acquired. Wesson and Barger divided these growths also into two groups: (1) postinflammatory polyps and (2) true polyps. Both of these classifications take into consideration what is apparently true, there are two types of polyps of the colon. The polyps of the colon that Erdmann and Morris classified as congenital or adolescent in origin are recognized by Wesson and Barger as true polyps. Therefore there is an apparent agreement between these authors that the rest of the polyps of the colon are acquired. Both of these clas-

From the Division of Surgery and the Division of Medicine, the Mayo Clinic.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1934.

1. Erdmann, J. F., and Morris, J. H. Polyposis of the Colon. *Surg. Gynec. & Obst.* 40: 468 (April) 1925.
2. Wesson, H. R., and Barger, J. A. Classification of Polyps of the Large Intestine. *Proc. Staff Meet. Mayo Clin.* 9: 497-498 (1934).

fications lack proper qualifications, since no patient was ever known to have been born with a disseminated polyposis of the colon, and the relation of polyposis of the colon to infection is not known. It is only necessary to point out that in the cases which are reported here the polyps belong to the congenital or adolescent group of Erdmann and Morris or to the true polyps in the classification of Wesson and Bargent.

Polyposis, or excrescences on the mucous membrane of the colon, has been described in the literature since the early part of the eighteenth century. The most convincing report by an early writer is that of Luschka,³ who described thousands of polyps of varying size which occurred in the colon of a woman aged 30. The polypoid lesions which had been described previously by other writers were termed "colitis polyposa" by Virchow⁴ in 1863. Cripps⁵ was the first to record that the disease may affect different members of the same family. Lockhart-Mummery,⁶ Erdmann and Morris,⁷ Gant,⁸ Storey,⁹ Pennant,¹⁰ Kennedy and Weber,¹¹ and others have reported more than one instance of polyposis of the colon among members of the same family.

The disease is usually manifested in early adult life at about the age of 30 years, however it does occur

Polyps may occur throughout the lumen of the alimentary tube. However the process is usually limited to anatomic divisions such as the stomach, small intestine or colon. Aside from patients who have disseminated polyposis of the colon there are many patients who have one or more polyps in the rectum or rectosigmoid. In addition to the patients who have a few polyps in the rectum and rectosigmoid and those who have a disseminated polyposis there are those who have segmental polyps, which usually are situated at the flexures of the intestine. It is important to remember that a polyp of the intestine may prove serious in one of four ways: (1) It may bleed as a result of infection or ulceration, (2) it may obstruct the intestine when it has attained sufficient size, (3) it may produce an intussusception, and (4) most important of all, it may become malignant, if carcinoma is not already present when the polyp is first discovered.

Hullsiek¹⁴ found that the average age of patients who had polyposis of the colon is 30.9 years. It therefore is evident that some of Hullsiek's patients must have been a decade or more on either side of 30 years of age. This illustrates that it is impossible to determine whether the condition is congenital or acquired in cases in which the patients are 40 or more years of

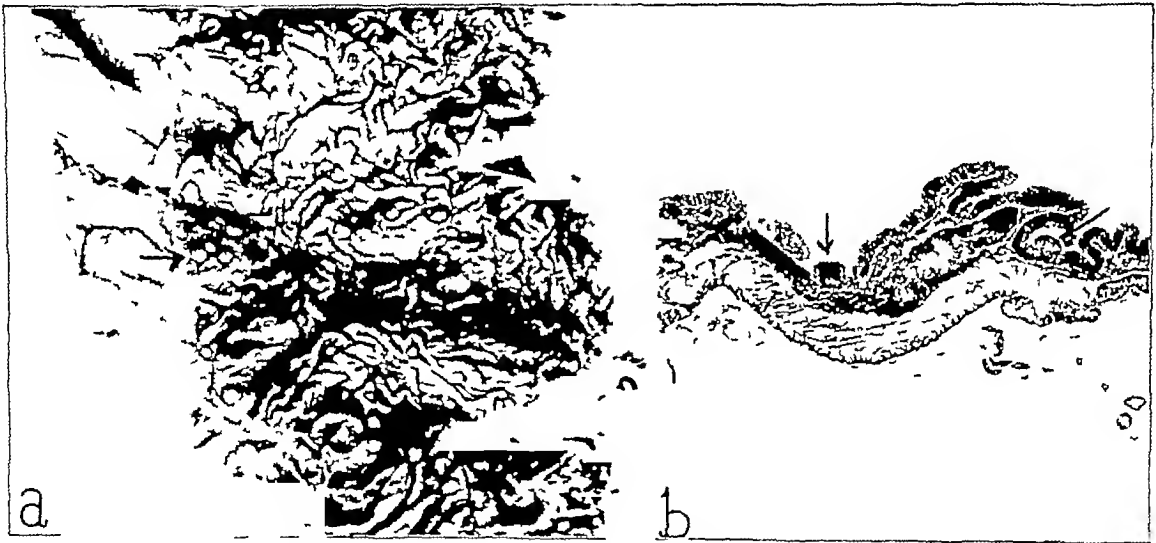


Fig 1—*a* small excrescences (polyps) on mucous membrane of colon *b* cross section of such polyps (X 3)

much earlier. Vajda,¹¹ Bickersteth,¹² Niernack,¹³ and Kennedy and Weber have reported cases of disseminated polyposis of the colon in which the patients were 12 years of age or younger. Kennedy and Weber had a patient 2½ years of age.

So far, no one has offered any criteria for settling this point, which is, of course, purely of academic interest.

In some cases of severe ulcerative colitis in which there has been widespread destruction of the intestinal mucosa the colon may have a polypoid appearance. Some of the polypoid projections are true polyps while others are puckered projections of the intestinal mucosa. While this appearance may be the result of ulcerative colitis we have seen polyps of the colon which had undergone degeneration with widespread infection and which were indistinguishable from severe ulcerative colitis. We have seen characteristic chronic ulcerative colitis develop in two cases of disseminated congenital polyposis of the colon. Examination of segments of the intestine which were removed surgically, revealed evidence of chronic ulcerative colitis. All the original polyps had disappeared probably as a result of the destruction and ejection of the mucous

3 Luschka H. Ueber polypöse Vegetationen der gesamten Dickdarmschleimhaut. *Arch f path Anat* 20: 133-142, 1861.
4 Virchow R L K. Die krankhaften Geschwülste. Berlin. A. Hirschwald 1863, p. 243.
5 Cripps W. H. Two Cases of Disseminated Polypus of the Rectum. *Tr Path Soc London* 33: 165-168, 1882.
6 Lockhart-Mummery J P. Diseases of the Rectum and Colon and Their Surgical Treatment, ed 2. Baltimore: William Wood & Co 1934, pp. 293-295.
7 Gant C. Diseases of the Rectum, Anus and Colon Including the Illeocecal Angle, Appendix, Colon, Sigmoid Flexure, Rectum, Anus, Sigmoid and Sigmoidocolic Region. Philadelphia: W B Saunders Company 2: 249, 1923.
8 Storey J C. Familial Polyposis of Colon with Superimposition of Carcinoma. *M J Australia* 2: 663-664 (Nov. 26) 1932.
9 Pennant D H. Multiple Polyposis of the Colon. *Brit M J* 1: 6 (Feb. 21) 1925.
10 Kennedy R I J and Weber H M. Polyposis of the Colon in Children. *Am J Dis Child* 42: 69-76 (July) 1931.
11 Vajda A. Polyposis intestinalis. *Jahrb f Kinderh* 50: 411-426, 1899.
12 Bickersteth R A. Multiple Polyp of the Rectum Occurring in a Mother and Child. *St Bartholomew's Hosp Rep* 26: 299-301, 1890.
13 Niernack J. Intestinal Polyposis and Carcinoma. *Ann Surg* 30: 104-108, 1902.

14 Hullsiek H E. Multiple Polyposis of the Colon. *Surg Gynec & Obst* 47: 346-356 (Sept.) 1928.

membrane that occur in the latter condition. We know of no cases previously recorded in which there was a disseminated polyposis of the colon with a subsequent development of a chronic ulcerative colitis and disappearance of the polyps.

There is a common opinion abroad that polyps of the rectum and colon are rather common. This may be true, but it is hardly substantiated by the objective data. In the proctoscopic examination of the rectum or rectosigmoid of 4,000 patients in the Proctologic Clinic of St. Mark's Hospital in London, Allingham¹⁵ found sixteen patients who had polyps. Of the patients examined in the Section on Proctology at the Mayo Clinic 4 per cent had one or more polyps that could be

of the nineteen patients were women and seven were men. The average age of the patients was 29.1 year. Carcinoma was known to be the lesion for which the patient was sent to operation in six cases. The presence of blood in the stools, which usually was intermittent usually was the symptom that caused the patient to seek relief. Diarrhea was more constant from day to day than was the blood in the stools. The diarrhea varied and frequently was characterized by acute exacerbations. During these exacerbations the number of rectal discharges were as many as fifteen to twenty in twenty-four hours. A mild cramplike pain in the lower part of the abdomen which was increased during and after bowel movements frequently was present. Moderate

to severe anemia was present in most of the cases. In about a third of the cases the number of leukocytes was greater than 10,000 per cubic millimeter of blood.

The general physical condition, aside from the varying degrees of anemia, was good. A presumptive diagnosis of polyposis of the colon was made in all cases by digital examination.

REPORT OF CASES

The clinical data in two of the nineteen cases will be summarized briefly.

CASE 1—A woman, aged 41, had enjoyed good health until the onset of the present illness, three years before she came to the clinic. The present illness began with a discharge of small amounts of bright red blood and mucus with each bowel movement. During the first year of her illness the discharge of blood and mucus in the stools had not caused a great deal of concern, since she had felt well and there had not been any change in her normal passage of two stools each day. In the second year of her illness the discharge of blood and mucus had become more profuse, an intermittent diarrhea (up to twelve stools daily) had developed and she had had diffuse dull aching abdominal pains which often were more severe just before bowel movements. During the year before she came to the clinic, the third year of her illness, the diarrhea had continued but there had been a decrease in the amount of rectal bleeding. Throughout the illness her weight had remained normal. At times there had been "a little temperature" but there was no very definite history of pyrexia.

General examination revealed that she was a small woman, 5 feet 2 inches (157.5 cm) tall and weighed 111 pounds (50 kg). The skin and mucous membranes were definitely pale and she complained of weakness. There was tenderness over the distal segments of the colon. A digital examination of the rectum revealed a hard palpable roughened surface of the rectal wall. Sigmoidoscopic examination disclosed a disseminated polyposis of the rectum and rectosigmoid. Rectosigmoidoscopic examination revealed polypoid lesions disseminated throughout the large intestine. Aside from a definite secondary anemia (the value for the hemoglobin was 9.5 Gm. per hundred cubic centimeters of blood) the results of laboratory tests were within normal limits. The surgical treatment of this patient was carried out precisely as is outlined in this communication.

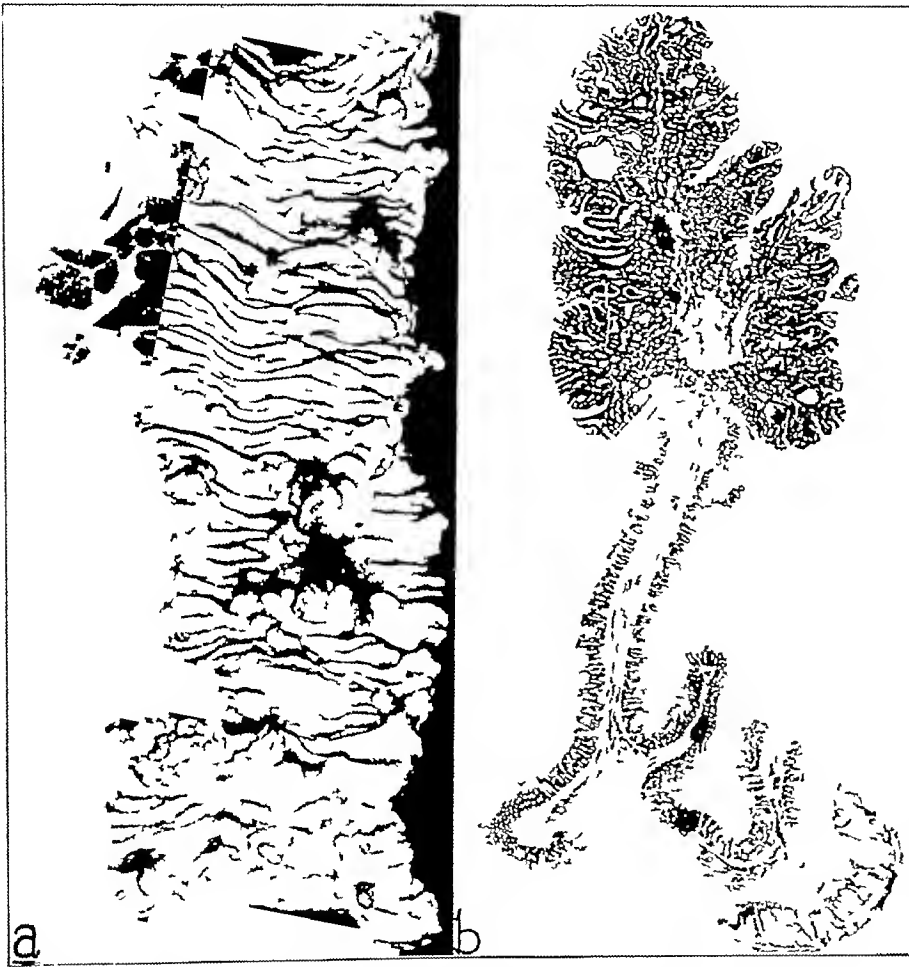


Fig. 2.—a long pedunculate polyp of colon b cross section of such a polyp (slightly reduced from a photomicrograph with a magnification of 5 diameters)

visualized with the sigmoidoscope. Only 0.04 per cent of the latter group had a disseminated polyposis of the colon.

In the nineteen cases which form the basis of this paper, disseminated polyposis extended from the terminal portion of the ileum to the rectum. The diagnosis in all these cases was confirmed by examination of a segment of colon after it had been removed surgically. None of the patients in these cases were more than 41 years of age. This upper age limit was arbitrarily selected since there are no other criteria for the selection of cases of congenital polyposis of the colon and the upper age limit has not been defined. Twelve

¹⁵ Allingham, William. *Diagnosis and Treatment of Diseases of the Rectum, Anus and Contiguous Structures*. Philadelphia: F. A. Davis Company, 1888, p. 189.

Recovery from the operations was uneventful. Six months after the last operation the patient was well.

CASE 2—A woman, aged 22, came to the clinic on account of diarrhea, which had been present for several years. She never had had more than six or eight stools in twenty-four hours. Eighteen months before she came to the clinic she had had a constant aching pain in the lower part of the abdomen and in the perineal region. This perineal pain had been most severe before bowel movements. Recently the abdominal pain had become severe and cramplike and, like the perineal pain, had become most severe just before defecation. During the past year small quantities of bright red blood occasionally had been present in the feces.

She was healthy in appearance except for a slight paleness of the skin and mucous membranes. Along the distal segments of the colon was a moderate amount of tenderness on palpation. The rectal wall felt "rough" on digital examination. Proctoscopic examination revealed a disseminated polyposis. Roentgenologic examination showed that the polypoid lesions involved the entire colon as far proximally as the ileocecal junction. The value for the hemoglobin was 121 Gm per hundred cubic centimeters of blood, the results of the other laboratory tests were within normal limits.

Treatment was instituted as described in this communication. The recovery was uneventful until the twenty-seventh day after ileosigmoidostomy and right hemicolectomy, when signs of intestinal obstruction developed. On the twenty-ninth post-operative day it became urgent that the obstruction be relieved. The abdomen again was opened and an obstruction of the ileum, which was situated about 6 inches (15 cm) from the opening into the sigmoid flexure, was found and relieved. During the operation the pulse rate became greatly increased and 200 cc of 6 per cent solution of acacia and 200 cc of citrated blood were administered intravenously. She continued to fail and died the following day.

COMMENT

We have reviewed the data pertaining to the incidence of cancer or polyposis of the colon among members of the families of these nineteen patients. Ten of the patients did not know positively about the grandparents on one or both sides. If their grandparents had died of cancer, the patients never had been told. Nine knew their grandparents. Of the seventy-six grandparents, three were known to have had cancer. Of the thirty-eight parents, five were known to have or to have had cancer. Two aunts and two uncles had or had had cancer. To adopt the term "sibships," which has been used by Garrod¹⁶ to designate brothers and sisters of the same marriage, ten sibships out of the total of seventy had or had had cancer. Exclusive of the patients, cancer occurred eighteen times among 207 individuals.

These data are not presented as an accurate record of the family histories of these patients but are as accurate as we have at the present time. We do not present these data as proof of a heredity factor of cancer and polyposis of the colon. We do not believe that these data have any significant interpretation or that there is any biologic or genetic theory that makes these data significant.

The diagnosis of disseminated polyposis of the colon cannot be made on the basis of any single finding. The various sized polyps often can be felt by digital examination of the rectum. Proctoscopic examination of the rectum, rectosigmoid and distal part of the sigmoid flexure will reveal that the mucous membrane is studded with polyps which vary from 5 mm to 1 cm or more in diameter. Some of the larger polyps may be pedunculate. Sometimes the polyps appear to be equally dis-

tributed over the surface of the intestine. In other cases the polyps are collected together in groups. The extent of the involvement of the proximal portion of the sigmoid flexure and the rest of the colon may be determined by means of thorough roentgenologic investigation of the large intestine or by direct examination. The extent of the polyposis of the colon in the cases which are the basis of this study was determined by direct examination.

The two conditions that are difficult, clinically, to distinguish from polyposis are cancer which is situated in the rectosigmoid or higher in the bowel and chronic ulcerative colitis. We have seen polyps develop in the course of a chronic ulcerative colitis and chronic ulcerative colitis develop in a colon which was the site of a polyposis. It has been repeatedly observed by us, as well as by others that polyps may degenerate, ulcerate and become infected secondarily. When such a process is taking place, it may be difficult to make a definite diagnosis. Treatment should never be delayed beyond the time necessary to make the diagnosis. We recognize that the surgical risk is greatly increased by the presence of widespread inflammation in a colon that contains degenerating polyps, but we further recognize the fact that delayed extirpation of the colon may jeopardize the patient's chance of recovery if cancer is present. We do not believe that polyps of the colon bleed until infection and ulceration are present. Therefore delay in the institution of treatment is not conservative but perhaps the most radical course that could be pursued.

The treatment of disseminated polyposis of the colon is a surgical problem. This assumption is based on the well known fact that all polyps of the colon may eventually become malignant. Aside from the development of malignancy they are a source of danger, as they may produce intestinal obstruction or hemorrhage and may predispose to inflammatory complications, such as ulcerative colitis.

The development of the treatment of disseminated polyposis is a most interesting study. In the beginning of surgical treatment of this disease, it was observed that ileostomy, which usually was performed late in the course of the disease, merely prolonged an unfortunate existence. To accomplish anything of permanent value, it soon was apparent that the development of a method for removing the affected portion of the bowel was of paramount importance. As surgical technique improved and, with it, the proper preparation of the patient for such hazardous operations, ileostomy, followed by total colectomy, became the method of choice. At best, the risk of ileostomy followed by total colectomy, even when total colectomy is performed in stages, is high and the results are not all that are to be desired. In addition, even when the procedure is successfully accomplished, many patients are left with a more or less troublesome ileac stoma although many get along remarkably well.

Those interested in the treatment of diseases of the colon were anxious that means be developed to preserve the natural outlet of the bowel whenever possible, in cases of multiple polyposis. With the evolution of diathermy and its application in diseases of the rectum, it became possible to fulgurate and clear the rectum of offending polyps. The next steps forward, although not applicable in all cases by any means, were temporary ileostomy, colectomy or the removal of the colon down to the rectosigmoid in one or two stages,

16 Garrod A. E. *Inborn Errors of Metabolism* ed 2 London H. K. Frowde and Hodder and Stoughton 1923

and the transplantation of the ileum into the rectum or the rectosigmoid by side-to-side, end-to-side or end-to-end anastomosis at a subsequent operation. Prominent among the surgeons who have devised such procedures are Rankin¹⁷, Graham,¹⁸ Soper¹⁹ and Struthers²⁰.

The method of treatment which we wish to describe seems to have qualifications which still further advance

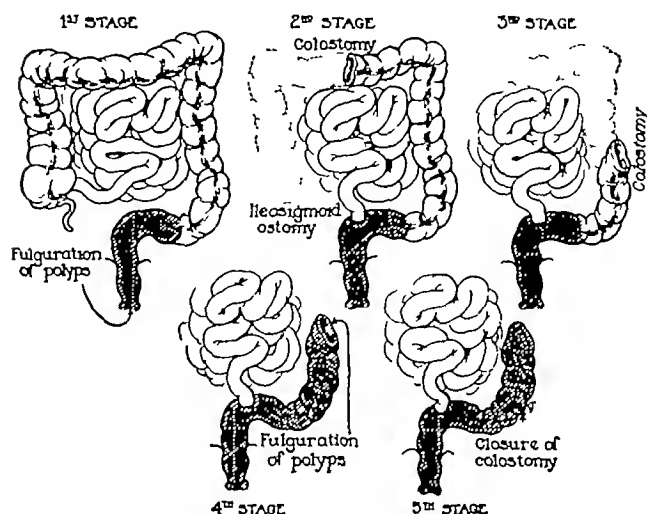


Fig. 3—Various stages of ileosigmoidostomy and colectomy

the care of selected patients who have multiple polyposis of the colon. The normal outlet of the rectum and its sphincters is preserved, and the rectosigmoid and sigmoid flexure, which contain the nervous mechanism which controls the desire to defecate, are left intact, thus leaving sufficient room for the storage of fecal material. Primarily, the operation has been made possible by the development of improved instruments and improved technic on the part of proctologists. We were assisted by Dr. Buie and his colleagues in the Section on Proctology at the Mayo Clinic, who removed the polyps from the rectum, rectosigmoid and sigmoid in order that segments which were free of polyps might be utilized in performing an ileosigmoidostomy. The first stage of the operation (fig. 3) is performed by the proctologist, who with repeated applications of diathermy removes a few polyps at a time as conditions permit until the rectum and rectosigmoid are free from polyps. The second stage (fig. 3) of the operation is not performed until the rectum and rectosigmoid are free from polyps and the inflammation incidental to their removal. This stage of the procedure, which is performed through a right rectus incision, consists of end-to-side ileosigmoidostomy and hemicolectomy, with removal of the right half of the colon and as much of the transverse colon as can be easily accomplished. Care is taken in the performance of the ileosigmoidostomy to cut the ileum at an angle (fig. 4) that insures not only a large stoma but also a good blood supply to the incised edge. The anastomosis is made along the longitudinal band with a serous layer of silk sutures and mucosal layers of sutures of chromic catgut, the angles of the anastomosis are protected with extra

interrupted sutures of silk which should include epiploic tags whenever possible. The incised end of the remaining portion of the transverse colon, with a Pavl clamp closing it, is brought out of the upper part of the right rectus incision, after intra-abdominal raw surfaces have been covered with peritoneum. A rectal tube is fixed in the rectum to allow free passage of liquid and gas.

The third stage (fig. 3), which is carried out as soon as conditions indicate, consists of hemicolectomy again, this time through a left rectus incision, with removal of the remaining portion of the transverse colon, the splenic flexure and the descending colon. One can judge the amount of colon to be resected by palpation of the polyps. It may be possible to save more of the colon than has actually been reached from below with the sigmoidoscope, because the proximal portion of colon is brought out of the wound, which makes it possible to fulgurate when necessary through the colonic stoma at a later date. It is important in performing resection of the transverse colon to preserve as much of the omentum and its blood supply as possible. The fourth stage (fig. 3) consists of retrograde examination and fulguration through the abdominal colonic stoma. The fifth step (fig. 3) consists of closure of the colonic stoma, which reestablishes the continuity of the intestine.

Strangely, little if any fecal drainage occurs through this colonic stoma at any time before closure. It may be left as a safety valve for some time and closed later

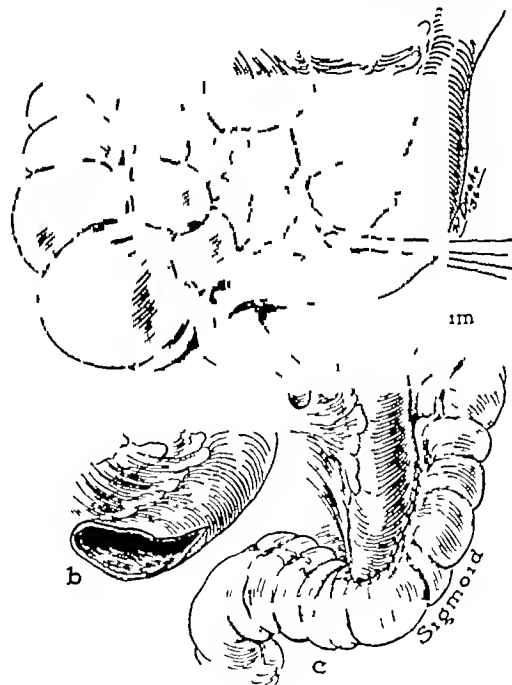


Fig. 4—Anastomosis of ileum with sigmoid flexure.

after repeated examination has revealed that the remaining portion of bowel is free from polyps.

A word before summarization as to the type of case to which this procedure is applicable. It cannot be used when secondary inflammation has involved the entire colon. In such a case the condition is best treated by ileostomy and total colectomy in stages after the inflammation has subsided. The surgical treatment outlined is of particular value in the case in which the diagnosis

17. Rankin, F. W. Colectomy for Adenomatosis and Pseudopolyposis. Report of Five Additional Cases. *Ann. Surg.* 102: 707-723 (Oct.) 1933.
18. Graham, H. F. Multiple Adenomas of the Colon (Polyposis). *Am. J. Surg.* 5: 234-240 (Sept.) 1928.
19. Soper, H. W. Polyposis of the Colon. *Am. J. M. Sc.* 151: 405-409 (March) 1916.
20. Struthers, J. E. Multiple Polyposis of the Intestinal Tract. *Ann. Surg.* 72: 649-664 (Dec.) 1920.

has been made before complications occur, particularly when carcinoma has not involved the colon distal to the sigmoid flexure

As soon as multiple polyposis of the colon is diagnosed and the described method of treatment is considered applicable, the first stage of the operation should be started. While this admittedly is a formidable surgical procedure, it is the only known way of guarding the patient against repeated intestinal hemorrhages and carcinoma. In most cases instead of being a prophylactic measure, the operation actually extirpates degeneration of the polyps, with subsequent infection multiple carcinomas which are already present in polyps scattered throughout the colon.

SUMMARY

In nineteen cases in which the patients were less than 41 years of age, twelve were women and seven were men. The hereditary and familial tendencies if present do not admit of any known genetic or biologic interpretation. Six of these patients had a carcinoma, which was the predominating lesion at the time of operation. It has been said that the development of carcinoma in these colons is inevitable, that uncomplicated polyposis of the colon is symptomless, and that diarrhea and blood in the stools are not signs of polyposis but are evidence of serious complications such as secondary infection, ulceration or carcinoma. An ulcerative colitis may develop on an existing polyposis of the colon with subsequent disappearance of the polyps. The new surgical procedure is designed to reduce the operative risk, conserve the distal segment of the colon and the entire rectum, and eliminate the necessity for permanent ileostomy.

ABSTRACT OF DISCUSSION

DR. FRANK H. LAHEY, Boston. I would like to call attention to the factor of malignancy as established and the accepted need for surgery in these cases. One should be careful about advocating too much x-ray therapy. It seems unlikely that much will be accomplished in the way of cures and that if the dosage is increased sufficiently a good deal of damage will be done without the danger of malignancy being really offset. It seems to me very probable that the x-rays may have considerable value in the preparation of some of these cases. There are certain things that have been learned regarding the surgical management of these cases. One is that no one can standardize the type of operative procedure. Another is that ileostomy is not such a bad procedure if the colon is taken out. Ileostomy is a terrible thing for any individual to endure if the colon is in. It has been demonstrated to my associates and me however in doing colectomies in a considerable number of cases of ulcerative colitis, diverticulosis and colectomies for persons with multiple polyps that there is a tendency as soon as the fluid absorbing section of the colon is taken out for the contents of the ileum to take on the solid character of the contents of the distal colon. We therefore do not think that ileostomy in itself is such a terrible operation if the colon is to be taken out later. If fulguration is to be done in these cases it is wise not to make the colostomy at that stage; it is much easier to manipulate the fulguration with the colon intact and with its upper end flexible. Many of these patients are below 40 and in excellent condition and I believe that many of them will stand as have our patients total colectomy down to the sigmoid in one stage. One can implant the sigmoid in the upper end of the wound doing also ileostomy and a few weeks later after examination of the upper end of the sigmoid and fulguration of any remaining polyps reestablish the fecal stream by anastomosing the ileum to the sigmoid end to side. We have two patients who have two formed movements a day even though all the colon is out and the ileum anastomosed

to the stump of the rectum. All have learned that we have not been sufficiently aware of the possibility of multiple lesions in the colon, and all of us doing surgery have the obligation to establish not only the diagnosis of malignancy, adenomas or polyps but in every case by contrast enema and proctoscopic examinations, we must be extremely sure that although we diagnose the carcinoma we do not leave behind other coincident lesions. Several times in doing resections of the colon I have seen polyps pop out of the end of the open colon that have not been diagnosed. It is extremely important not only that we remove the lesion but that we are sure that there are no other lesions.

DR. WALTER A. FANSLER, Minneapolis. All persons have an innate dread of a permanent ileostomy or colostomy. For this reason a procedure which avoids a permanent stoma and does not lessen the patient's chances of cure is worthy of consideration. Drs. Mayo and Wakefield have pointed out the possibilities of fulguration of the polyps through a proctoscope from below, an ileosigmoidostomy and colectomy in stages. In certain cases modification of this procedure is necessary. I saw a patient in 1935 with multiple polyposis. Because of inflammation and rigidity in the retroperitoneal portion of the sigmoid, it was impossible to fulgurate from below to a point only slightly above the rectosigmoid juncture—a point too low for an anastomosis with the ileum. After the coagulation had been carried upward as far as possible, an ileosigmoidostomy was done a point being selected in the sigmoid where the polyps were relatively few. At the same time a left inguinal colostomy was done a knuckle of the bowel being brought out but not opened. A week later this was opened a proctoscope was inserted in the distal portion, and the polyps were destroyed to a point where fulguration had been completed from below. Thus the bowel was cleared of polyps to a point well above the ileosigmoid anastomosis. The proctoscope was then inserted into the proximal portion of the colostomy and it was possible to coagulate all polyps as far as the splenic flexure. The final operative procedure was a colectomy, the entire bowel being removed down to the point of the colostomy. The distal opening of the colostomy was closed by inverting the bowel end and dropping it back into the abdominal cavity. The ease with which the polyps were coagulated in the upper segment brought to mind certain other possibilities in selected cases. In some cases of multiple polyposis only the rectum, sigmoid and a portion of the descending colon are involved. In these cases a temporary colostomy followed by coagulation through the colostomy and through the rectum would be less hazardous than a resection of the bowel. Also when the physical condition of the patient or the condition of the colon itself would seem to make the operations of ileosigmoidostomy and colectomy too hazardous the polyp-bearing area could be exposed through one or more colostomies and the polyps fulgurated. The colostomy could be left open as long as seemed necessary to satisfy the surgeon that recurrence was unlikely.

DR. H. W. SOPER, St. Louis. As the authors have said many of the patients with uncomplicated multiple polyposis remain symptomless. The diagnosis may be missed in a general examination. It has been my rule for many years that no general examination of a patient is complete without proctosigmoidoscopy. In a case in which operation was performed twenty-two years ago before the days when fulguration was practiced or anything about diathermy was known, the patient was a boy aged 8 years and the polyps in the rectum and lower sigmoid were pedunculated. They could readily be removed by the old snare and cautery of the base and were successfully removed, an eighth-inch stump being left. Colectomy was then done and the ileum was attached to the stump. Dr. Will Mayo knew of this case and asked me to report it some day and I take this occasion to do so. I saw the patient now 30 years of age a husky young farmer with good motility of the intestinal tract having one well formed stool daily. The x-ray examination showed that the ileum had in a way taken on the function of a colon as it had dilated and slowed down the rate of motility. Apparently one can get along very well without a colon. It interested me that the man's urine was negative for indican.

DR. E. G. WAKEFIELD Rochester, Minn. I should like to make one or two remarks about the function of the colon. It has been said that when the body is deprived of the colon and the patient has an ileac stoma, the lower part of the ileum takes on the function of the colon. This is not true. When a patient is subjected to an ileostomy we have shown in metabolic studies that the kidneys immediately compensate in maintaining the electrolytic balance of the body and maintain this function so long as the patient has an ileac stoma. However, some patients who have an ileac stoma develop more and more control of the ileac dejecta and at some periods of the day may pass semiformal feces. The partial control of the ileac dejecta is similar to that which develops in patients who have a colonic stoma. It may or may not be associated with dilatation of the terminal portion of the ileum. In uncomplicated cases the ileum may not dilate at all. If it does dilate, the dilatation is never greater than about twice the normal size and this dilatation occurs only in its terminal segment, which would not greatly increase its storage capacity.

Clinical Notes, Suggestions and New Instruments

AN APPARATUS FOR URINE ALBUMIN DETERMINATIONS ON A LARGE SCALE

F. T. HUNTER, M.D., BOSTON

In a clinical laboratory receiving from fifty to eighty urine specimens each morning, any apparatus that lessens the time required to perform a given test soon justifies its initial cost. The apparatus illustrated here was devised for such a purpose. It consists of twelve electric soldering irons mounted in a supporting frame and wired in parallel. Releasing the thumb-screws permits the frame to be raised or lowered, sliding up or down on the two uprights. Adjustable guards prevent the soldering irons from being lowered too far into the liquid. The base is a piece of thick brass, wide and heavy enough to give stability and to prevent the apparatus from tipping. Twelve test tubes (pyrex, 150 by 25 mm.) rest in a movable solid wooden block, which has holes, bored to a depth of about 5 cm., to fit them. Cleats at the rear of the base guide the block so that when in place each tube lies immediately beneath a corresponding soldering iron.

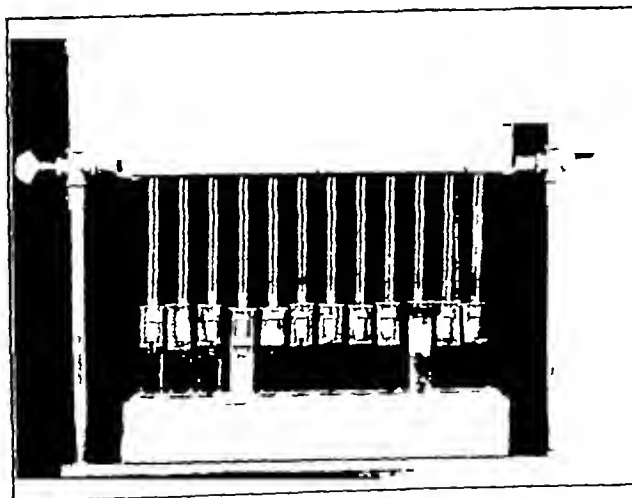


Fig. 1—Position of apparatus while boiling

When the test is to be performed each tube is filled with a different urine specimen to an appropriate level. The specific gravity is then read a few drops of glacial acetic acid are added the block is placed under the soldering irons the latter are immersed about 1 cm. in the liquid and the current is

turned on. At the end of from two to two and one-half minutes all the specimens have come to a boil, and those positive for albumin can be seen at a glance. As there is a sharp line of demarcation between the boiled and the unboiled portions of the urine, the albuminous cloud is more easily seen

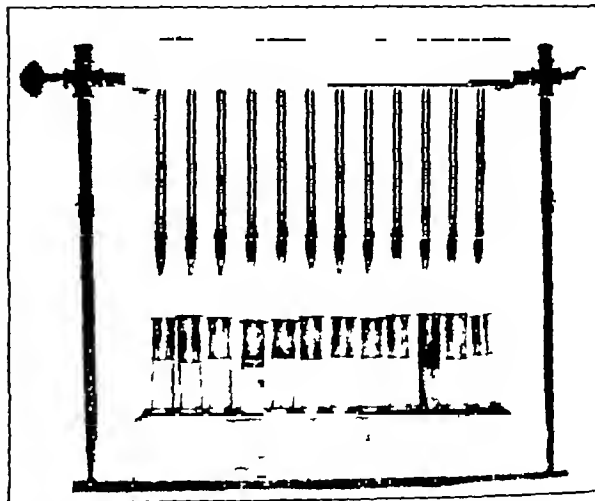


Fig. 2—Soldering irons withdrawn from the liquid after boiling. Note albuminous cloud in the tenth tube

than when boiling is produced in a flame. The time saving achieved by the apparatus is obvious, the cost of operation negligible. Material for the construction of the instrument costs about \$34.

6 Commonwealth Avenue.

NONTRAUMATIC SPONTANEOUS SUBAPONEUROTIC HEMATOMA ITS PROBABLE RELATION TO ATYPICAL SCURVY

MICHAEL SCOTT, M.D., PHILADELPHIA

The following case of Barlow's disease (forme fruste of scurvy) is presented because of its striking characteristics and its relative rarity in this country. An Italian girl presented herself to Temple University Hospital Dispensary with a painless, progressive enlargement of the head, which had reached striking proportions within a period of three weeks and at first glance suggested an ordinary hydrocephalus. No complaint aside from the noticeable enlargement of the head was described by the patient or by her family. The child was admitted to the service of Dr. Temple Fay and the neurologic and other examinations proved to be entirely negative. Certain unusual features of the case suggested Barlow's disease, and the subsequent treatment employed for the extensive subaponeurotic hematoma of the scalp completely relieved the condition. The full effect of vitamin C therapy could not be ascertained in this instance, as the blood under the scalp was removed largely by aspiration, and following air injection the remainder rapidly absorbed during her stay in the hospital.

Recently Aballi and Valledor¹ reported two cases practically identical to the one here presented. They cured their patients by feeding them lemon and tomato juice without the need of aspiration.

REPORT OF CASE

A C., an Italian girl, aged 14 years, admitted to the Neurological-Neurosurgical Department of Dr. Temple Fay, Temple University Hospital, Nov. 20, 1935, complained of rapid, progressive and painless enlargement of the head. The child had apparently been well in all respects until two weeks previously, when it was noted that the tissues about the left eye became edematous, the following day the right eye was similarly affected and three days later the swelling about the

Read before the Philadelphia Neurological Society, Dec. 20, 1935.
From the Neurological-Neurosurgical Department of Dr. Temple Fay, Temple University Hospital.
¹ Aballi, A., and Valledor, T. Two Atypical Cases of Barlow's Disease. Bol. Soc. cubana de pediat. 5: 201 (June-Dec.) 1933.

eye spontaneously receded. One week prior to admission the mother noticed that the child's head was becoming rapidly larger, especially about the ears and temples. The patient was said to have fallen on the stairs of her home three weeks before but did not strike her head. She landed on the buttocks but



Fig 1—Appearance of patient on admission to hospital

there was no evidence of injury sustained, and the fall was of trivial character.

The past history was negative for direct trauma to the head. There had been no complaints of headache, vomiting, falling vision, ataxia or mental abnormalities.



Fig 2—Eighteen days later following aspiration of hematoma and correction of avitaminosis

Physical examination revealed an emaciated child of sallow complexion with a triangular head (fig 1) showing bulging in the temporal areas on each side. Palpation of the head revealed a fluctuating mass completely surrounding the vertex which shifted with postural changes and followed gravitational

laws. On deep palpation of the swelling, small, round, irregular, marble-like ridges and exostoses could be felt over the skull surface, more so about the frontal bones. There was no pulsation and no evidence of acute inflammation. All other bones of the body were normal on palpation. The physical and neurologic examination was otherwise negative. There were no masses or areas of ecchymosis and there was no disturbance of the pulmonary, gastro-intestinal or urinary systems.

Urinalysis was negative. Complete blood counts showed a definite secondary anemia, hemoglobin was 11.5 Gm, the red blood cell count was 4,000,000, a leukocytosis of from 12,000 to 13,000 was present with a normal differential count. The platelet count was 269,000. The bleeding time was one minute, the coagulation time was four and one-half minutes and the capillary fragility test was within normal limits. Blood chemistry revealed blood sugar, 107 mg per hundred cubic centimeters, serum calcium, 10.9 mg, serum phosphorus (inorganic), 4.8 mg, icterus index, 4 units, van den Bergh test (direct), negative. The blood Wassermann and Kahn reactions of the patient and the parents were negative. Complete spinal fluid studies were negative.

Five days after admission (November 25) the subaponeurotic space was aspirated and 160 cc. of dark red bloody fluid was removed, following which 140 cc of air was injected in order to determine the character of the bony exostosis palpated. This bloody fluid separated into a cellular and a serous layer.

Microscopic examination of this fluid by Dr F W Konzelmann revealed chiefly old red blood cells. In addition, however, "great clumps of macrophages were noted, richly laden with brown granular pigment and with fragments of red blood cells."

X-ray examination of the skull after removal of a portion of the fluid under the scalp and injection of air to replace it showed a fluid level about both temporal areas, with air between the cranium and the scalp. There was no roentgen evidence of any exostosis or proliferation. X-ray examination of the long bones and chest was negative. Encephalographic studies of the brain were then made to rule out intracranial defects or pathologic changes. These proved to be entirely negative for organic disorders. The brain pattern was normal.

COMMENT

There had been no marked loss of weight. The family is poor and fresh milk, butter, orange and tomato juice were rarely if ever served. The mother stated that her other six children were healthy and had no complaints.

The history of trauma as a cause in this case can be dismissed because of its trivial character and because the head was not injured in the fall. The patient insisted that she fell down, striking only the buttocks, and did not "bump her head." The child noticed owing to the swelling occasioned by the hematoma, that the supporting bars for her eye glasses were tight behind the ears, across the temples and over her nose for a period of at least two months before the noticeable onset of her present condition. The photograph (fig 3) reproduced from the article of Aballi and Vallador illustrates the striking similarity in the cranial contour to the case here reported.

The staff was at a loss for a time to account for the extensive and spontaneous hematoma of the scalp. Dr Lansbury of the medical department had suggested subclinical scurvy as



Fig 3—Reproduction of a photograph of a patient with Barlow's disease whose case was reported by Aballi and Vallador.¹

a possibility Dr Ramirez-Corria of Havana, Cuba, was visiting Dr Fay's clinic at the time and unhesitatingly diagnosed the condition as Barlow's disease, subsequently forwarding the Cuban literature on the subject.

CONCLUSION

In a case of extensive, bilateral, nontraumatic subaponeurotic hematoma atypical scurvy (lack of vitamin C) is suggested as a cause for the condition.

Appropriate recognition of this complication is strikingly absent in the textbook treatises on vitamin deficiencies.

Temple University

Special Clinical Article

SURGERY OF THE SYMPATHETIC NERVOUS SYSTEM

CLINICAL LECTURE AT KANSAS CITY SESSION

JAMES C WHITE, M.D.

BOSTON

The concept that the autonomic nervous system is concerned purely with motor innervation of the smooth muscle of the viscera dates back to the last half of the nineteenth century and the work of Claude Bernard,¹ Gaskell² and Langley.³ In recent years the antagonistic action of the cramosacral and the sympatho-adrenal systems has been intensively investigated by the physiologists and Cannon⁴ gave it the appropriate name of homeostasis. Through this efficient and entirely automatic mechanism, the body adapts itself to the constantly fluctuating stresses and emotions of life. Without it, as Cannon has shown, life is still possible in a perfectly protected environment. But all forms of active endeavor and conflict with unfavorable reality are no longer possible.

It has been known for many years that the action of this system of nerves is not under the control of the will but is under the control of the emotions. More recently the centers from which the autonomic impulses spring have been traced to the premotor cortex and the hypothalamus. Certain disease states are now recognized as arising out of an abnormal activity of the autonomic nervous system. There are also numerous other conditions amenable to treatment by sympathectomy. One of these is visceral pain, which is not actually transmitted over sympathetic neurons but over somatic sensory fibers intermingled with them. As this subject does not, strictly speaking, come under the title of my paper and is too broad to cover here in any detail, I shall have to limit this discussion to the diseases concerned with disordered vasomotor or visceromotor function and confine myself to those which are best known and which have the most definite clinical application.

VASOMOTOR DISORDERS

Human hands and feet like the ears of the rabbit, have the specialized function of regulating body heat.

Read in the General Scientific Meetings at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 12, 1936.

1. Bernard, Claude. *Leçons sur les phénomènes de la vie commune aux animaux et aux végétaux*. Paris: Baillière et fils, 1878.

2. Gaskell, W. H. *The Involuntary Nervous System*. London: Longmans Green & Co., 1916.

3. Langley, J. N. *The Sympathetic and Other Related Systems of Nerves*. In Schafer, Textbook of Physiology. New York: Macmillan Company, 1900, vol. 2.

4. Cannon, W. B. *The Wisdom of the Body*. New York: W. W. Norton & Co., Inc., 1932.

Frazier, Alpers and Lewy⁵ have shown that, when the governing center of this mechanism is destroyed by injuries in the floor of the third ventricle, the capacity to regulate body temperature is lost. When the normal individual is hot, vasodilatation permits the loss of excess heat by radiation, whereas in the cold vasoconstriction prevents this. In states of emotional excitement the sympathetic nerves likewise constrict the superficial vessels and one develops "cold feet," literally as well as figuratively. With this discharge the sympathetic nerves, which are very indiscriminating in their action, activate the sweat glands as well. We all know among our acquaintances individuals with cold, clammy hands. Cobb,⁶ who has been making a special study at the Massachusetts General Hospital of the personality that goes with this type of sympathetic imbalance, finding that these individuals have a special psychological makeup which is perhaps characterized by inner emotional turmoil thoroughly covered and repressed beneath an outwardly normal appearance and behavior.

For my own part, I have become more and more impressed that this syndrome constitutes a true constitutional inferiority. These individuals are likely to develop scleroderma and arthritis, if they are victims of infantile paralysis, their cold legs are likely to stop growing and to ulcerate. In most of the cases of causalgia and amputation stump neuralgia this type of circulation exists, and it was present preceding the injury. I believe that a low pain threshold, as well as a personality that is poorly equipped to fight life's battles usually accompanies this syndrome. This is a personal impression.

What is more likely to impress the average practitioner are the more severe degrees of the disorder. These are commonly classified as Raynaud's disease, if there are symmetrical phases of digital blanching and cyanosis, or as acrocyanosis when the extremities are constantly blue as well as moist and cold. At the onset the vascular walls are normal, but Sir Thomas Lewis has shown that the constant asphyxia which accompanies the severer forms of these disorders may lead to an early endarteritis. A number of very satisfactory tests have been devised to pick out the cases favorable for operative interruption of the vasoconstrictor nerves. These consist either of getting the body in the hot vasodilated state by fever from typhoid vaccine or by heating, or of paralyzing the vasoconstrictor nerves by an anesthetic. Patients who have vasoconstrictor disorders of sufficient severity to result in chronic vasospasm in a room at 70° F. should be submitted to sympathectomy before endarteritic changes appear in their digital arterioles, and before a constricting bed of scar tissue replaces the subcutaneous tissue.

OPERATIVE RESULTS

To go from the simple to the more complex, the results of cutting the vasoconstrictor nerves to the lower extremity have been uniformly satisfactory. To do this the second and third lumbar sympathetic ganglia have been resected. As Raynaud's disease is far less frequently severe in the feet than in the hands my colleagues and I have operated on only eighteen patients for this condition in the legs. All these opera-

5. Frazier, C. H., Alpers, B. J., and Lewy, F. H. The Anatomical Localization of the Hypothalamic Center for the Regulation of Temperature. *Brain* 59: 122, 1936.

6. Cobb, Stanley. Personal communication to the author.

7. Lewis, Thomas, and Pickering, G. W. Observations on the Maladies in Which the Blood Supply to Digits, Feet, and Hands is Permanently and upon Bilateral Gangrene of Digits. *Quart. J. Med.* Relevant to So-Called Raynaud's Disease. *Clin. Sci.* 1: 327 (Dec.) 1932.

tions have been successful and free from any major complications. The results up to six years after operation are as satisfactory as on the day of discharge.

In the arm, however, the results have been far less successful. All together Dr. Smithwick and I have performed fifty-eight sympathetic ganglionectomies on thirty-eight patients. Our experiences are best summarized by dividing them into three groups. In the first, only the upper two thoracic ganglions were resected. In the second, the extent of this operation was increased to include the inferior cervical ganglion. In our third and present series, a new form of sympathetomy has been employed which I am going to describe in some detail. In the first series of ten cases, removing only the first and second thoracic ganglions proved to be an inadequate operation. The early results were good, but in six the vasodilatation lasted only six months and then there was a complete recurrence. The reappearance of sweating showed that the cause of failure here lay in the reestablishment of nervous connections.

In the second series we carried out the final modification of Adson's⁸ operation, taking great care to resect the inferior cervical and the first and second thoracic ganglions in their entirety. After this has been done the sweat glands are permanently paralyzed, but the hand remains fully dilated for only a fortnight. Theoretically it seemed as though the hand in an early favorable case should have remained as permanently dilated as the foot. Yet it was a most tantalizing fact that it did not. In a series of eleven of these patients we constantly observed a partial recurrence of vasospasm beginning about a fortnight after cervicothoracic ganglionectomy. Lewis and Landis⁹ have called attention to this, and most of the surgeons who have had a large experience with the operation in this country have been similarly impressed. In our series of cases the recurrence of vasospasm completely vitiated the early post-operative improvement in four patients and caused us to classify the others as only mediocre results.

This is best illustrated by a typical patient who has had both her upper and lower extremities denervated. On examination two years after her operations in a room at 70 F., her feet remain as warm (90 F.) and free from color changes as on the day of her discharge from the hospital. Her hands, on the contrary, although free from perspiration, may become cyanotic on exposure to cold or nervous excitement and their surface temperature averages from 75 to 78. This is better than before her cervicothoracic ganglionectomy, but the result leaves much to be desired.

In 1933 the recurrent attacks of cyanosis in the hands of a patient two weeks after a complete cervicothoracic ganglionectomy led Dr. Smithwick and me to call a halt on the upper extremity operation until we could discover the mechanism of this recurrent form of spasm. It was quite obviously not neurogenic because after these patients had been heated to the point of generalized sweating the denervated hands remained perfectly dry. As the nerve supply to the sweat glands is the same as that to the blood vessels, this test showed that the vasoconstrictor nerves were interrupted. The clue to this impasse was given us by Dr. Norman Freeman, who had worked in Dr. Cannon's laboratory and told us of the fact long known to physiologists, that denervated smooth muscle remains sensitive to the circulating sympathomimetic hormones epinephrine and sympathin. Not only does smooth muscle remain sensitive, but it becomes hypersensitive.

We promptly tested all our available cases and found that physiologic doses of epinephrine or adrenal secretion stimulated by excitement or by insulin hypoglycemia were promptly followed by a striking fall in surface temperature and all the signs of vasospasm.¹⁰ With Okelberry and Whitelaw¹¹ I have studied this phenomenon in the rabbit's ear and the monkey's hand. We discovered that the blood vessels in the rabbit's ear become so sensitive to epinephrine within a week after superior cervical ganglionectomy that they constrict to a maximum whenever the animal is cold, struggles or becomes excited. A lasting vasodilatation can be obtained only when adrenal secretion is abolished.

These observations did not explain the differences observed after sympathetic denervation of the human arm and leg. But it soon became apparent that this difference depends on whether the preganglionic or the postganglionic vasoconstrictor neurons are cut. This anatomic variation in epinephrine sensitization was clearly demonstrated by Hampel.¹² Wherever the vasoconstrictor pathway is interrupted there is some degree of adrenal sensitization, but from a quantitative point of view it is roughly true that this is only a third as great if only central fibers are cut. Our observations have been fully corroborated by Grant¹³ and by Telford.¹⁴ In lumbar ganglionectomy the postganglionic fibers to the sciatic nerve which arise in the last lumbar and the sacral ganglions, are preserved. Smithwick¹⁵ and also Telford¹⁴ have devised an operative technic for sparing these fibers to the brachial plexus and cutting only the preganglionic fibers to the arm. This can be accomplished by leaving the inferior cervical, first and second thoracic ganglions in situ, but cutting the sympathetic chain below its third thoracic ganglion and severing the communicant rami from the second and third intercostal nerves. This operation has now been performed twenty-eight times on eighteen patients at the Massachusetts General Hospital. Observations over a period of one and one-half years have demonstrated that the lasting increase of blood flow in the arm after this operation can be as great as in the leg.

CONDITIONS OTHER THAN RAYNAUD'S DISEASE

Operations for the relief of chronic vasospasm are of great value in a number of conditions aside from true Raynaud's disease.

1. In scleroderma and sclerodactyly improvement of circulation has been followed by an arrest in the

⁸ Adson, A. W. Cervicothoracic Ganglionectomy: Trunk Resection and Ramisection by the Posterior Intrathoracic Approach. *Am J Surg* 11: 227 (Feb.) 1931.

⁹ Lewis, Thomas and Landis, E. M. Some Physiological Effects of Sympathetic Ganglionectomy in the Human Being and Its Effect in a Case of Raynaud's Malady. *Heart* 15: 151 (May) 1930.

¹⁰ Freeman, N. E., Smithwick, R. H. and White, J. C. Adrenal Secretion in Man. The Reactions of the Blood Vessels of the Human Extremity Sensitized by Sympathectomy to Adrenaline and to Adrenal Secretion Resulting from Insulin Hypoglycemia. *Am J Physiol* 107: 529 (March) 1934. Smithwick, R. H., Freeman, N. E. and White, J. C. Effect of Epinephrine on the Sympathectomized Human Extremity. An Additional Cause of Failure of Operations for Raynaud's Disease. *Arch Surg* 20: 759 (Nov.) 1934.

¹¹ White, J. C., Okelberry, A. M. and Whitelaw, G. P. Vaso-motor Tonus of the Denervated Artery: Control of Sympathectomized Blood Vessels by Sympathomimetic Hormones and Its Relation to the Surgical Treatment of Raynaud's Disease. *Arch Neurol & Psychiat* to be published.

¹² Hampel, C. W. The Effect of Denervation on the Sensitivity to Adrenaline of the Smooth Muscle in the Nictitating Membrane of the Cat. *Am J Physiol* 111: 611 1935.

¹³ Grant, R. T. Further Observations on the Vessels and Nerves of the Rabbit's Ear with Special Reference to the Effects of Denervation. *Clin Surg* 2: 1 (Sept.) 1935.

¹⁴ Telford, E. D. The Technic of Sympathectomy. *Brit J Surg* 23: 448 (Oct.) 1935.

¹⁵ Smithwick, R. H. Modified Dorsal Sympathectomy for Vascular Spasm (Raynaud's Disease) of the Upper Extremity. *Ann Surg* to be published in 1936.

advance of the disease and by an improvement in function of the hand. We have had satisfactory results in four cases. As these conditions commonly involve the hands, the results of the new operation of preganglionic neurectomy should be even more impressive. In the advanced forms of the disease, however, in which the vessels are compressed in a bed of scar tissue, no improvement can be expected. We have had three failures in this group.

2 In the late stages of poliomyelitis increasing the circulation of the paralyzed leg may be of value for two conditions: for trophic lesions and for increasing bone growth in the legs (Harris¹⁶). It is important to point out that no permanent increase in blood flow can be expected in a totally paralyzed leg.

3 In 1927 Rowntree and Adson¹⁷ advocated sympathetic ganglionectomy for increasing circulation to the affected joints in certain selected cases of rheumatoid arthritis. They postulated that the operation must be limited to young individuals with superimposed vasospasm and with a good vasomotor index. Furthermore, the operation was applicable only when the hand or foot was involved, as there is little increase in circulation above the elbow or knee. Few favorable reports have appeared from other clinics, and in five cases observed with Dr. Walter Bauer of the Robert W. Lovett Memorial Foundation for the Study of Joint Disease we have been unable to obtain any increase in joint mobility or relief of joint pain. I can recommend this operation only in the rheumatoid type of arthritis when it is desirable to improve circulation per se in the cold, moist extremities.

In cases of traumatic arthritis the story is quite different. In this condition there is often an accompanying osteoporosis and vasomotor disturbance. This reflex atrophy of bone which Sudeck first described, may follow minor fractures or trauma near the wrist or ankle. It is sometimes intractable to ordinary orthopedic measures and has then cleared up after restoration of an adequate circulation. Even a temporary hyperemia, such as follows procaine injection of the sympathetic ganglions or periarterial sympathectomy, has sufficed to start active use of the crippled extremity and resulted in complete relief. We have found procaine block to be sufficient in two cases. Fontaine and Herrmann,¹⁸ who have reported twenty-two cases, believe that ganglionectomy should be reserved for the severest forms. Our knowledge here is still very incomplete, both as to the physiology of painful bone atrophy and as to why sympathectomy works so well at times and then occasionally fails.

4 Hyperhidrosis or excessive sweating of the hands may be a very disagreeable condition. Under these circumstances the fingers and palms may actually drip with perspiration especially under nervous excitement. This can be stopped by sympathectomy. We have had two recent cases: the first in one of our stenographers who was constantly smearing her typing. She has been relieved for four years by resection of the first and second thoracic ganglions. In a second case, a medical student felt that surgery would be impossible for him to undertake on account of the excessive moisture of

his hands, I blocked the corresponding ganglions by paravertebral alcohol injection. By this method he needed hospitalization for only one night and returned to his classes the next day. At the end of two years he maintains normally dry hands.

5 In thrombo-angitis obliterans, when endarteritis has occluded the main arteries, vasospasm may contract the all important collateral vessels. The natural physiologic response to pain is vasoconstriction. Certain clinics have recommended lumbar ganglionectomy whenever there is a favorable vasomotor index. The Peripheral Vascular Clinic at the Massachusetts General Hospital has never subscribed completely to this view. In the first place, lumbar ganglionectomy cannot be expected to relieve the pain of gangrenous toes. A much simpler procedure, crushing the peripheral nerves,¹⁹ can be carried out under local anesthesia without even putting the patient to bed. This operation relieves all pain and produces a complete, although temporary, paralysis of the vasoconstrictor nerves. After a wave of acute thrombosis in Buerger's disease, interruption of nerve conduction for three months is usually sufficient to enable the patient to pick up an adequate collateral circulation. In a series of more than twenty-five severe cases during the last six years, the necessity for major amputation has been reduced 60 per cent by the use of this simple and minor operative procedure. It is therefore logical to crush the peripheral nerves in all severe cases with actual gangrene and pain. Lumbar ganglionectomy should be reserved for those rare instances of Buerger's disease in which, after the paralyzed peripheral nerves have regenerated, vasospasm again becomes a complicating factor. When used in this way, lumbar ganglionectomy is a most valuable procedure. We have needed to do this in only twelve cases.

6 In discussing the recently proposed forms of sympathectomy for lowering blood pressure in essential hypertension, many interesting problems must be considered. Let me first review a few of the important physiologic facts that are known about the mechanism of the hypertensive state. These have been very ably presented by Dr. Soma Weiss.²⁰

In the first place, vasomotor tonus in hypertension is perfectly normal and is superimposed on an intrinsic arteriolar spasm. This last factor is not neurogenic in origin, nor is it due to circulating chemical substances such as an excess of epinephrine. The elevations of diastolic and systolic pressures are secondary manifestations and must be looked on as compensatory homeostatic adjustments for the maintenance of an adequate capillary circulation in the tissues. The exact nature of the change in the arterioles and arteries is unknown. Prinzmetal and Wilson²¹ have shown that the increased vascular resistance is not confined to the splanchnic area but is generalized throughout the systemic circulation. Sympathetic vasodilatation in an extremity produced by the 'heat' test or by paralysis under procaine infiltration of the sympathetic ganglions produces no greater increase in blood flow in hypertensive than in normal individuals. If the vascular spasm of the hyper-

16. Harris R. I. The Effect of Lumbar Sympathectomy on the Growth of Legs Shortened from Anterior Poliomyelitis. *J. Bone & Joint Surg.* 12: 859 (Oct.) 1930.

17. Rowntree L. G. and Adson A. W. Bilateral Lumbar Sympathetic Ganglionectomy and Ramisectomy for Polyarthritides of the Lower Extremities. *J. A. M. A.* 55: 694 (March 5) 1927.

18. Fontaine Rene and Herrmann L. G. Post Traumatic Painful Osteoporosis. *Ann. Surg.* 97: 26 (Jan.) 1933.

19. Smithwick, R. H. and White J. C. Peripheral Nerve Block in Obliterative Vascular Disease of the Lower Extremity. Further Experience with Alcohol Injection or Crushing of Sensory Nerves of Lower Leg. *Surg. Gynec. & Obst.* 60: 1106 (June) 1935.

20. Weiss Soma. Recent Advances in the Treatment of Hypertension. *VI. Clin. North America* 19: 1343 (March) 1936.

21. Prinzmetal Byron and Wilson C. The Nature of the Peripheral Vascular Resistance in Arterial Hypertension with Special Reference to the Vasomotor System. *J. Clin. Investigation* 15: 63 (Jan.) 1936.

tensive were due to an excessive activity of the sympathetic nervous system, the rationale for sympathectomy would be clear. Unfortunately, this is not the case. In addition, it is known that total extirpation of the sympathetic nervous system in animals produces no lasting fall in blood pressure.

To take up the other side of the picture, the fact that extensive sympathectomy produces no striking fall in the blood pressure of the normal dog and cat does not necessarily mean that it cannot reduce the blood pressure of a hypertensive human being. Clinical evidence to date has given a rather definite contradiction of the theoretical objections.

It is now well recognized that hypertensive individuals show abnormal pressor responses to cold and emotion. Clinical evidence reported by Adson, Craig and Brown,²² by Page and Heuer²³ and by Peet²⁴ constitute fairly convincing proof that sympathectomy can cause a worth while reduction in blood pressure in certain favorable cases of essential and malignant hypertension. When it is considered that this condition usually progresses to a fatal termination, surgical attempts at its amelioration are certainly justifiable, provided medical treatment has been tried and found to be ineffective.

The proposed surgical methods fall into three main categories.

1 Operations to reduce adrenal secretion, either by partial adrenalectomy or by adrenal denervation. Such procedures should be condemned first because they are inadequate and secondly because they may be followed by Addison's disease. Such a case has recently been reported by Rogoff,²⁵ and I have seen a second.

2 Cutting the lower six thoracic and upper two lumbar anterior spinal roots, which has been recommended by Adson, Craig and Brown.²² This radical operation interrupts the vasomotor outflow to the lower half of the body, as well as the nerves to the adrenal glands. I have had no personal experience with this method, but in the hands of Adson and of Heuer²³ it has been followed by a considerable number of striking results.

3 Splanchnicectomy. This operation interrupts the secretory fibers to the adrenal glands and vasoconstrictor fibers to the splanchnic area. It can be carried out either above or below the diaphragm. The intra-thoracic approach, devised by Peet,²⁴ cuts these fibers with greater certainty and over a larger extent. It has now been used at the Massachusetts General Hospital by Dr. Smithwick in twelve cases. The results of this operation to date appear to be nearly as good as those of the more radical and far more mutilating method of ventral root section.

To summarize the results of these operations, it seems fair to state that they show signs of promise in early favorable instances of hypertension. Even after the most careful selection some of these cases are likely to fail; the operations are difficult and the mortality rate is fairly high. For the practitioner who primarily cares for the patient this is important to appreciate. Investigation has to progress through justified and intelligent trial and error. It is wise that physicians

should accept new surgical procedures only after proper evaluation of the problem and strong supporting evidence. In the problem of hypertension, this stage cannot be said to have been reached. At present, therefore, it seems advisable to leave the operative treatment of hypertension in the hands of those who are best qualified to perform this difficult type of surgery and who can be trusted to observe their operative results with open minds and so decide whether there is lasting benefit to their patients.

CONCLUSION

I have centered my remarks on the physiology and surgery of the vasomotor nerves. I have done this purposely because it is the line that is advancing most rapidly today. An equally important matter, the relief of visceral pain, is too large a subject to cover and does not, strictly speaking, belong in the field of the sympathetic nervous system. I have not taken up the application of sympathectomy to several important conditions, because these are not related to abnormal reactions of the blood vessels. The most outstanding of these is sympathectomy in the treatment of megacolon. All who have used this operation agree that it is consistently effective in suitable cases of Hirschsprung's disease. On the other hand, presacral neurectomy is not a sound method for improving the function of a paralyzed bladder. This has been shown both by disappointing clinical results and by the recent work on the physiology of micturition. I have said nothing about the application of sympathectomy to spastic paralysis because it is now conceded that this operation is totally illogical.

A great many unphysiologic procedures have been advocated in the past, but in their justification it must not be forgotten that this entire field of neurosurgery has developed out of Royle and Hunter's suggestion for the treatment of spastic paralysis. This method and many others were based on inadequate fundamental knowledge, advocated with too great enthusiasm and then thrown into the discard. Surgical intervention on the sympathetic nervous system is just emerging from the stage of trial and error. This is due not only to an accumulation of clinical experience but equally to a better understanding of the function of the visceral nerves and a development of diagnostic tests. Of the subjects which I have discussed in this paper, the operative treatment of hypertension alone appears to remain in question. The real value of the others now rests on a firm foundation.

Massachusetts General Hospital

Bacteria in the Stratosphere—Specimens of bacteria floating in the stratosphere between 36,000 and 70,000 feet were obtained and identified. In all there were ten colonies collected and of these, five proved to be aerobic, spore-forming bacilli while the other five were mold fungi identified as *Rhizopus* sp. *Aspergillus niger*, *Aspergillus fumigatus*, *Penicillium cyclopium* and *Macrosporium tenuis*. Not only are these organisms of importance to man but it may be assumed that numberless other pathogenic organisms of similar size and weight are floating high in the air. A study of the influence of the prevailing wind directions and the occurrence of rising and falling columns of air on the origin and spread of endemic or epidemic diseases would no doubt be of inestimable value. Also in this connection the transfer of disease germs by means of aircraft must be borne in mind.—Armstrong, H. G. The Medical Aspects of the National Geographic Society-U. S. Army Air Corps Stratosphere Expedition of Nov. 11, 1935, *J. Aviation Med.* 7:55 (June) 1936.

22 Adson A. W. Craig W. McK. and Brown C. E. Surgery in Its Relation to Hypertension. *Surg. Gynec. & Obst.* 62:314 (Feb. No. 2 A) 1936.

23 Heuer G. J. Anterior Spinal Nerve Root Section. A Surgical Treatment of Essential Hypertension. *Ann. Surg.* 102:1073 (Dec.) 1935.

24 Peet M. M. Splanchnic Section for Hypertension. A Preliminary Report. *Univ. Hosp. Bull., Ann Arbor Mich.* 1:17 1935.

25 Rogoff J. M. Addison's Disease Following Adrenal Denervation in a Case of Diabetes Mellitus. *J. A. M. A.* 106:279 (Jan. 25) 1936.

Council on Physical Therapy

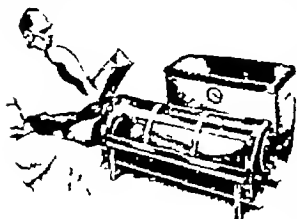
THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORT

HOWARD A. CARTER Secretary

BURDICK SUCTION-PRESSURE UNIT ACCEPTABLE

Manufacturer The Burdick Corporation, Milton, Wis

This unit is recommended by the firm for the administration of suction-pressure therapy, particularly in the treatment of peripheral vascular disease. It consists essentially of a pump for creating positive and negative pressures, a motor, and a



Burdick Suction Pressure Unit

boot or chamber in which the extremity is inserted for treatment. The combined weight for shipment is 550 pounds. About 300 to 400 watts of electrical energy is required.

The two-cylinder pump is driven by a one-half horse power motor. Either alternating or direct current may be used as a source of power. The power plant is housed in a steel cabinet on top of which are located the

controls. By the aid of a selection of cams, either the suction or the pressure period may be changed. From one to four boots may be run at the same time. The boots are made of aluminum, with windows of cellulose acetate. The weight of one boot is 35 pounds and the length is 28 inches. The manometer is placed on the boot and its readings check closely with mercury manometers connected with the pressure chamber. A safety vacuum valve is a part of each boot, eliminating the danger of applying excessive vacuum pressures. Molded, stiff cuffs are furnished in three different sizes. Six soft, sponge rubber adapters, which may be inserted in the cuffs, are available to accommodate the intermediate or small size thigh or arm.

This machine was examined in a clinic acceptable to the Council. It was operated under actual conditions and its performance appeared to be in accord with the claims made for it. Pressures between -80 and -20 mm of mercury may be obtained.

Some indications for the use of this type of apparatus appear to be acute vascular occlusion, freezing, and vascular diseases with major involvement of the large vessels. Contraindications appear to be thrombophlebitis, cellulitis or lymphangitis (acute or subacute), extensive destruction of the arteriolar or capillary vessels, advanced thromboangitis obliterans with capillary stasis, and advanced arteriosclerosis with capillary stasis and venous thrombosis.

This apparatus has a very limited field of usefulness and probably therefore does not belong in the armamentarium of the average physician. It belongs more in the realm of hospital equipment, since most of these rare arterial diseases are hospital cases.

In view of the satisfactory performance of this unit with reference to the treatment of acute vascular occlusion, freezing and vascular diseases with major involvement of the large vessels the Council on Physical Therapy voted to include the Burdick Suction-Pressure Unit in its list of accepted devices.

DRINKER INFANT RESPIRATOR ACCEPTABLE

Manufacturer Warren E. Collins, Inc., Boston

The Drinker Infant Respirator is an apparatus for producing and maintaining artificial respiration in infants. It consists mainly of a chamber of suitable size to accommodate an infant. Insulated heating elements are provided for maintaining body temperature. When in operation, it is entirely closed except for the opening through which the infant's head protrudes. The pump which creates a vacuum and a slight pressure is operated by a motor and alternately exhausts the air from and returns it to the chamber. The negative pressure causes an expansion of the chest walls of the infant, permitting atmospheric air to enter the nostrils and mouth and hence into the

lungs. The products of respiration are exhaled when the vacuum is released in the chamber and the chest walls contract. Thus a moderate degree of measured negative pressure alternating rhythmically with positive pressure is maintained for a long period. The device is equipped with a heating element enabling it to be used as an incubator. A constant temperature is readily produced and easily maintained, and the rate and depth of breathing may be adjusted.

The machine was carefully investigated in twelve cases in a clinic acceptable to the Council. Included in this series were cases of simple apnea, several cases of asphyxia livida, one premature infant and one baby having asphyxia pallida. All the infants survived and were discharged from the hospital in satisfactory condition.

Preparation for mechanically induced artificial respiration consisted in cleaning the infant's air passages of any obstructing material. This was effected in the most gentle manner. In one case a soft tracheal catheter was left in the trachea during the operation of the machine. At times oxygen or carbon dioxide and oxygen were also used in association with the respirator. Both negative and positive pressures, rather than just the negative pressure, were employed, the two at the same pressure. This pressure varied from 25 to 45 respirations per minute. The slower rate seemed better.

Three principles govern the treatment of those infants needing aid: (1) clearance of the air passages, (2) maintenance of body heat, and (3) provision of a supply of oxygen to the blood. After removing obstruction, artificial inflation and deflation of the lungs and a tracheal catheter are used very infrequently.

The respirator is a valuable adjunct when efforts at resuscitation must be persisted in for a long time. Apparently, some patients have completely recovered after four hours of mouth to lung insufflation, combined with manual artificial respiration. The apparatus would save much time and energy. It seems valuable with premature and immature infants, and in babies who have breathed irregularly and with shallow inspirations, it apparently stimulates deeper, more frequent and regular respirations. In a previously, absolutely nonaerated lung it is questionable whether the apparatus can produce any great degree of alveolar expansion. It will not initiate natural respiration.

The Council believes the danger of the production of emphysema and pneumothorax from rupture of the alveoli during mechanical artificial respiration to be slight, but nevertheless possible. As far as can be determined from the Council's investigation, the apparatus probably should not be used in infants having intracranial injury and hemorrhage. These conditions might conceivably be aggravated by the forced action of the respirator.

In view of its favorable performance, the Council on Physical Therapy voted to include the Drinker Infant Respirator in its list of accepted devices.



Drinker Infant Respirator

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORT

PAUL NICHOLAS LEECH Secretary

STATUS OF PICROTOXIN

Report of the Council on Pharmacy and Chemistry

Picrotoxin which is an extremely active poison, has long been proposed for use in a variety of conditions, including poisoning with chloral hydrate but a wide experience has always resulted in its falling into practical disuse. As long ago as 1909 it was proposed for inclusion in New and Nonofficial Remedies as useful in the treatment of tuberculosis and in epilepsy. The Council refused recognition because of the likelihood that the drug would do more harm than good.

Calling attention to the recent work of Maloney and others indicating that picrotoxin may have a certain value in com-

bating the acute toxic effects arising from overdosage with barbitol and its derivatives, Eli Lilly & Company asked the Council to consider Ampoules Picrotoxin (Lilly) for admission to New and Nonofficial Remedies as an agent for use in this condition. The firm stated "It will be emphasized that the clinical use of picrotoxin is still in the experimental stage and that Ampoules Picrotoxin are made available solely to facilitate further investigation." It was pointed out to the firm that such investigation should be carried out by workers in hospitals or other institutions equipped for scientific work and not by the general practitioner.

The Council's referee called attention to the clinical report of Arnett (*THE JOURNAL*, May 20, 1933, p 1593), pointing out that it presents so many unknown factors as to be of no value beyond that of being suggestive of the possible value of picrotoxin in the treatment of barbitol poisoning if indeed it is that since Arnett used various measures and there is no evidence that his patient took a fatal dose of Amytal, certainly not that a fatal dose had been absorbed before the stomach was emptied. The referee also pointed out that wide differences in effectiveness had been found by Maloney in the use of picrotoxin against different barbiturates—negligible, for instance, against phenobarbital and many times greater against Nostal. Much more should be known about this antagonism before the Council could be justified in accepting Picrotoxin for distribution to the general practitioner.

The Council does not wish to imply a belief that picrotoxin is of no value in the treatment of barbitol poisoning. It awaits the development of further evidence in the work of competent investigators. The Council is, however, convinced that the evidence now available for this use does not justify the placing of a marketed product in the hands of the general practitioner irrespective of his facilities for using it with the greatest benefit to his patient, for determining its therapeutic value and contributing the evidence in a satisfactory way.

When Eli Lilly & Company was informed of the Council's attitude in the matter of offering picrotoxin to the general practitioner, the firm announced its intention of withdrawing its Picrotoxin Ampoules from the market.

The Council desires to express its appreciation of this enlightened action on the part of the firm and to voice the hope that other manufacturers of pharmaceuticals will refrain from making picrotoxin generally available until competent investigators have cleared up the questions of its safety and clinical effectiveness, especially in the treatment of acute poisoning from barbitol derivatives.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

ANAEROBIC ANTITOXIN (See New and Nonofficial Remedies, 1935, p 366)

E. R. Squibb & Sons, New York, N. Y.

Gas Gangrene Antitoxin—Prepared from the serum of horses which have been immunized against the toxins of *Cl. Welchii* (perfringens) and *Cl. oedematis maligni* (vibrio septique). After the desired degree of potency is obtained the horses are bled the plasma is separated and the serum prepared in a manner similar to that used for other antitoxic sera. The product is concentrated and refined by a method which is similar to that used for diphtheria antitoxin. As a preservative 0.5 per cent phenol is added. Marketed in packages of one vial containing 10 000 units of *Clostridium Welchii* antitoxin and 10 000 units of *Clostridium oedematis maligni* antitoxin.

Dosage—The contents of one vial or more injected intravenously intramuscularly or intraperitoneally, at intervals of twenty-four to forty-eight hours, according to the requirements of the individual case.

Tetanus-Gas Gangrene Antitoxin—Prepared from the serum of horses which have been immunized against the toxins of *Cl. tetani* (tetanus), *Cl. Welchii* (perfringens) and *Cl. oedematis maligni* (vibrio septique). After the desired degree of potency is obtained the horses are bled the plasma separated and the serum prepared in a manner similar to that used for other antitoxic sera. The product is concentrated and refined by a method which is similar to that used for diphtheria antitoxin. As a preservative, 0.5 per cent phenol is added. Marketed in packages of one syringe containing 1 500 units of *Clostridium tetani* antitoxin 2 000 units of *Clostridium Welchii* antitoxin and 2 000 units of *Clostridium oedematis maligni* antitoxin.

Dosage—The contents of one syringe injected subcutaneously or intramuscularly as promptly as possible after injury and repeated once or twice at seven-day intervals if further danger of infection is present.

Council on Foods

CHANGE IN NAME OF COMMITTEE ON FOODS TO COUNCIL ON FOODS

On the recommendation of the Committee on Policy, Rules and Procedure (representing the Council on Pharmacy and Chemistry, the Council on Physical Therapy and the Committee on Foods) the Committee voted that it would be advantageous to change the name "Committee on Foods" to "Council on Foods." The name "Council" gives to this group a title uniform with that established by the Association for similar bodies. The Committee transmitted this recommendation to the Board of Trustees. The Board, at the Kansas City meeting, ratified the change, which took effect July 1, 1936.



Old seal



New seal

The seal of the Council on Foods is identical with the older seal of the Committee except for the change in name. New typographic plates have been prepared and may be secured from the Association headquarters. All possible consideration will be given cooperating firms to make the change in the seal, and for a reasonable time they will be permitted to continue to use the acceptable labels and advertising bearing the old seal of the Committee on Foods.

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REVISED WORDING OF ITS EARLIER DECISION ON ENERGY CLAIMS

FRANKLIN C. BING, Secretary

ENERGY CLAIMS FOR FOODS

All foods except the simple mineral foods and water contain chemical energy available for use by the healthy body to support the many activities and life processes and incidentally to maintain temperature. This use of the term "energy" in defining the caloric energy value of foods should not be confused with the popular usage signifying activity, vitality, strength, vigor or endurance. These conditions depend on many factors, including freedom from disease, natural constitution, physical environment, training, habits and others. Good nutritive condition, a necessity for health, requires far more than food energy only, all the nutritional essentials of a complete, well balanced diet, in adequate amounts, are demanded.

Food advertising should correctly inform the public of the energy values of foods in carefully chosen terms that may be properly interpreted. The distinction between the caloric and popular senses of the word "energy" must be recognized and observed.

The advertisers of food products should also take cognizance of the fact that limitation of the energy intake is essential for reduction of body weight. There are no foods that burn up body fat. This is burned only when the total energy intake is reduced to a point at which the body is forced to draw on its own stores for fuel. Furthermore the time of the day when food is eaten has nothing to do with the production of body fat. Regardless of the number of meals eaten, the total energy value of the day's food intake will determine whether the diet is fattening or reducing.

The expression 'Provides energy' or 'Furnishes energy' is acceptable when it is clearly indicated by appropriate modifying phrases that 'food energy' or 'calories' is meant. In general, ordinary foods except water and salt are sources of energy. Statements of calories per unit weight are useful as indicating relative economy of different foods as sources of energy, but for healthy persons calories from one food are not to be regarded as of more value than those from any other food.

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SATURDAY, AUGUST 1, 1936

ORIGIN OF BENCE JONES PROTEIN

Bence Jones protein is an albuminous substance which appears in the urine under certain pathologic conditions. The material is characterized by precipitation at a relatively low temperature (from 40 to 50 C) and resolution as the temperature of the medium approaches the boiling point. The presence of this protein in the urine has been of clinical aid in the diagnosis of multiple myeloma. This protein material escapes catabolism and passes the kidneys in amounts so great that the nitrogen excreted in this form may amount to a third or more of the total nitrogen excreted.

Although it is a highly complex substance forming colloidal solutions, it may be passed in large quantities for long periods by kidneys which remain impervious to plasma proteins and which are, to all appearances at least, histologically intact. The question of the origin of Bence Jones protein is of particular interest. Is the protein of endogenous or of exogenous origin? Is it derived from the serum proteins? Is Bence Jones protein present in the normal organism, in the normal bone marrow, or does it arise as a manifestation of an alteration of the normal processes of protein metabolism?

The chemistry of Bence Jones protein has been rather carefully investigated as a means of approach to the problem of its origin. An estimated molecular weight of 35,000 for the substance strongly suggests that this material might well be a product of the cleavage of blood proteins or identical, perhaps, with serum albumin. This view is supported by similarities in amino acid composition between the serum proteins and Bence Jones protein. However, immunologic studies that have been conducted on purified Bence Jones protein indicate that it is a distinct chemical entity apart from the serum proteins. Precipitin, complement fixation and anaphylactic reactions establish crystalline Bence Jones protein to be a single antigen, distinct from the proteins of normal human serum.

Impure preparations of the protein may occasionally react immunologically as though they contained traces of serum proteins.

The rather conclusive nature of the evidence indicating the nonidentity of Bence Jones protein with blood proteins has led investigators to study the most probable site of origin of the material, the bone marrow. It was early possible to demonstrate the presence of a Bence Jones-like protein in myelomatous tissue. Only recently, however, has this protein been demonstrated in normal bone marrow. Meyler,¹ working in the Netherlands, has succeeded in obtaining extracts of both calf's bone marrow and the bone marrow of normal man and has demonstrated that the extracts contain a protein that has properties identical with those assigned to Bence Jones protein. The behavior of the extract toward heat, and variations in this heat reaction by alterations in electrolyte concentration of the protein solution, were characteristic of Bence Jones protein. Furthermore, it was possible to produce an experimental Bence Jones proteinuria in rabbits by the injection of the bone marrow extract. This observation is in harmony with earlier reports that injected Bence Jones protein is excreted to a considerable extent unchanged following injection into an experimental animal. The author presents some evidence which indicates that the Bence Jones protein is produced in normal bone marrow as part of the lymphocytes and other leukocytes. This would explain the presence of Bence Jones proteinuria not only in cases of multiple myeloma but also in reported instances of lymphatic and myeloid leukemia and empyema, as the white corpuscles are the substrate common to these diseases. Meyler has succeeded in detecting Bence Jones protein in the pus of abscesses and empyema, and also in the lymphocytes and other leukocytes in cases of leukemia. Injection of an extract of lymphocytes from a patient with lymphatic leukemia into a rabbit produced Bence Jones proteinuria in the animal. The differences in the degree of proteinuria in cases of multiple myeloma as contrasted with leukemia and empyema are explained on the basis of the quantity of Bence Jones protein produced by the white cells. When bone marrow is broken off (in cases of tumor metastasis) or when the white cells are destroyed (in leukemia and empyema), Bence Jones proteinuria does not appear, as a rule, as the quantity of the protein produced is relatively small. In cases of multiple myeloma, however, the white cell may have the power to produce a large quantity of Bence Jones protein, not all of which can be metabolized, the excess is consequently excreted in part by the kidney. This investigation offers an interesting suggestion concerning the origin of Bence Jones protein and has correlated many of the existing clinical facts regarding this type of proteinuria.

¹ Meyler, L. Bence Jones Proteinuria. Arch. Int. Med. 57: 4 (April) 1936.

FACTORS AFFECTING BASAL
METABOLISM

Factors such as age, diet, climate, race and menstruation exert a significant effect on the basal metabolism of the normal human subject. Each of these has received considerable attention, particularly the questions of age and of diet. The effect of age has been adequately established. There is a steady increase during infancy from the low values of approximately 25 calories an hour per square meter of body surface obtained on new-born infants to a maximum value somewhat greater than 50 calories an hour per square meter of body surface at an age of between 3 and 5 years. Thereafter a gradual decrease in basal metabolism occurs during childhood, middle age and old age. The exceedingly low value of 21.1 calories an hour per square meter of body surface has recently been obtained¹ in a woman 106 years old.

The decrease in basal metabolism during childhood is constant with the exception of a temporary rise that has been frequently described in both boys and girls at about the age of puberty. The reason for the pubertal rise is not known with certainty, some believe that it may be associated with hyperactivity of the thyroid gland at this period, others believe that it may be related to the increased rate of growth frequently occurring in the adolescent. A recent study² yields some information regarding the latter view. Periodic determinations of the basal metabolism were made in a group of thirty-nine growing, adolescent girls ranging in age from 14 to 16 years, chosen so that puberty itself was not a conflicting factor. The metabolism data were then related to age, rate of growth in stature and time since menstruation first occurred. The data thus obtained showed that the basal heat production, expressed either as calories for twenty-four hours, calories per kilogram of body weight for twenty-four hours, or calories per square meter of body surface for twenty-four hours, decreased slightly but consistently with age. There were no constant trends or regular differences between the values, however, when they were classified either according to time since the first menstruation, the age of the first menstruation, or the age of maximum increment of growth in stature. Thus there is no indication in these data of a relation between the rate of adolescent growth and basal metabolism. Other factors must be concerned in producing the frequently observed transient rise in basal heat production observed at puberty.

The nature of the diet may also exert a profound influence on the basal metabolism of the normal human subject. The basal metabolic rate of strict vegetarians, for example, is consistently some 11 per cent lower than that of persons consuming an ordinary unrestricted diet.³ A similar lowered rate of metabolism has been

repeatedly observed in those receiving a submaintenance diet. The decrease in basal metabolism in undernutrition might lead to the belief that a rise would occur in "overnutrition." Indeed, many have long believed that overnourishment is accompanied by a "luxus konsumption," or a luxury consumption of energy. According to this view an excess of nourishment would be burned up and not stored in the body. The more recent work indicates that the attractive theory of "luxus konsumption" is still not adequately demonstrated.

A current investigation⁴ adds further interesting information regarding the effect of dietary intake on basal metabolism. The study was made on a group of thirty-three healthy children whose ages ranged from 4 to 15 years and in whom it was possible to control the diet at will. The effect on basal metabolism of both undernutrition and overnutrition due to the excessive eating of carbohydrate, fat or protein was determined. The feeding of a submaintenance diet was followed by the expected decrease in the basal heat production. The addition to an adequate diet of excessive amounts of either carbohydrate or fat caused little if any significant change in basal metabolism. However, the feeding of large quantities of protein was followed by an increase in basal heat production. These results indicate that overnutrition due to carbohydrate or fat causes no significant elevation in basal metabolism, whereas excessive amounts of protein produce a distinct increase, at least in the growing child. This observation adds further to the evidence attaching special significance to the protein content of the diet as a factor affecting the basal heat production.

NEW METHODS OF SCIENTIFIC PUBLICATION AND BIBLIOGRAPHY

The dissemination of new scientific knowledge is second in importance only to research itself. The results of research cannot be of full value in the advancement of science unless they are made known. Publication is the first step in the dissemination of knowledge, the next step is the incorporation of published matter into the bibliography of the subject with which it deals. At present scientific journals cannot always publish all the worthy material offered and in many cases *more prompt publication than now possible* may be desirable, also in certain branches of science the *bibliographic services are inadequate* and may become more so. Fortunately the last statement does not apply to medicine, because the bibliography of the older literature is well covered by the *Index Catalogue* and that of the current literature by the *Quarterly Cumulative Index Medicus*, published by the American Medical Association. A comprehensive and ambitious plan to improve and expand the facilities for scientific publication and bibliography has been inaugurated by Science Service. The new enterprise will center in the

¹ Matson J. R. and Hitchcock F. A. Basal Metabolism in Old Age. *Am J Physiol* 110: 329 (Dec.) 1935.

² Lewis Carolyn A. Relation Between Basal Metabolism and Adolescent Growth. *Am J Dis Child* 51: 1014 (May) 1936.

³ Wakeham Glen and Jensen L. O. The Basal Metabolic Rates of Vegetarians. *J Biol Chem* 97: 155 (July) 1932.

⁴ Johnston J. A. and Maroney J. W. Relationship of Basal Metabolism to Dietary Intake. *Am J Dis Child* 51: 1039 (May) 1936.

Documentation Division of Science Service, for the work of which the Chemical Foundation has given a grant of \$15,000.¹ Documentation has been defined in the broad sense as "the assembling, classification and distribution of documents of all sorts in all fields of human activity." By way of enlarging the facilities for scientific publication the Documentation Division has developed photographic mechanisms for the prompt issuance of papers and monographs that existing periodicals in various branches of science cannot publish promptly if at all. The plans are based on cooperation with existing periodicals societies and institutions. Microfilms are made of manuscripts, from which prints can be produced for reading in special machines as well as projection prints for direct reading and general distribution. The films will be permanent and, as orders can be filled as received, no storage of printed stock will be necessary. The process just outlined is used also for copying printed and other matter at small expense. The process is already in use in certain libraries for research purposes and in place of inter-library loans. Thus the Bibliofilm Service of the U. S. Department of Agriculture is said to give excellent results. Eventually it may prove practicable and economical to publish certain periodicals by microphotographic methods. It is possible to reproduce by microphotography say 150 or more pages of ordinary typescript on an area 3 by 5 inches in extent, from such negatives, prints can be made for reading machines as well as for direct reading. Special attention is given to the development of these methods in cooperation with Dr. R. H. Drager of the medical corps of the navy. The outlook promises well for the development of new and helpful methods of reproducing reading matter on a large scale. It will be of interest to learn how the problem will be solved of reproducing illustrations, which are such an important feature in medical and other biologic literature.

Science Service is interested also in scientific bibliography. It dreams of a complete, centralized international bibliography, of a master file of cards punched and marked to actuate an assorting mechanism to which is linked a duplicating machine from which bibliographic lists can be delivered instantly to order as desired. Assuming the scheme to be practical, what shall be done with past and present bibliographies? No attempt will be made to discuss details at this time, but the following statement of proposed bibliographic investigations may be of interest: the extent and adequacy of the bibliographies of the scientific literatures of the past, current bibliographic services and the possibility of their cooperation in new plans, the methods of classification, bibliographic mechanisms (including devices for filing and finding, microphotographic cameras, printers) the problems of language and copy-

rights, methods of international cooperation. Here is a huge task and "the possible inauguration of the bibliographic project is a matter of years and considerable expenditure of money."

Current Comment

END RESULTS OF DIAGNOSIS OF NEUROSIS

The term neurosis is still frequently applied purely as a diagnosis of exclusion. The adequacy of this method is, however, open to serious question. In an attempt to throw more light on this problem, Comroe¹ has recently reported a follow-up study of 250 cases diagnosed as neurosis. Satisfactory replies were obtained from 100, or 40 per cent, of the series. Of the 100 cases in which a diagnosis of neurosis had been made without important accompanying physical diagnosis, definite improvement or symptomatic cure in forty had followed hospital or dispensary care. In thirty-four the condition had remained in statu quo, two were definitely symptomatically worse, and in twenty-four definite evidence of organic disease had become manifest since discharge. Of the latter group the time interval between the patient's previous discharge from the hospital and the discovery of the organic pathologic changes was never more than two years and averaged eight months. In seven of these cases death occurred and was attributed to (1) abdominal carcinomatosis, (2) carcinoma of the liver, (3) gastric carcinoma, (4) disease of the coronary arteries, (5) Addison's disease, (6) pellagra and (7) myocardial degeneration. Of the remaining seventeen cases in which evidence of organic disease had developed, the diagnoses were (1) diabetes mellitus, (2) gallbladder disease (three cases, all proved by operation), (3) duodenal ulcer, (4) pulmonary tuberculosis (two cases), (5) ureteral stone, (6) chronic appendicitis, (7) Buerger's disease, (8) suppurative mesenteric adenitis, (9) cardiovascular renal disease with hypertension, (10) renal calculus, (11) uterine myoma, (12) pregnancy, (13) mitral stenosis and (14) toxic goiter. All these diagnoses were confirmed by laboratory, roentgen or operative results. Analysis of the previous records in these cases disclosed symptoms which in most instances might or should have led to the proper diagnosis at the time of the original examination. The author points out that this is an exceptionally high percentage of mistaken diagnoses and that the diagnosis of neurosis by exclusion is fraught with considerable danger. It is important, therefore, to recognize the definite characteristics of neurosis, the most important of which are the anxiety state, neurasthenia, compulsion neurosis and hysteria. Neurosis is in reality an emotional instability out of proportion to actual organic impairment. The point is frequently overlooked however, that neurosis and organic pathologic changes often coexist and either may be the forerunner of the other or they may be entirely separate from each other. The points brought out by this simple presentation of follow-up information deserve the careful consideration of every practicing physician.

¹ Davis Watson. Microphotographic Duplication in the Service of Science. *Science* 83: 402 (May 1) 1936. Activities of Science Service in Scientific Documentation. *J. Soc. Motion Picture Engineers* 20: 77 (July) 1934. Dräger R. H. Some Technical Aspects of Microphotography. *ibid.* 20: 84 (July) 1936.

¹ Comroe B. J. Follow Up Study of 100 Patients Diagnosed as Neurosis. *J. Nerv. & Ment. Dis.* 83: 679 (June) 1936.

Medical Economics

THE ST LOUIS MEDICAL SOCIETY PLAN

MAJOR G SEELIG M D
St Louis

The St. Louis Medical Society toward the end of 1933 created, by resolution, the Code and Contract Board (the name of which was later changed to the Medical Economics Board), made up of three members. This board established as its objective a survey of all the factors entering into the economic fabric of medical practice and arranged a close cooperative alliance with such other correlated committees of the St. Louis Medical Society as the Medicolegal, Censors, Ethics and Hospital committees. It furthermore appointed subcommittees for the study of special topics. To one of these subcommittees was delegated the task of collecting, studying and evaluating the various schemes and plans that were rapidly developing throughout the country and that were being tried out as ameliorative economic measures. The Medical Economics Board also maintained a close contact with the Missouri State Medical Association and the American Medical Association, and both of these agencies have been helpful throughout the period of organization.

As a result of the activities of the Medical Economics Board of the St. Louis Medical Society, the Medical Economic Security Administration was established comprising three bureaus: the Medical-Dental Service Bureau, Group Hospital Service and Central Admitting Bureau. Up to date the first two of these bureaus have been established and are functioning satisfactorily. The board of directors of the Medical-Dental Bureau is made up exclusively of members of the St. Louis Medical Society, the St. Louis County Medical Society, the Mound City Forum (Negro Medical Society) and the St. Louis Dental Society. Through its agency, patients are enabled to meet their doctor and their hospital bills on a basis of time budgeting. The results to date indicate an eagerness on the part of a large group of the working class to avail themselves of this opportunity. All financial arrangements are completed only after they have met with the assent of the individual doctor, dentist or hospital concerned in the problem of the patient seeking help.

The Board of Group Hospital Service is made up of representatives of the public, the hospitals that are in the group: the St. Louis Medical Society and the St. Louis County Medical Society. In essence, the activity of Group Hospital Service consists in providing for employees in groups of ten, three weeks free hospital service (exclusive of physicians, roentgenologists, pathologists' and special anesthetists' fees) on the payment of \$9 a year, plus \$1 registration fee by each individual who enrolls. The response to this activity has thus far been most encouraging and we feel that we in St. Louis are on the road to provide sane, satisfactory and highly desirable hospital care for that great body of the public which is in a state of economic fixation.

Our whole scheme is based on the so-called Washington Plan. We have, however, introduced such modifications as have been demonstrated to be desirable as a result of the experience of the Washington group. For example, Group Hospital Service in St. Louis will not enroll, as members, any group that is working under any prepayment plan or other scheme that denies free choice, by the group members of physician or hospital. The hospitals constituting Group Hospital Service must agree not to extend any preferential contracts to industrial organizations, and employees are enrolled by Group Hospital Service only on the provision that their dues are to be paid

by their employers through a system of payroll deduction at the source. An exception is made in the instance of government employees, on account of the legal prohibition against payroll deductions by government agencies.

The plans outlined are much too complex to permit detailed description within short compass. The important points that merit consideration and that we in St. Louis believe deserve commendation are the following. The public, the hospitals, industry and commerce have accepted the lead of the St. Louis Medical Society, in an attempt to break down the impasse created by economic factors that were rapidly doing great damage to the public health, happiness and comfort. The St. Louis Medical Society has succeeded in no small degree in convincing the thinking public that organized medicine is concerned chiefly and primarily with public health and only secondarily with those material benefits which flow indirectly to the physicians themselves and without which the individual practitioners cannot possibly carry on. The organized profession of St. Louis has never assumed an attitude of dominating autocracy, but on the contrary, has been able to work smoothly and cooperatively with every other health agency in the city and with every group of intelligent laymen whose chief interests lie beyond the field of public health, the organized profession however, has modestly but none the less specifically tried to make it plain that health and disease come within their bailiwick as experts, just as bridge and levee construction comes within the realm of the engineers, and that any scheme or plan that aims at health security and that ignores the counsels of medical experts must of necessity rest on a dangerously insecure foundation.

4952 Park View Place

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

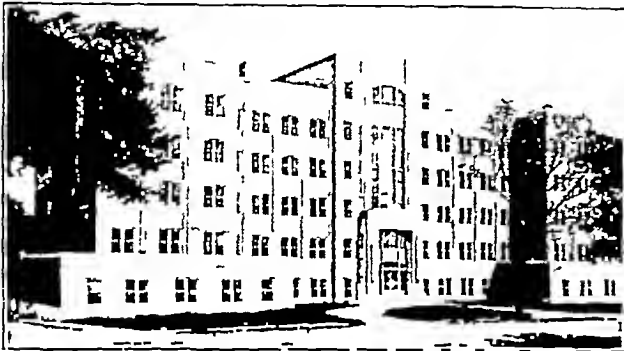
Personal—Dr. Walter A. Minsch, Athens, has resigned as health officer of Limestone County on account of illness. Dr. William J. B. Owings, Vernon, has been appointed health officer of Escambia County, succeeding Dr. Edward F. Goldsmith, Jr., Brewton, who resigned to engage in private practice in Pritchard.

Outbreak of Poliomyelitis—With five new cases of poliomyelitis, the total number of cases in Alabama was 199 with twelve deaths. The *Chicago Tribune* reported July 26. The outbreak had by the middle of July involved about ten counties in the northwestern corner of the state and had spread to three adjoining counties in Tennessee and Mississippi to a slight degree. According to the U. S. Public Health Service, the outbreak appears to be comparable to that which occurred in north central North Carolina last year in intensity, mildness of the individual cases, high proportion of rural cases and low age distribution. It is presumably a favorable indication that the Alabama outbreak became apparent some four weeks later in the season than did the outbreak in North Carolina.

ARKANSAS

Report of Impostor Who Collects Instruments—Dr. Jones H. Lamb, Paragould, reports that a man posing as manager and owner of Copley and Company, reputedly an instrument supply concern in Nashville, Tenn., has been calling on physicians to collect instruments for adjustment and polishing. A letter from a Nashville supply house, answering an inquiry from Dr. Lamb when he did not receive his instruments state that the firm of Copley and Company is not known in that city.

Dedication of Medical School Building—Dr Thomas M Pinson, Kerrville, Texas, the first and only graduate of the school fifty-six years ago was guest of honor at the recent dedication of the new building of the University of Arkansas School of Medicine, Little Rock. Other speakers included Gov J Marion Futrell, Mrs J W Velvin, president of the Arkansas Federation of Women's Clubs, John C Futrell LL.D. president, University of Arkansas, Lieut Gov Lee Cazort and Mr Marion Wasson, a member of the board of trustees. Dr Frank Vinsonhaler, dean of the medical school, presided. The building, which is five stories high with a sixth floor in the center, was constructed at a cost of \$500,000. Its exterior is of buff-colored face brick trimmed with Arkansas limestone. The Isaac Folsom Clinic occupies the first floor and part of the second, which is the main floor. On the main floor are located the offices of administration, library and cafeteria. The pathology and bacteriology departments occupy the third floor, containing laboratories and offices for each, a necropsy room, a museum of pathology and an amphitheater. The fourth floor houses the departments of physiologic chemistry and physiology



New medical school building

and pharmacology, with laboratories and offices for each. The departments of anatomy and histology with laboratories, offices and a lecture room, are located on the fifth floor. The sixth floor provides space for research laboratories and cages for dogs and other animals; the department of operative surgery is also located on this floor.

COLORADO

Radiologic Conference—The midsummer radiologic conference sponsored by the Denver Radiological Club will be held at the Hotel Shirley-Savoy, Denver, August 5-7. Guest speakers on the program will include:

Dr Eugene P. Pendergrass, Philadelphia, Chaoul Therapy as Practiced in European Clinics.
Dr John D. Camp, Rochester, Minn., Roentgenologic Findings in Patients with Sciatica and Low Back Pain.
Dr James M. Martin, Dallas, Texas, Radiation Therapy in the Treatment of Carcinoma of the Intra Oral Cavity, Larynx and Pharynx.
Dr Clyde K. Emery, Los Angeles, Management of Carcinomas of the Breast.

Visiting speakers of the Radiological Club of Omaha include Drs Howard B. Hunt, Anders P. Overgaard, Albert F. Tyler, Tenney, Tennyson, Harris, James F. Kelly and Edward W. Rowe, Lincoln. Wednesday evening there will be a joint meeting with the Medical Society of the City and County of Denver with Dr Theodore E. Beyer, president of the society, presiding. Speakers will be Dr Camp and Dr Martin on "Osteoporosis and Its Importance in Medical Diagnosis" and "The Physician's Responsibility to the Cancer Patient" respectively. Thursday morning will be devoted to a symposium on gastrointestinal disease and Thursday afternoon to a round table discussion followed by a symposium on diagnostic radiology. A round table discussion Friday afternoon will deal with therapeutic radiology.

CONNECTICUT

Personal—Dr Marvin A. Stevens, formerly football coach at Yale University and since 1932 on the coaching staff of New York University, has been appointed assistant clinical professor of orthopedic surgery, Yale University School of Medicine, New Haven. He has also been made orthopedist in the Yale University Department of Health and to the staff of New Haven Hospital.

Relic from Charter Oak Presented to Hartford—The city of Hartford was presented by Dr Charles Coffing Beach with a three foot piece of wood from the original Charter Oak. June 16 the three hundredth anniversary of Thomas Hooker's

arrival in Hartford. According to the *New England Journal of Medicine*, this relic includes part of a knot hole in which is believed to have been hidden the original charter in 1636. The tree was blown down in a storm in August 1856 and this relic has been passed on through the Buckleys, Stuarts and Beaches. The piece presented to the city stands encased in a glass cabinet, on the back of which is embossed a brief history of the tree.

GEORGIA

Society News—Dr Shelley C. Davis, Atlanta, read a paper on "The Chronically Diseased Cervix as a Focal Point of Infection" before the Fulton County Medical Society in Atlanta July 16. The society was addressed, July 2, by Drs Thomas E. McGeachy, Decatur, and J. Edgar Paulin, Atlanta; their paper was entitled "Dissecting Aneurysm of the Aorta."—At a meeting of the Thomas County Medical Society in Meigs, June 17, Drs Ernest F. Wahl, Thomasville, read a paper on "Effect of Nervous Influences on Digestion" and William W. Jarrell, "Treatment of Rural Syphilis." Dr James R. Dykes, Thomasville, discussed "A Proposed Venereal Disease Clinic for Thomas County."—The Sixth District Medical Society was addressed at Dublin, June 24, among others by Drs Bernard L. Helton, Sandersville, on "Diathermy in General Practice," and Robert G. Ferrell Jr., Dublin, "Acute Osteomyelitis."—The Burke-Jenkins-Screven Counties Medical Society was addressed at Millen, June 11, by Drs Quimby A. Mulkey, Millen, on "Diagnosis and Treatment of Head Injuries," and Herbert C. Schenck, Atlanta, "Present Status of Tuberculosis in Georgia with Suggestion for Improvement."—The Carroll County Medical Society sponsored a public lecture at the Carroll Theater, Carrollton, June 23; Dr Hal M. Davison, Atlanta, spoke on "Malaria Control."

ILLINOIS

Personal—Dr Lawrence F. Isenhardt has been named health officer of Mount Carroll, succeeding Dr Samuel P. Colehour.—Dr Kenneth G. Bulley of the staff of the Wisconsin State Sanatorium, Statesan, Wis., has been named superintendent of Kane County Springbrook Sanatorium, Aurora.

Study of Traffic Accidents—The University of Illinois this autumn will inaugurate a study of the causes of traffic accidents and the efficacy of methods to reduce the motor toll, the *Chicago Tribune* reports. Students will be required to pass a driver's license examination to obtain a school permit to use an automobile and the cars will have to pass a mechanical test. A detailed record will be kept of all available pertinent information on the 500 automobiles for which student permits are issued. It is hoped to gain information of value to street safety engineers.

Society News—The Sangamon County Medical Society held its annual picnic at the Wentworth Club and golf tournament at the Oakcrest Country Club, July 23.—The McHenry County Medical Society was addressed, July 16, by Dr Clifford G. Grulee, Evanston, on "Care of Premature Infants."—Dr George J. Musgrave, Chicago, discussed "Nasal Accessory Sinuses" before the Christian County Medical Society, July 23.—Dr M. Herbert Barker, Chicago, addressed the Whiteside County Medical Society, June 25, on "Treatment of Hypertension with Special Reference to the Cyanates."—At a meeting of the McLean County Medical Society in Bloomington, June 9, Dr Archibald L. Hoyne, Chicago, discussed "Treatment of Meningococcic Meningitis."—Dr Paul A. O'Leary, Rochester, Minn., discussed "Modern Treatment of Syphilis" before the Peoria City Medical Society, June 23.

CHICAGO

Annual Golf Tournament—The Chicago Medical Society will hold its annual golf tournament at Olympia Fields August 12. While many prizes will be awarded to members of the society and their guests, competition for the Van Derslice Cup is open only to past presidents, trustees, councilors alternate councilors and branch officers. The fee of \$4 includes the charge for dinner in the evening. All members of the society are urged to play in the tournament and bring their guests.

Campaign Against Rabies—A movement was launched to place antirabic serum on the list of free medicines furnished by Cook County. The *Chicago Tribune* reported July 25 as a step in the campaign now being waged against the disease by officials in Chicago and the county. A special campaign will be carried on against unmuzzled dogs with the adoption of an emergency ordinance permitting the destruction of any dog claimed within twenty-four hours and a quarantine has been

imposed forbidding the transportation of dogs into or out of Cook County. The *Tribune* reported, July 27, that 242 cases of dog bites had been reported within the previous two and one-half days.

KANSAS

Second Graduate Course—The Kansas State Board of Health opened its second graduate course in obstetrics and pediatrics in Salina, July 27, to continue for four weeks at weekly intervals. Other places where the course will be given are Ellsworth, Hays, Osborne and Concordia. Lectures in the course, which is financed by social security funds, will be given by Drs Leroy A. Calkins, professor of obstetrics and gynecology, University of Kansas School of Medicine and Lucius E. Eckles, Topeka.

Committee on Tuberculosis—The appointment of a committee on control of tuberculosis by the Kansas Medical Society was the outgrowth of a conference in Topeka May 26, attended by representatives of the state board of health, the Kansas Tuberculosis and Health Association, the Kansas Tuberculosis Sanatorium and the state medical society. The conference was called to consider means whereby these agencies could best coordinate their efforts in this field. The purpose of the committee will be to serve in an advisory capacity to the various groups engaged in tuberculosis work. Dr Howard L. Snyder, Winfield, president of the Kansas Medical Society, was named chairman ex officio, and Dr Charles F. Taylor, Norton, vice chairman. Other members appointed to date according to the state medical journal, are Drs Charles H. Lerrigo, Earle G. Brown and Forrest L. Loveland, all of Topeka; Harry L. Chambers, Lawrence, and Harold H. Jones, Winfield. The first meeting of the committee was to be held in June to discuss and organize activities for the coming year.

MAINE

Society News—At a meeting of the Aroostook County Medical Society in Houlton, June 11, Drs William V. Cox, Lewiston, discussed 'Diagnosis and Treatment of Brain Tumor' and Magnus F. Ridlon, Bangor, 'Carcinoma of the Uterus'.—Dr Julius C. Oram, Portland, addressed a recent meeting of the Portland Medical Club in Portland on gastro-intestinal manifestations of allergic conditions.

MARYLAND

Rocky Mountain Spotted Fever—Eight cases of Rocky Mountain spotted fever and three deaths have been reported in Maryland, up to July 1, according to *Baltimore Health News*. Since Jan. 1, 1930, 245 cases have been recorded in the state, twenty one of which have been fatal.

Typhoid Carriers—The names of sixteen typhoid carriers were added from January 1 to May 31 to the register kept by the state department of health. Ten of these were found in 1935 and six during the first five months of this year. Seventy-nine cases of the disease were traced to these sixteen carriers, sixty-seven to those discovered in 1935 and twelve to those found since the beginning of the current year. The register of typhoid carriers, begun in 1929, contains 153 names. Fifty-two of these were males and 101 females, to whom 642 cases of typhoid have been traced. The majority of cases occurred between 1911 and 1935 but the total includes fifteen cases in Cecil County in 1884 that were traced to a milk handler. The number of known active carriers in the counties on June 1 was 128, forty-one males and eighty-seven females. The number of cases traced to them is 551. A separate register of carriers discovered in Baltimore is kept by the city health department, the number of active carriers is twenty-one. According to the state department of health seventy-one carriers are housewives, eleven include cooks, domestics, a waiter, a market attendant, eighteen milk handlers, eight sea food handlers, three cannery workers, no occupation was listed for twenty-eight carriers. One of the carriers is 87 years of age and is believed to have been responsible for about fifty cases between 1916 and 1935.

MASSACHUSETTS

Anniversary of Student Medical Society—A dinner was recently held at the Harvard Club, Boston, to observe the one hundred and twenty-fifth anniversary of the Boylston Medical Society, which is probably the oldest students' medical school organization in this country. A new catalogue of the society was issued to commemorate the occasion. Speakers included Drs Henry Jackson Sr., George R. Minot and C. Sidney Burwell, dean of the Harvard Medical School and president-elect of the society. Dr John Lovett Morse, faculty president of the society in 1910 and toastmaster at the centennial cele-

bration, and Dr David Cheever, son of the late Dr David W. Cheever, who spoke at the centennial celebration, also gave addresses. Dr Jackson Jr., awarded the Boylston Prize for the year 1936-1937 to Mr. Barnard P. Todd for his dissertation on the etiology of rheumatic fever. The society was founded by Ward Nicholas Boylston, who also established the Boylston Medical Library. Mr. Boylston was a merchant in Boston.

MICHIGAN

State Society Night—The Calhoun County Medical Society was host to officers and committee members of the Michigan State Medical Society at a dinner meeting in Battle Creek, June 2. Speakers included:

Dr Grover C. Penberthy, Detroit, president of the state society. Five Year Program of the Michigan State Medical Society.
Dr Henry Look, Flint, chairman of the council. Advantages of Unity.
Dr Clifford T. Ekelund, Pontiac, secretary. Who Wants Socialized Medicine?
Dr James H. Dempster, Detroit, editor of the state journal. How Not to Write the Case History.

Dr Rollin C. Winslow, president of the Calhoun County Medical Society, presided at the meeting.

Medical Clubs Desire Charter—At a meeting of the medical clubs of Allegan and Van Buren counties in Allegan, June 17, the former voted to seek a charter to organize as the Allegan County Medical Society. The meeting followed golf and dinner at the Ot-Well-Egan Country Club. The afflicted-crippled child problem and the filter system were discussed, the speakers included Drs Louis Fernald, Foster Bay City, chairman, public relations committee of the state society, as guest, Enid T. Andrews, Kalamazoo; Roy H. Holmes, Muskegon; Aaron V. Wenger, Grand Rapids; and Mr. William J. Burns, Lansing, executive secretary of the state medical society.

NEW JERSEY

Personal—New Jersey delegates to the American Medical Association and Mr. Albert Skean, director of the Atlantic City Convention Bureau, were guests of honor at a dinner given in Atlantic City in appreciation of their efforts to bring the 1937 session of the Association to Atlantic City. The physicians were Drs. Walt P. Conaway and Hilton S. Read, Atlantic City; John F. Hagerty, Newark, and Ephraim R. Mulford, Burlington.

State Society President Resigns—Dr. Francis R. Hausling, Newark, who was installed as president of the Medical Society of New Jersey at the recent annual meeting, has resigned because of ill health and Dr. Spencer T. Snedecor, Hackensack, president-elect, has been declared president by the board of trustees. Dr. William G. Herrman, Asbury, as first vice president, has become president-elect. Dr. William J. Carrington, Atlantic City, first vice president. Dr. Edward M. Zeh, Hawkes, Newark, was made second vice president.

NEW YORK

Dr. Gregory Retires—Dr. Willis G. Gregory, dean of the University of Buffalo School of Pharmacy since 1890 and professor of pharmacy since 1886, retired this year, aged 79. Dr. Gregory graduated from the University of Buffalo School of Medicine in 1882 and took a degree in pharmacy in 1886. He was a member of the state board of pharmacy for thirty years and of the U. S. Pharmacopoeial Revision Committee from 1890 to 1920 and has been president of the New York State Pharmaceutical Association. He retains his teaching position at the university.

Physicians' Home Seeks Endowment—The corporation known as The Physicians' Home, which recently reorganized, plans a vigorous campaign to finance a permanent home for aged and infirm physicians. Dr. Charles Gordon Heyd is president and Drs. Warren Coleman and Silas F. Hallock are vice presidents of the corporation. Dr. Benjamin Wallace Hamilton is secretary and Dr. Joseph J. Eller, treasurer. All are of New York. The board of directors was enlarged from fourteen to thirty-three members from all parts of the state. The Physicians' Home, which was incorporated June 4, 1919, has found it possible to maintain only from four to seven guests. There has been a large waiting list. The present endowment is about \$130,000.

Society News—The Endicott Johnson Medical Department entertained the Broome County Medical Society, the Binghamton Academy of Medicine and the Binghamton Psychiatric Society, June 29, at the Binghamton Country Club. Major Gen. Charles R. Reynolds, surgeon general, U. S. Army, spoke on 'The Responsibility of the General Practitioner in the Scheme of National Defense.'—Dr. George H. Whipple,

Rochester, among others, addressed the Cavuga County Medical Society, June 18, on anemia—Dr Walter S. Thomas Clifton Springs addressed the Cortland County Medical Society, June 19, on Differential Diagnosis of the Adenopathies.—The Rockland County medical and bar associations held their annual joint meeting June 17 at the Rockland Country Club

OHIO

Occupational Disease Program—With an appropriation of funds under the Social Security Act, the Ohio State Department of Health has launched a program for control of occupational disease under the direction of the division of industrial hygiene. For the fiscal year begun July 1 \$28,000 was made available from federal funds, which with the departmental appropriation of \$5,200 made possible the addition to the staff of five technically trained persons and a secretary, with traveling expenses and an allowance for laboratory equipment and supplies. Dr. William Eugene Masters, Columbus, has been appointed medical supervisor and Dr. Kenneth D. Smith, recently health commissioner of the city of Marion, assistant medical supervisor. Other appointments are those of Mr. C. B. Young, Columbus, as chemical engineer, Mr. Clayton Smucker, Columbus, as chemist, and Mr. A. R. Morrison, also a chemical engineer as technical assistant. All these men have recently had a month of intensive training under the technical staff of the U. S. Public Health Service. The program is divided into immediate and long range projects, the first covering investigation of the more urgent or profound cases or complaints of occupational disease, the second, physical examinations of workers subjected to important hazards and various types of surveys. The first project of the latter category will be a study of silicosis, for which a newly equipped laboratory has been set up in Columbus and a traveling automobile laboratory for field examinations provided. Dr. Emery R. Hayhurst, chief of the division of industrial hygiene and consultant in occupational diseases, is in charge of the expanded program.

OREGON

Personal—Dr. Neil F. Black of the U. S. Public Health Service, stationed at San Francisco, has been appointed health officer of Klamath County.—Dr. Rachel C. Sparks, physician to Oregon State College, Corvallis, for eight years, has severed her connections to devote her time to private practice.

Society News—At a meeting of the Jackson County Medical Society in Medford June 5, Dr. Richard B. Dillehunt, Portland, gave an address on abnormal conditions in children's feet. Dr. Henry H. Dixon, Portland, discussed psychiatric problems.—Dr. Morris Fishbein, Chicago, editor of *THE JOURNAL*, addressed the Multnomah County Medical Society, Portland, July 1, on "Organized Medicine and New Forms of Medical Practice."

TENNESSEE

Flexner Lectures at Vanderbilt—Dr. Thorvald Madsen, director of the State Serum Institute of Denmark, Copenhagen, will deliver the fifth series of Abraham Flexner Lectures at Vanderbilt University School of Medicine during the 1936-1937 session. Dr. Madsen was educated in Copenhagen and has been director of the serum institute since 1902. He has been chairman of the Health Section of the League of Nations since 1921.

Joint Medical Meeting—The medical societies of Alcorn and Tishomingo counties in Mississippi, the Five County Medical Society (Hardin, Lawrence, Lewis, Perry and Wayne counties) and the Tri-County Medical Society (Chester, Decatur and Weakley counties) held a joint meeting at Shiloh National Park June 30. Speakers were Drs. LeRoy B. Brackstone, Iuka, Miss., on "Acute Hemorrhagic Nephritis in Children," John H. Tilley, Lawrenceburg, "Intestinal Obstruction," John C. Pearce, Jackson, "Prenatal Care and Some Pathologic Conditions in Obstetrics," William O. Baird, Henderson, "Sudden Deaths," and Claud F. Gilbert, Corinth, Miss., "Skull Fractures with Brain Injuries."—Dr. Robert S. Leach, Knoxville, addressed the Knox County Medical Society, June 23, on "Ocular Vertigo."—Drs. John G. Moss and Wallace L. Poole, Johnson City, addressed the Washington County Medical Society, July 2, on pelvic pain and poliomyelitis.

UTAH

Society News—Speakers at a meeting of the Central Utah Medical Association in May in Salina were Drs. William R. Tyndale, Salt Lake City, president of the Utah State Medical Association, on amebiasis; John R. Anderson, Springville, on arachnidism; George A. Curtis, Salt Lake City, secretary of

the state society, socialized medicine, and Mr. William H. Tibbals, executive secretary, medical economics.—The Salt Lake County Medical Society held a golf tournament with the legal profession at the Fort Douglas golf course, June 2. At a clinical meeting in May case reports were presented by Drs. David C. Budge, Logan, on chronic infection of the leg; David E. Smith, painless jaundice; Oza J. LaBarge, cystic disease of bone, and Alfred C. Callister, mechanical asphyxia caused by cleft palate combined with retraction of the lower jaw.—At a recent meeting of the Weber County Medical Society, Ogden, Drs. Howard K. Belnap and Charles Elmer Barrett spoke on respiratory and alimentary allergy, respectively.

WASHINGTON

Personal—Dr. John A. Kahl, Portland, has been appointed health officer of Clark County with headquarters at Vancouver.—Dr. Frances Houston, physician to women at the University of Washington, Seattle, has discontinued this work and will engage in private practice.

Lumberman's Clinic Practice Declared Illegal—The Supreme Court of Washington has recently affirmed a ruling of a lower court that the Lumberman's Clinic, Olympia, was illegally engaged in practicing medicine. The action was based on the claim that the clinic is not a hospital association under the law and therefore illegally entered into contracts with employers to give medical attention to their employees. Both Thurston County as plaintiff and the clinic as defendant appealed the case. It was held that the judgment should include a provision that if reorganization was not effected within ninety days the court would enter a judgment of ouster.

Memorial to Pioneer Physician—A bronze bust on Dr. David Swinson Maynard, one of the original settlers and the first physician of Seattle, has been made for the King County Medical Society under the public works of art project. The Puget Sound Surgical Society provided a pedestal. Dr. Maynard was a native of Vermont and after practicing twenty years near Cleveland joined an emigrant train to the Northwest in 1850. He lived in various places for two years but in 1852 joined the original company in making a permanent settlement on the site named Seattle. Until his death in 1896 he took an active part in the civic, social and medical affairs of the city, according to *Northwest Medicine*.

WISCONSIN

The "Spectro-Chrome" and "Hocus Pocus"—A unanimous verdict that "the application of light rays by the use of the Spectro-Chrome instrument has no substantial healing or curative effect on diseases of the human body" was rendered by a jury in a libel suit of E. A. Ernest, Milwaukee, against the Milwaukee Journal. The newspaper in an article published Nov. 19, 1933, had called the Spectro-Chrome a "hocus pocus" healing device. Mr. Ernest was at that time a distributor for the apparatus, which is made by the Spectro-Chrome Institute, Malaga, N. J., controlled by one Dinshah P. Ghadiali. According to the *Milwaukee Medical Times*, Ghadiali threatened to sue the newspaper unless a retraction was made. He did not sue nor was a retraction published. Ernest sued however for \$150,000 damages and \$35,000 special damages. The newspaper defended itself squarely on the statement that Spectro-Chrome was "hocus-pocus" and had no curative value other than mental. Its contention was that exposure of such a mischievous and dangerous quackery and fraud was a public duty and that the newspaper article was fair comment. Spectro-Chrome was the subject of an article in *THE JOURNAL*, Jan. 26, 1924, which was the basis for most of the newspaper article.

District Meetings—The Fifth Councilor District Medical Society held a meeting June 25 at Big Cedar Lake. Speakers were Drs. Andrew B. Rivers and James T. Priestley Jr., Rochester, Minn., on "Treatment of Peptic Ulcer and Acute Appendicitis," respectively; Edward L. Cornell and Ralph B. Bettman, Chicago, "Treatment of Toxemias of Pregnancy," and "Treatment of Injuries of the Chest," respectively. In the evening Dr. Carl W. Eberbach, Milwaukee, spoke on "Medical Practice in Labrador" and Dr. Ralph M. Carter, Green Bay, president of the state society, on organized medicine.—At the annual meeting of the Seventh Councilor District at Tomah June 10 speakers included Drs. Edwin J. Kepler, Rochester, Minn., on "Recent Advances in Endocrinology," William S. Middleton, Madison, "Diagnosis and Treatment of Heart Disease," Harry R. Foerster, Milwaukee, "Common Skin Diseases," and Mr. J. George Crownhart, Madison, secretary of the State Medical Society of Wisconsin.

'The Immediate Future'—Dr William F Braasch, Rochester, Minn., was the dinner speaker at the annual meeting of the Sixth Council District in Fond du Lac, June 30, on 'The Future of Medicine Under State Control'. Guest speakers at the scientific session included Drs Harry E Mock and Clarence F G Brown Chicago, on 'Diagnosis and Management of Obscure Abdominal Lesions' and 'Medical Management of Gallbladder Disease' respectively. Speakers at the annual meeting of the Fourth Council District in Lancaster in May included Drs Ralph M Carter, Green Bay, president of the state society, on 'State Medicine and the Private Practitioner' and Eben J Carey Milwaukee 'Medical Science and the Public'.

ALASKA

Typhoid Quarantine—Settlements in the Bristol Bay region were under quarantine, July 26, with all persons prohibited from leaving until the danger of spreading an outbreak of typhoid had passed. Dr Walter W Council, territorial health officer, wired other Alaskan cities that no fishermen from the affected salmon cannery hamlets could board airplanes or boats. With the fishing season ended, the quarantine prevented the annual hurried migration of fishermen from the cannery settlements to celebrations in Alaskan towns or farther south to Seattle, Portland and San Francisco for the winter.

GENERAL

Aero Medical Association—The eighth annual meeting of the Aero Medical Association will be held at Los Angeles August 28-30, with headquarters at the Biltmore. Speakers will include the following:

- Dr Bascom L Wilson major medical corps U S Army An Analysis of the Causes of Rejection of 500 Applicants for Flying Training
- Dr Isaac H Jones Los Angeles Résumé of Problems in Aviation Medicine
- Dr John R Poppen lieutenant commander medical corps U S Navy Equilibrium Functions in Instrument Flying
- Dr David C Gæde lieutenant (j. g.) U S Navy Neuro-orenlatory Asthenia—Its Nature and Prevalence in Flying Personnel
- Dr Charles H Gowan Glendale, Calif Carbon Monoxide Poisoning
- Dr Harry V Wurdemann Seattle Statistics of Physical Examination for Flying with Special Reference to Continuation of Training by Students
- Dr Herbert F Fenwick, Chicago Fatigue—Its Relation to Ocular Muscle Balance and the Schneider Index
- Dr Wade Hampton Miller Kansas City Mo Fatigue—Some Special Effects and Tests

Women to Organize for Cancer Control—With the appointment of officers and committees, a definite step was recently taken in the plan to organize a 'Women's Field Army' in the program for control of cancer. The movement began in 1934, when the General Federation of Women's Clubs became interested in the campaign carried on by the American Society for the Control of Cancer, but it did not take shape until this year. Grace Morrison Poole, from 1932 to 1935 president of the General Federation of Women's Clubs, has been named chief adviser to the Women's Field Army, and Marjorie B Illig has been designated lay field representative of the American Society for the Control of Cancer. Both have their headquarters at the central office of the society, 1250 Sixth Avenue, New York. The Women's Field Army will serve as the official lay organization in the national campaign. Each state will have a commander and "vice commanders" in proportion to the population of the state, captains will be appointed to act as leaders in the local work. Advisory committees will be named, composed largely of medical men but with adequate lay representation. To obtain funds for the educational activities of the army, the American society has decided to set aside a week for a national enlistment campaign, the fee to be \$1. Voluntary contributions of the federation club members have formed a fund which is now available to the state federations for cancer education projects approved by the General Federation Advisory Board on Public Health.

Hot Weather Raises Mortality Rate—With a rate of 46.4, Peoria, Ill., showed the highest mortality among eighty-six cities with a total population of 37 million, for the week ended July 18 according to the U S Department of Commerce. A mortality rate of 6 was reported for Peoria for the corresponding period last year. The highest infant mortality rate (245) also appears for Peoria. The mortality rate for the eighty-six cities was 17 against a rate of 10.4 for the corresponding period last year. The sharp increase in mortality for this week resulted from the extreme heat wave in midwestern states. There were 12,183 deaths during the week, as compared with 7,439 in the corresponding week of 1935 representing an increase of 4,744 deaths or 64 per cent. From the standpoint of mortality the heat wave of 1936 is much more severe than the heat wave of 1934 the department points out.

Minneapolis reported a mortality rate of 40.3 as compared with 8.4 in 1935, Evansville, Ind., 36 in 1936 against 14.1 in 1935. Indianapolis, 33.5 in 1936 as compared with 14.1 in 1935, and Dayton, Ohio, showed a recent rate of 33.6 against a rate of 9.4 in 1935. The annual rate for eighty-six cities for the twenty-nine weeks of 1936 was 13 as against a rate of 12 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Pan-Pacific Surgical Congress—The second congress of the Pan-Pacific Surgical Association will be held in Honolulu, T H, August 6-14, with headquarters at the Royal Hawaiian Hotel. Officers are Drs George W Swift, Seattle, president, Nils P Larsen, Honolulu, vice president, and Forrest J Pinkerton, Honolulu, secretary. Among speakers listed on the tentative program were:

- Dr John M Wheeler New York A New Operation for Spastic Entropion of the Lower Eyelid
- Dr Harvey B Stone Baltimore Gallbladder Disease from the Surgical Standpoint
- Dr Arthur M Shipley Baltimore The Diaphragm as a Surgical Problem
- Dr Fred W Rankin Lexington Ky Evolution of Surgery of the Large Bowel and Rectum
- Dr Ralph C Matson Portland Newer Achievements in Thoracic Surgery
- Dr Carl J Johannesson Walla Walla Wash Difficulties of Roentgenologic Study of Postoperative Stomach and Small Intestine
- Dr Paul B Magnuson Chicago Grafting Experiences with Fresh and Ununited Fractures of the Neck of the Femur
- Dr Hugh H Tront Roanoke Va Carcinoma of the Breast
- Dr J Hua Lin Peiping China Foreign Bodies in the Air and Food Passages
- Dr J Nishiwaka Sapporo Japan Observations on Surgery of the Pancreas
- Dr J Hardie Neil Auckland N Z Bronchoscopy Anatomy

Two community health meetings will be held Monday and Thursday evenings, August 10 and 13. Among speakers will be:

- Dr Henry W Cave New York Appendicitis—Its Cause and Treatment
- Dr Frederic A Besley Waukegan Ill The Tragedy of Accidents
- Dr Hulett J Wyckoff Seattle, Arthritis
- Dr Malcolm T MacEachern Chicago Cancer—Its Course and Curability
- Dr Howard L Updegraff Los Angeles Growing Old Gracefully

Dr MacEachern will conduct a hospital institute at Queen's Hospital, August 11-12, under the auspices of the association. The Pan-Pacific Surgical Association was formed during the first congress, held in Honolulu, Aug 14-24, 1929, which was arranged by the Pan-Pacific Union.

Nasal Spray as Preventive of Poliomyelitis—Recent experimental work by Drs Charles Armstrong and Walter T Harrison of the National Institute of Health, Washington, D C., in preventing poliomyelitis in monkeys by the use of a nasal spray has excited so much interest and speculation that the U S Public Health Service deems it desirable to issue the following statement:

'The evidence regarding this method is as yet based entirely on animal experimentation and the proposed spray is not at present to be regarded as of proved value in the prevention of poliomyelitis in man. Perhaps it would be advisable to await the results of further trials before giving the method general application. If it is desired to use the solution it should be sprayed into the nostrils three or four times on alternate days, and thereafter weekly during the presence of poliomyelitis. The spray tip should be pointed upward and backward at an angle of about 45 degrees, and the spraying should be thorough enough to reach the pharynx as well, when a bitter taste will be noted. The early applications at least should be administered by a physician. The experimental work on animals is still being pursued. Therefore, the tentative procedure is subject to such changes as may be dictated by future findings. The most effective solution so far developed during experimentation on monkeys is prepared as follows:

Solution A Dissolve one gram (1 Gm.) of picric acid in 100 cc of physiologic salt solution (0.85 per cent). (Warming facilitates solution of the picric acid.)

Solution B Dissolve 1 gram (1 Gm.) of sodium aluminum sulfate (sodium alum) in 100 cc of physiologic salt solution (0.85 per cent). Any turbidity in this solution should be removed by filtering one or more times through the same filter paper.

Mix solutions A and B in equal amounts. The resulting mixture which contains 0.5 per cent picric acid and 0.5 per cent alum is sufficiently antiseptic to prevent the growth of organisms and is ready for use as a spray. Home-made concoctions are not favored.

While predictions cannot be made concerning epidemics, it is the opinion of the public health service that there are no indications that poliomyelitis will be unduly prevalent this summer."

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 13, 1936

Debate on the Induction of Premature Labor in Primigravidas

At the Section of Obstetrics of the Royal Society of Medicine, a debate took place on the motion "That the induction of premature labor should not play any part in the treatment of pelvic contraction in primigravidas." More than twenty speakers took part and the motion was carried by 40 votes to 18. A. J. Wrigley said that few, if any, present would advise induction before the estimated thirty-sixth week. If the disproportion was obvious before that, the majority would advise cesarean section. During the last few years, thousands of unnecessary inductions had been performed. It was taught that, if in doubt, it was safer to induce. This wholesale intervention was accompanied by considerable risk. Prof. F. J. Browne had stated that, out of 173 deaths in nine maternity hospitals, eight followed directly on induction. The introduction of a bougie was often followed by brisk hemorrhage from separation of the placenta. Another danger of induction was rendering the action of the uterine muscle inadequate, so that complications set in. It resulted in a considerable increase of infant mortality and in some increase of maternal mortality.

Arnold Walker gave some figures on a series of 3,000 consecutive booked cases at the Willesden Maternity Hospital, which were representative of the general population. Among the 1,447 primigravidas the total infant loss in the cases in which labor was interfered with was eighteen. These included cesarean sections, forceps deliveries and craniotomies—there were no inductions—but excluded breech deliveries. Among these eighteen were deaths from hydrocephalus, antepartum hemorrhage and prematurity. Walker described what he and his colleagues termed "trial labor"—the opportunity for a deflexed head or a conical lower uterine segment to readjust itself, and for the increasing tension of the ligaments to pull down the uterus and its contents. When time had been given for this, the position could be reviewed afresh. The reasons for this policy were the frequency with which induced labor was complicated by inertia and the frequency with which the child was born dead or died.

Herbert Spencer spoke in favor of induction. Five years ago when the subject was discussed before the society the value of induction for minor degrees of disproportion was generally acknowledged. Only one London hospital had ceased to practice induction since Whitridge Williams, whose experience was limited to one case, had given it up. The present debate dealt only with primigravidas, though he knew of no reason for limiting induction to pluriparas in whom it might be attended with special risks. The value of induction could be estimated only by comparison with alternatives—trial labor, forceps, cesarean section. His use of forceps had been conservative since he learned forty-six years ago that all children delivered by forceps who died had meningeal or cerebral hemorrhage. In a series of 427 inductions at University College Hospital there was only one maternal death, a mortality of 2.3 per thousand, while the fetal mortality was just under 12 per cent. For the eighty-five primigravidas of the series, ten children died, 11.7 per cent. He held that induction should have a large part in the treatment of minor disproportion, cesarean section and forceps a small part and craniotomy (except for dead, damaged or hydrocephalic children) no part at all. He deplored the craniotomies of some hospitals.

James Wyatt supported Spencer by figures from St. Thomas's Hospital where of 3,800 deliveries labor was induced in 199

for disproportion, generally by bougies. In only sixteen, or 8 per cent, was there some morbidity, the standard being a rise in temperature to 100 F or over. Of twenty-three stillbirths in this series, five were macerated and one was a case of hydrocephalus.

Prof. Munro Kerr said that it was impossible at the thirty-sixth week to tell whether the head would go through or not in borderline cases. Adjustments took place during the later days of pregnancy and the early stage of labor, which altered the outlook completely as to the relative size of head and pelvis. With the patient in the dorsal position one was apt to grasp the head above the pelvis so as to tilt it either backward or forward and to produce anterior or posterior parietal obliquity. With the latter, matters were made to appear much worse than they were, with the former, better than they were. It was impossible to tell beforehand how the head was going to mold or what the strength of the uterine contractions would be. These two important uncertainties had always to be contended with, and it was only when labor had started that it could be said whether the head would go through the pelvis or not. In only about 10 per cent of the cases in which he allowed a trial labor to take place was spontaneous delivery not forthcoming, and his result was a fetal mortality of not more than 5 or 6 per cent, excluding extraneous conditions, such as malformations of the uterus and placenta praevia. The sooner induction in primigravidas was abolished, the better.

Leslie Williams drew attention to the difference between trial labor in domiciliary and hospital practice. In the latter it was an excellent thing, in the former it had no place, and even in the best nursing homes only a small one.

The Bureau of Human Heredity

The establishment of the Bureau of Human Heredity has been described previously. In a letter to the *British Medical Journal* the chairman, R. Ruggles Gates, F.R.S., calls attention to the interest of this new enterprise to physicians. Whether they have any particular interest in human genetics or not, it should be a cause of general satisfaction that Great Britain has been chosen as the seat of a clearing house for the scientific world of material dealing with human heredity. The British National Heredity Committee was formed in 1932 for the collection of data and the investigation of human pedigrees, as a branch of the International Human Heredity Committee, founded by the International Federation of Eugenic Organizations. The committee has now been enlarged as a council. It has secured accommodations at 115 Gower Street, London W.C.1, and in collaboration with the Galton Laboratory aims at setting up a clearing house of material on human genetics. The council consists of geneticists and leading physicians. It would welcome any material from institutions and individuals giving well authenticated data on the transmission of human traits. Family histories or pedigrees, twin studies and statistical studies are mainly contemplated. Reprints of published work are also most acceptable. Many authors may have collected pedigrees which they have been unable to reproduce in detail. The council hopes that these records may be included in the clearing house and not lost. Other objects contemplated are facilities for study, replies to inquiries and information service, but these cannot be initiated for some time.

Gift for Research to Royal College of Surgeons

The late Bernhard Baron was a generous donor to medical institutions. Though primarily concerned with the relief of sufferers, he realized the great value of advances in medical knowledge and supported it. His trustees have visited the Royal College of Surgeons and realized the importance of the researches being carried on there under difficult conditions. They have therefore made a gift of \$125,000 for new laboratories, which as a memorial to him are to be called the Bernhard Baron Laboratories.

PARIS

(From Our Regular Correspondent)

July 2, 1936

Puncture of the Sternum as a Diagnostic Method

The sternal puncture method of obtaining specimens has become an almost routine procedure in many French clinics, enabling the hematologist to see in two or three microscopic fields in a few minutes blood elements which under ordinary conditions—specimens obtained from the ear or the finger—would necessitate hours of search. The technique and results obtained in sternal puncture are reviewed by Andre Dreyfus in the *Concours medical*, March 29. The technique of sternal puncture is much simpler and far less likely to be followed by serious complications than is that of puncture of the spleen for blood specimens. A needle like that employed for artificial pneumothorax and provided with a mandrin, is introduced under local (ethyl chloride) anesthesia through the first portion (manubrium) of the sternum, a little to one side of the midline, and near the junction of the first and second bones of the sternum. Sufficient blood can be obtained, on withdrawing the piston of a syringe attached to the needle, to be spread on several slides for staining. The slides are fixed for ten minutes in methyl alcohol (absolute), stained by the May-Grunewald-Giemsa method for thirty to forty-five minutes and then examined with the aid of an oil immersion lens. The resultant myelogram, as it is termed, can be grouped as follows:

1 Red series. The ratio of nucleated red cells to leukocytes is as one to five, i. e., about 10,000 to 50,000. In this number of nucleated red cells there are from 3 to 5 per cent of proerythroblasts.

2 Myeloid series. Myelocytes 4 to 6 per cent, neutrophil myelocytes 30 to 35 per cent, polymorphonuclear neutrophils 25 to 30 per cent, myelocytes and polymorphonuclear eosinophils 1 to 5 per cent, myelocytes and basophil polymorphonuclears 0 to 0.5 per cent, making a total for the myeloid series of from 60 to 75 per cent.

3 Lymphoid series. Lymphocytes 20 to 30 per cent and plasmocytes 5 to 10 per cent, making a total for this series of from 20 to 35 per cent.

4 Monocytic series. Monocytes 2 to 5 per cent.

In addition, one finds a certain number of cells belonging to the reticulo-endothelial system.

With the aid of sternal puncture, the Biermer type of anemia can be immediately diagnosed by the presence of "primordial erythroblasts," a term which Dreyfus applies to the Ehrlich megaloblasts. A secondary anemia, e. g., that due to a gastric cancer, can be easily excluded.

The true aplastic anemias, in which the blood obtained by ordinary methods fails to show any evidence of regeneration, can be divided by the results of the sternal puncture method into (a) the true aplastic anemias in which there is an absence of every erythroblastic element and (b) the hypoplastic anemias much more common, in which the medulla shows evidence of erythropoiesis whereas the blood fails to show any such regenerative elements. These aplastic anemias frequently appear clinically as aleukemic leukemias and here the sternal puncture enables such a differential diagnosis to be made. In all the anemias the regeneration of the blood as the result of treatment can be followed much more accurately in a myelogram than in a hemogram.

Sternal puncture is of special value in the aleukemic leukemias, e. g., myeloma and lymphoma. It enables a diagnosis to be made of acute leukemia (lymphoid or myeloid) in cases that cannot be diagnosed by any other method. The agranulocytoses present a difficult diagnostic problem which the myelogram renders comparatively easy.

Other diseases in which sternal puncture is of great aid are atypical forms of Hodgkin's disease and the various hemorrhagic disorders.

Often cultures taken from the blood obtained by sternal puncture will be positive, whereas those obtained by the ordinary method are negative, according to Debre.

Myeloid Megakaryocytic Splenomegaly Diagnosed by Puncture of Spleen

At the May 1 meeting of the Société médicale des hôpitaux of Paris the value of puncture of the spleen in the diagnosis of diseases of the blood-forming organs was emphasized by Emile-Weil and his associates. A man, aged 54, had a splenomegaly of three years' duration. The blood examination revealed an orthochrome anemia of medium degree with a leukocytosis of 18,600, 30 per cent myelocytes, and normomegaloblastosis of 24 per cent. If the splenic puncture had not been made, the diagnosis would have been myeloid subleukemia. The puncture of the spleen and the resultant blood examination (splenogram) revealed an intense erythroblastosis and the presence of numerous megakaryocytes. Roentgen treatment of the enlarged spleen only caused the myeloid reaction to cease but had no influence on the erythroblastosis, so that a year later a splenectomy appeared to be indicated. The spleen weighed 2 Kg (4½ pounds) and showed on microscopic study a complete absence of its normal pattern. Sternal punctures before as well as after the operation revealed the absence of any medullary participation in the blood picture, hence this excludes the possibility of the diagnosis of myelogenous leukemia. The compensatory enlargement of the liver following the operation shows that it is megakaryocytic and erythroblastic, thus replacing the corresponding function of the spleen.

About twelve cases of splenomegaly of the myeloid megakaryocytic type have thus far been reported, but this case is the first to be diagnosed clinically. It is not rare. The disease is one of the spleen itself and not a systemic one like leukemia. This form of splenomegaly is due to a number of different causes, the most common being tuberculosis, which has been found in nearly half of the cases.

BERLIN

(From Our Regular Correspondent)

June 22, 1936

The Convention of German Surgeons

The Congress of German Surgeons was held in Berlin at Easter. The chairman, Professor Lexer of Munich, welcomed some 1,500 delegates to the sixtieth convention. The Deutsche Gesellschaft für Chirurgie has throughout its sixty-four years of existence faithfully reflected the scholarly endeavors of German surgical research and has advocated the closest cooperation with representative groups of other medical fields. Lexer emphasized in his opening address that successful work can be carried on only by thoroughly competent surgeons who do not restrict their activities to small subdivisions of the field. The chairman advised strongly against the surgeons splitting up into separate groups.

The Frankfurt surgeon Victor Schmieden delivered a jubilee address on the "History of Laparotomy." Schmieden designated laparotomy as the most important sphere of surgery today and the one in which the greatest measure of success has been attained. He told how the nations of remotest antiquity had some knowledge of abdominal surgery and described some of the earlier technical aids. Much that appears modern in abdominal surgical procedure is in reality old, Trendelenburg's position, for example, was described by Celsus himself. The employment of the many layered suture of the abdominal wall is likewise of antique origin. Each age thinks that it has reached the zenith of accomplishment, but if the history of

medical science is passed over in retrospect it becomes evident that the most durable progress has been made precisely in the field of abdominal surgery and that the most brilliant phase of this development occupied a relatively brief period.

H. Brandis of Freiburg-in-Breisgau spoke on operative risk and its dependence on constitutional factors arising from sympathetic nervous or metabolic disorders. The nearer the liver an operation is carried out, the greater the danger. The seriousness of any operation is heightened if hepatic function is threatened with impairment. The old idea of "operable" or "inoperable" fails to coincide with the contemporary view of what constitutes in a biologic sense an operative risk. "Inoperable" in modern parlance implies the presence of refractory disorders of the circulation or of metabolism. In many instances, however, the patient may be rendered operable by amelioration of the disordered state. Consideration of the risk entailed by operative treatment has resulted in the institution of adequate prophylactic measures and this accounts for the substantially improved chances of favorable outcome. Postoperative and circulatory disturbances, shock and embolism are now less frequent. Intervention early in the course of an illness is the best prophylactic measure against operative risks.

Discussing the treatment of cardiospasm, Prof. E. K. Frey of Düsseldorf called special attention to the fact that although purely functional disturbances do not in themselves call for surgical intervention they may develop an anatomic stenosis which can be removed only by mechanical means. In unelastic strictures dilation therapy will be unsatisfactory, and it is then that the creation of a wide passage between stomach and esophagus becomes necessary. This is better effected by a transthoracic rather than a transperitoneal approach.

Professor Guleke of Jena reported on the course of untreated carcinoma of the rectum. Most of these patients live another year subsequent to the establishment of clinical diagnosis, but as many as 90 per cent succumb within from one and one-half to two years. Case records show that the patient has usually been troubled for about a year prior to consultation. If it is also assumed that carcinoma must have been present for a considerable time before the onset of subjective symptoms, the total duration of untreated cancer of the rectum must be placed at from four to four and one-half years. Of 200 patients presenting the disease who were not subjected to radical intervention or who were considered inoperable, 7 per cent lived three more years but only 1 per cent lived five more years. Radical abdominosacral intervention entailed a mortality of 14.8 per cent, when the operation was performed in one stage; the death rate was 31.4 per cent (of thirty patients), when performed in two stages the rate was 5.9 per cent (of fifty-one patients). Hence the two-stage intervention is far and away the method of choice. Data gathered from the entire literature show a mortality of below 10 per cent from the two-stage procedure. The discussion showed that the assembly generally was in accord with Guleke's observations. Under certain circumstances caution requires that the operation shall not be performed in more than two stages.

Clairmont of Zurich submitted a paper on "Contraindications in Nonemergency Operations." He detailed the various possible types of physiologic examination employed in testing functional capacity. The physician's knowledge of pathologic anatomy frequently fails to lead to a satisfactory explanation. Operative trauma means a burden on many organs. The strain on the circulation may be psychogenically imposed prior to the operation or it may begin with narcosis. The variations in tonus and the sudden fluctuations of the blood pressure that take place under narcosis subject the circulation to a singularly heavy burden. The respiration is likewise heavily taxed and there are in addition the influences of metabolism, elevation of the diaphragm, postoperative intestinal atony and so on.

The hematopoietic mechanism demands a substantial production of new cells by the bone marrow. An attempt should therefore be made to estimate the risk entailed by nonemergency intervention in a given case and adequate preliminary treatment initiated if possible.

Schneider of Freiburg-in-Breisgau has studied the "Burden Placed on the Circulation" by the influence of surgical interventions. He is particularly concerned with the blood values (minute volume, output). The amount of blood in circulation is usually decreased by narcosis, it is increased, however, in exophthalmic goiter or thyrotoxicosis, is present as well as by surgical infection and prostatic hypertrophy. In the foregoing diseases, although the quantity of blood in circulation increases rapidly, it returns as rapidly to normal following the intervention.

Further remarks on the mortality from operations were made by Seifert of Würzburg. He has established that prognosis in cancer cases in which operative intervention is undertaken grows more unfavorable the greater the patient's age. Mortality from operations rises rapidly among women beyond the sixtieth year of life, whereas men in the same age groups appear better able to maintain their resistance. All in all, the inference would seem to be that operations for cancer on patients of any age possess an operative mortality below the average.

Payr of Leipzig supplied impressive figures on the cure of cancer by operation. Payr used as material his own operation in private practice, and the postoperative norm of time on which he based his conclusions was set at ten years. He had twenty-nine patients, originally presenting carcinoma diversely located, who had been free from recurrence of the disease for more than ten years subsequent to operation. Of these patients only a small number had received postoperative radiotherapy. König of Würzburg said he subscribed to the opinion that the number of permanent cures of cancer, especially those effected by timely use of the knife, is much greater than is generally supposed. This is of particular importance in view of the perennial rumors with regard to the incurability of cancer set on foot by persons unqualified to speak.

The next topic was the "Predispositions to and Heredity of Cancer." According to Hintze of Berlin, any predisposition can be inherited as such. A localized tendency, however, is not equivalent to a general predisposition toward tumor formation. Cancer is wont to appear in certain locales of predilection along the hair line, on the boundary between the skin and the mucous membrane, on the borders of pigmented areas. In 85 per cent of the cases, mammary carcinoma has its seat in the upper external quadrant. Almost without exception, cancer attacks only a breast that has given suck. Why the disease should originate within the respiratory, alimentary and genito-urinary tracts is difficult to explain. Carcinoma would seem to appear most frequently in places where during the period of growth, the buds of the elongated intermediate sections are present. It may be that a remnant of the originally strong tendency to grow has simply persisted. Perhaps the proximal part of the femur as the seat of sarcoma can be explained in the same manner. According to all investigators only the predisposition to cancer is inherited, not the cancer itself. Only in case of inbreeding or if both parents are cancerous is the probability that the descendants will have the disease increased above the average for the population as a whole. Prof. K. H. Bauer of Breslau, a surgeon, emphasized the difficult nature of the question of the hereditability of cancer. Under no circumstances can the results of experiments with tumors in the mouse be made applicable to man. Reliable data with regard to heritability of cancer is available only for polyposis intestinalis and xeroderma pigmentosum. All other neoplasms must be provisionally considered as nontransmissible. The entire world literature mentions only ten cases in which

each of a pair of dizygotic twins presented cancer, whereas cases of malignant growths presented by one of a pair of such twins are numerous enough. This permits the supposition that external factors assume the decisive etiologic role in cancer.

Rieder of Hamburg dealt with the status of surgery of the sympathetic nervous system. The entire sympathetic system must be thought of as forming a syncytium. Since periarterial sympathectomy involves but one part of the sympathetic network, it can never be more than partially successful. Extirpation of a ganglion never results in a permanent vascular paralysis, because of an extensive peripheral automatism, the so-called peripheral automatic vasomotor center. Recidivation after theoretically correctly performed operations is explicable as due to this peripheral automatism, that is, the operation may provide neural or humoral stimuli to the vasomotor center. The most satisfactory results are forthcoming when the procedure is used in reflex-nutritional bone disease in true Raynaud's disease, and in endarteritis obliterans. In paroxysmal tachycardia also favorable results have been reported. Hyperhidrosis and vasomotor-trophic edema are frequently benefited and abbreviated by operative treatment. There is little sense in the treatment of bone and joint tuberculosis or arthritis deformans by ganglion operation. The results of sympathetic nerve intervention in epilepsy, glaucoma, parkinsonism and atypical neuralgia are also unsatisfactory. In the discussion that followed, the Strasbourg surgeon Leriche, who is an authority in this field, emphasized that good results are obtainable in kidney disorders if the latter arise from blood perfusion disturbances due to vascular spasms. From 1,119 personally observed cases, Leriche concludes that the physiologic foundations are still wholly unknown and on this account the strictest criteria must be applied and the utmost caution exercised in the interpretation of indications. In other diseases also, sporadically successful results are observed along with the failures.

Kirschner of Heidelberg sponsored the use of electrocoagulation of the ganglion in *tic douloureux*. Of 235 patients observed by him, all but eleven were free from pain after the intervention, in those who still complained, the cause of the pain was more centrally located. In five cases a bilateral operation was performed with favorable results. Recidivation took place in 25 per cent of the patients, but after further coagulation the pain was immediately dissipated.

VIENNA

(From Our Regular Correspondent)

June 3, 1936

The Sedimentation Rate in Surgical Conditions

At a recent session of the Vienna Surgical Society, Professor Kunz spoke on the value of observing the velocity of sedimentation in the blood of surgical patients. Although in the past sixteen years more than 2,000 works have been published on this subject, the true nature of the reaction (variation in the sedimentation speed of erythrocytes) has not been determined. Apparently blood plasma is an important factor and it is believed that in certain pathologic processes substances enter the blood which accelerate the sedimentation speed in resorption of inflammatory substances, for example, or in absorption of the products of decomposition. After aseptic operations the sedimentation speed undergoes alteration in the direction of a persistent acceleration in disturbances during the curative process the return to the normal value is troubled. An acceleration is present in bone fracture cases which persists until consolidation has been effected. The sedimentation speed is of practical importance in diseases of the bones and joints as it may permit an inflammatory to be distinguished from a noninflammatory process. It is also an aid in the detection of tuberculous alterations and in the evaluation of the success of the therapeutic measures initiated. It helps the physician

to determine whether or not a diseased joint may again be permitted to exercise its function or an orthopedic intervention for the removal of a defect be performed. Likewise in the question of whether or not a case of pulmonary tuberculosis should receive surgical treatment the sedimentation speed provides valuable indications. It has a prognostic importance after radical operations on malignant tumors, if it resumes the normal value especially quickly and remains normal thereafter, recovery is indicated, but a renewed increase points to a relapse or metastases. In abdominal surgery the sedimentation speed helps the physician to distinguish between an adnexitis and an acute appendicitis, for example, it also serves as a good diagnostic aid in the latter disease in combination with the white blood picture. The sedimentation speed is normal in simple acute appendicitis and the leukocyte count only a trifle above normal, but in phlegmonous appendicitis, although the sedimentation speed remains normal, the leukocyte values are high. An accelerated sedimentation speed becomes first evident in perforation, the abdominal phenomena are thus not fulminant. But should the sedimentation speed show considerable increase, this speaks against an acute appendicitis. The sedimentation speed can be of value also in the recognition of the various forms of cholelithiasis and its complications. The sedimentation speed is normal in stomach and duodenal ulcer and remains so during the first few hours following perforation. Accordingly, the accelerated sedimentation speed in a perforation peritonitis indicates an inflammation of the perforated organ or its surroundings which has existed for a long while previously, while the normal sedimentation speed is evidence of the perforation of an ulceration.

Sigmund Freud's Anniversary

On the eightieth birthday of Prof Sigmund Freud, by far the best known Austrian physician of recent decades, many celebrations were held in Vienna, none of which were attended by Freud himself. Since he underwent a serious operation (supramaxillary resection) Professor Freud has been confined to his bedroom. Both the Vienna Society of Physicians and the Psychiatric-Neurologic Association held extraordinary sessions in his honor despite the fact that the Freudian doctrines were at one time categorically rejected within both these organizations. As a sequel of these controversies Freud has not attended a single meeting of either group in fifty years. The government could not overlook the significance of this man, despite his Jewish origin. Freud received official congratulations from all over the world. Only the German reich maintained conspicuous silence—for obvious reasons. An interesting series of lectures was delivered by Nobel prize winner Thomas Mann, one of the greatest of living poets and himself an émigré from Germany, on "Freud and the Future." Mann pictures Freud as "the pathfinder of a new humanity," as one who points the way out of darkness into the light that shall dispel hatred and fear, he sees in Freud the prophet of a bright and joyous era of peace on earth. The following incident illustrates the difficulties with which Freud at first had to contend. When in 1886 he made known his theories to the Society of Physicians in Vienna and spoke of such things as hysteria in males, the meaning of dreams and the suggestive production of hysterical paralysis, the leading Viennese neurologists of that time declared his words unworthy of belief and beyond the pale of discussion. Freud was accordingly refused membership in the Institute of Cerebral Anatomy (Meynert). And when at a later date Freud had proved his theory of infantile sexuality which is the most important pillar in the whole Freudian structure his teaching was completely rejected both by pediatricians and by the church. Only long afterward did his doctrine first encounter recognition. Freud, imperturbable lives and works on despite his eighty years and he is not to be induced into making public appearances.

Congress of Catholic Physicians

The second International Congress of Catholic Physicians, in which 500 doctors from twelve countries participated was held at Vienna during Easter week of this year. The proceedings were confined to two principal topics: the first, "Eugenics and Sterilization", the second, "Medical Missionary Activity."

Death of Prof. Ludwig Braun

The distinguished cardiologist Ludwig Braun died recently of an infection, aged 70. Braun took his degree at Vienna. His original intention was to be a surgeon but he was forced to abandon this plan because of a hypersensitivity to iodoform, a substance much used at the time. Braun then turned to internal medicine. In his work on cardiac action he was a pioneer in using motion pictures as an aid in medical research. Other investigations, on the effects of digitalis and on arteriosclerosis, formed the material of a remarkable book on heart disease, which is still considered excellent. Braun was a master research scholar in the field of aortic and cardiac syphilis but his greatest achievement was the discovery of the interrelation of the kidneys and high blood pressure. During the last ten years he had been much occupied with this problem. Wide notice was accorded his monograph on the heart and fear (1932). Braun did much to stimulate experimental cardiac research. In 1910 he became both professor and director of the section of internal medicine at the Jewish Hospital, Vienna, and was much sought out by doctors and patients as a distinguished teacher and brilliant diagnostician. Also as a philanthropist and sociologist Braun rendered notable services.

MOSCOW

(From Our Regular Correspondent)

June 17, 1936

Sweeping Changes in the Law on Abortion and Divorce

The Soviet Government published May 26 a proposed bill which would make artificial abortion illegal and provide help to pregnant women, enlarge the lying-in homes, the kindergartens and public nurseries, and make amendments to the divorce law. The immense importance of this bill was the reason why the government first sanctioned a wide discussion by the entire population in the press at meetings, and in scientific societies. After this discussion is finished, the suggested changes received will be considered, and the bill will become a law.

The history of legalized abortions in our country begins with Nov. 18, 1920, when the government published a decree permitting artificial abortions for medical and social indications. Any woman who wanted to end her pregnancy could enter a special medical establishment or lying-in house, where abortion was performed. The improved conscience of the people as well as improvement in the cultural and material level has increased the birth rate and brought on a marked desire to discontinue abortions. Taking in account all of the facts mentioned, the Central Executive Committee of the Union of Socialist Soviet Republics found it possible to propose this bill to the people. It would prohibit abortion in hospitals, clinics, ambulances, private houses and so on and allow the operation only when the pregnancy would endanger the woman's life. When that reason for an abortion does not exist the physician operator will be punished with two years in prison. If the abortion is made by a person without special medical education he is imprisoned three or more years. Women breaking this law are indictable to public censure and on repeated violation to a fine of 300 rubles.

To make the family more stable and to eliminate frivolous marriages both parties must be present in the registry office in cases of divorce. The divorce must be registered in both passports and the cost is raised to 50 rubles for the first one.

150 for the second and 300 for the next. Alimony must be recovered for the children's maintenance after divorce, one-third of the respondent's salary for one child, a half for two children and 60 per cent for three and more.

The government proposes to improve the material status of mothers. Instead of 32 rubles as received now for a dowry for the new-born there will be given a dowry of 45 rubles and 10 rubles monthly instead of 5 for feeding the infant. To mothers having more than seven children, the government will pay after the birth of each child 2,000 rubles for five years to mothers having eleven children, 5,000 rubles after each addi-

Distribution of Appropriations

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|--|-----------------------------|
| City lying in beds | 22.2 million rubles |
| Country lying in beds | 23.8 million rubles |
| Public nurseries | 230.0 million rubles |
| Kindergartens | 221.0 million rubles |
| Children's milk kitchens | 9.0 million rubles |
| Total | 506.0 million rubles |
| Except for | |
| Erection and maintenance of public nurseries | 11.8 million rubles |
| Improvement of kindergartens | 30.8 million rubles |
| New staff education | 50.0 million rubles |

tional birth, and beginning with the second year, an annual help of 3,000 rubles extra during the four years after the child's birth.

By Jan. 1, 1939, there must be organized 11,000 new lying-in beds in cities and 32,000 in country districts, half of them in obstetric departments of country hospitals and the second half in newly established collective farm lying-in houses. The number of beds in public nurseries must reach 800,000 in towns and 4,500,000 in country districts by the same time.

Fifteen million rubles extra will be devoted this year especially to training supplementary medical personnel.

The number of places in city kindergartens will reach 2,100,000 by the end of 1938, instead of 700,000 as at present.

In country districts there will be organized preschool groups for 23,000,000 children. This year 35,000,000 additional rubles for instructing new teachers will be assigned. To realize these measures the government will give this year, besides 1,881.3 million rubles for social insurance, 672.8 million of rubles. They will be divided as shown in the table.

All the foregoing measures must be realized during the next two and a half years.

A Decrease in Syphilis

Syphilis has been a widespread disease in Russia. Dr. Khym studied syphilis at the end of the last century in the Voronezh department in central Russia, where a twenty bed hospital for antisyphilitic treatment was situated. His figures show that from 1889 to 1893 a total of 4,109 patients—of whom 516 were children—passed through the clinic. About one third of the cases in the primary stage.

Dozent S. Galperin repeated Khym's work for the period from 1929 to 1933 in the same place. He registered only 143 cases of syphilis. These figures, relating to one of the most populous regions of the country, demonstrate that there has been a sharp decrease in the incidence of syphilis.

Professor Honored for Popularizing Anesthesia During Labor

Previous to 1934, anesthesia during delivery was used but rarely in the Soviet Union. Through the initiative of Prof. A. J. Lourje of Sverdlovsk, anesthesia during childbirth now is widely used. Professor Lourje has been honored for introducing and popularizing a safe method of anesthesia during labor with the order of Lenin—the highest reward in the Union of Socialist Soviet Republics. It is believed that not less than 300,000 women will be thus relieved of labor pains this year.

Marriages

CLARENCE EDGAR YOUNT JR, Prescott, Ariz, to DR FLORENCE HEARN BROOKHART of Washington Iowa, June 22

JOSEPH WOODS BRUNSON, Chester S C, to Miss Charlotte BOYKIN SALMONO of Camden, June 6

TREVOR DOUGLAS ABEL, Columbia, S C, to Miss Louise Fleming at Charlotte, N C, May 28

JOHN R BENDER Jacksonville, N C, to Miss Louise L Zimmerman of Lexington, June 20

CLARK E BAKER to Miss Polly Heaton, both of Marion Ill, in Beaumont, Texas, May 12

MALCOLM HUGH MCBRYDE to Miss Margaret Whitlock both of Milton, N C, May 23

HYMAN LEWIS BERSON to Miss Judith Hilda Lichtenstein both of Brooklyn, June 30

E. RAYMOND AMBLER JR, Abington, Pa, to Miss Jean Richardson Fagans, June 13

RICHARD F BOYD, Cimarron, Kan to Miss Kathleen Ragan in Chicago in June.

Deaths

Joseph Patten Wales of Wilmington, Del, University of Pennsylvania Department of Medicine Philadelphia, 1898, past president of the Medical Society of Delaware and the Newcastle County Medical Society, for several years a member of the state board of health, at various times surgeon to the police department, director of the city department of public safety aged 62 on the staff of the Delaware Hospital, where he died April 16, of pneumonia

Paul Maxwell N Kyle of Major M C, U S Army Denver University of Maryland School of Medicine Baltimore, 1916, served during the World War, entered the Medical Corps of the U S Army as a lieutenant in 1917 and in 1929 was appointed a major, aged 45, was stationed at the Fitzsimons General Hospital, where he died, May 1 of pulmonary tuberculosis and tuberculous meningitis

Aden Cobbs Vickrey, St. Louis, Washington University School of Medicine, St. Louis, 1911 member of the Missouri State Medical Association at one time superintendent of the State Hospital, number 2, St. Joseph, Mo., and assistant superintendent of the City Sanitarium for several years connected with the U S Public Health Service, aged 50 died April 10, of burns received in a fire

Milton Thomashefsky, Brooklyn Columbia University College of Physicians and Surgeons, New York, 1921 member of the Medical Society of the State of New York, member of the American Academy of Ophthalmology and Oto-Laryngology, fellow of the American College of Surgeons, associate, ear, nose and throat, Jewish and Greenpoint hospitals, aged 38 died May 15

William Armstrong Byrnes of A Surg, Lieut, U S Navy, retired, Minneapolis, University of Illinois College of Medicine Chicago 1917, entered the navy in 1917 and retired in 1922 for incapacity resulting from an incident of service advanced on retired list, served during the World War aged 45 died in May in San Diego, Calif

William Bartholomew Wanner, Wimbledon, N D Rush Medical College, Chicago, 1893, member of the North Dakota State Medical Association, past president of the Sheyenne Valley District Medical Society, served during the World War aged 68 died April 18, in the Trinity Hospital Jamestown of arteriosclerosis

Francisco Javier Rodriguez Mendoza, Cartagena Colombia South America, University of Pennsylvania Department of Medicine, Philadelphia 1930, professor of clinical surgery and anatomy and operative medicine at the University of Cartagena School of Medicine, aged 30 died April 3 of pulmonary tuberculosis

Herbert Booth Woodard of Chicago, Hahnenmann Medical College and Hospital Chicago 1897, also a resident of Hinsdale Ill served during the World War fellow of the American College of Surgeons aged 66, on the staff of the Hinsdale Sanitarium and Hospital where he died May 25 of thrombosis

Frederick William Boyd, Montgomery, Ala, University of Alabama Medical Department Mobile 1906 served during

the World War, physician in charge of the Kilby Prison Hospital, aged 56, died, May 1, in a hospital at Talladega, of an accidental gunshot wound received while cleaning a pistol

Patrick Joseph Byrne, Syracuse N Y, Bellevue Hospital Medical College, New York 1893 member of the Medical Society of the State of New York, on the staff of the Crouse-Irving Hospital and St Mary's Maternity Hospital and Infants Home, aged 75, died, May 7, of coronary thrombosis

David Kaplan of Oak Park, Ill Rush Medical College Chicago, 1919, for many years cardiologist to the Veterans Administration Facility, Hines, Ill aged 41, recently appointed chief cardiologist to the Veterans Administration Facility New York, where he died, April 17 of heart disease

Gregory E Ehrenburg, Spivak, Colo Voronej Government University Faculty of Medicine, Voronej, Russia 1899 member of the Colorado State Medical Society on the staff of the Sanatorium of the Jewish Consumptives Relief Society aged 62, died May 10 of cerebral hemorrhage

Ernest Howard Lines, New York College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1886, served during the World War, formerly chief medical director of the New York Life Insurance Company aged 76, died, April 17, in Topsfield Mass

W Theodore Waas, Fernandina Fla Tulane University of Louisiana Medical Department, New Orleans 1894 formerly a druggist, for many years a member and president of the city council, local surgeon to the Seaboard Air Line Railway and county physician, aged 70, died April 23

Edwin Erastus Clark, Knoxville Pa, College of Physicians and Surgeons, Baltimore, 1893 member of the Medical Society of the State of Pennsylvania, aged 69 died, May 12 in the Arnot-Ogden Hospital, Elmira N Y, of septicemia which developed following a prick by a thorn

William Edward Croxton of West Point Va, Medical College of Virginia, Richmond, 1904, during the World War was medical examiner of the county exemption board, for many years chairman of the school board aged 53, died, May 9, in a hospital at Richmond, of pneumonia

Dock Long, Duncan, Okla, Southern Medical College Atlanta Ga, 1882 member of the Oklahoma State Medical Association, health superintendent of Stephens County aged 75, died, May 21, in the Wesley Hospital, Oklahoma City, of mastoiditis and cerebral hemorrhage

Henry Kuhl Dillard of Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1902 served during the World War, assistant medical director of the Penn Mutual Life Insurance Company aged 59, died, May 17, in Asheville, N C. of tuberculosis

Aaron Longstreet Stillwell of Somerville, N J, College of Physicians and Surgeons, Medical Department of Columbia College, New York 1889 past president of the board of health aged 71 on the staff of the Somerset Hospital where he died April 16 of myocarditis

Wesley Herbert Secord, Winnipeg Manit Canada McGill University Faculty of Medicine Montreal Que 1903 past president of the Council of the College of Physicians and Surgeons of Manitoba aged 53, died May 13 of spongio blastoma multiforme

Harvey Willard Tupper, Harvey Ill, University of Illinois College of Medicine, Chicago, 1913, served during the World War aged 47 on the associated staff of the Ingalls Memorial Hospital where he died April 18 of carcinoma of the prostate

Jacob W Rothacher, Detroit Detroit College of Medicine 1897 at one time a druggist, formerly county coroner and city physician, for many years on the staff of St Mary's Hospital aged 65, died suddenly April 21, of angina pectoris and diabetes mellitus

Joseph Leander Roseborough, Senatobia, Miss, Vanderbilt University School of Medicine, Nashville Tenn, 1877 for fifty years physician and surgeon to the Illinois Central Railroad, aged 81 died April 22 in the Baptist Hospital Memphis, Tenn.

John William Dalrymple, Hackettstown, N J College of Physicians and Surgeons Medical Department of Columbia College New York 1877, aged 81 died, May 1, in the Warren Hospital, Phillipsburg, of diabetes mellitus and uremia

Erwin Leon Stafford, Chestertown, N Y, University of Vermont College of Medicine Burlington 1883, aged 84 died April 13, in the Moses-Ludington Hospital Ticonderoga, of a self inflicted bullet wound and cerebral hemorrhage

Clayton H. Charles, Milwaukee, Hahnemann Medical College and Hospital, Chicago, 1902, veteran of the Spanish-American War, aged 57, died, May 3, in the Veterans' Administration Facility, of pneumonia.

John Hunter Carradine, Lawton, Fla., Tulane University of Louisiana Medical Department, New Orleans 1890, aged 71, died, May 1, in St. Luke's Hospital at Jacksonville, of arteriosclerosis and bronchopneumonia.

William Goldsmith MacLachlan, McFarland, Wis., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890, member of the State Medical Society of Wisconsin, aged 86, died, April 10.

John Joseph Stanton, Philadelphia, Jefferson Medical College of Philadelphia 1903, formerly on the staffs of St. Joseph's and St. Agnes hospitals, aged 56, died, April 15, of coronary occlusion.

John Webster Snow, Helena, Ala., Birmingham Medical College, 1909, member of the Medical Association of the State of Alabama, aged 54, died, April 19, of appendicitis and diabetes mellitus.

Joeday N. Goodwin, McAllen, Texas (registered by Texas State Board of Medical Examiners under the Act of 1907), aged 63, died, May 5, in McAllen Municipal Hospital, of mesenteric thrombosis.

Katharine Annabelle Hathaway Salmon, Syracuse, N. Y., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887, died, April 15, of intestinal obstruction and arteriosclerosis.

Russell Truitt, Southwick, Idaho, Eclectic Medical Institute, Cincinnati, 1877, member of the Idaho State Medical Association, aged 83, died, April 19, in Lewiston, of chronic myocarditis.

Albert Hamilton Taft, Hillsboro, N. H., McGill University Faculty of Medicine, 1932, member of the New Hampshire Medical Society, aged 29, died, April 21, in Concord of septic sore throat.

Royal Scott Stuckey, Maywood, Neb., University of Nebraska College of Medicine, Omaha, 1903, aged 62, died, April 7, in St. Catherine of Siena Hospital, McCook, of nephritis.

Neill Malcolm Watson, Red Lake Falls, Minn., McGill University Faculty of Medicine, Montreal, Que., Canada, 1891, aged 70, died, April 6, of coronary thrombosis and diabetes mellitus.

Daniel Wesley Le Grand, East St. Louis, Ill., Washington University School of Medicine, St. Louis 1901, member of the Illinois State Medical Society, aged 66, died, April 30, of heart disease.

Charles Gustavus Morris, Battle Creek, Mich., Detroit College of Medicine 1914, member of the Michigan State Medical Society, aged 51, died suddenly, April 29, of heart disease.

James Francis Kearney, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905, aged 55, died, April 9, of coronary occlusion.

Otto Klietsch, San Diego, Calif., Hessische Ludwigs-Universität Medizinische Fakultät, Giessen, Hesse, Germany, 1886, aged 75, died, April 20, of carcinoma of the rectum.

Henry William Schmidt, Chelsea, Mich., University of Michigan Department of Medicine, Ann Arbor, 1888, aged 71, was killed, April 5, in an automobile accident.

Philip Louis Kessler, Finchville, Ky., Louisville Medical College, 1900, aged 56, died, April 12, in Simpsonville, of coronary thrombosis and chronic arthritis.

Anna Rebecca Cooper, Chicago, Cleveland Medical College 1895, aged 65, died, May 2, in the Provident Hospital, of coronary occlusion and pulmonary infarct.

Shedrick Le Roy Morris, Atlantic City, N. J., Howard University College of Medicine, Washington, D. C. 1895, aged 71, died, April 26, of myocarditis.

William Arthur Schlesinger, Cleveland Heights, Ohio, Western Reserve University Medical Department, Cleveland 1904, aged 56, died, April 15.

Clement V. Marmaduke, Pueblo, Colo., Northwestern University Medical School, Chicago 1896, aged 68, died, April 14, of pneumonia.

Joseph L. Korzen, Berwyn, Ill., Chicago College of Medicine and Surgery 1917, aged 49, died, May 6, of coronary thrombosis.

Hugh A. Jones, St. Louis, Missouri Medical College, St. Louis 1886, aged 70, died, April 14, of pneumonia.

Bureau of Investigation

SNYDER PRODUCTS COMPANY, ETC.

A Chicago Outfit Declared a Fraud

Mail order quacks usually operate under a variety of high sounding names. When they have "milked" a victim dry under one firm name, they can later solicit him under another name (and perhaps from a slightly different address), so that he will not suspect that all the "come-on" stuff emanated from the same source. Recently the Post Office Department at Washington issued a fraud order against the Snyder concern, operating under the various titles Snyder Products Company, Snyder Tablet Company, Virginia Walker, Order Department, Virginia Walker, D. Ph., Women's Department, Julia Sincere, Women's Department, Indian Herb Gardens, E. E. Schneider, The Herb Medicine Man, The Vita-Tone Company, O. J. Medical Company, and their officers and agents as such.

Under these diversified names, the several companies listed, all owned and controlled by one Ernest E. Schneider, offered for sale through the mails an extensive array of alleged remedies. Several were of the "monthly regulator" or "delayed period" type, but the majority were nostrums for innumerable ailments, including tablets for kidney and bladder troubles, nervous disorders, restoring lost manhood and lost womanhood, or what have you.

I Reduced 70 lbs.

You, Too, Can Have a Charming, Graceful Figure

Many women report the loss of as much as 5 lbs. in ONE WEEK. Safely without teas, dangerous drugs, dopes or chemicals without strenuous exercising or starvation dieting. Snyder's Anti-Fat Tablets are a SAFE HARMLESS EFFECTIVE compound does not leave a flabby skin. **SEND NO MONEY** Just pay postman when delivered.

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Among the encyclopedic list of "patent medicines" was the ubiquitous fat cure, 'Snyder's Anti-Fat Tablets.' Like most obesity-cure copy, the 'come-on' was the picture of a damsel, clad in a bathing suit and displaying a finely proportioned figure.

The advertising lure read

I Reduced 70 lbs.

You too can have a charming graceful figure.

Many women report the loss of as much as 5 lbs. in ONE WEEK! Safely without teas, dangerous drugs, dopes or chemicals without strenuous exercising or starvation dieting. Snyder's Anti-Fat Tablets are a SAFE HARMLESS EFFECTIVE compound does not leave a flabby skin. **SEND NO MONEY** Just pay postman when delivered.

The obese who succumbed to the S. P. Anti-Fat pharascology and wrote to the company received a large, crudely illustrated circular depicting a misshapen, overweight female designated "Hypothetical Ethel" together with other illustrations purporting to show the same person reduced to an ideal figure by the use of Snyder's Anti-Fat Tablets.

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Why not rid yourself of cruel, Life-Shortening Fat? Now that at last it can be DONE. SAFE. Harmless. Leaves no wrinkled skin after reductions. Triumph of Medical and Pharmaceutical Science.

As a result of the advertising ballyhoo, the Snyder outfit and associated concerns received between eight hundred and one thousand letters a day, and filled between seven and eight hundred orders. The gross income for 1934 was \$87,000 which peaks eloquently for the gullibility of human nature.

Don't be discouraged or alarmed because nature fails you. You can now depend on this wonderful new S. P. Periodic Relief Compound.

Double X\ Strength (Pills) often successfully relieves some longest overdue, unusual discouraging unnatural suppressed periods generally very quickly. Some say magic like quick in action without danger pain or inconvenience. Rely on this new wonderful Relief Compound

Copy appeal, while representing the stuff to relieve irregular or delayed menstruation due to "cold, exposure to inclement weather, wet feet violent shock or other like causes," obviously winks the other eye to give the impression that the product is an effective abortifacient when it states "We do not maintain a purchasers' correspondence department. Hence we cannot answer personal letters or unethical questions. Women are quick to understand the real purposes of Snyder Products."

The "Snyder's S P Tablets Prescription O J O XX" was shown by government analysis to contain a fraction of a grain of ferric carbonate per tablet together with potassium sulfate indicating a mixture similar to Bland's mass, also emodin-bearing plant extractives but no alom or alkaloids.

Other Snyder periodic pills declared fraudulent by the Post Office Department included "O J O Relief Compound," "S P Relief Compound and S P Treatment," "S P Snyder's Tablets Combination No XXX" and "S P Snyder's Tablets No XX." The fraud order debarring the Snyder (Schneider) interests from the mails was issued in April, 1936.

Correspondence

THE USE OF DESICCATED THYROID

To the Editor—The presentation of Dr John M Berkman on "Low Basal Metabolic Rate and the Use of Desiccated Thyroid" (THE JOURNAL, June 13) is interesting not alone for what it says but also for what it implies. Are we to understand that no clinical indications arise for the use of thyroid in conditions not accompanied by low metabolic rates? If so, is one to understand further that only the thyroxine principle in desiccated thyroid is the therapeutically active unit in the complex mixture called desiccated thyroid? What does the author mean by a difference in potency of different preparations of desiccated thyroid, assuming, as one must, that the iodine content of all offered desiccated products meets the U S P requirements? I trust that the author, in asserting this difference in potency, had no reference to the fact that one manufacturer persists in labeling his product on a basis of the weight of the fresh gland, as against the general procedure of other manufacturers to label their products on a basis of the weight of the dehydrated material. There is a feeling among many competent clinicians that thyroid can be and is effectively used in conditions not accompanied by a low metabolic rate and that the present state of knowledge of thyroid function does not permit the categorical judgment that thyroid function is synonymous with thyroxine activity.

HERMAN SHARLIT, M D, New York.

[Dr Sharlit's comments were referred to Dr Berkman, who replies.]

To the Editor—My intention was not to imply but to state directly that in my opinion there are no indications for the prolonged use of desiccated thyroid except in the presence of a definitely depressed basal metabolic rate. However, this statement, or implication if you will was qualified by a paragraph on page 2045 as follows: "As a general rule one does not expect favorable results from elevation of the metabolic rate unless that rate is in the region of minus 16 per cent or lower and when such a rate is associated with definite symptoms the most significant of which are fatigue and intolerance to cold." This paragraph of course is in particular reference to the group of cases in which there is a low basal metabolic rate without myxedema. Of course the foregoing statements

are made on the assumption that the basal metabolic rate determinations have been accurate and truly represent the rate of metabolism in the individual patient.

From a chemical standpoint, desiccated thyroid is a complex mixture. However, from a practical standpoint thyroxine appears to be the only therapeutically active ingredient. This is strongly suggested by the fact that in the treatment of myxedema pure crystalline thyroxine is just as effective as desiccated thyroid and completely eradicates all the symptoms of the condition.

Thirdly, it was not my intention to imply that any one preparation of desiccated thyroid was more efficacious than another but to suggest that adherence to one brand of desiccated thyroid allows one to become accustomed to the effect of the dosage. As to the variance in potency, Gutman, Benedict and Palmer analyzed the thyroxine content of various thyroid preparations on the market and found a variation between the highest and the lowest of 259 per cent. Means, Lerman and Salter assayed the effect of various commercial preparations of thyroid gland on myxedematous patients and found that the calorogenic action depended on the total organic iodine content rather than on the thyroxine-iodine content.

JOHN M BERKMAN, M D, Rochester, Minn.

VARIATION IN BILE PRESSURE IN HUMAN BILIARY TRACT

To the Editor—May we call attention to the erroneous conclusions regarding biliary tract pressure implied by the paper entitled "Observations on the Variation in Bile Pressure in the Human Biliary Tract" by Harold A Kipp in THE JOURNAL, June 27, page 2223.

Biliary tract pressure is measured either against the effective resistance of the Oddi sphincter while the bile is being secreted by the liver (in which case there is no flow through the sphincter) or maximally at the level at which the sphincter just ceases to be effective. If the sphincter is closed completely (nonfunctioning) and a side arm is added to the biliary system (stomach cholecystogastrostomy), the system must include the stomach, and the pressure in the biliary radicles depends on the height of fluid level in the stomach over the point of reference in the biliary tract, and also on the gastric tonicity. This is admirably illustrated in the author's figure 2, although in the paper it is given scant consideration. Any readings obtained in such a system cannot be considered to be biliary tract pressures, but biliary tract plus intragastric pressures, and explanations of variations in readings must take into consideration factors which affect gastric pressure, such as recumbency, standing and coughing. Thus, from this case no conclusions can be drawn concerning biliary tract pressure or factors controlling it in human beings.

Furthermore, by the method employed in this case, even if the sphincter were normal and no cholecystogastrostomy had been performed, pressure readings would have been of doubtful significance since the position of the sphincter was merely guessed at. Similar objection may be raised to the method employed by McGowan, Butsch and Walters in their paper on

Pressure in the Common Bile Duct of Man in the same issue of THE JOURNAL, since they frankly measured pressure only from the point of emergence of the tube from the skin. A method for accurately measuring maximum biliary tract pressure in man at the sphincter of Oddi has been described (Koster, Harry, Shapiro, Arthur and Lerner, Harry, On the Rate of Secretion of Bile, *Am J Physiol* 115 23 [March] 1936).

HARRY KOSTER, M D
ARTHUR SHAPIRO, M D
Brooklyn

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

UNDULANT FEVER

To the Editor—A man aged 42 has been sick for the past three months. The history and clinical course are compatible with undulant fever except that repeated agglutination tests have been negative. Recently an intradermal skin test of 1:500 dilution of a stock vaccine containing 2,000 million each of *Brucella abortus* and *Brucella melitensis* gave a mildly positive reaction with a zone of erythema 1 cm in diameter and slight swelling. It also caused a rise of temperature to 99 F and a rise of pulse to 110 for the first time in three weeks. How much reliance may be placed on such a skin test? I would appreciate references to recent good literature on the subject. Please omit name.

M D Massachusetts

ANSWER—Burnet, Carpenter, Simpson and others have found that a small proportion of individuals with brucellosis (undulant fever) from whose blood *Brucella* may be recovered, fail to develop specific serum agglutinins. The intradermal test utilizing heat-killed or formaldehyde killed *Brucella* organisms as antigen, appears to be of value in identifying individuals who have acquired cutaneous sensitiveness after the invasion of tissues by living *Brucella* organisms. The endermic reaction is of value in the diagnosis of brucellosis, particularly in cases in which no agglutinins for *Brucella* are found in the blood serum after repeated testing, and in those in which *Brucella* cannot be grown on culture of the blood, urine, stools or bile. The skin test is also of value in those cases in which the agglutination reaction is doubtfully positive in low titer (from 1:10 to 1:100). Bacterial filtrates have been utilized for the intradermal test but heat-killed bacterial suspensions seem to have a more specific action. The *Brucella melitensis* (abortus) vaccine, which is used in the therapy of brucellosis, may be utilized for the skin test. Because of the extreme sensitiveness of some persons to the intradermal injection of killed *Brucella* organisms, it is desirable to reduce the bacterial content of the test dose by diluting 0.1 cc of the vaccine with 0.4 cc of sterile physiologic solution of sodium chloride. The intradermal test is made with 0.1 cc of the diluted suspension producing a wheal about 5 mm in diameter. A positive reaction will develop in from twelve to forty-eight hours at the site of the injection. A positive test is characterized by the gradual development of an indurated reddish area usually from 3 to 5 cm in diameter. The induration usually persists for several days. A faint transient pink reaction without induration should probably be regarded as a negative test. In particularly sensitized individuals a systemic reaction may occur following the injection of the skin test antigen. In interpreting the results of such cutaneous tests consideration must be given to the fact that presumably normal persons may develop cutaneous hypersensitiveness without symptoms of illness as the result of previous subclinical (asymptomatic) *Brucella* infection. Consideration must also be given to the fact that cutaneous sensitiveness remains after recovery from brucellosis. Thus, a person who has cutaneous hypersensitiveness to *Brucella* antigen may be suffering from some other disease at the time the test is made. A positive skin test in such a case may be merely the result of asymptomatic or symptomatic brucellosis acquired some months or years previously. In such cases, due regard should be given to the clinical symptomatology. If repeated agglutination tests are negative and if the intradermal skin test is negative it is quite unlikely that the patient has or has had brucellosis.

The following recent reports describing the intradermal test as an aid in the diagnosis of undulant fever, may be consulted:

- Giordano A S. *Brucella Abortus Infection in Man*. The Intradermal Reaction as an Aid in Diagnosis. *The Journal of Tropical Medicine and Hygiene* 1929 p 1957.
- Simpson W M and Frazier Eunice. Undulant Fever. Report of Sixty Three Cases Occurring in and About Dayton Ohio. *The Journal of Tropical Medicine and Hygiene* 1929 p 1958.
- Simpson W M. Undulant Fever (Brucellosis) with Reference to 148 Cases Encountered in and About Dayton Ohio. *The Journal of Tropical Medicine and Hygiene* 1934.
- Leavelle H R and Amoss H L. The Endermic Reaction in *Brucella* Infections. *Arch Int Med* 48 1192 (Dec) 1931.
- Levin William. The Intradermal Test as an Aid in the Diagnosis of Undulant Fever. *J Lab & Clin Med* 16 275 (Dec) 1930.
- Harris H J. Undulant Fever—Difficulties in Diagnosis and Treatment. A Preliminary Report of Fifty One Cases. *New York State J Med* 34: (Dec) 1934.
- Evans Alice C. Chronic Brucellosis. *The Journal* Sept 1 1934.

PERSISTENT FISSURE OF TONGUE

To the Editor—A woman aged 35 divorced mother of one child 13 years of age complains of fissures of the upper surface and the edges of the tongue for the past four months. The tongue feels tender at times and varies in appearance from day to day and even from morning to night. The fissures vary in size and depth from time to time and do not appear to be affected by treatments with 10 to 20 per cent silver nitrate tannic acid in glycerin boric acid physiologic solution of sodium chloride sodium perborate dilute hydrochloric acid by mouth cod liver oil intramuscular injections of hydrochloric acid and a strict diet eliminating salt spices condiments and lemons of which she is fond and used to eat in large quantities. She used sodium perborate as a routine before the onset of the soreness. The patient is active. Her home surroundings are all but pleasant which results in her vomiting quite frequently whatever she may eat or drink even if it is water. She has never smoked and has not indulged in alcohol on account of its having been the main cause for her divorce. Her teeth are in excellent condition with no rough surfaces evident. In spite of all forms of diet and exercises she suffers from chronic constipation, which is being corrected by the use of agarol or caroid and bile salts. Examinations by different physicians agree with my observation that there is no apparent organic disorder. The blood pressure is 110 systolic 70 diastolic pulse 80 respiration 18 20 temperature normal weight between 110 and 120 pounds (50 and 54 Kg). The patient gained 10 pounds (4.5 Kg) by using cod liver oil and intramuscular injections of hydrochloric acid. Examination of the blood reveals red blood cells 4,500,000 white blood cells 8,000 and hemoglobin 80 per cent. Smears from the tongue and gums are negative for Vincent's infection. The Wassermann reaction is negative. I should like to know what condition this is and the possibility of its being allergic. The patient uses Dorothy Gray cosmetics and Roux shampoo tint made by Roux Laboratories 9 East Forty Fifth Street New York. Is Roux tint harmless? Please advise as to a working diagnosis and modes of treatment. Please omit name.

M D Texas

ANSWER—It is impossible to diagnose the nature of the disorder from this description. Certainly, pernicious anemia should be ruled out. Even though the blood count is normal a gastric analysis should be made to see if there is sufficient hydrochloric acid. An avitaminosis should also be considered and a diet rich in vitamins should be tried. An allergic condition is also possible. Canker sores have been found to be due to allergy in many cases by W L Beecher. Beecher and others believe that ulcers may be due to allergy. He believes that the allergic reactions cause a lessened resistance to digestive ferments and that ferment action produces the actual ulcer. The persistence of the allergy prevents healing and a recurrent allergic reaction may account for seasonal incidence of ulcers.

Since the tongue condition has lasted four months, a work up from the allergic point of view is indicated. This will include a careful history of possible causative foods and complete skin tests for foods. If positive skin tests are found the foods should be removed from the diet for a trial period of about two weeks. If tests are negative, elimination diets should be tried successfully for periods of a week. One class of food may be removed at a time. Since nuts, spices and chocolate (cocoa) are particularly apt to cause symptoms in the mouth these foods should be eliminated at once.

It is not likely that cosmetics play a part here as there is lack of contact.

PARALYSIS AFTER SPINAL ANESTHESIA

To the Editor—Are there any recorded cases of hemiparalysis with loss of sphincters following a spinal anesthesia? If so is the lesion permanent? Please omit name.

M D South Dakota

ANSWER—There are reports in the literature of paralysis and of loss of control of the sphincters following spinal anesthesia. In some cases the symptoms were transient in others they were prolonged, in some the outcome was fatal. Paralysis affecting the legs and the anal and vesical sphincters occurred in two of the 924 cases reported by Bedeschi in which spinal anesthesia with amylolacine hydrochloride B P 254 ("stovaine") was employed (Bedeschi P. Considerazioni sopra 924 casi di rachistovainizzazione, *Gazz d osp* 34 249 [Feb] 1913). The paralysis of the sphincters subsided after ten days in one case and after thirty-five days in the other. In the latter case cystitis was present, and severe decubitus but the patients were able to stand and to walk, but disturbances of great weakness in the legs, and sensory

Silva reported a case of permanent paralysis of the bladder and rectum after removal of an inguinal lymph node under intraspinal anesthesia (Silva Castro B. Effects of Intraspinal Anesthesia. *Arch de med de Pernambuco* 1 47 [Feb] 1925). A case of left-sided hemiplegia following spinal anesthesia which cleared up within a month under symptomatic treatment was reported by R Dassen (Sindrome piramidal consecutivo a una raquianestesia. *Semana med* 1 1145 [April 18] 1935).

Zahradnicky observed 280 cases of paresis of the lower extremities and anal sphincter in a series of 667 cases in which procaine hydrochloride in combination with epinephrine was used to produce spinal anesthesia (Zahradnicky Ueber die Erfolge der Medullaranästhesie, speziell bei Laparotomien, *Arch f klin Chir* 89 371, 1909). These symptoms were only temporary, however, and were without unfavorable after-effects. Steuernagel had three cases in which there was slight paresis in one or both legs and sensory disturbances. In two of these cases, conditions promptly returned to normal under electrical treatment, but in the third case there was evidence of grave organic injury from the spinal anesthesia, weakness and pains in the legs, sensory disturbances, and considerable paresis of the right leg. The symptoms gradually subsided by the end of the third month, when it was found that a purely hysterical disturbance had succeeded the organic disturbances (Steuernagel, W Erfahrungen mit der Lumbalanästhesie, *Monatsschr f Geburtsh u Gynäk* 34 702 [Dec.] 1911).

Violet and Fisher collected reports of 30,000 gynecologic cases from the literature in which spinal anesthesia was used. Paralysis of the legs or sphincters developed in sixteen cases, generally subsiding after a few days or months but entailing fatal complications in the bladder or kidneys in two cases and fatal infection from an eschar in a third. In three cases the paralysis or ataxia seemed to be permanent (Violet and Fisher Etude sur la rachistovainisation en gynécologie, *Lyon Chir* 4 421 [Nov 1] 1910). Boldt believed the occasional paralysis of one or both extremities to be due to faulty technique (Boldt, H J Spinal Anesthesia in Gynecology, *New York M J* 101 437 [March 6] 1915).

Other references dealing with this subject are

- Ashworth H K Nervous Sequelae of Spinal Anesthesia *Proc Roy Soc Med* 26:501 (March) 1933
 Chiene, George Discussion on Spinal Anesthesia *Brit M J* 2:785 (Sept. 18) 1909
 Ciaprin Gino Contributo clinico-statistico sulle rachianestesia ed anestesia locali praticate presso l'Infermeria presidiaria di Aquila *Politecnico* (Sez. Prat.) 30:111 (Jan 22) 1923
 Dandois Accidents cérébro-spinaux tardifs et prolongés apres cocainisation de la moelle, *J de chir et Ann Soc belge de chir* 1:282 (April May) 1901
 Gioseffi M I rischi della rachianestesia dal punto di vista clinico e medico-forense *Riforma med* 38 966 (Oct 9) 1922
 Guibal P Anesthésie rachidienne inefficacité et méfaits de l'injection intrarachnoidienne de caféine *Presse méd* 2 583 (July 4) 1923
 Hughes Cecil The Present Position of Spinal Analgesia *Proc Roy Soc Med Sect. on Anes* 21:1 (Nov 4) 1927
 Neugebauer Ueber Rückenmarksanästhesie mit Tropicocain *Wien klin Wchnschr* 14:1229 (Dec 12) 1261 (Dec. 19) 1299 (Dec 26) 1901
 Nicolich Rach anesthésie en chirurgie génito-urinaire *Rev prat d mal d org gén urin* 10 197 1913
 Reclus P De la méthode de Bier (analgésie chirurgicale par injection intrarachnoidienne de cocaïne) *Gaz heb de méd et chir* 48 280 (March 24) 1901
 Schepelmann Emil Ueber öble Zufälle bei Lumbalanästhesie *Deutsche med Wchnschr* 2 1475 (Oct.) 1924
 Smith W A Neurologic Hazards of Spinal Anesthesia *J M A Georgia* 22 297 (Aug.) 1933

LEAD POISONING OF PAINTER

To the Editor—Is it likely that a painter will develop lead poisoning when he uses the brush for painting? The patient involved is said to have been a painter for a period of eight years. Granted that a painter is suffering from lead poisoning, how long would one be likely to find stipple cells in the blood after the patient ceased to be exposed to lead? Please omit name

M D Kansas

ANSWER—Large numbers of brush painters who apply paint that contains lead have suffered from lead poisoning of some degree, in the course of years spent in the paint trade. House painters rather than industrial brush painters, are more prone to acquire lead poisoning, owing to the requirements for sandpapering old lead coatings prior and preparatory to repainting. Torch work for the burning off of old coats of paint may give rise to some lead fume but this is not an important source of lead poisoning among painters. Naturally brush painters get some paint on their hands in the absence of great care this paint may enter the mouth through contact with the fingers in smoking taking a chew of tobacco and eating. In short, lead poisoning among brush painters using lead paint is by no means extraordinary.

The detection of stipple cells as a qualitative procedure is of questionable value in the diagnosis of lead poisoning. A few such cells may be found in many persons unexposed to lead after careful search. However, quantitative counts are of some value when the number of such stipple cells is in excess of some such figure as 3,000 per million total red cells. When lead is being absorbed the number of stipple cells may be increased even though no clinical lead poisoning may be established at present. Conversely stipple cells may be found in the blood long after disappearance of clinical manifestations of

lead poisoning. Irregularly increased numbers of stipple cells may be found in the blood examinations as much as a year after exposure or after the cessation of clinical manifestation, but no hard and fast statement can be made in this respect. Further, disabling sequelae of lead poisoning may persist in the absence of any increased numbers of stipple cells.

CHRONIC GONORRHEA

To the Editor—A man aged 22 had acute gonorrheal urethritis in February 1935. He treated himself with acriflavine and continued ordinary activities until March when he had epididymitis on the left side and two weeks later epididymitis on the right side. These inflammations subsided. In July there was still a slight discharge with a positive complement fixation test and a negative Wassermann reaction. A series of Corbus Ferry vaccine injections was given for eight weeks. The discharge stopped after the third injection. At the end of treatment the complement fixation test was still positive but the patient was given a rest. At the end of November the discharge reappeared although the patient had had no further intercourse. Acriflavine prostatic massage and two weeks later again Corbus Ferry vaccine were administered. After four treatments the discharge stopped and a smear was negative even after a prostatic massage. The complement fixation test taken one week ago was still positive. 1 How reliable is the complement fixation test? 2 When will it be safe for the patient to have intercourse? 3 What further treatment would you suggest? Please omit name

M D New York.

ANSWER.—1 A positive gonococcus complement fixation reaction indicates the presence of a focus of living gonococci in the patient. A negative reaction does not exclude gonorrhea.

2 Intercourse will be safe when, following careful study of the prostatic secretion and urethral discharge following provocative injections, one fails to demonstrate gonococci and the complement fixation test is negative.

3 In all probability this patient's infection is lurking in the prostate and vesicles. Continued massage of these glands followed by instillation of a mild solution of silver nitrate (from 0.25 to 0.5 per cent) should help to clear up the infection.

INTERSTITIAL KERATITIS

To the Editor—What would be the proper course of treatment for an eight year old girl with an interstitial keratitis of the right eye of three days duration a positive Wassermann reaction and otherwise good health? Please omit name.

M D, California.

ANSWER—The treatment must be both local and systemic in order to minimize possible damage to the eye. Locally, atropine should be used in sufficient amount to obtain and maintain full pupillary dilatation. Heat in the form of hot wet fomentations should be applied from twenty to thirty minutes at least three times a day and this may be supplemented by short wave diathermy. Antisyphilitic measures applied locally have proved to be entirely without value. Ethylmorphine hydrochloride is of value only in the later stages. As soon as the left eye shows the faintest signs of irritation, as it undoubtedly will, for the majority of cases of interstitial keratitis become bilateral, the pupil should be dilated as widely as possible with atropine.

The systemic treatment must be aimed at the underlying cause of the interstitial keratitis, namely, congenital syphilis. This had best be carried out by a pediatrician or syphilologist rather than an ophthalmologist. In general, these conditions respond better to the use of the arsenical or bismuth preparations than to the time tried mercury injections. But there is no specific effect to be expected and time is an important element.

SENSITIVITY TO INSULIN

To the Editor—I have a patient who is sensitive to all the brands of insulin listed in New and Nonofficial Remedies. Local areas of swelling and induration develop about the site of each injection. Is there any product on the market to be used in such cases and where can it be obtained?

MORRIS FINK M D New York.

ANSWER.—The question of sensitivity to insulin is given full consideration in an article by F N Allan and L R Scherer Insulin Allergy (*Endocrinology* 16 417 [July Aug.] 1932). Several of the commercial houses which manufacture insulin have supplies of crystalline insulin on hand which they will supply for special cases showing sensitiveness to the ordinary commercial forms of insulin.

In many cases desensitization is spontaneous if injections are continued at regular intervals. An interesting point made by Allan and Scherer with regard to desensitization toward insulin is that the change may be localized to the area where the injections are customarily made. A patient who had become free from local reactions complained that the trouble recurred when he entered the hospital at a second visit. It was found that the reaction occurred on the arms where the injections

were given by the nurses, but not on the thighs, where he had been accustomed to give the injections himself. A similar observation was reported by Campbell, Gardiner and Scott, quoted by Allan and Scherer. Efforts to bring about desensitization deliberately have not been very effective although certain cases have been benefited by this means.

SIGNS OF ALCOHOLIC INTOXICATION SEEN AT NECROPSY

To the Editor—Would you be kind enough to answer the following three questions? In the performance of an autopsy is it possible for the physician to state that the deceased was intoxicated at the time of death? What is the greatest length of time after death that the statement of intoxication can be made without any question of doubt? What are the positive tests that can be made on the pathologic examination? Any other facts will also be greatly appreciated. If printed please omit name.

M D Pennsylvania

ANSWER—It is not possible to determine by unaided necropsy whether or not a person was intoxicated by alcohol at the time of death. Redness of the lining of the esophagus and stomach, minute hemorrhages in the gastric mucous membrane, hyperemia and edema of the brain and its membranes, and a more or less definite odor of alcohol from the gastric contents and the organs, especially the brain, though accepted as indications of ingestion of alcohol shortly before death, convey no trustworthy information about the actual amount of alcohol in the body. That can be determined only by chemical examination of the blood supplemented by examination of the contents of the stomach. Other forms of intoxication as well as certain acute infections may cause changes in the organs more or less like those caused by alcohol. At least in many cases there will be grave doubt whether the odor is surely that of alcohol. And finally comes the fact that according to reports acute fatal alcoholic intoxication may occur without causing any recognizable changes in the organs mentioned.

POSSIBLE ARSENICAL POISONING

To the Editor—A patient with severe secondary anemia of cause as yet unknown has for the past six weeks taken as part of his treatment four Blaud Modified Pills three times a day (20 grains or 1.3 Gm. of iron and one-tenth grain or 0.0065 Gm. of arsenic trioxide three times a day). The blood picture shows slight improvement. There are no symptoms of poisoning but can this dosage of arsenic trioxide be continued? Has any harm been done to date? Please omit name.

M D Massachusetts

ANSWER—No harm may have been done, for chronic arsenic poisoning usually produces gastro-intestinal disturbance, irritation of the respiratory tract, skin diseases or neuritis before it results in cachexia. This case nevertheless, illustrates the necessity of omitting the other ingredients, such as arsenic or strychnine from the traditional "tonic" pills when giving large doses of iron in the modern treatment of anemia.

REMOVAL OF TEETH IN PATIENT WITH HEMOPHILIA

To the Editor—A man aged 58 subject to hemophilia has a mouth full of decayed teeth, which should be removed. Can you advise a safe procedure, as on two former occasions he nearly bled to death from the extraction of one tooth? Please omit name.

M D Ohio

ANSWER—The removal of teeth in a person with pronounced hemophilia should be undertaken with the greatest possible care and only after the patient has been under treatment to lower the coagulation time to an irreducible minimum. In the event that teeth must be removed, only one or two should be taken out at a time, and the gums should be carefully sutured by means of a very fine needle. It is usually possible to suture the gums to prevent undue bleeding even in a hemophilic patient if care is exercised in closely approximating the gum surfaces and tying the sutures tight enough to cause definite pressure.

CORNEAL OPACITIES

To the Editor—Please tell me the efficacy of a solution of quinine bisulfate in clearing up old corneal opacities. If of value please state strength of solution used and frequency of applications. Should this query appear in THE JOURNAL, please omit name.

M D Pennsylvania

ANSWER—Dr. Elias Selinger has recommended the use of quinine bisulfate in the treatment of corneal opacities as well as in trachoma. Other ophthalmologists have not noticed any better results from it than from ethylmorphine hydrochloride. It is used in a 2 per cent aqueous solution instilled into the conjunctival sac four times a day or as a 2 per cent ointment in petrolatum three times a day, the patient being instructed to massage for two minutes after the use of the ointment.

Council on Medical Education and Hospitals

THE AMERICAN BOARD OF INTERNAL MEDICINE (INC)

The American Board of Internal Medicine, incorporated Feb. 28, 1936, completed its organization June 15. The officers chosen were Walter L. Bierring, M.D., Des Moines, chairman; Jonathan C. Meakins, M.D., Montreal, vice chairman, and O. H. Perry Pepper, M.D., Philadelphia, secretary-treasurer. These officers with the following six members constitute the present membership of the board: David P. Barr, M.D., St. Louis; Reginald Fitz, M.D., Boston; Ernest E. Irons, M.D., Chicago; William S. Middleton, M.D., Madison, Wis.; John H. Musser, M.D., New Orleans; and G. Gill Richards, M.D., Salt Lake City.

The term of office of each member is to be three years, and no member shall serve more than two consecutive three year terms.

The organization of the board is the result of effective effort on the part of the American College of Physicians in conjunction with the Section on Practice of Medicine of the American Medical Association, and these two organizations are represented in the membership of the board on a five to four ratio respectively.

The American Board of Internal Medicine had previously received the official approval of the two bodies fostering its organization, as well as that of the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

The purpose of the board is to be the certification of specialists in the field of internal medicine and the establishment of qualifications with the required examination procedure for such certification.

While the board is at present chiefly concerned with the qualifications and procedures for certification in the general field of internal medicine, it is intended to inaugurate immediately after July 1, 1937, similar qualifications and procedure for additional certification in certain of the more restricted and specialized branches of internal medicine, as gastroenterology, cardiology, metabolic diseases, tuberculosis and allergic diseases, such special certification to be considered only for candidates who have passed at least the written examination required for certification in general internal medicine. The operation of such a plan would require the active participation and cooperation of recognized representatives from each of such special fields of medicine.

Each applicant for admission to the examination in internal medicine will be required to meet the following standards:

General Qualifications—1. Satisfactory moral and ethical standing in the profession.

2. Membership in the American Medical Association or by courtesy membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided membership in other societies should not be required.

Professional Standing—1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association.

2. Completion of an internship of not less than one year in a hospital approved by the same council.

3. In the case of an applicant whose training has been received outside the United States and Canada his credentials must be satisfactory to the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

Special Training—1. Five years must elapse after completion of a year's internship in a hospital approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association before the candidate is eligible for an examination.

2. Three years of this period must be devoted to special training in internal medicine. This requirement should include a period of at least several months of graduate work under proper supervision in anatomy, physiology, biochemistry, pathology, bacteriology or pharmacology particularly as related to the practice of internal medicine.

This work may be carried on in any domestic or foreign medical school or laboratory recognized by the Council on Medical Education and Hospitals of the American Medical Association as offering appropriate facilities for this type of postgraduate experience or it may include a period of at least several months of graduate work under proper supervision in internal medicine or in its restricted and specialized branches in any domestic or foreign hospital, clinic or dispensary or under the

immediate preceptorship of an internist recognized by the Council on Medical Education and Hospitals of the American Medical Association as offering appropriate facilities for this type of postgraduate experience.

3 An education period of not less than two years of special study nor practice in the field of internal medicine or in its more restricted and specialized branches.

The American Board of Internal Medicine does not propose to establish fixed rules for the preliminary training of candidates for certification in this field. Broad general principles for training, however, may be outlined although such suggestions as are made must of necessity be subject to constant changes reflecting the dynamic nature of the specialty.

A sound knowledge of physiology, biochemistry, pharmacology, anatomy, bacteriology and pathology so far as they apply to disease is regarded as essential for continued progress of the individual who practices internal medicine. The mere factual knowledge of medicine and its basic sciences is not sufficient. The candidate must have had training in their use in furthering his understanding in clinical medicine. This implies practical experience under the guidance of older men who bring to their clinical problems ripe knowledge and critical judgment. Preparation to meet this requirement adequately may be even more difficult to obtain than the so-called scientific training. It may however be acquired in the following ways:

(a) By work in a well organized hospital outdoor clinic conducted by competent physicians.

(b) By a prolonged period of resident hospital appointments likewise directed by skilled physicians.

(c) By a period of training in intimate association with a well trained and critical physician who takes the trouble to teach and guide his assistants rather than to expect him only to carry out the minor drudgery of a busy practice.

4 The board does not consider it to the best interests of internal medicine in this country that rigid rules as to where or how the training outlined shall be obtained. Medical teaching and knowledge are international. The opportunities of prospective candidates are not all the same. Some may have the opportunity of widening their knowledge by a period of study abroad. Others at the other extreme may be restricted to a comparatively narrow geographic area and their more detailed training must be obtained in short periods scattered over a longer time. Although it is laid down that at least five years must elapse between the termination of the first intern year and when the candidate is eligible to take the examination a longer period is advisable. The board wishes to emphasize that the time and training are but means to the end of acquiring a broadness and depth of knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge as best he may, rests with the candidate while the responsibility of maintaining the standard of knowledge required for certification devolves on the board.

Method of Examination—The examination required of candidates for certification as specialists in internal medicine will comprise part I (written) and part II (practical or clinical).

PART I—The written examination is to be held simultaneously in different sections of the United States and Canada and will include:

(a) Questions in applied physiology, physiologic chemistry, pathology, pharmacology and the cultural aspects of medicine.

(b) Questions in general internal medicine.

The first written examination will be held in December 1936 and candidates successful in this written test will be eligible for the first practical or clinical examination, which will be conducted by members of the board near the time of the annual session of the American College of Physicians at St. Louis in April 1937.

The fee for examination is \$40, which must accompany the application and an additional fee of \$10 is required when the certificate is issued.

Application blanks and further information can be obtained by addressing the office of the chairman, Walter L. Bjerring, M.D., 406 Sixth Avenue, Des Moines, Iowa.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALASKA Juneau Sept. 1 Sec. Dr. W. W. Council Juneau.
ARKANSAS Basic Science Little Rock, Nov. 2 Sec. Mr. Louis E. Gebauer 701 Main St. Little Rock. *Medical (Regular)* Little Rock, Nov. 10 Sec. Dr. A. S. Buchanan Prescott. *Medical (Eclectic)* Little Rock, Nov. 10 Sec. Dr. Clarence H. Young 207½ Main St. Little Rock.
CALIFORNIA Sacramento Oct. 19-22 Sec. Dr. Charles B. Pinkham 420 State Office Bldg. Sacramento.
CONNECTICUT Basic Science New Haven Oct. 10 *Prerequisite to license examination* Address: State Board of Healing Arts 1895 Yale Station New Haven.
FLORIDA Jacksonville Nov. 16-17 Sec. Dr. William M. Rowlett P. O. Box 78 Tampa.
GEORGIA Atlanta Oct. 13 Joint Sec., State Examining Boards Mr. R. C. Coleman 111 State Capitol Atlanta.

IDAHO Boise Oct. 6 Commissioner of Law Enforcement, Mr. Emmitt Pfost 205 State House Boise.

ILLINOIS Chicago Oct. 20-22 Superintendent of Registration, Department of Registration and Education Mr. Homer J. Byrd, Springfield.

KENTUCKY Louisville, Dec. 2-4 Sec. State Board of Health, Dr. A. T. McCormack 532 W. Main St. Louisville.

MARYLAND Regular Baltimore Dec. 8 Sec. Dr. John T. Olin 1215 Cathedral St. Baltimore. *Homeopathic* Baltimore, Dec. 8-9 Sec. Dr. John A. Evans 612 W. 40th St. Baltimore.

MICHIGAN Lansing Oct. 14-16 Sec. Board of Registration in Medicine Dr. J. Earl McIntyre 202 3-4 Hollister Bldg. Lansing.

MINNESOTA Basic Science Minneapolis Oct. 6-7 Sec. Dr. J. Charnley McKinley 126 Millard Hall University of Minnesota, Minneapolis. *Medical* Minneapolis Oct. 20-22 Sec. Dr. Julian F. DuBois 350 St. Peter St., St. Paul.

MONTANA Helena Oct. 6 Sec. Dr. S. A. Cooney 7 W. 6th Ave. Helena.

NEVADA Carson City Aug. 3 Sec. Dr. John E. Worden, Carson City.

NEW HAMPSHIRE Concord Sept. 10-11 Sec. Board of Registrars in Medicine Dr. Charles Duncan State House Concord.

NEW JERSEY Trenton Oct. 20-21 Sec. Dr. Arthur W. Belmont 28 W. State St., Trenton.

NEW MEXICO Santa Fe Oct. 12-13 Sec. Dr. Le Grand Ward Santa Fe.

NEW YORK Albany Buffalo New York and Syracuse Sept. 21-24 Chief Professional Examinations Bureau Mr. Herbert J. Hamilton, 315 Education Bldg. Albany.

OKLAHOMA Oklahoma City Dec. 9 Sec. Dr. James D. Osborn Jr. Frederick.

OREGON Basic Science Portland Nov. 21 Sec. Mr. Charles D. Byrne University of Oregon Eugene. *Medical* Portland Jan. 5-7 Sec. Dr. Joseph F. Wood 509 Selling Bldg. Portland.

PURTO RICO San Juan Sept. 1 Sec. Dr. O. Costa Mandry Box 536 San Juan.

VIRGINIA Richmond Dec. 9-13 Sec. Dr. J. W. Preston, 78½ Franklin Road Roanoke.

WISCONSIN Reciprocity Madison Sept. 8-9 Sec. Dr. Robert E. Flynn 401 Main St. La Crosse. *Basic Science* Madison Sept. 16 Sec. Prof. Robert N. Bauer 3414 W. Wisconsin Ave. Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Sept. 14-16 Ex. Sec. Mr. Everett S. Elwood 225 S. 15th St. Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Philadelphia, June Sec. Dr. C. Guy Lane 416 Marlboro St. Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov. 7. *Applications must be filed at least sixty days prior to the examination.* Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY New York, Sept. 26 Sec. Dr. John Green 3720 Washington Blvd. St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan. 9 Sec. Dr. Fremont A. Chandler 180 N. Michigan Ave. Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY New York Sept. 25-26 Sec. Dr. W. P. Wherry 1500 Medical Arts Bldg. Omaha.

AMERICAN BOARD OF PEDIATRICS Baltimore and Cincinnati in November Sec. Dr. C. A. Aldrich 723 Elm St. Winnetka Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec. 29-30 Sec. Dr. Walter Freeman 1028 Connecticut Ave. Washington D.C.

AMERICAN BOARD OF RADIOLOGY Cleveland Sept. 25-27 Sec. Dr. Byrl R. Kirklin Mayo Clinic Rochester Minn.

California Reciprocity and Endorsement Report

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports 20 physicians licensed by reciprocity and 3 physicians licensed by endorsement from April 22 through May 20, 1936. The following schools were represented:

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--|-------------------------|-----------|------------------|
| University of Colorado School of Medicine | (1934) | 1934 | Colorado |
| American Medical Missionary College Chicago | (1901) | 1901 | Ohio |
| Bennett Medical College Chicago | (1916) | 1916 | Illinois |
| Loyola University School of Medicine | (1898) | 1898 | Illinois |
| National Medical College Chicago | (1899) | 1899 | Illinois |
| University of Illinois College | (1931) | 1931 | Illinois |
| Tulane University of Louisiana | (1922) | 1922 | Louisiana |
| Boston University School of Medicine | (1931) | 1931 | Hawaii |
| Tufts College Medical School | (1917) | 1917 | Mass. |
| University of Minnesota Medical School | (1921) | 1921 | Minnesota |
| St. Louis University School of Medicine | (1920) | 1920 | Missouri |
| Washington University School of Medicine | (1922) | 1922 | Kansas |
| Creighton University School of Medicine | (1933) | 1933 | Nebraska |
| University of Nebraska College of Medicine | (1931) | 1931 | Vermont |
| Temple University School | (1912) | 1912 | Penn. |
| University of Tennessee | (1912) | 1912 | Texas |
| Vanderbilt University School | (1910) | 1910 | Missouri |
| Julius Maximilians Universität Medizinische Fakultät Würzburg | (1922) | 1922 | Iowa |
| Rheinische Friedrich Wilhelms Universität Medizinische Fakultät Bonn | (1922) | 1922 | New York |
| School | LICENSED BY ENDORSEMENT | Year Grad | Endorsement of |
| George Washington University School of Medicine | (1917) | 1917 | U.S.A. |
| Rush Medical College | (1932) | 1932 | U.S.A. |
| University of Maryland School of Medicine and College of Physicians and Surgeons | (1917) | 1917 | U.S.A. |

* Verification of graduation in process.

Book Notices

A Manual of the Common Contagious Diseases By Philip Moen Stimson A.B. M.D. Assistant Professor of Clinical Pediatrics Cornell University Medical College Second edition Fabrikoid Price \$4 Pp 439 with 56 illustrations Philadelphia Lea & Febiger 1936

This invaluable and compact manual has been thoroughly revised and brought down to date. A new chapter on smallpox has been added and chapters dealing with poliomyelitis, whooping cough, measles and meningitis have been changed to meet recent therapeutic advances. This has been accomplished without any undue expansion, and the comprehensive conciseness that characterized the first edition has been maintained. It is doubtful whether any book in any language presents the current information on the acute contagious diseases in such a lucid and compact manner as does this manual. It is well balanced, direct in its manner of presentation, and authoritative. The book is earnestly recommended to the practicing physician and to the student of medicine as an invaluable and necessary part of his library.

Children's Fears By Arthur T. Jersild and Frances B. Holmes Child Development Monographs Monograph No. 20 Paper Price \$2.75 Pp 356 with illustrations New York Bureau of Publications Teachers College Columbia University 1935

This monograph represents a series of studies covering a period of three years at the Child Development Institute of Teachers College, Columbia University. The material deals with the various types of fears that are most prevalent at all ages and an analysis of the data for indications of developmental trends and causal factors. The methods used to elaborate this material were many including direct observation of children by parents and adults, interviews with parents and teachers, case studies and experimental situations. The monograph is divided into four parts: (1) children's fears observed in daily life by parents and other adults; (2) fears reported by children themselves and fears recalled from childhood by adults; (3) an experimental study of the fears of young children; (4) the nature and prevention of childhood fears. The monograph is valuable for any one interested in the emotional behavior of children. The authors have shown unusual skill in planning and evaluating their investigation. The work is highly recommended to the profession.

Invisible Radiations of Organisms By Otto Bahn Professor of Bacteriology Cornell University With an Introduction to the Physics of Radiation By Sidney W. Barnes Research Associate in Physics University of Rochester Band IV Protoplasma Monographien Herausgegeben von R. Chambers et al. Cloth Price 13.20 marks Pp 215 with 32 illustrations Berlin Verlag von Gebrüder Borntraeger 1936

This is a critical discussion of the accumulated evidence with regard to the question as to whether or not there is a mitogenic radiation. The author who has studied the problem extensively himself, believes that the evidence for its existence is much more convincing than the negative observations which can usually be explained as resulting from the use of detectors that are not in a suitable state. The history of the subject in brief is that in 1923 Gurwitsch found that if he exposed one side of the zone of meristematic growth of an onion root to another growing root the exposed side when sectioned after a time showed more dividing nuclei than the other. The effect could be obtained through quartz but not through glass, indicating that it was due to ultraviolet rays of wavelength shorter than 3000 angstroms and it was concluded therefore both that the growing root emitted radiation of this kind and that the absorption of this by another growing root induced cell division within it. This effect on mitosis gave rise to the name mitogenic radiation. Subsequent work has established that the range is from 1900 to 2500 angstroms and that not only will monochromatic light of these wavelengths from physical sources produce the mitogenic effect but radiation capable of producing the effect is given off by a large number of living tissues growing tissue in general being a more active emitter than adult. The acceptance of these results has been delayed for two principal reasons: first the radiation emitted is so weak that its detection by photography or other physical means is inconclusive and second it did not seem likely that there could be any mechanism within the living cell or body fluids capable of pro-

ducing light of such high energy. The first difficulty has been largely overcome by the use of better biologic methods of detection, the best developed of which is based on the influence of the radiation on the budding of yeast, which gives sufficiently consistent results to be quite convincing. The second difficulty has been removed by the finding that many chemical reactions in solution give off a similar very weak ultraviolet radiation. Examples of these reactions that have been shown to account for some of the mitogenic radiation are oxidation, glycolysis, creatinine hydrolysis and proteolysis. The radiation from blood for example has been shown to be due to a number of such reactions. Of special medical interest is the fact that malignant tumors radiate strongly in comparison to the tissues of growing animals which radiate weakly. On the other hand, the blood of patients with malignant tissue ceases to radiate while normal blood radiates quite well. The blood continues to radiate during most diseases, but there are exceptions, such as leukemia and severe septicemia. It is indicated that the healing of wounds is accelerated by irradiation at the proper time. The effect from menstruating women, allegedly harmful to yeast cultures in industry may be due to a radiation from oxycholesterol which may account also for observations that bacteria on seeded plates are killed by handling by some persons. An introductory section on the physics of radiation by Barnes makes the book complete in itself, so that it can be understood readily by the general reader.

Elements of Psychology By Knight Dunlap Professor of Psychology in the University of California at Los Angeles. Cloth Price \$3 Pp 489 with 65 illustrations St. Louis C. V. Mosby Company 1936

Knight Dunlap is well known in the field of psychology. While he differs from some of the other writers in this field in rejecting the concept of image (but not imagination) and also in the rejection of instinct, the present book, as a whole, will not be found to be a great departure from other elementary textbooks on this subject. It is subject to the usual criticism that it is more of a work on the physiology of the nervous system than one in psychology and that its discussions of reflex and of body mechanisms involved in thought and psychologic response really stress the physiologic nevertheless it is improbable that a knowledge of these structures will hurt the beginning psychologist. The point of view is highly academic. Since the amount of material in the book is not great and covers perception of space and time, emotions, thinking, learning, psychologic measurements and individual differences as well as the problems of maladjustment and readjustment, the space devoted to specific problems cannot be extensive. Its probable value when compared with similar works lies in the soundness of the author's selection of material rather than in anything novel. The material given on mental tests and other practical considerations is more scanty than one would hope for in a book published in 1936 and there is much stress laid on psychophysical apparatus and experimental material which might be better left to a special course in experimental psychology rather than to the elementary student. There is a satisfactory glossary. The references at the end of each chapter are insufficient.

Manuel de pathologie médicale Par Maurice Journé et Pierre Noël Deschamps Third edition Cloth Price 110 francs Pp 1702 Paris Masson & Cie 1935

The authors cannot be accused of verbosity as far as preface is concerned, as there is no preface at all. A review of the book allows the conclusion that the work has been written for students for whom it will be a source of enjoyment and stimulation. A short discussion of etiology, symptomatology, clinical course, diagnosis, prognosis and treatment follows the description of the pathology in each chapter. Numerous remarks as to the clinical and therapeutic features are skilfully woven into the presentation of the pathologic aspect of the disease under discussion. The space allotted each subject is in proportion to its clinical importance. The first chapter is devoted to diseases of infectious and parasitic origin. The remaining chapters treat the entire series of diseases according to their regional distribution. Several statements attract special attention. Intratracheal injections of antipneumococcus or antistreptococcus serum are advocated in the pneumonic type of influenza. An intranasal spray of diacetylmorphine is recom-

mended for the treatment of bronchial asthma. Fractional examination of gastric contents, the Dick test and phonocardiographic method of recording heart sounds are not mentioned. General anesthesia is considered as contraindicated in thyroidectomies. In accordance with the scope of the book, bibliographic references have been omitted. All the information is down to date, the style simple and pleasing, the format handy.

La périodicité saisonnière des maladies épidémiques et en particulier de la poliomyélite. Par G. Hornus, Assistant à l'Institut Pasteur. Préface de C. Lévy. Monographies de l'Institut Pasteur. Paper. Price 28 francs. Pp 137 with 23 illustrations. Paris: Masson & Cie 1935.

Hornus in his monograph on seasonal periodicity in epidemic diseases, particularly poliomyelitis, has shown that these diseases are more prevalent in the temperate zones than in the Mediterranean basin. But little is known of the epidemiology of infectious diseases in the tropical regions. The more one approaches the equator from north to south the less marked is the frequency of infectious diseases, the more so for poliomyelitis. In the temperate zone south and north of the equator there is a six months difference in seasonal periods. There are several charts in this monograph illustrating the frequency of poliomyelitis in different months of the year, and the results show that there are two peaks when poliomyelitis is at its height, one is during the summer and fall, and the other during the spring. The author discusses several possible factors that have to do with seasonal distribution of poliomyelitis. In the monograph meteorological factors, such as temperature, which in itself is not as important as the barometric pressure, are discussed. Humidity, the author believes, makes the mucosa of the nasal pharynx more permeable to the droplets of poliomyelitis virus, provided it is proved that the infection spreads by way of the respiratory tract. Also discussed are atmospheric pressure, wind, insulation, atmospheric electricity and cosmic and terrestrial factors, the latter not being quite clearly described. The virulence and variability of the pathogenic organism that causes poliomyelitis are mentioned.

Bodyscope. By Ralph H. Segal. Over 80 full length and detailed anatomical illustrations and 20,000 words of reference text. Boards. Price \$3.50. Brooklyn, New York: J. Sklar Mfg. Co. 1935.

This is a highly ingenious device for making readily available to the average man a knowledge of human anatomy. It includes an outline of the anatomy of the tissue of the body classified by systems with various special sections of the body illustrated on charts shown on revolving wheels. The second and third pages reveal figures of a man and a woman, with various layers of the viscera, illustrated on the revolving wheels so as to show the contents of the abdomen at various levels. As the wheels revolve, the text concerning the organs also revolves so as to be available with the picture. The last page shows heart, lungs and sagittal sections. There are inserts showing the portraits of famous contributors to medicine and also some facts regarding their lives. As a ready reference to human anatomy and physiology, this device should be exceedingly useful. If there is any criticism to make it concerns the great size of the book which measures 16 by 19 inches and therefore is inconvenient except on a large table.

Die Herzkrankheiten im Röntgenbild und Elektrokardiogramm. Von Dr. med. Paul Uhlenhuth, a. o. Prof. an der Universität Bonn/Rhein. Paper. Price 36 marks. Pp 318 with 316 illustrations. Leipzig: Johann Ambrosius Barth 1936.

The author has attempted to present in a systematic fashion the clinical details of heart disease together with the changes to be seen in x-ray plates and in electrocardiograms. The purpose of this correlation is to give the clinician an opportunity to see how these graphic methods help in handling diseases of the heart. The many roentgenograms and electrocardiograms are placed at the end of every chapter each with a legend beneath and a brief synopsis of the clinical story on the opposite page. The reader thus has the opportunity of studying the text, the roentgenograms and electrocardiograms separately should he so desire. The material is timely, the presentation is simple, the printing excellent and the illustrations well reproduced. There are a number of useful diagnostic tables and compilations of differential diagnosis. There are some excellent chapters on the measurements used in inter-

preting the x-ray plates, and one dealing with roentgenography is included. A chapter is devoted to the theory of the electrocardiogram. The rest of the book covers the various clinical conditions to be encountered and is thorough in its scope. The author may be accused of presenting too much controversial material still held *sub judice*, but this is a minor criticism. The book can be unequivocally recommended to the physician interested in heart disease. It will show him the field of usefulness of these two graphic methods of studying the heart. The expert will find it useful in obtaining the present point of view of the German school.

A Synopsis of Physiology. By A. Rendle Short, B.Sc. M.D., F.R.C.S. Professor of Surgery, University of Bristol, and C. I. Ham, M.B. B.Sc., F.R.C.S. Second edition. Edited by C. L. G. Pratt, M.Sc., M.D., Lecturer in Physiology, St. Thomas's Hospital Medical School. Cloth. Price \$3.50. Pp 312 with 26 illustrations. Baltimore: William Wood & Company 1936.

This compendium of physiology has been recedited. The fact that the senior author is professor of surgery in a British university will assure the reader that the emphasis is clinical rather than academic. The concise form of the work leads to undesirable dogmatism and to many statements that are not rigorously true. Properly and critically used, this kind of a book might be valuable, particularly in reviewing for examinations. Unfortunately, works of this kind are ordinarily employed by persons without a basis for critical judgment. It is consequently to be recommended cautiously. If the material were a little more extensive, the book might serve as an elementary reference dictionary. Much new material has been added in the second edition, including such highly technical data as the tentative structural formulas for ergosterol, vitamin A and the female sex hormones. The inclusion of such material gives a fallacious impression of scholarly completeness.

Treatment in General Practice. The Management of Some Major Medical Disorders. 1. Articles Republished from the British Medical Journal. Cloth. Price 8s. 6d. Pp 250 with 6 illustrations. London: H. K. Lewis & Co. Ltd. 1936.

This collection of articles, which were published weekly in the *British Medical Journal* chiefly during the first half of 1935, is a welcome presentation of the practice of eminent British teachers of clinical medicine. The present volume deals chiefly with diseases of the respiratory and circulatory system and some of the acute specific fevers. The series planned, which this is the first volume, is intended to present a panorama of current therapeutics. As such it should be of help to the teacher as well as to the student but most of all to the general practitioner.

Seuchenerkrankung und Klimaforschung. Die Ergebnisse der Klimaforschung in ihrer Bedeutung für die Epidemiologie. Von Dr. med. Friedrich Wolter, Leiter des Hamburgischen Forschungsinstituts für Epidemiologie. Nach einem Vortrag auf der bloklimatischen Tagung anlässlich des 25jährigen Jubiläums der Deutschen Meteorologischen Gesellschaft in Hamburg. Kleine Hippokrates Bücher! Band V. Herausgegeben von Prof. Dr. med. Kurt Klare, Scheldt. Boards. Price 3 marks. Pp 43. Stuttgart & Leipzig: Hippokrates Verlag GMBH 1935.

In this small monograph Wolter presents a readable account of epidemiology regarded not from the narrow range of the bacteriologist but from the broader point of view of the hygienist who considers the phenomena involved in the development and the recession of epidemics from many other angles. In this particular treatise he discusses the relation of epidemics to climatic cycles in particular to the Bruckner cycle (thirty-five years). There seems little doubt that climatic cycles occur—although they are by no means absolute in their rhythm—so, too, that cycles of long range appear to overlap, and that meteorologists can determine eleven, seventeen and thirty-five year cycles, as well as longer periods of increasing or decreasing solar activity or of relative wetness or dryness. It is logical that the organic world must adjust itself to such cosmic and terrestrial alterations in environment, with resulting difference in the chemical and endocrine and other physiological mechanisms. So far the only observations extending over a period of several years are those of Petersen. That pathological expression of such changes will be found might seem obvious but it will require long time chemical observation of human beings before the possible integrations can be evaluated and at the present time there is neither understanding nor consequent financial support for studies of this type. This is the handi-

that underlies all monographs of the type here reviewed. The observations are interesting and suggestive but cannot at the present time go beyond this point.

Evans' Recent Advances in Physiology. Fifth edition revised by W. H. Newton, M.D., M.Sc., Senior Lecturer in Physiology, University College London. Cloth Price \$5. Pp. 500 with 120 illustrations. Philadelphia: P. Blakiston & Son & Co., Inc. 1936.

This is a stimulating synthetic review of some aspects of recent physiologic literature. Largely rewritten by Newton, it retains the clarity and pertinence achieved by Lovatt Evans. The topics discussed refer to the circulation, respiration, nervous processes, urine secretion and sex hormones. In addition, the little discussed physiologic mechanisms involved in micturition and defecation have been given a thorough treatment. Evans himself has contributed the chapter on the metabolism of cardiac muscle, a field in which he has made numerous discoveries. A clear presentation is given of the importance of the diastolic ventricular volume in determining energy liberation in contraction. It is almost superfluous to mention the specific subjects that are treated in an especially clear way, because it would include most of the topics discussed. The book is decidedly worth while as a means of keeping abreast of the major developments in physiology.

The Integration of the Endocrine System. Being the Fifth Horsley Memorial Lecture Delivered at University College Hospital Medical School. By Sir Walter Langdon Brown, M.D., F.R.C.P. Paper Price 7s. 6d. Pp. 54. New York: Macmillan Company, Cambridge: University Press, 1935.

This is the fifth Horsley Memorial Lecture published in a pocket size edition and represents a scholarly and provocative discussion of the interrelationships of the endocrine system. Beginning with a short historical development of the early researches on the endocrine glands, the author stresses three recent lines of advance which are leading to a clearer conception of the integration of the endocrine system: (1) the diencephalon, (2) the pituitary and (3) the hormones of the pituitary gland. Each is briefly discussed and finally the author proposes the view that, while the endocrine glands are autonomous in their activity, they can be modified and controlled by diencephalic centers which operate directly through the sympathetic nervous system or indirectly through the chemical activities of the anterior pituitary.

Die tierischen Parasiten der Haus- und Nutztiere sowie des Menschen. Ein Lehr- und Handbuch mit Bestimmungstabellen für Tierärzte, Ärzte und Studierende. Von Dr. med. Josef Flebinger, Diplomierter Tierarzt o. b. Professor an der Tierärztlichen Hochschule und Privatdozent der medizinischen Fakultät der Universität in Wien. Third edition. Paper Price 17.50 marks. Pp. 375 with 353 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1936.

The present account of the animal parasites is divided into two parts. The first, which covers only thirty-eight pages, gives a general discussion of parasitism, invasion, transmission and physiology of parasites, effects of parasites on the host, immune reactions and technical methods. The second section, which is extensive and comprises 302 pages, gives a systematic description of most of the protozoa, worms and arthropods of interest to medical and veterinary sciences. The descriptions of individual forms are necessarily short but in general accurate. The author has appended to his systematic account a parasite catalogue giving the systematic position of the various parasites and indicating their hosts. He has also included a host catalogue showing the parasites under each host. The chief criticism that can be raised against the text is the almost complete lack of references to French, English and American authors.

Medical Papers Dedicated to Henry Asbury Christian, Physician and Teacher in Honor of His Sixtieth Birthday, February 17, 1936. From His Present and Past Associates and House Officers at the Peter Bent Brigham Hospital, Boston, Mass. Cloth Price \$10. Pp. 1000 with illustrations. Baltimore: Waverly Press, Inc. 1936.

This volume is a collection of medical papers dedicated to Dr. Henry A. Christian in honor of his sixtieth birthday. The contributions are from his present and past associates and house officers of the Peter Bent Brigham Hospital. The book is a fitting tribute and token of appreciation that reflects the inspiration and guidance of a great clinician and teacher. The

papers are all of current medical interest covering a wide field and represent, for the most part, original investigations. They are a testimonial to an inspiring and critical preceptor. While Dr. Christian's personal contributions have been chiefly in the domain of cardiovascular-renal diseases, the collected works of his assistants reflect his diversity of medical interest. At the end of the book is a register of former and present members of the Peter Bent Brigham Hospital Medical staff. The volume is attractively bound and printed and deserves a place in every medical library.

Eye, Ear, Nose and Throat Manual for Nurses. By Roy H. Parkinson, M.D., Head Oculist and Aurist to St. Joseph's Hospital, San Francisco. Third edition. Cloth Price \$2.25. Pp. 232 with 72 illustrations. St. Louis: C. V. Mosby Company, 1936.

In this manual there is a certain amount of anatomy which is necessary for nurses to know, and this section is embellished with an adequate number of illustrations. In a brief fashion the common diseases of the eye, ear, nose and throat are discussed, and lastly under the caption of operating room technique, are numerous illustrations identifying the instruments used in the different operations. This sort of textbook is valuable not only for student nurses but even more so for nursing supervisors and others who have to instruct them. The author does not make the mistake of setting forth information with which student nurses need not be concerned.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Discharge in Bankruptcy a Bar to Claim for Malpractice.—The defendant, a practicing physician in Michigan, injured the plaintiff's urethra in an attempt to introduce sounds. The plaintiff sued the physician and obtained a judgment against him, the court finding that the treatment had been done "carelessly, recklessly, wantonly and negligently."

Subsequently the physician moved to Wisconsin and in that state the plaintiff brought suit on the Michigan judgment but before final action in the case the physician was adjudicated a bankrupt by the United States district court for the western district of Wisconsin and was later granted a full discharge from all provable debts. Subsequent to the adjudication in bankruptcy, but prior to the final discharge, the plaintiff obtained a judgment against the defendant, based on the Michigan judgment. Executions against the defendant's property, however, were returned unsatisfied and the plaintiff sought to have the physician imprisoned for nonpayment of the judgment. The trial court refused to order the arrest of the physician, and the plaintiff appealed to the Supreme Court of Wisconsin.

The correctness of the ruling of the trial court, said the Supreme Court, depends on whether or not the plaintiff's claim against the physician was exempt from the operation of the discharge in bankruptcy under section 18 of the bankruptcy act, providing in part as follows:

A discharge in bankruptcy shall release a bankrupt from all of his provable debts except such as are liabilities for willful and malicious injuries to the person or property of another [Italics supplied].

Was the plaintiff's claim one for "willful and malicious" injury? The whole pleading in the malpractice suit, said the Supreme Court, and the judgment of the Michigan court placed the acts of the physician in the field of negligence. There was no intimation that the physician felt any ill will or malice toward the plaintiff. The most extreme statement in the pleading or in the findings of the Michigan court said the Wisconsin court properly viewed is to the effect that the physician was employed to treat the plaintiff with the expectation that he possessed and would use the care and skill required of physicians who undertake treatment of patients and that the physician failed to rise to his obligation, was reckless and unskillful in his treatment of his patient. But said the Supreme Court, in the absence of

wilful and intentional acts and of malice and hatred an injury due to negligence is not caused by wilful and malicious conduct. The use by the Michigan court in describing the treatment rendered by the defendant of the words carelessly, recklessly and wantonly was to describe the negligence of the defendant and did not mean that the defendant wilfully and maliciously injured the plaintiff. In the opinion of the Supreme Court of Wisconsin therefore the plaintiff had a provable claim in the bankruptcy proceeding from which the defendant was released by the discharge in bankruptcy. The judgment of the trial court refusing to order the arrest of the physician was affirmed—*Schacht v. Bonacci* (115) 264 N. W. 625.

Workmen's Compensation Acts Atrophy of Leg Following Trauma to Sciatic Nerve—The claimant Bruno, an employee of the defendant company, in the course of his employment sustained a fracture of one of his great toes. He was awarded compensation for that injury. Later, he applied to the workmen's compensation bureau for further compensation claiming that at the time of the accident he had fallen backward and had injured his back resulting in a permanent atrophy of his left leg. The deputy commissioner denied him further compensation because in his opinion, the medical testimony showed the atrophy had existed prior to the accident and had not been aggravated by the trauma. On appeal the court of common pleas held that the accident caused the claimant to fall backwards to the floor striking his back and causing him injury to the sciatic nerve which caused an atrophy and foot drop of the left leg and awarded additional compensation. The employer appealed to the supreme court of New Jersey.

According to the medical testimony said the supreme court the atrophy of the claimant's leg might well have followed a traumatic injury. Such testimony tended to exclude other possible causes for the claimant's condition such as syphilis, infantile paralysis or diphtheria. Furthermore the evidence showed that prior to the accident the claimant had been sound, healthy and able to do heavy work. The court concluded from the evidence presented, that the atrophy of the claimant's left leg had resulted from the accident and that therefore the claimant was entitled to further compensation.

The Court of Errors and Appeals affirmed on appeal the judgment granting the claimant additional compensation—*Bruno v. Turner & Co. Inc.* (N. J.) 183 1 173.

Workmen's Compensation Acts Frost-Bite a Compensable Injury—The claimant a policeman sustained frost-bite of his hands while on night patrol duty during the winter. Gangrene set in and some amputation was necessary. From an award of the workmen's compensation bureau granting him compensation the township of Woodbridge his employer appealed to the supreme court of New Jersey.

The weather was unusually cold said the supreme court, and the claimant's employment obliged him to use his hands and prevented him from seeking shelter. He was exposed to a different risk than the public generally because he was on duty from 6 p. m. to 4 a. m. with the exception of a lunch hour. The claimant the court concluded sustained a compensable accidental injury arising out of and in the course of his employment—*Mattler v. Woodbridge Tp.* (N. J.) 183 4 150.

Health Insurance Permanent Disability in Relation to Pulmonary Tuberculosis—Permanent disability "said the United States circuit court of appeals means that which is continuing as opposed to that which is temporary and separate and distinct periods of temporary disability do not constitute that which is permanent. In the present case a veteran permitted his war risk insurance policy to lapse in September 1919. Approximately thirteen years later when admittedly he was totally and permanently disabled from tuberculosis he brought suit on the policy claiming that he had been to all and permanently disabled during the life of the policy. The United States district court gave judgment for the veteran and an appeal was taken to the circuit court of appeals.

There was a dissenting opinion said the court, that the disease from which the veteran was ultimately disabled resulted from tuberculosis during the life of the veteran's policy. There is no reasonable presumption that before the

lapse of the policy it had progressed to the stage where it was totally disabling, or where its persistence might reasonably have been expected to continue permanently. In *United States v. Grew*, 68 F. (2d) 124, it was observed that there are "a great number of maladies which are or may be steadily progressive but which are not wholly incapacitating in their early stages," and that "there are others which, though properly to be considered as total disabilities in the incipient stages, are often arrested to the extent that the patient may thereafter lead an industrious and a useful life. Pulmonary tuberculosis is one of the commonest of the latter class." The present case, said the court, must be aligned with *U. S. v. Sumner*, 69 F. (2d) 770, wherein it was said that, even if tuberculosis was totally disabling in its incipient stages, evidence of this carries no inference that the disability is reasonably certain to continue through life. The fact, continued the court, that the veteran, about two years after the policy had lapsed, filed a claim with the Veterans' Bureau contending that he was 50 per cent disabled, that he refused proffered hospitalization for his tuberculous condition, and that he delayed approximately thirteen years making claim under the policy, all prevent any reasonable inference being drawn that the veteran was permanently and totally disabled during the life of the policy. The judgment of the trial court for the veteran was therefore reversed—*United States v. Middleton* 81 F. (2d) 205.

Workmen's Compensation Acts Compensability of Gonorrheal Ophthalmia—The employee lost the sight of one of his eyes as the result of gonorrheal infection. He filed a claim for compensation under the workmen's compensation act of Texas. The district court granted compensation, after the industrial board had denied the employee's claim, and the company and its insurer appealed to the court of civil appeals of Texas, Beaumont.

The employee contended that he contracted the infection from using a toilet on the premises where he was employed. The verdict of the jury for the employee, said the court of civil appeals, was based on two presumptions: (1) that there were gonococci on the toilet used by the employee at the place of his employment, and (2) that the employee became infected from using this particular toilet. But, the court said, there was no evidence to support either presumption. The jury could not presume an "infected toilet," and then, piling presumption on presumption, presume that the employee was infected by the toilet. The verdict, therefore, was wholly without support, for the jury went into the domain of conjecture and piled one presumption on another. The judgment of the trial court was therefore reversed and the case remanded for a new trial, the appellate court being of the opinion that the case had not been fully developed on the first trial—*Standard Accident Ins. Co. v. Ritchie* (Texas), 80 S. W. (2d) 498.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology New York Sept. 26-Oct. 3 Dr. William P. Wherry 107 South 17th St. Omaha Executive Secretary
- American Association of Obstetricians Gynecologists and Abdominal Surgeons Bretton Woods N. H. Sept. 14-16 Dr. James R. Bloss 418 Eleventh St. Huntington W. Va. Secretary
- American Congress of Physical Therapy New York Sept. 8-11 Dr. Nathan H. Polmer 921 Canal Street New Orleans Secretary
- Colorado State Medical Society Glenwood Springs Sept. 9-12 Mr. Harvey T. Sethman 1612 Tremont Place Denver Executive Secretary
- Idaho State Medical Association Boise Aug. 31-Sept. 4 Dr. Harold W. Stone 105 North Eighth St. Boise Secretary
- Michigan State Medical Society Detroit Sept. 21-24 Dr. C. T. Ekelund 35 West Huron St. Pontiac Secretary
- National Medical Association Philadelphia Aug. 16-22 Dr. W. Harry Barnes 1315 North 15th St. Philadelphia Acting Secretary
- Nevada State Medical Association Reno Sept. 25-26 Dr. Horace J. Brown 20 North Virginia St. Reno Secretary
- North Minnesota Medical Association Fergus Falls Aug. 31-Sept. 1 Dr. Oscar O. Larsen Detroit Lakes Secretary
- Washington State Medical Association Yakima Aug. 31-Sept. 2 Dr. Vernon W. Spickard 1303 Fourth Avenue Seattle Secretary
- Virginia State Medical Society of Madison Sept. 8-11 Mr. J. G. Crownhart 119 East Washington Avenue Madison Secretary
- Wyoming State Medical Society Cody Aug. 24-25 Dr. Earl Whedon 6 North Main Street Sheridan Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery 5 373-404 (May) 1936

Uterine Contraction Rings. Report of Eight Cases. T. M. Boulware. Birmingham—p. 373.

Ulcers of the Leg. J. E. Cameron. Alexander City—p. 377.

*Blood Platelet Numbers in Normal Men and Women. J. L. Brakefield and Kate Malone. Birmingham—p. 380.

Alabama's Eighty Nine Years of Medical Organization. Brief History of the Association. D. L. Cannon. Montgomery—p. 385.

Blood Platelet Numbers in Normal Persons—Brakefield and Malone determined the blood platelet numbers in ten men and five women living the normal routine of college life. The counts were made at a definite hour from week to week in the men over a period of ten weeks and in the women over a period of five weeks. An analysis of the work on the men shows that only 4 per cent of the counts were in excess of 500,000 per cubic millimeter. Approximately 20 per cent were slightly in excess to 400,000 per cubic millimeter, while 68 per cent fell between 300,000 and 400,000. The average for all the determinations was 373,000. There were no greater variations in the counts made from week to week than were found at different periods within one day. A range of from 350,000 to 400,000 per cubic millimeter may be considered normal for the group of men studied. In the women the determinations ran consistently lower. None exceeded 400,000 per cubic millimeter, while approximately 90 per cent fell between 300,000 and 330,000 per cubic millimeter. The average for the group was 328,000 per cubic millimeter from week to week. The variations within one day paralleled closely those from week to week and the average for the group was 335,000 per cubic millimeter.

American Heart Journal, St. Louis

11: 513-640 (May) 1936

Intermittent Claudication Studied by a Graphic Method. L. H. Hitzrot. M. Naide and E. M. Landis. Philadelphia—p. 513.

Ineffectiveness of Drugs on Collateral Flow After Experimental Coronary Occlusion in Dogs. C. J. Wiggers and H. D. Green. Cleveland—p. 527.

Paradox of Chiari's Network. Review and Report of Case of Chiari's Network Ensnaring Large Embolus. W. M. Yater. Washington D. C.—p. 542.

Auriculoventricular Dissociation and Adams-Stokes Syndrome in Acute Coronary Vessel Closure. S. P. Schwartz. New York—p. 554.

Coarctation of Aorta (Adult Type). Clinical and Experimental Studies. J. Flexner. New York—p. 572.

*Nonfilament Leukocyte Count After Coronary Artery Occlusion. D. E. Goodrich and F. J. Smith. Detroit—p. 581.

Analysis of Relations of Coronary Constrictor and Dilator Nerves in Cervical Vagus-sympathetic of Dog. C. W. Greene. Columbia Mo.—p. 592.

Temperature of Flare as an Index of Intensity of Histamine Skin Reaction. S. Perlow. Chicago—p. 605.

Alternation Phenomena in Electrocardiogram. Occurrence in Patient with Active Carotid Sinus Reflex. M. E. Missal and R. B. Cram. Rochester N. Y.—p. 611.

Syncope Attacks Due to Congenital Anomaly of Right Common Carotid Artery. H. L. Smith and H. C. Hinshaw. Rochester Minn.—p. 619.

Complete Heart Block in Hyperthyroidism. Report of Case. L. G. Stever. Cleveland—p. 623.

Acquired Interventricular Septal Defect Associated with Long Standing Congestive Heart Failure. Case. H. Gross and S. P. Schwartz. New York—p. 626.

Nonfilament Leukocyte Count After Coronary Occlusion—In applying the filament-nonfilament count in several patients after coronary occlusion Goodrich and Smith were struck with the fact that there was a left shift which was frequently pronounced. It was then decided to follow several such consecutive cases doing frequent simultaneous total leukocyte counts and differential counts according to the usual type as well as filament nonfilament counts plotting the results

graphically. This procedure was carried out in fifteen cases of coronary artery occlusion, and a total of 189 such counts were made. They found that the total white cell count is increased after coronary artery occlusion, averaging from 13,000 to 18,000 in the first four days. In a fatal case one count as high as 35,700 was encountered. The average leukocyte count has been found to be slightly higher in the patients who died than in those who recovered. The polymorphonuclear neutrophil percentage is above normal, being somewhat higher in the fatal group than in the recovered group. The average non-filament curve was found to be almost twice as high in the fatal cases of coronary occlusion as in the recovering group, and in the combined graph of fatal cases the nonfilament average was as high as the filamented average on the seventh and eleventh days, while in the recovering group, although a few cases showed an intersection of these two curves on the fourth day, in the main there was a wide separation between them. The eosinophils were absent in the four fatal cases up to the fifth day the curve slowly rising to 16 per cent on the tenth day and then falling to zero on the twelfth day. The recovering group showed an earlier appearance of eosinophils and a higher and more progressive rise to 36 per cent on the fifteenth day. The daily plotting of graphs of the differential and filament nonfilament counts after acute coronary occlusion gives information of distinct value in estimating the prognosis, and this information is superior to that obtainable from the total leukocyte count alone.

American Journal of Anatomy, Philadelphia

59 1 174 (May 15) 1936

Hereditary Lethal for Localized Motor and Preganglionic Neurons with Resulting Paralysis in Dog. C. R. Stockard. New York—p. 1.

Percentage of Water in Organs of Albino Rats After Prolonged Exercise. H. H. Donaldson. Philadelphia—p. 55.

Responses of Immature Rat Testes to Gonadotropic Agents. C. R. Moore. Chicago—p. 63.

Studies in Wave Mechanics of Muscle Form and Function. Parts IV and V. E. J. Carey. Milwaukee—p. 89.

Observations on Polymorphonuclear Leukocytes in Living Animal. E. R. Clark. Eleanor Linton Clark and R. O. Rex. Philadelphia—p. 123.

American Journal of Cancer, New York

27 1 216 (May) 1936

Comparison of Results in Series of Cases of Carcinoma of Breast Treated by Postoperative Roentgen Therapy for Prophylaxis with Similar Series in Which Operation Was Only Treatment. U. V. Portmann. Cleveland—p. 1.

*Ewing Sarcoma in Ribs. Four Cases. H. Bergstrand. Stockholm, Sweden—p. 26.

Liposarcoma of Bone. Report of Two Cases and Review of Literature. D. J. Rehbock and H. Hauser. Cleveland—p. 37.

Maintenance of Human Normal Cells and Tumor Cells in Continuous Culture. I. Preliminary Report. Cultivation of Mesoblastic Tumors and Normal Tissue and Notes on Methods of Cultivation. G. O. Gey, Baltimore and Margaret K. Gey. Washington D. C.—p. 45.

Reaction of Mice and of Various Mouse Tumors to Injection of Bacterial Products. H. B. Andervont. Boston—p. 77.

Vitamin A and Carcinogenesis. B. Sure. K. S. Ruchanan. Fayetteville Ark. and H. S. Thatcher. Little Rock Ark.—p. 84.

Effect of Sex Hormones on Transplanted Neoplasms. F. Bischoff and L. C. Maxwell. Santa Barbara, Calif.—p. 87.

Metaplasia of Uterine Epithelium Produced in Rats by Prolonged Administration of Estrin. C. S. McEuen. Montreal—p. 91.

Effect of Cod Liver Oil on Tumor Growth. Frances L. Haven. Rochester N. Y.—p. 95.

Effect of Insulin Therapy on Transplantable Tumors in Mice. H. Pinkerton. S. M. Beale Jr. S. Warren and Andrey Kieling. Falmouth Mass.—p. 99.

Influence of Age on Growth of Sarcoma 180. F. Bischoff and M. Louisa Long. Santa Barbara, Calif.—p. 104.

Carcinoma of Pancreas with Cardiac and Cutaneous Metastases. Case Report. M. E. Marten and L. M. Meyer. New York—p. 106.

Metastasizing Hepatoma in Hog (Sus Scrofa). W. H. Feldman. Rochester Minn.—p. 111.

Precipitation Tests in Mice. III. Disturbance Between 200 and 300 Days of Life. L. C. Strong. New Haven Conn.—p. 115.

Id. IV. Determinations on Mice Belonging to an Immune-to-Cancer Stock, CBA. L. C. Strong. New Haven Conn.—p. 118.

Melanomas. D. H. Affleck. Baltimore—p. 120.

Ewing Sarcoma in Ribs—Bergstrand describes four cases of Ewing sarcoma in the ribs, all similar. The tumors originated from the posterior portion of one of the ribs and grew like sponges into the pleural cavity pushing the lifted pericostum and the pleura before them. The greatest length of the tumors was along the rib. The surface was coarsely lobate

The ribs presented a characteristic increase in density and volume and spicules were formed. The latter occurred only on the inside of the rib, however, where the periosteum was elevated but not on the outside even though the tumor tissue grew around the rib. The loosening of the periosteum began at the point of attachment of the intercostal muscles. One patient, treated by extirpation and x-rays is alive and well five and a half years after the operation although metastases had occurred in the lungs two years after the operation. These disappeared under roentgen treatment. The author believes that practically all Ewing sarcomas are localized to those parts of the skeleton in which ossification begins in the second month of fetal life. The first formation of the later ossifying blastema takes place at the same points. As the cells of Ewing sarcoma are similar to these blastema cells the conclusion might be drawn tentatively that Ewing sarcomas are due to a disturbance in the formation of the skeleton at an early stage of fetal life.

American Journal of Clinical Pathology, Baltimore

G 205 322 (May) 1936

- *Significance of Monocytes in Agranulocytosis (Leukopenic Infectious Monocytosis) N. Rosenthal and H. A. Abel New York.—p. 205
- Cutaneous Reaction to Avirulent Tubercle Bacilli (1) Reaction to Fine and Coarse Suspensions (2) Reaction to Suspensions Prepared from Cultures on Mediums Containing Crystal (or Gentian) Violet H. J. Corper and Catherine Clark, Denver.—p. 231
- *Hodgkin's Disease in the Aged S. Sailer New York.—p. 241
- Experimental Background and Clinical Application of Escherichia Coli and Gum Tragacanth Mixture (Coli Bactragen) in Prevention of Peritonitis B. Steinberg Toledo Ohio.—p. 253
- Unusual Giant Cell Lymphogranuloma Report of Case N. C. Foot, New York.—p. 278
- Quantitative Estimation of Bilirubin in Blood Serum or Plasma A. S. Giordano and D. Eager South Bend Ind.—p. 286
- Interplay of Heredity and Environment in Experimental Cancer Clara J. Lynch New York.—p. 293

Significance of Monocytes in Agranulocytosis—Rosenthal and Abel believe that the differentiation of agranulocytosis from other diseases is best accomplished by means of a blood examination which shows the characteristic profound leukopenia and neutropenia. It is possible to differentiate three main types of agranulocytosis at the onset of symptoms, according to the predominance of certain cells: (1) agranulocytosis with relative lymphocytosis, (2) agranulocytosis with unusual monocytosis (leukopenic infectious monocytosis) and (3) hypoleukocytic angina in which all the symptoms of agranulocytosis are present, including leukopenia, but without much change in the differential blood count. In addition to eight cases previously reported, they discuss fourteen cases of agranulocytosis with monocytosis (leukopenic infectious monocytosis) and show the possible relation of this form of agranulocytosis in certain cases to drugs. Marked monocytosis in certain cases of agranulocytosis has received slight attention. The most striking hematologic feature of agranulocytosis is not only the relative increase in the percentage of monocytes but, in some cases, an actual absolute increase. The monocytes correspond to the large mononuclear and transitional cells first described by Ehrlich. They are larger than the neutrophils and present the characteristic irregular rounded or s-shaped, finely reticulated, nucleus. The cytoplasm usually stains evenly and contains a few discrete azure granules. Oxidase positive granules can be demonstrated in the cytoplasm with the proper stains. Supravital staining by means of neutral red and Janus green B brings out the characteristic features of this type of cell: the evenly distributed and equal sized vacuoles (so-called roset) and a few evenly distributed small mitochondria. They move very slowly when observed in the warm box. In addition to these cells, large clastocytes or macrophages may be found in the blood, obtained from the lobe of the ear at times up to 10 per cent or more. These apparently, are more numerous in the tissues. There is a leukopenia varying from 900 to 4,000 cells associated with a monocytosis at the onset of the disease. In three cases in the present group a leukopenia, neutropenia and monocytosis persisted after the initial attack. The prognosis is more favorable in agranulocytosis accompanied by monocytosis. In the authors' series of twenty-two cases seventeen patients have recovered.

Hodgkin's Disease in the Aged—Sailer presents a case of Hodgkin's disease with necropsy in a white man aged 77. A series of seven other cases all macroscopically proved with

necropsy in ten, are summarized. Of the seventy-four patients, twenty-six ranged from 40 to 77 and forty from 20 to 40 years of age. There is nothing characteristic in the onset, clinical progress and duration of the disease in the latter decades to distinguish it from that occurring in earlier age periods. The anatomic distribution and histology of the lesion are essentially the same in the two groups.

American Journal of Diseases of Children, Chicago

51 1007 1256 (May) 1936

- *Maternal Age at Conception of the Congenitally Malformed Child Study Based on 607 Cases D. P. Murphy Philadelphia.—p. 1007
- Relation Between Basal Metabolism and Adolescent Growth Carolyn Adler Lewis New York.—p. 1014
- Relationship of Basal Metabolism to Dietary Intake J. A. Johnston and J. W. Maroney Detroit.—p. 1019
- Tissue Response of White and of Negro Children to Induced Tuberculosis M. I. Levine New York.—p. 1052
- Certain Types of Tetanus Gravis S. G. Ross and T. R. Waugh Montreal.—p. 1059
- Metabolism of Adolescent Girls II Fat and Protein Metabolism C. C. Wang Corinne Hodgen and Mary Wing, Cincinnati.—p. 1083
- Pneumonia in Children Survey of One Thousand Cases with Attempted Follow Up J. L. Kohn and S. B. Weiner, New York.—p. 1095
- Postpneumonic Residual Infiltration Observations on Ten Patients Followed from Two to Ten Years After Original Admission J. L. Kohn New York.—p. 1101
- Congenital Thrombocytopenia H. N. Sanford Eleanor I. Leslie and Marian M. Crane Chicago.—p. 1114

Maternal Age at Conception of Malformed Children—Murphy studied the data dealing with the ages of 570 mothers at the births of 607 congenitally malformed children and at the births of 1,583 normally developed siblings. In a study of 466 of the mothers, each having at least one normal and one defective child, it was found that the average age at marriage was 21.1 years, at the birth of the first normal child 23, and at the birth of the first defective child 28.4. The proportion of defective to normal offspring at different maternal ages was found to be (1) lowest when the mothers were between 20 and 25 years of age, (2) more or less constant when the mothers were between 15 and 30, (3) increasing from year to year when the mother had passed 30, and (4) greatest after the mothers had passed 40 years of age, at which time the ratio of defective to normally developed children was approximately three or more times that noted before the mothers were 30. From this study and from a previous one, it is concluded that congenital malformation is most likely to afflict the child if it is the fifth or later in the order of birth in the family, if its birth occurs after the mother is 30 and especially if after she is more than 40.

American Journal of Hygiene, Baltimore

23 431 618 (May) 1936

- Resistance of Yaws and Syphilis Patients to Reinoculation with Yaws Spirochetes T. B. Turner New York.—p. 431
- Mortality Changes as Related to Prosperity and Urbanization in the United States Counties J. H. Watkins and A. G. Evans New Haven Conn.—p. 449
- Incidence of Cerebrospinal Fever in the United States Navy as Related to Length of Service and Season of Enlistment S. S. Cook Washington D. C.—p. 472
- Morbidity and Mortality from Diphtheria in the South C. C. Dauer New Orleans.—p. 486
- Spread of Tuberculosis in Negro Families F. M. McPhedran Philadelphia and E. L. Opie New York.—p. 493
- Fate of Negro Persons in Contact with Tuberculosis E. J. Opie New York, F. M. McPhedran and Persis Putnam Philadelphia.—p. 515
- Relative Frequency of Clinically Manifest Tuberculosis Open Tuberculosis Asymptomatic Lesions and Deaths in White and Negro Persons E. L. Opie, New York, F. M. McPhedran and Persis Putnam Philadelphia.—p. 530
- Diphtheria Immunity in Rural Alabama O. L. Chason Mobile Ala.—p. 539
- The Relationship of Certain Environmental Factors to Distribution of Yaws in Jamaica G. M. Saunders Kingston Jamaica B. W. I. W. Kumm Belém Brazil South America and J. F. Ferris.—p. 558
- Types of Corynebacterium Diphtheriae in Maryland Cultural Reactions Cellular Morphology Virulence Distribution Stability and Clinical Significance C. A. Perry Ona R. Whitley and Elizabeth Petran Baltimore.—p. 569
- State Wide Investigation of Hookworm in South Carolina W. S. Leathers A. E. Keller Nashville Tenn. and J. B. F. Wernan Columbia S. C.—p. 600

American Journal of Ophthalmology, St. Louis

19:371-456 (May) 1936

- Micro-Anatomy of the Eye with Slit Lamp Microscope I Comparative Anatomy of Angle of Anterior Chamber in Living and Sectioned Eyes of Mammalia Part I M U Troncoso and R Castroviejo New York—p 371
- Concerning Accommodative Asthenopia Following Head Injury V Westcott Chicago—p 385
- Treatment of Flat Type of Separated Retina and of Macular Hole with Special Devices and Modifications C B Walker Los Angeles—p 392
- Seton Operation in Glaucoma O R Wolfe and M J Blaess Marshalltown, Iowa—p 400
- Tolerance of Light in Nonphotophobic Individuals E C Allers and C Sheard Rochester, Minn.—p 407
- Interstitial Degeneration of Cornea R E Wright Madras India—p 413

American Journal of Pathology, Boston

12:283-436 (May) 1936

- Comparative Chemical and Histologic Examinations of Aortas for Calcium Content Series I S R Haythorn F A Taylor Helen Whitehill Crago and Anna Zoe Burner Pittsburgh—p 283
- Calcium Content of Arteriosclerotic Aortas Series II S R Haythorn and F A Taylor Pittsburgh—p 303
- Studies of Paralysis Syndrome Produced in Rabbits and Guinea Pigs by Extracts of Normal Primate Bone Marrow R A Kelsner and L S King Boston—p 317
- Changes in Appearance of Wall of Muscular Artery Between Diastolic and Systolic Blood Pressures R J M Galloway Toronto—p 333
- Clinical and Pathologic Features of an Infection Caused by New Pathogen of Genus *Listerella* C G Burn New Haven Conn—p 341
- Malignant Teratoma of Mediastinum Report of Case and Review of Twenty Four Cases from Literature J D Houghton Boston—p 349
- Visceral Pathology in Scarlet Fever and Related Streptococcal Infections H Brody and L W Smith New York—p 373
- Acute and Chronic Bacillary Dysentery J Felsen, New York—p 395
- Virus Disease of Owls R G Green Minneapolis and J E Shillinger Washington D C—p 405
- So-Called Atrophy of Adrenal Cortex with Intranuclear Inclusions Report of Case H A Weiner New Haven Conn—p 411
- Adeno-Acanthoma Sarcomatodes of Mammary Gland Report of Case with Critical Review of Literature on Squamous Epithelium in Intramammary Tumors J G Pasternack and J E Wirth Seattle—p 423

A New Pathogen of Genus *Listerella*—Burn asserts that a new species of organism belonging to the genus *Listerella* was first obtained from a new-born infant in February 1933. One year later a similar organism was recovered from the blood in two cases of fatal illness in infants and soon thereafter a fourth organism of the same type was isolated at necropsy from the meninges and viscera of an adult. The organism has been grown by the usual culture methods and has been demonstrated readily by the Gram stain in the various tissues. In all four cases the anatomic lesions involved the liver and in the three cases in which the central nervous system was examined lesions were revealed in the tissues. Since this bacillus is markedly hemolytic on blood agar plates and in blood broth and since it has a tendency to form short chains in meat infusion broth, particularly when freshly isolated from the tissues, it may be mistakenly called a *Streptococcus haemolyticus*. It has some of the characteristics of the diphtheroids and consequently may be overlooked as a nonpathogenic organism. Through the courtesy of Schultz, Terry, Bryce and Gebhardt, Jones and Little and Seastone it has been possible to study transplants of their strains and they have been found to be identical, both culturally and serologically, with those isolated from the four cases that the author encountered. A possible source of the infection in man through the milk supply is suggested in view of the isolation of the same organism in suppurative meningitis of cattle.

Atrophy of Adrenal Cortex with Intranuclear Inclusions—Weiner reports a case in which intranuclear inclusion bodies were found in the cells of the adrenal cortex. The apparently sudden onset of a disease certainly not primarily functional, following trauma with no evident physical consequences seems difficult to understand. However that terrific emotional strains or minor accidents will frequently precipitate an Addison's disease associated with 'atrophy' as well as with tuberculosis of the adrenals is evident from a review of the literature. The fact that the blood pressure was apparently normal until the terminal crisis is not remarkable and has been noted frequently enough. The value of this as a clinical

differential point between 'atrophy' and tuberculosis has been denied. The pathologic features of the case, except for the nuclear inclusion bodies, fit completely the numerous descriptions given by various authors. Although vacuolar degeneration, disappearance of the cytoplasmic granules and diminution in the number of the basophil cells of the pituitary are reported, serial sections showed a normal appearance. Although no history of the classic symptoms of diarrhea was obtained, the fresh petechial hemorrhages, in addition to the numerous macrophages heavily laden with old blood pigment seen in the tunica proper of the intestinal mucosa offer presumptive evidence of intestinal involvement. It has become clear that typical Addison's disease can be produced by the destruction of the adrenal cortex alone. The selective involvement of specific cells associated with a disease process, the slow necrosis hyperplasia and hypertrophy of these adrenal cortical cells the apparently secondary inflammatory reaction and the relatively insignificant degree of fibrosis, in addition to the finding of intranuclear inclusions, offer presumptive evidence at least for another etiologic interpretation than syphilis tuberculosis congenital hypoplasia 'cytotoxins' circulating in the blood and chronic inflammation.

American Journal of Public Health, New York

26:455-560 (May) 1936

- Child Health and the Elementary School J T Phair Toronto—p 455
- Effect of E. R. A. on Local Programs Laura A Draper Minneapolis—p 462
- Comparative Value of State Districts and County Districts as Basis of Local Health Organization L S Godfrey Jr Albany N Y—p 465
- Integrating Mental Hygiene From the Point of View of the Public Health Officer and School Physician F L Patry Albany N Y—p 471
- Community Program for Prevention of Mental Disease Elizabeth J Adamson New York—p 480
- Consumer Demand for Vital Statistics The Health Officer's Point of View L A Round Providence R I—p 489
- Id. The Needs of the Epidemiologist J A Doull Cleveland—p 491
- Id. The Need of the Child Hygienist Martha M Eliot Washington D C—p 493
- Id. The Health Education View C F Bolduan New York—p 497
- Id. The Field of Demography W S Thompson Oxford Ohio—p 499
- Id. Point of View of Registrar S G Thompson Jacksonville Fla—p 502
- Some Practical Considerations in Bacillus Pertussis Vaccine Preparation Grace Eldering and Pearl L Kendrick, Grand Rapids Mich—p 506
- Relationship of the Public Health Nurse to the Part Time Local Health Officer in Communicable Disease Work Margaret G Arnstein Albany N Y—p 512
- Sequel to Public Health Ruling Concerning Streptococcal Mastitis C S Bryan and G J Turney Lansing Mich—p 517
- Practical Criteria and Methods for Identification of Hemolytic Streptococci Julia M Coffey Albany N Y—p 521

Anatomical Record, Philadelphia

65:131-254 (May 25) 1936

- Spleen Studies II Microscopic Observations of Circulatory System of Living Traumatized Spleens and of Dying Spleens M H Kinsely Chicago—p 131
- Effect of Estrin on Prostate Gland of Albino Rat and Mouse D Weller M D Overholser and W O Nelson Columbia Mo—p 149
- Sex Chromosomes in Man with Especial Reference to First Spermatocyte R L King and H W Beams Iowa City—p 165
- Changes in Incisor of Thirteen Lined Ground Squirrel (*Citellus tridecemlineatus*) Following Bilateral Gonadectomy I Schour Chicago—p 177
- Unusual Double Human Pregnancy with Single Corpus Luteum II I Wieman and C K Weichert Cincinnati—p 201
- Effect of Ovarian Transplants on Development and Maintenance of Seminal Vesicle and Prostate Gland of Albino Rat C A Pfeiffer New York—p 213
- Retrocaval Ureter and Right Aorta W A Dial New Orleans—p 239
- Preparation of Microscopic Sections for Making Fiber Counts of Nerves Containing Unmyelinated Fibers R I Jones Minneapolis and Bloomington Indianapolis—p 247

Double Human Pregnancy with Single Corpus Luteum—Wieman and Weichert secured the material for their study at the necropsy of a woman aged 25 dead of a bullet wound in the abdomen. It consists of a pregnant uterus, approximately twice the size of a normal nonpregnant one and of tubes, ovaries and the upper part of the vagina all of which were removed four hours after death. The uterus was found to contain two male embryos but since no record of the last menstruation was obtained the duration of pregnancy is

unknown. In arriving at a final decision as to the zygotic origin of the embryos, the following facts have to be properly evaluated: a single corpus luteum of pregnancy, two chorions partially united by an intermingling of their villi and two widely separated implantation sites. The last two factors strongly point to a biovular origin of the embryos. On this basis the presence of a single corpus luteum would mean that the two ova came from the same follicle and that the sexual identity is only coincidental, since each ovum would have been fertilized by a different spermatozoon. The differences in crown-rump lengths of the embryos and in the lengths of the external genitalia may be significant for such an interpretation. In view of the conditions a monovular origin could be maintained only on the assumption that the separation of the embryo into two parts occurred before implantation. This is highly improbable because it is generally believed as concluded by Arey, that mammalian monozygotic twins do not arise by the separation of early blastomeres. The common chorion which all twins of this sort possess indicates that separation must be subsequent to the period when the cleavage group is differentiated into an inner cell mass and outer shell of trophoblast. It is therefore concluded that the embryos are biovular in origin and that the two ova came from a single follicle.

Archives of Otolaryngology, Chicago

23 509 616 (May) 1936

- Development of Otic Capsule. III. Fetal and Infantile Changes in Fissular Region and Their Probable Relationship to Formation of Otosclerotic Foci. T. H. Bast. Madison Wis.—p. 509.
- Bronchoscopy Study of Carcinoma of Lung. Analysis of Three Hundred Cases of Bronchial Carcinoma with One Hundred Postmortem Examinations. R. Kramer and M. L. Som. New York.—p. 526.
- Refinement of External Fronto-Ethmoidal Operation. New Vaso-frontal Pedicle Flap. R. C. McNaught. San Francisco.—p. 544.
- Esophagitis. II. Pathologic and Clinical Study. H. R. Butt and P. P. Vinson. Rochester Minn.—p. 550.
- *Operative Exposure of Facial Canal with Removal of Tumor of Greater Superficial Petrosal Nerve. G. E. Tremble and W. Penfield. Montreal Canada.—p. 573.
- Paget's Disease and Deafness. J. R. Lindsay and H. B. Perlman. Chicago.—p. 580.

Operative Exposure of Facial Canal.—Tremble and Penfield report a case of operative exposure of the facial canal with removal of a tumor of the greater superficial petrosal nerve. No other description of a perineurial fibroblastoma arising in the vicinity of the geniculate ganglion is to be found in the literature. The presenting symptom was facial paralysis. But preliminary tests localized the site of interruption to the genu of the facial nerve and exploration was undertaken with a view to a possible end to end suture within the petrous bone. The operation was carried out under tribrom ethanol in amylene hydrate and a locally applied anesthetic. The same incision was made as for a radical mastoid operation except that it was extended a little above and below. The whole tip of the mastoid process and the vaginal process of the external auditory canal was removed. The cells over the lateral sinus were uncovered. The middle ear was opened from behind by enlarging the aditus ad antrum and removing part of the roof of the external meatus. All the bone below the horizontal semicircular canal and as far as the stylomastoid foramen was taken away. The whole canal was uncovered with exposure of the facial nerve. To get a better exposure of the nerve some of the bony floor of the middle fossa was removed. The facial nerve was identified again at the bend and traced along its horizontal course. At a point about 4 mm from the bend and just above the oval window the nerve was involved by a vascular mass of tissue which proved to be a new growth. On removal of the root of the middle ear a tumor herniated into the opening. It extended through the bone from the facial canal to the subdural space following the canal of the greater superficial petrosal nerve. As much of the growth as possible was removed. During this procedure the incus was gently taken away with the curet and later the malleus and the drum. The tumor was curetted out and the seventh nerve left exposed. A low incision of the nerve capsule. Finally the eustachian tube was curetted so that it would close off with a view to future complete interruption of the tumor. At no time was there a leakage of cerebrospinal fluid. The wound was closed with the staples and the external auditory meatus left open as in a radical mastoid operation. It was decided not to make an

anastomosis of the seventh nerve to the twelfth, as it seemed possible that the removal of the tumor would allow the seventh nerve to regenerate. They urge that such an exploration should be carried out in many cases of paralysis of the facial nerve with a view to (1) relief of the pressure on the facial nerve, (2) direct suture of the nerve or (3) facial-hypoglossal anastomosis, as indicated by the operative observations.

Archives of Pathology, Chicago

21: 565 726 (May) 1936

- Experimental Pulmonary Edema. V. H. Moon and D. R. Morgan. Philadelphia.—p. 565.
- Multiple Myeloma of Hemocytoblastic Type. R. P. Smith. Halifax, N. S. and M. Silberberg. Panama City. Republic of Panama.—p. 578.
- Relation of Glioma of Leptomeninges to Neuroglia Nests. Report of Case of Astrocytoma of Leptomeninges. O. T. Bailey. Boston.—p. 584.
- Cerebral Neuro-Epithelioma. A. J. McLean and S. R. Lantieri. Portland Ore.—p. 601.
- Effect of Alcohol on Cholesterol Induced Atherosclerosis in Rabbits. T. P. Eberhard. New York.—p. 616.
- *Significance of Tissue Lymphocytes in Prognosis of Lymphogranulomatosis. S. R. Rosenthal. Chicago.—p. 628.

Tissue Lymphocytes in Prognosis of Lymphogranulomatosis.—Rosenthal investigated the role of the lymphocytes and the lymph nodules of the lymph nodes and spleen and the filiation thereto of the prognosis in Hodgkin's disease. Sixty-three cases were studied in thirty-nine of which biopsies had been made before roentgen treatment was begun. In twenty-nine instances, tissues were available for postmortem examination. In fifteen of the latter instances there had been no roentgen treatment. The duration of life after the onset of Hodgkin's disease was found to be proportional to the predominance, subordination and absence of lymphocytes and lymph nodules in the lymph nodes. The average duration of life for groups of patients showing the three types was 4.35, 2.29 and 1.14 years, respectively. The effect of roentgen treatment on involved lymph nodes is thought to be (1) a decrease in the number of reticulum cells with pyknosis, karyorrhexis and necrosis or an abnormal reaction of such cells with bizarre shaped mitotic figures and irregular giant cell formation (2) a decrease in the number of lymphocytes and lymph nodules (3) a proliferation of fibrocytes with dense connective tissue formation and hyalinization if the original destructive phenomena are overcome. A marked decrease in the number of lymphocytes and lymph nodules was evident in the spleen and lymph nodes in all cases (with or without roentgen treatment) on postmortem examination. This was true whether the organ was involved by the process or not and was explained by the "indirect action" of the products of destruction of tissue entering the blood stream. Some method devised to stimulate the lymphoid elements of the body might aid in staving off the progress of the disease.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

17 257 320 (May) 1936

- Present Status and Technique of Artificial Fever. U. Giles. New Orleans.—p. 263.
- Fever Therapy in Gonococcal Arthritis and Epididymitis. J. A. Trautman. New Orleans.—p. 277.
- *Hyperpyrexia in Bronchial Asthma. K. Phillips. Miami Fla.—p. 282.
- Physical Therapy in Low Back Injuries. F. H. Walke. Shreveport La.—p. 290.
- Technic of Physical Therapeutic Methods in Gynecology. M. Abramson. Minneapolis.—p. 293.
- Treatment of Pneumonia by Electromagnetic Induction. Preliminary Report. M. G. Schmitt. Chicago.—p. 299.

Hyperpyrexia in Bronchial Asthma.—Phillips regards hyperpyrexia in bronchial asthma as a most valuable adjuvant in conjunction with other methods for correcting existing physiologic and clinical abnormalities. At first he produced and maintained high temperatures for long periods but later lower temperatures were maintained for from four to five hours. At least ten treatments weekly or biweekly must be given for any lasting results. Lower temperatures shorter intervals and more frequent treatments have been found to be of value. This is illustrated by a case of two years chronicity in which treatments were shortened and continued up to a total of thirty-five in the third year the patient demonstrated an almost spectacular rapid improvement. It therefore becomes evident that first reports appearing in the literature covering one or two cases in which from one to three treatments each were given are of no conclusive value. It is not surprising that some of these

men have abandoned hyperpyrexia as worthless. At present the author has under observation a group of patients in whom the temperature is elevated to only 101 or 102 F for forty-five minutes daily. The present indications are that this technic might prove to be the most appropriate. With this method one can treat cases ambulatorily and increase the total number of treatments indefinitely to fit individual needs. At these temperatures, general oxidation and metabolism is enhanced and the patient is hardly inconvenienced. The therapeutic possibilities of hyperpyrexia have only been touched on.

Delaware State Medical Journal, Wilmington

8 73 92 (May) 1936

- Postoperative Complications with Especial Reference to Water and Chemical Balance D B Pfeiffer Philadelphia—p 73
Cancer of Larynx: Diagnosis and Surgical Cure G Tucker Philadelphia—p 80

Georgia Medical Association Journal, Atlanta

25: 145 184 (May) 1936

- Learning Better How to Live J E Paulin Atlanta—p 145
Sacral Anesthesia in Labor H J Bickerstaff Columbus—p 148
Miliary Syphilis of Intestine in the New Born: Discussion of the Pathology of Syphilis of Gastro-Intestinal Tract in Children J Janipolsky and C D Fowler Atlanta—p 154
Puerperal Infection: Report of Four Cases G N Coker Canton—p 158

Illinois Medical Journal, Chicago

69 381-476 (May) 1936

- What Can Be Done for Sinus Trouble G E Shambaugh Jr Chicago—p 417
Rhino-plasty: Some Practical Considerations S Salinger Chicago—p 423
Surgical Anatomy and Esthetic Effects of Submucous Resection A M Brown Chicago—p 430
Statistical Study of Obstetric Practice in a Small City Hospital L T Gregory and Vera Whitted Urbana—p 434
Transurethral Prostatic Resection H M Soloway Chicago—p 436
Some Present Day Considerations on Syphilis H A Rosenbaum Chicago—p 439
Duodenitis with Associated Aerodynia J B Gillespie Urbana—p 442
Primary Carcinoma of Jejunum E Jonas E I Steck and J Brame Chicago—p 444
Critical Study of Mortality in Appendicitis: Review of 456 Cases D K Hur Manteno—p 447
*Differential Diagnosis of Diseases Causing Hematuria E Bechtold Belleville—p 452
*Mongolism in One of Dizygotic Twins: Report of Case R L Jenkins Chicago—p 455
Life Death and Dextrose R L Gorrell Stuart Neb—p 456
Pyloroplasty in Treatment of Duodenal Ulcer J W Thompson St Louis—p 461
Diagnostic Examination H P Miller Rock Island—p 467
Traumatic Tonsillectomy: Two Cases L J Lawson Evanston—p 470

Diagnosis of Diseases Causing Hematuria—Bechtold declares that, when it is thoroughly realized that hematuria may be the first, the last and almost the only symptom of a malignant condition of the bladder and in 54 per cent of adult renal neoplasms the initial symptom it is obvious that no one is justified in passing lightly over this important observation. These patients should be immediately and thoroughly studied preferably at the time the bleeding is present. A satisfactory diagnosis may not be possible at one sitting so that it often becomes necessary to study these patients over a long period. A large group of hematurias result from new growths in the bladder. Bleeding resulting from ulcer, stone, the various types of cystitis and so-called benign papillomas can be successfully diagnosed only by cystoscopy. Bleeding is most frequent in the serious lesions of the kidney demanding early recognition and treatment, in particular tumors and tuberculosis. In the diagnosis of renal hematuria the pvelogram is almost essential. The retrograde method is the most valuable since it is quite possible that occasionally no shadow will be obtained with the intravenous method if the affected kidney does not have sufficient function to excrete the dye. The recognition of tuberculosis of the kidney depends primarily on the identification of the tubercle bacilli in the bladder or kidney urine or in both on the appearance of the bladder and on plain roentgenograms of the genito-urinary tract showing calcareous deposits in the region occupied by the kidney. Pvelograms should be made with caution as they may result in generalization of the infection. All cases of unexplained presence of red blood cells in

the urine should make one suspicious of calculus. Blood in varying amounts is a common observation in the pyogenic inflammatory lesions of the kidney, such as pyelonephritis and results from the fracture of the young blood vessels of the granulation tissue. Ordinarily, blood appears late in the disease. Bleeding from prostatic lesions and from varicose veins around the neck of the bladder resembles bleeding from the posterior urethra. Hemoglobinuria results from the transudation of dissolved hemoglobin from within the blood vessels into the urine. It occurs in various toxic conditions resulting from chemical poisoning and in the 'black water fever' of malaria and is occasionally observed after blood transfusions and after large burns. It is recognized by its characteristic red color, the urine being clear, or, if cloudy on allowing the specimen to stand the supernatant fluid retains the red color. The benzidine or guaiac tests give a positive reaction. Red blood cells as a rule are not found on microscopic examination.

Mongolism in One of Dizygotic Twins—In Jenkins' instance of mongolism the twins were of opposite sex, obviously of dizygotic origin. Other instances of the occurrence of mongolism in one of dizygotic twins have been reported and summarized. Their significance lies in the fact that the concomitant development of a normal fetus and a mongol fetus in the same uterus demonstrates that no etiologic hypothesis placing entire dependence on a humoral mechanism of the maternal blood is tenable. Such a hypothesis would be irreconcilable with cases such as these. The ready transmission of at least most endocrine hormones across the placental barrier makes it furthermore highly unlikely that the mechanism of the production of mongolism is humoral at all. When mongolism occurs in identical twins both twins are affected. The author believes that these facts may be reconciled with his hypothesis that mongolism is due to the fertilization of an ovum the viability of which has been diminished by its age, or with the hypothesis of Rosenau that mongolism is due to foci of tissue change in the ovary, perhaps scars marking the sites of old ovulations.

Journal of Experimental Medicine, New York

63 617 788 (May 1) 1936

- Effect of Combination with Diazot Compounds on Immunologic Reactivity of Antibodies H Eagle Dorothea E Smith and P Vickers Philadelphia—p 617
Neutralization Tests with Serums of Convalescent or Immunized Animals and Viruses of Swine and Human Influenza T Francis Jr New York and R E Shope Princeton N J—p 645
Incidence of Neutralizing Antibodies for Human Influenza Virus in Serum of Human Individuals of Different Ages T Francis Jr and T P Magill New York—p 655
Incidence of Neutralizing Antibodies for Swine Influenza Virus in Serum of Human Beings of Different Ages R E Shope Princeton N J—p 669
Immunologic Studies with Virus of Infectious Laryngotracheitis of Fowls Using Developing Egg Technic F M Burnet Melbourne Australia—p 685
Studies in Synergy: Synergic Action of Staphylococci and Beef Lens Extract in Rabbits H F Swift and M P Schultz New York—p 703
Id. Synergic Stimulating Effect of Hypersensitivity to Foreign Protein and to Bacteria H F Swift and M P Schultz New York—p 725
Chemical Studies on Bacterial Agglutination II Identity of Precipitin and Agglutinin M Heideberger and E A Kabat New York—p 737
Active Immunization of Guinea Pigs with Virus of Equine Encephalomyelitis II Immunization with Formalized Virus H R Cox and P K Ohtsky New York—p 745
*Infection and Intoxication: Their Influence on Hemoglobin Production in Experimental Anemia F S Robscheit-Robbins and G H Whipple Rochester N Y—p 767

Infection and Intoxication—Robscheit-Robbins and Whipple deal with infection and a variety of intoxications which do or do not modify the production of hemoglobin and red cells in experimental anemia in dogs due to blood loss. When clinical anemias develop in association with infection the tendency is to explain this abnormal state of the blood on the basis of blood destruction or of lack of absorption from the intestine. The experimental data indicate that the essential factor is a disturbance of the internal metabolism which is concerned with upbuilding of the large hemoglobin molecule. There is no evidence of any significant red blood cell destruction in certain experiments and strong evidence that the absorp-

tion of food constituents is normal. Accelerated metabolism due to thyroid or dinitrophenol does not modify hemoglobin production in standard anemic dogs. Endometritis lasting many weeks will profoundly reduce the production of hemoglobin in the standard anemic dog. A sterile abscess also will diminish the production of new hemoglobin in the anemic dog when liver is being fed but particularly during fasting periods when the usual abundant production of new hemoglobin is reduced to zero. Impaired absorption can be excluded as a factor of any significance in experiments in which food consumption is 100 per cent digestion normal and body weight maintained. Destruction of red cells can likewise be excluded as of any significance in experiments with the sterile abscess in a fasting period, as the freed hemoglobin would be promptly turned over by the anemic dog to appear in the subsequent weeks as new hemoglobin. These experiments point to a disturbance of internal metabolism related to hemoglobin building in the body as responsible for the inhibition of hemoglobin production under these conditions. The same factor is often of importance in human disease.

Journal of Pediatrics, St. Louis

S 533 656 (May) 1936

- Effect of Illness on Emotional Development B. I. Beverly Chicago.—p. 533
- *Common Allergic Disorders in Childhood H. B. Adams New York.—p. 544
- Celiac Disease: Intestinal Absorption and Gastro-Intestinal Motility A. E. Wade Seattle.—p. 563
- *Enuresis: Statistical and Analytic Study S. Weiss Philadelphia.—p. 570
- Paroxysmal Sneezing in Whooping Cough A. C. Ramhar Chicago.—p. 582
- *Summer Tetany and Serum Calcium R. C. Fredeen and F. C. Neff Kansas City Kan.—p. 584
- Multiple Hemangio-Endotheliomas of Liver: Report of Case W. A. Howard Iowa City.—p. 588
- Eventration of the Diaphragm J. F. Landon New York.—p. 593
- Thrombosis of Internal Cerebral Veins in Infancy and Childhood: Review of Literature and Report of Five Cases Hertha Ehlers and C. B. Courville Los Angeles.—p. 600
- Bismuth Subnitrate Poisoning in an Infant: Case Report H. N. Rundsford and A. Nightingale Brooklyn.—p. 624
- Infection with an Organism of the Genus *Listeria*: Report of Case of Acute Cerebrospinal Meningitis with Recovery B. W. Carey Jr. Boston.—p. 626
- Banana Powder and Fecal Flora of Infants L. von Neysenbug Daytona Beach Fla. and A. Fine New Orleans.—p. 630

Allergic Disorders in Childhood—Adams states that in asthma due to extrinsic factors, to infection or to both, there are fairly characteristic clinical types (patients sensitive to an inhalant or to food or to both children with negative skin tests whose asthma is thought to be of infectious origin and children in whom infection and extrinsic protein sensitization play more or less equally important parts) each requiring a different approach for successful treatment. Mixed stock vaccines have a real use and give fairly consistent results in properly selected cases of asthma. In order to obtain good results treatment of allergic manifestations must be given over long periods of time. Various secondary manifestations in allergic children such as sinusitis, urticaria or angioneurotic edema may usually be ignored in the expectation that successful treatment of the chief complaint will rid the child of the secondary conditions. Testing each patient by scratch intracutaneous and passive transfer methods is well worth the time consumed. The scratch test used alone is not reliable. It is essential to test clinically all allergens giving positive skin reactions before judging them significant. The reactivity of the skin itself varies with the individual and must be taken into consideration in reading reactions. Constitutional reactions to intracutaneous tests need not occur in pediatric allergy practice.

Enuresis—Weiss states that: 1. The economic status of the family of enuretic children is important since enuresis occurred more frequently in children from families in poor financial circumstances. 2. The tendency for enuresis occurs more frequently in children of lower intelligence. 3. Enuresis occurs most frequently in the age group between 6 and 9 years and in families of three or more siblings. 4. Childhood diseases as a factor in producing enuresis must be considered in relation to the emotional disturbance arising incident to the illness. 5. Children with enuresis in most cases are affected by tears.

The incidence of fear indicates that these children are suffering from a neurosis. 6. Two personality groups may be differentiated, depending on whether the enuresis has continued from infancy or began in childhood. The children of the first group are characterized by passivity, while in the latter group the children are characterized by hyperactivity and aggressiveness. 7. Parental overprotection by preventing the child from becoming independent is an important factor since it leads to the production of protest reactions. 8. Enuresis occurred in association with other complaints of a behavioristic nature, such as stealing, lying and temper tantrums, more frequently than as the only symptom. If these complaints are to be considered as protest reactions, enuresis may also be in the nature of a protest reaction.

Summer Tetany and Serum Calcium—During July and August 1935, when there was practically no interruption of sunshine by rain, clouds or smoke, Fredeen and Neff saw two Negro infants with repeated convulsions. Some evidences of rickets suggested the possibility of tetany, and for these reasons calcium and phosphorus determinations were run as checks to the treatment. The calcium and phosphorus levels were low at the same time in the first case, possibly as a result of some variation in the mineral balance of the diet at the time. The factors that explain the development of the tetany are the deeply pigmented skin, the susceptible age, the presence of untreated rickets, the previous winter and incompletely cured rickets during the short period in March when there was about the usual amount of sunshine. Then came the period of exceptionally rainy and cloudy days in April, May and June when the infants were more completely covered with clothes than usually at this time of year. That the amount of ionized calcium in the circulating blood is low because of an incomplete diet and the supply depleted during this period of inadequate exposure to sunlight by the withdrawal into the bones of the healing rickets seems a logical conclusion as to the production of tetany in these infants.

Journal of Pharmacology & Exper. Therap., Baltimore

57 1 112 (May) 1936

- Method for Obtaining Preparation of Melanophore Hormone of Pituitary Gland R. L. Siehle, Montreal.—p. 1
- New Bloodless Method for Continuous Recording of Peripheral Circulatory Changes H. Molitor and M. Kniazuk Rahway N. J.—p. 6
- Relative Hypnotic Effects of Some Aryl and Unsymmetrical Alkylaryl Thio-Ureas E. J. deBeer, J. S. Buck, W. S. Ide and A. M. Hjort, Tuckahoe, N. Y.—p. 19
- Effects of Acetanilid on Growth and Blood Morphology of Rats P. A. Smith and W. E. Hamburger New Haven Conn.—p. 34
- Growth and Blood Morphology of Rats Receiving Sodium Bromide, Caffeine and Combinations with Acetanilid P. A. Smith and W. E. Hamburger New Haven Conn.—p. 43
- Thyrotropic Hormone of Pituitary Gland and Iodine Metabolism B. F. Summel, D. R. McLaughlin and V. Pieha Cleveland.—p. 49
- Chemotherapeutic Action on Spirillum minus in Mice by Certain Anil and Styryl Quinoline Compounds Free from Metals or Metalloids C. H. Browning and R. Gnlhransen Glasgow Scotland.—p. 56
- Effect of Dinitrophenol on Rate of Alcohol Metabolism H. W. Newman and M. L. Tainter San Francisco.—p. 67
- Ergolotin Ergometrine Ergosterine and Ergobasine K. K. Chen, E. E. Swanson, E. C. Kleiderer and G. H. A. Clowes Indianapolis.—p. 74
- Toxicity and Glycemic Properties of Number of Amidine and Guanidine Derivatives W. A. Broom Sheffield England.—p. 81
- Dilation of Coronary Vessels by Certain Organic Extracts and Drugs C. W. Greene Columbia Mo.—p. 98

Effect of Dinitrophenol on Rate of Alcohol Metabolism—Newman and Tainter gave dogs alcohol intravenously and dinitrophenol intramuscularly and compared the rates of fall of blood alcohol concentrations for periods when the animals breathed room air and periods when they rebreathed from a closed system. When elimination of alcohol from the lungs was prevented by rebreathing the hyperventilation of dinitrophenol did not modify the rate of fall of blood alcohol but when the dogs breathed into room air, its elimination was doubled. A similar degree of hyperventilation, produced mechanically in a dog not receiving dinitrophenol resulted in an increased rate of fall of blood alcohol similar to that in hyperventilation due to dinitrophenol. Therefore the increased rate of disappearance of alcohol from the blood after dinitrophenol is due not to the increased rate of metabolism nor to the increased temperature but to the hyperventilation.

Journal of Urology, Baltimore

35 491 582 (May) 1936

- Coccic Infections of Renal Cortex E Beer New York—p 491
Prevention of Recurrent Renal Calculi C C Higgins Cleveland—
p 494
Blind Ureterocele Report of Case with Unusual Clinical and Patho-
logic Aspects J C Sargent Milwaukee—p 499
Evaluation of Various Methods of Treating Tumors of Bladder W V
Wishard Jr H G Hamer and H O Meritz Indianapolis—p 503
Treatment of Overflow Incontinence of Neurogenic Vesical Dysfunction
C D Creevy Minneapolis—p 507
Some Recent Developments in Treatment of Neurogenic Dysfunction of
Bladder Based on Cystometry J T Gernon E Palmer and C M
McKenna Chicago—p 515
Study of Pathologic Alterations in Female Bladder and Urethra Result-
ing from Infection with *Trichomonas Vaginalis* N J Heckel Chicago
—p 520
Congenital Valvular Obstruction of Posterior Urethra Report of Case
E Visiol Stevens Point Wis—p 524
Radical Perineal Prostatectomy H C Rolnick Chicago—p 527
Blastomycosis of Genito-Urinary Tract C R Marquardt Milwaukee
—p 531
Urinary Obstruction Among Children C C Hyde South Bend Ind
—p 534
Relationship of Reticulo-Endothelial System to Urogenital Infections
R E Cumming Detroit—p 540
*Antivirus Treatment of Gonorrhea W L Sherman Detroit—p 546
*Experience with Fever Therapy in Treatment of Gonorrheal Urethritis
J K Ormond Detroit—p 551
Controlled Low Spinal Anesthesia in Transurethral Surgery R M
Nesbit Ann Arbor Mich—p 557
Section of Large Solitary Renal Cysts Description of Satisfactory
Technic V J O'Connor Chicago—p 561
Nephralgia Due to Urinary Hyperacidity G A Humphreys New York
—p 569
Malignant Melanoma of Penile Urethra Brief Review of Urethral
Sarcoma in Male M F Campbell New York and M J Fein
Montclair N J—p 573

Antivirus Treatment of Gonorrhea—Sherman treated 400 male cases of gonorrhea, in 200 of which instillations were administered of various antiseptic solutions urinary sedatives prostatic massages and the usual symptomatic treatment accepted by most physicians, and in the other 200 a combination of antivirus, vaccine and prostatic massage. The antivirus used was a product based on Besredka's work. It contains the antivirus principle of gonococcus, streptococcus and staphylococcus, combined with a vaccine made from these organisms and suspended in an inert vehicle. The vehicle used does not have any bactericidal properties it is neutral in reaction and has no effect on mucous membranes. The preservative used was a 1:10,000 mercurial solution, with little if any bactericidal action in the urethra. The patients were instructed to inject this solution into the anterior urethra each day, as supplemental treatment multiple, simultaneous, subcutaneous injections of a mixed stock vaccine were administered. Prostatic massage was not started until after the urethral discharge had entirely disappeared. Of the entire group 305 patients completed the prescribed treatment and were discharged as cured, but the patients who were treated with antivirus made better progress. The urethral discharge stopped and the first negative prostatic smear was obtained two weeks earlier in the cases in which antivirus was employed, and the first negative prostatic smear of a consecutive series of five was obtained, on an average, 31 weeks earlier. The average duration of treatment necessary to effect a cure also was 49 weeks less in the group treated with antivirus than it was in the cases in which the patients were treated with antiseptic solutions alone. The complications that arose in the course of the treatment were more than three times as frequent among the patients who received ordinary local treatment as among those who were given antivirus. Prostatitis developed in fourteen of the former cases epididymitis in three vesiculitis in one and lymphadenitis in one. In the latter group of cases prostatitis developed in only one epididymitis in three and lymphadenitis in one. The persistent regular application of antivirus solution to the tissues involved and the subcutaneous injection of gradually increasing amounts of vaccine develop a local cellular immunity as well as an increase in the general immunizing forces of the body. These results coincide with the observations of other investigators. In spite of the fact that the patients who were treated with antivirus had a larger number of complications at

the time of their admission to the clinic than did those who received ordinary treatment, progress was more rapid and satisfactory.

Fever Therapy in Treatment of Gonorrhea—Ormond used fever therapy in the treatment of twenty-one attacks of gonorrheal urethritis in twenty patients. In only two of fifteen ambulatory patients did complications arise during treatment but no complications developed in the patients undergoing treatment in the hospital. The treatment nearly always caused a prompt and striking decrease in the urethral discharge, and in cases in which the patients completed the treatments the course seemed shorter than it usually is with the ordinary forms of treatment. Arthritis and epididymitis yielded promptly, and in the one case of ophthalmitis the condition cleared up after one treatment. The older or more chronic lesions seemed to respond more promptly and more completely than did the recent or more acute lesions. This may mean that the patient's immunity, which was produced during the course of the disease had attenuated the organisms and rendered them more vulnerable to heat. Temperatures as high as 107°F have in most instances been well tolerated. An interval of three or four days between treatments is best. The duration of a treatment should not exceed six hours. In the cases in which acute lesions were cured, the most common number of treatments was five. The treatment is not free from danger, as deaths have occurred in its course. In the future, some change in technique or additional therapy will possibly enable this method of treatment to produce rapid, safe and certain cure. In long continued chronic lesions and in the presence of complications, the author believes the method will be found of great value.

Laryngoscope, St. Louis

48 323-406 (May) 1936

- Ocular Manifestations of Rhinogenic and Orogenic Intracranial Complications E. B. Spaeth Philadelphia—p 323
Neurologic Aspects of Frontal Lobe Abscess C. E. Connor St. Paul—p 340
Unusually Large Calculus of Tonsil H. Rubin Brooklyn—p 376
*Operation for Relief of Double Abductor Paralysis Preliminary Report J. M. Lore New York—p 380
New Device for Testing Malinger in Unilateral Deafness M. M. Kafka Brooklyn—p 383
Tonsil Evertor Semisharp for Cutting or Tearing Pillar Retractor Knot Tier P. S. Stout Philadelphia—p 387
New Type Vassil Rasp in Plastic Surgery S. Israel Houston Texas—p 388

Operation for Double Abductor Paralysis—Lore bases his procedure on what would happen if the anterior commissure or the arytenoid was removed and transferred to a point at which the cord would be more external. The interior of the larynx was exposed by means of a thyrotony incision, extended into the thyrohyoid membrane in the form of a V shaped incision. Then a small bladed knife was plunged through the floor of the ventricle, about three eighths inch from the edge of the cord, and coming out about three-eighths inch subglottically. The knife in this position was carried posteriorly toward the arytenoid, cutting parallel to the vocal cord. When the vocal process was reached the knife was carried internal to it, cutting the attachment of the vocal cord from it, until the posterior commissure was reached, at which point the cord was severed. The arytenoid was then dissected and removed. The tissue subjacent to the detached cord was removed down to, but not including the perichondrium. The vocal cord was then put back in its original position and anchored to the surrounding tissues by means of sutures. The result is to transfer the posterior end of the cord attachment externally. This may be kept in place by packing the inside of the larynx or by a bag inflated with air.

Medical Annals of District of Columbia, Washington

5 123 150 (May) 1936

- Ancient and Modern Knowledge Concerning Anal Fistula L. A. Buie Rochester Minn—p 123
Epidemic Poliomyelitis in Washington Clinical Survey with Emphasis on Diagnostic Features A. L. Abrams Washington—p 126
Mesenteric Vascular Occlusion F. Threadgill Washington—p 130
Histidine Treatment of Peptic Ulcer Report of Three Cases J. F. Finnegan and J. F. Elward Washington—p 135
Fundamentals of Internal Medicine Diseases of Nervous System A. Schneider Washington—p 138

New England Journal of Medicine, Boston

214 961 1018 (May 14) 1936

- Hypophysis and Metabolism B A Housay Buenos Aires Argentina
South America—p 961
Carbohydrate Metabolism B A Housay Buenos Aires Argentina
South America—p 971

Public Health Reports, Washington, D C

51 567 610 (May 8) 1936

- Comparative Study of Certain Characteristics of One Thousand Inmates
of the Northeastern Penitentiary I Age B S Sanders—p 571
Influence of Trypan Blue on Resistance of Mice to Transplantable and
Induced Tumors H B Andervont—p 591

Southern Medical Journal, Birmingham, Ala

29 445 546 (May) 1936

- *Readjustments in Thoracic Cage and Its Contents Following Total and
Partial Pneumonectomy W F Rienhoff Jr Baltimore—p 445
Recognition of Modern Treatment of Broken Hips L Thornton and
C Sandison Atlanta Ga—p 456
Diagnostic Value of Skin Lesion Tuberculid H Hailey Atlanta Ga.
—p 460
Roentgen Ray Examination of Colon in Study of Amebiasis J C Bell
Louisville Ky—p 462
Epidemiology of Endamoeba Histolytica Infection in Two Rural Georgia
Counties D L Seckinger Atlanta Ga—p 472
Nervous Control of Coronary Circulation and Its Clinical Significance
C W Greene Columbia Mo—p 478
Recent Advances in Diagnosis and Treatment of Coronary Thrombosis
L F Bishop Jr New York—p 483
Advances in Dietary Management of Diabetes C M MacBryde
St Louis—p 488
Gallbladder Disease How Diagnose It? How Treat It? L Martin
Baltimore—p 492
Internists Attitude Toward Unusual X Ray Findings in Appendix
Area H Bowcock Atlanta Ga—p 497
Acute Appendicitis in Children P F Barbour Louisville Ky—p 500
Anemia in Children Two Unusual Cases L L Lee San Antonio
Texas—p 504
Diagnostic Measures in Atopic Infantile Eczema H J Rinkel Kansas
City Mo—p 507
Ununited Fractures E W Ryerson Chicago—p 512
Indications for Operation in Renal Stones R M LeComte Washing
ton D C—p 515
Some Observations on the Jameson Recession Operation for Strabismus
J W Jervey Jr Greenville S C—p 520
General Consideration of Defective Hearing and Deafness with Par
ticular Reference to Etiology N E Hartsook Johnson City Tenn
—p 521
Three Years Affiliation of a Community Chest Mental Hygiene Clinic
with the Department of Psychiatry in a Medical School S Ackerly
Louisville Ky—p 527
Public Health Significance of Our Newer Knowledge of Yellow Fever
B J Lloyd Washington D C—p 533
Nitrogen Retention Due to Hypothyroidism Report of Case J W
Bogges Jr Guntersville Ala—p 536
Uses of Colposcopy with Demonstration of New Colposcope G Gell
horn St. Louis—p 538
New Direct Blood Transfusion Instrument S Meeker Memphis Tenn
—p 539

Readjustments Following Pneumonectomy—Rienhoff points out the compensatory changes occurring in the thoracic cage and its contents after total and partial pneumonectomy and the total absence of immediate or remote respiratory or circulatory embarrassment following these procedures. The study is based on an analysis of thirty-six cases in ten of which a complete pneumonectomy was performed. In twenty-four of the remainder only a part of the lung was removed and in two a posttraumatic atrophy of the left lung had occurred. His experience teaches him that thoracoplasty or the resection of ribs may be given up certainly as a primary procedure and that in all probability, particularly in clean cases it will be unnecessary to perform any type of thoracoplastic operation. It would also seem that it is unnecessary to do a phrenectomy before or during the operation of total or partial pneumonectomy. For it is the piston action of the diaphragm on that side against the rigid intact wall of the thorax on both sides that brings about the so necessary expansion of the remaining lobes following partial pneumonectomy and it is as a rule either completely or practically immobilized on the side operated on for some time following total pneumonectomy. It seems that at a later date the activity of the diaphragm on the side operated on returns with the filling of the thorax by the dilatation of the contralateral lung. Hence it follows that interference with the normal anatomic or physiologic condition of the thoracic parietes after total or partial

pneumonectomy may be unnecessary, if not actually harmful. It is of course advisable not to drain the remaining empty space following total pneumonectomy, because this is immediately filled, as shown, with a coagulated mass of plasma, which undergoes later organization with the production of a fibrous tissue mass that occupies a space of greater or less size, depending on the cavity that eventually has to be filled. Not only in total but also in partial pneumonectomy, if the remaining lung undergoes a compensatory dilatation, this multiloculated cystic mass of fibrous tissue is compressed by the encroaching lung or lobe and gives way as the space is occupied by the gradual enlargement of the remaining lung tissue, the final result being that the space which normally would be occupied by lung but is not becomes filled by this labyrinthine cystic, fibrous tissue body. This may, as it is in cases of total right pneumonectomy, be so great as to occupy the entire remaining thoracic cavity, or it may fill only a small portion

Yale Journal of Biology and Medicine, New Haven

S 421 558 (May) 1936

- Ultimate Results of Operations for Intracranial Tumors Study of
Series of Cases After a Nine Year Interval. H Cairns London,
England—p 421
Immunizing Value of Acetone-Killed and Heat Killed Vaccines W M
Hale New Haven Conn—p 493
Failure of Dinitrophenol to Influence Vitamin B Requirement G R.
Cowgill and Margaret Dann New Haven Conn—p 501
Accommodation and Its Reflex Pathways in Teleosts R G Meader
New Haven Conn—p 511
*Carcinoma of Stomach in Young People Report of Case with Spleno
megaly W J Bruckner New Haven Conn—p 523

Carcinoma of Stomach in Young People—Bruckner reports a case of carcinoma of the stomach in a girl, aged 20 years, in whom, because of the prominence of the anemia and splenomegaly, attention was directed almost wholly to diseases of the spleen. In a total of 22,759 cases reported from various sources the incidence of gastric cancer in young subjects was found to be 0 per cent in the age group up to 10 years, 0.06 per cent from 10 to 20 years and 1.17 per cent from 20 to 30 years of age. In young people (26 years or less) the etiology of carcinoma of the stomach is particularly obscure. Chronic gastric irritation, considered by many a primary or contributory cause in older persons, seems highly improbable in these younger people. Heredity has often been claimed to be an important etiologic factor. Multiple cases of gastric cancer in one family are often cited. However a review of the patients less than 20 years of age fails to substantiate this point of view. There is usually no history of other neoplasm in the family, sometimes the family history is not known, and only rarely is there knowledge of the presence of cancer. It has been suggested by Jaffe that teratomas may arise in the stomach and possibly gastric cancers may arise from the teratoma in the so-called congenital cases. As with older people, males are more often affected than females and in about the same proportion of two to one. The medullary type of carcinoma sometimes with the formation of glands is usually found. The scirrhous type occasionally occurs and the colloid and plastic limitis types are uncommon. Most of the tumors are located in the pyloric region. A few are found along the lesser curvature and in the cardia. The greater curvature of the stomach is rarely invaded. The disease most often simulated is peptic ulcer. In nearly all cases, the finding of carcinoma is an accidental and unexpected event. Most reviewers agree that there is a sudden onset, rapid course, persistent fever and progressive anemia. When observed, the anemia has always been of the hypochromic type. There are no reported cases with a hyperchromic, macrocytic anemia which is well known to occur though uncommonly found in older individuals. Achylia is commonly not present. The amount of free acid tends to be normal or slightly low. An abdominal mass is felt only infrequently. The other features of these cases do not seem to differ from those found in later life. The outlook is uniformly hopeless. There is no reported cure on record and no patient seems to have lived longer than three years. It has been emphasized many times that the extended use of roentgen studies earlier surgery and the wider use of radiotherapy would alter the prognosis. Nevertheless in every case thus far the lesion was inoperable when cancer of the stomach was first suspected.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

20: 257-320 (May) 1936

Some Observations on the Acts of Closing and Opening the Eyes A J Hall—p 257

Pigmented Deposits in the Lens and Cornea of Doubtful Nature R E Wright and K K Nayar—p 295

British Medical Journal, London

1: 869-924 (May 2) 1936

Food Allergy or One Man's Meat—Another Man's Poison A M Kennedy—p 869

Analysis of the Asthmatic Patient J Maxwell—p 874

Treatment of Varicose Diseases of Lower Limbs R T Payne—p 877

Trichomonas and Vaginal Discharge E W Assinder—p 882

*Epidemic Cervical Adenitis S L Simpson with bacteriologic report by H W Scott Wilson and F Kellett—p 883

Treatment of Varicose Veins—Payne attempts to assess the methods employed in the treatment of varicose veins. His experience is based on more than 1,000 consecutive cases. The sex distribution of the cases gave a ratio of four females to one male. A family history of varicose veins was present in more than 50 per cent of the cases. In women varicose veins tend to appear during the periods of endocrine stress—puberty, the early years of child bearing and the menopause. Numerically the group in which the veins first appear during pregnancy is by far the largest, usually during the second or third month. Varicose diseases are invariably progressive, arrest is unusual and natural cure is rare, apart from that which occasionally follows acute phlebitis. Primary varicose veins may be true varicosities, ectasia or varicules. Secondary varicose veins develop as the result of obstruction of the deeper veins and are usually associated with lymphatic obstruction. In all cases an accurate history and a careful clinical examination are essential if appropriate treatment is to be carried out and the best results are to be obtained. It is suggested that the most frequent type of phlebitis in varicose veins is in reality a thrombosis. The ideal injection medium must be nontoxic, in the doses used it must produce no undue pain during injection, it must be free from local or general dangers, and it must be introduced in such a way that no important physiologic changes may follow the obliteration of the injected veins. Injections should begin in the most distal veins working gradually up the limb. In varicose ulceration rest in bed or some form of external support may result in temporary cure and a permanent cure may follow injection or excision of the affected veins. In the treatment of phlebitis the small thrombotic lesions are best dealt with by putting the limb in elastoplast and allowing the patient to walk, in these, uneventful recovery is the rule. In the case of spreading phlebitis elastoplast treatment should be similarly carried out but it is often found that arrest of the condition is not brought about unless the patient is in bed. Operation offers the best prospect of cure in cases of this type in which huge varicose veins have become extensively thrombosed as the result of the phlebotic process. The introduction and the development of injection methods have overshadowed operative measures to such an extent as to suggest that these actually have no place in treatment. But there are definite indications for operative intervention. In the patient with uncomplicated varicose veins, certain features may indicate the advisability of operative treatment either alone or more often in conjunction with injections. 1 The veins may be of such colossal size that the discomfort and length of time involved in the process of sclerosis will make operative treatment simpler and quicker. 2 The whole saphenous tract may be varicosed and owing to the incompetence of the valves the reflux of blood may be so great that thrombosing solutions will have little or no effect. 3 The condition of ectasia rather than varicosity may be present in which case it is difficult to obtain thrombosis.

Epidemic Cervical Adenitis—Simpson discusses an epidemic of cervical adenitis consisting of two children and four adults in one household and another child who shared the same

desk at school. The onset was usually acute, although it might be anticipated by a few days malaise. The illness proper was ushered in by a sharp rise of temperature to 103 F, severe headache, drowsiness, photophobia (frequently with slight conjunctivitis), prostration and rapid painful enlargement of the tonsillar, cervical and even occipital glands. Slight sore throat was usual, although not invariable, and in no case was the local inflammation of the throat more than relatively mild compared with the adenitis. The glands might become palpable within a few hours but sometimes were not a prominent feature for some days. They were hard discrete and tender, and the increase in size was usually so considerable as to render the adenitis the presenting feature of the illness. The glands began to subside at the beginning of the second week. To minimize pain the neck was held in a fixed position and acute torticollis might be simulated. Shivering or rigor on the first day was usual but not invariable and recurrent rigors, as in the cases described by Miller were not a feature. The temperature remained high for ten days or more, being from 102 to 104 F in the evening and a few degrees lower in the morning. The pyrexia was associated with free perspiration sometimes very profuse. The pulse was usually but not invariably, disproportionately slow compared with the temperature. Transitory remissions were not uncommon when well being with a normal temperature was a feature suggesting a rapid recovery, only to be followed a day later by complete recrudescence. Prostration within the first few days was the rule and the patient's general condition usually gave rise to anxiety. Headache was usually severe, being occipital generalized or bandlike in distribution. Diarrhea and slight colicky abdominal pain was a feature in four patients. Convalescence was associated with weakness, inertia and some anemia. The incubation period would appear to be about six days or less, the duration of the acute phase about ten days and of the total illness about three weeks. The blood counts in the present series and those in Cameron's and Miller's cases are too few to exclude glandular fever, but they do suggest a different disease in that a relative lymphocytosis was never present. In one patient of the present series there was enlargement of the axillary and inguinal glands, which Cameron states may be involved in glandular fever but not in epidemic streptococcal adenitis. An important diagnostic point in the present series was the complete negativity of the agglutination test for glandular fever. The author is of the opinion that neither the streptococcus nor any other organism is yet established as the etiologic agent.

Journal of Mental Science, London

82: 99-202 (March) 1936

Functional Localization in Thalamus and Hypothalamus W E Le G Clark—p 99

Liver in Epilepsy Study in Application of Levulose Tolerance Test A Gurdham and A W Pettit—p 119

Effect of Sodium Evipan on Cerebrospinal Fluid Pressure E N Butler—p 131

Approach to the Problem of Fear in Children Hilda Weber—p 136

Studies in Depression D E Cameron—p 148

Journal of Tropical Medicine and Hygiene, London

39: 89-100 (April 15) 1936

Encephalitis Lethargica in the Tropics Record of Two Cases Occurring in Ceylon E C Spaar—p 89

Value of Aldehyde and Stilbene Tests in Diagnosis of Kala Azar T B Menon D R Annamalai and T K Krishnaswami—p 92

Medical Journal of Australia, Sydney

1: 559-592 (April 25) 1936

Concentration of Lead in Urine of Workers at Mount Isa Mines Limited Queensland with Especial Reference to Its Value in Diagnosis of Lead Poisoning D O Shiels—p 559

Cancer of the Lung Clinical Survey of One Hundred Cases C Harvey—p 565

*Infarcts and Thromboses Met With in Three Thousand Autopsies J B Cleland—p 572

Concentration of Lead in Urine—Shiels determined, by Taylor's method the concentration of lead in the urine of twenty-nine subjects of compensatable lead poisoning and of eighty-five subjects who were fit and exposed to generally similar hazards. The average value in the case of fit subjects was 0.12 mg per liter of urine. The average value in the case

of subjects suffering from compensatable lead poisoning from whom samples were taken while they were still exposed to the hazard or within a few days of leaving it, and who had undergone no treatment previous to reporting sick, was 0.23 mg per liter. Out of 114 subjects, twenty-four showed concentrations equal to or greater than 0.2 mg per liter, seventeen of these, or 70.8 per cent, were suffering from compensatable lead poisoning. Thirteen subjects showed concentrations equal to or greater than 0.25 mg per liter; twelve of these, or 92.2 per cent, were suffering from compensatable lead poisoning. Of the subjects with compensatable lead poisoning, 50 per cent showed urinary lead concentrations equal to or greater than 0.25 mg per liter. The results confirm those of Kehoe, Thamman and Cholak, who considered that lead poisoning could be expected when the urinary lead excretion was 0.21 mg per liter, and of Brown, who found that 50 per cent of the subjects of lead poisoning had urinary lead concentrations above 0.2 mg per liter.

Infarcts and Thromboses in Necropsies—Cleland asserts that in the 3,000 postmortem examinations at the Adelaide Hospital infarcts were encountered in 209: 119 in the lungs, sixty-four in the kidneys, fifty-six in the spleen, two in the adrenals, two in the liver, three in the small intestine and one in both testes. Massive pulmonary embolism occurred in forty-one instances; thromboses in large vessels in seventy-eight; antemortem thrombi in the chambers of the heart in sixty-four and infarcts of the wall of the heart in thirty-three. In thirty-three of 109 cases in which infarcts in the lung were present there were infarcts in other organs as well; the majority of these being in the kidneys (twenty-four cases). Infarcts in the lung were associated with valvular disease of the heart in thirty cases, and with hypertrophied and dilated hearts not due to valvular disease in thirty-six, and were due to a detachment of clots from large systemic veins in twelve. In typhoid there were two examples of infarcts in the lungs. In the two cases of infarcts of the liver, one patient was a woman of 37 who developed *Staphylococcus aureus* pyemia after an operation for repair of the cervix and who showed portal pyemia with abscesses and infarcts. The other was a man, aged 32, with malignant endocarditis of the mitral valve and infarcts of the lungs, kidney and spleen as well. Infarcts of the kidneys were associated in two thirds of the cases with infarcts elsewhere. In twenty-seven of the sixty-four cases there were infarcts of the spleen. Malignant endocarditis was responsible in twenty-nine of the sixty-four cases. In half the cases in which infarcts of the spleen were present there were infarcts in other organs. When there were infarcts elsewhere, malignant endocarditis was the usual source of the emboli. When there were infarcts only in the spleen, malignant endocarditis was responsible for only about one fifth of the infarcts. Bilateral infarcts of the testes were recorded in a man of 29 with a hypertrophied and dilated heart from mitral stenosis and an adherent pericardium with red granular kidneys.

South African Medical Journal, Cape Town

10 279 314 (April 25) 1936

- Medical Odds and Ends in a Country Practice. P. B. Grenfell.—p. 281
Cholecystostomy or Cholecystectomy? G. K. Loveday.—p. 283
Id. A. W. Sanders.—p. 285
Id. W. H. Lloyd Wronsley.—p. 286
Unfair Competition in General Practice. N. Shapiro.—p. 287

Tubercle, London

17 337 384 (May) 1936

- Intestinal Tuberculosis. J. Maxwell.—p. 337
Tuberculosis with Relation to Meningitis Particularly as Regards Children. H. H. Scott.—p. 348
Treatment of Bone and Joint Tuberculosis. H. Gauvain.—p. 360
Example of Intrathoracic Dermoid Cyst. W. B. Wood.—p. 364

Tuberculosis with Relation to Meningitis—In his summary of 300 necropsies Scott found that, apart from nine cases in which brain tuberculomas were found, the meninges showed tubercles in ninety-three of 225 children less than 10 years of age and in thirty-five of the seventy-five more than 10 years of age. Between the ages of 10 and 20 years there were three among ten, leaving thirty-two among sixty-five adults more than 20 years of age. The distribution of the milia differed

as regards the frequency with which they were found in children and in adults. Not once among the children were tubercles found along the Sylvian fissures when not seen elsewhere, and only once in the whole series, and that was the case of a man of 27 with cavities in both lungs, widespread bronchopneumonic phthisis and adherent thickened pleura, but no signs of involvement of any other viscus except for the tubercles, which were few, along the left fissure of Sylvius.

Chinese Medical Journal, Peiping

[Supplement 1] 1 518 (Feb.) 1936 Partial Index

- *Pathologic Anatomy of Human Kala Azar with Especial Reference to Certain Hitherto Less Well Recognized Changes. C. H. Hu.—p. 1
Polynuclear Count in Health and Disease and Its Significance in China. H. C. Pai.—p. 13
Myxoma of Heart. Case Report and Review of Literature. C. W. Bien and K. Y. Chin.—p. 64
*Infantile Spinal Progressive Muscular Atrophy (Werdnig-Hoffmann). Y. I. Cheng and C. H. Hu.—p. 106
Calcified Tumors in the Pelvis. Clara P. W. Wang.—p. 125
Production of Diphtheria Toxin with Pure Pig Stomach Digest. C. C. Young.—p. 143
Comparison of Various Mediums for Isolation of the Gonococcus. A. C. Mak.—p. 153
Beneficial Action of Glycerin on Bacillus Dysenteriae in Dysenteric Stools. J. P. Wu and R. H. P. Sia.—p. 179
Immunization Against Typhoid Fever with Bacterium Pullorum. Note. E. T. H. Tsen and K. F. Chen.—p. 195
Optimal Dosage of Prophylactic Cholera Vaccine. M. Y. Dzen and H. Yu.—p. 198
Bactericidal Action and Agglutinin Response of Persons Inoculated with Typhoid and Cholera Vaccines. Y. N. Yang, S. L. Tsao, Y. Chang and C. Y. Chung.—p. 202
Immunization Against Meningococcus Through Nasopharyngeal Route. Preliminary Report. S. M. Tao.—p. 213
Comparative Sensitivity of Wassermann and Kahn Tests in Cases of Treated Syphilis. T. J. Kurotschkin and T. L. Chin.—p. 246
Study on Effect of Cortin on Diphtheria Intoxication in Guinea Pigs. A. C. H. Yen, T. J. Kurotschkin and H. C. Chang.—p. 251
Serum Treatment of Experimental Typhus. S. H. Zia and C. J. Wu.—p. 270
Further Observations on Complement Fixation Test with Gonococcus Nucleoprotein. F. C. Lin.—p. 288
Survey of Incidence of Relapsing Fever in China. E. A. G. Shrimpton.—p. 312
Intracutaneous Test with Schistosoma Japonicum Antigen. Preliminary Report. H. C. Kan.—p. 387
Presence of Infective Leishmania Donovanii in Urine and Prostatic Fluid of Patients with Kala Azar. C. T. Teng and C. E. Forkner.—p. 394
Transmission in China of Helminths by Vegetables. R. C. Robertson.—p. 418
Human Sparganosis in the Foochow Area. H. E. Campbell, J. L. A. Webster and S. Y. Li.—p. 423
Methods of Illustrating Scientific Papers. R. Hoeppli.—p. 474

Pathologic Anatomy of Human Kala-Azar—In a study of thirty-one cases of kala-azar coming to necropsy, Hu found that besides the parasitization and great increase in number of the cells of the reticulo-endothelial system there are other changes. 1 There is frequent occurrence of extramedullary blood formation on the dural surface with secondary growth of new bone on the inner surface of the calvarium in the corresponding areas. 2 Myelocytic hyperplasia is especially striking after the parasites and their containing cells have disappeared. The young myeloid cells, especially the myelocytes are greatly increased whereas the metamyelocytes and leukocytes are decreased in number; the normoblasts are in most cases either not greatly increased or even probably decreased. 3 There is an increase of plasma cells in the spleen and bone marrow, which may remain for a considerable time after the parasitized cells have disappeared. A positive diagnosis of kala-azar can not be made without the finding of parasites. As a result of this study certain anatomic criteria are found which when considered together will make the diagnosis of kala-azar reasonably though not absolutely, certain in the absence of parasites.

Infantile Spinal Progressive Muscular Atrophy—Cheng and Hu believe that possibly in infantile spinal progressive muscular atrophy (Werdnig-Hoffmann's disease) and in congenital amyotonia there is a factor as yet unknown which acts in the fetal life to disturb the normal development of the nervous system. This process may be arrested in the postnatal period giving a picture of arrest of development or may continue after birth to give rise to degenerative changes. Based on this hypothesis only the four cases reported by Spiller, Councilman and Dunn, Leimboulet and Baudoin and Menges which pre-

sented a normal nervous system, do not belong to this group and are probably the only examples of a primary muscle disease a congenital form of primary myopathy. Since Oppenheim in his original article thought that congenital amyotonia is a primary muscular disease with a tendency toward gradual improvement, it seems reasonable to suppose that only these four cases should be considered as true Oppenheim's disease. A primary disease or degeneration of the muscles will certainly not be able to produce such profound changes in the nervous system as are seen in spinal progressive muscular atrophy. The muscular picture does not have to be explained on the basis of arrested development. It seems reasonable to suppose that the muscular changes in this condition are secondary to nervous changes that take place in the antenatal as well as postnatal periods. What produces the primary changes in the nervous system cannot be answered at present. Besides changes in the spinal cord and in the muscles, several workers have described changes occurring in one or the other internal secretory glands: sclerosis of the thymus and of the thyroid by Councilman and Dunn, increase of the interacinar epithelium of the thyroid by Lewis and a deficiency of chromaffin cells in the adrenals by Griffith. The authors have found atrophy of the adrenals and hyperplasia of the thymus. The significance of this is uncertain since such changes are found in only a few cases and the present knowledge of these internal secretory glands does not aid in postulating a correlation.

Annales de Médecine, Paris

39 361 448 (April) 1936

*Gouty Tophus. L. Cornil and J. E. Paillass.—p. 361

*Permeability of the Meninges to Arsenic Before and After Malaria. D. Paulian.—p. 375

Renal Decapsulation in Hematuric Nephritis. A. Cain, L. Michon and R. Cattani.—p. 397

Unusual Anatomicoclinical Combination. Epidemic Encephalitis and Multiple Sclerosis. A. de Wulf and L. Van Bogaert.—p. 417

Clinical Studies on Interferometric Method. A. Sokolowski.—p. 435

Congenital Polycystic Kidneys with Biliary Cysts. R. Lutembacher.—p. 440

Gouty Tophus—Cornil and Paillass discuss the pathogenesis and histologic reaction of the gouty tophus. There are two changes which are important, namely, vascular alterations and the so-called tophic infarct. After the exudative inflammatory attack manifested by clinical gout, major vascular lesions are produced. These are endothelial hyperplasia and fibroblastic sclerosis, which result in progressive obliteration of the lumen of the vessel. The succeeding thrombosis and the infarct are derived from an area of ischemic necrosis. The tissue attrition constitutes the point for the crystalline precipitation. The urate crystals act as a foreign body and contribute to the elaboration of a tissue reaction in which the reticulo-endothelial hyperplasia, macrophage reactions and lymphocytic infiltrations are the primary elements. The collagen sclerosis is a cystic sclerosis and the plain degeneration is no more than an epiphenomenon of the histologic picture. This pathogenic interpretation based on a definite anatomic foundation explains the failure of all attempts to reproduce the gouty tophus artificially. Thus subcutaneous injections of uric acid, as well as sodium biurate, have no chance to reproduce the picture because they lack at the outset of the test the principal conditions, i. e., vascular lesions and the infarct which are necessary for the pathologic end results.

Permeability of the Meninges to Arsenic Before and After Malaria—Paulian believes that the permeability of the meningeal barrier to arsenicals can be explained only by the vascular endothelial lesions resulting from syphilis in dementia paralytica. Twelve patients with dementia paralytica were examined before and after malarial therapy in an attempt to determine what changes resulted in this meningeal barrier. He concluded that permeability of the meninges for arsenic, which is absent in normal cases, is definitely increased in cases in which the barrier is injured by dementia paralytica. This increase of permeability is probably explainable by the persistence of syphilitic vascular lesions whose disturbing influence is well known. The cerebrospinal fluid shows variations in the level of arsenic depending on the time one hour after an intravenous injection it is found in the proportion of 1 to 18 mg per hundred cubic centimeters; the maximum permeability

is found about four hours after injection, from 18 to 24 mg per hundred cubic centimeters and after ten hours the level is lower. The blood also shows variations in arsenic content similar to that of the cerebrospinal fluid. After fever therapy by malaria or vaccines the meningeal permeability is considerably lowered. This fact cannot be explained by the cure of the vascular lesions and death of the spirochetes existing at this level. In favor of this fact, however, is the undeniable observation that clinical cures and prolonged remissions are often observed after this treatment. The most important practical conclusions from these studies are that in cases in which malarial treatment has given good results they are accompanied by changes in the permeability of the meningeal barrier and that investigation of this permeability constitutes one of the most important tests for the determination of improvement or clinical cure of dementia paralytica.

Bruxelles-Médical, Brussels

16 1172 1204 (May 31) 1936

Air Cysts of Lung. R. Pierret and A. Breton.—p. 1172

*Primary Umbilical Endometriosis. Case. Vanderzypen and C. Van Bogaert.—p. 1190

Total Extracts and Crystallizable Hormones in Treatment of Utero Ovarian Disorders. de Luna.—p. 1193

Primary Umbilical Endometriosis—Vanderzypen and Van Bogaert describe the case of a woman, aged 40, who complained of congestive umbilical pain coinciding with her menstrual periods without apparent external symptoms. This condition had existed for two years, but for the previous eight months a small hard tumor developed at the umbilicus at the time of menstruation. The small tumor was removed by biopsy and examined microscopically. The tumor was a typical endometrioma.

Presse Médicale, Paris

44 777-800 (May 13) 1936

Attempt at Surgical Treatment of Glandular Insufficiencies. R. Leriche and A. Jung.—p. 777

*New Sterilized Antidote Against Poisoning by Heavy and Toxic Metals. C. Strzyzowski.—p. 780

Peridural Metameric Anesthesia and Surgical Physiology of Peridural Space. G. Zorraqun.—p. 783

Intralesional Injections of Urine Water in Gynecology. P. Sappey.—p. 785

New Antidote Against Toxic Metals—The basis for Strzyzowski's antidote against the poisonous heavy metals is hydrogen sulfide. His method of preparation of 'antidotum metallorum' is as follows. Two liters of distilled water is heated to boiling. Two grams of sodium hydroxide is dissolved in half of this water and it is then supersaturated until cold by a current of hydrogen sulfide previously washed by being passed through a suspension of calcium carbonated water. Meanwhile, when the remaining water reaches a temperature of 50 C. 7.5 Gm of crystallized magnesium sulfate and 25 Gm of sodium bicarbonate are dissolved in it. When cool this second solution is added to the first and mixed, after having been cooled to 2 or 3 degrees below zero and finally saturated at this temperature with hydrogen sulfide gas. The preparation is placed in 125 cc flacons sterilized and cooled to as close to zero as possible. They are then stoppered with red rubber of good quality and sealed with paraffin. As prepared, the antidote is colorless at first but later develops a slight yellow tint which is an index of its good quality. Calculated as hydrogen sulfide the content in sulfur toxicologically active is more than 0.5 Gm per hundred cubic centimeters. It follows that 100 cc of this antidote recently prepared can instantly convert 4 Gm of mercury bichloride into inactive sulfur of mercury. The preparation is quite stable and the author believes that it is effective for detoxification of a large number of heavy metals such as antimony, silver, cobalt, iron, mercury and lead. When taken internally within limits compatible with physiologic functions the antidote is not toxic. Experience shows that 100 cc. taken by mouth or given by stomach tube does not produce undesirable reactions. The author himself took 0.2 Gm of mercury bichloride dissolved in 50 cc of water and two seconds later, 50 cc of the antidote. No serious complications resulted and he concludes that this antidote is a valuable addition to the treatment of heavy metal poisoning.

Union Medicale du Canada, Montreal

65 505 611 (June) 1936

Hypertrophy of Palpebral Tarsus of Facial Teguments and of Ends of Limbs Associated with Almost Generalized Osteoperiostosis New Syndrome. J N Roy—p 517

Hypertrophy and Osteoperiostosis—Roy reports the case of a man, aged 47, whom he has been able to observe for ten years. His disease was characterized by a complex of symptoms consisting of a hypertrophy of the upper eyelids, hypertrophy of the tissues of the face and extremities of the limbs and a disorder of the osseous system consisting of widespread osteoperiostosis. Although appearing somewhat acromegalic, the syndrome did not fulfil any of the requirements of the latter disease. The syndrome remained stationary in the case reported for almost the entire period of observation. The author believes that this syndrome is probably of endocrine origin and most likely due to some disorder of the parathyroid glands and the hypophysis. He considers the syndrome a new disease, since he has been unable to find a similar one described elsewhere.

Clinica Chirurgica, Milan

39: 289 364 (May) 1936

Thrombosis and Thrombotic Embolism of Pulmonary Artery G Lucarelli—p 291

*Morphologic Alterations Following Tracheotomy by Incision E Tantini and C Parzani—p 333

Cutaneous Metastasis of Gastric Neoplasm Case R Mannini—p 343

*New Technic for Amputation of Tibia with Protection of Stump by Muscular Flaps P Frassinetti—p 352

Morphologic Alterations of Trachea After Tracheotomy—Tantini and Parzani performed tracheotomy by an incision and with a window in dogs to verify the morphologic alterations that follow these procedures. The alterations consist in deformation of the canal with eversion of the stumps of the tracheal rings at the point of the incision and formation of a cartilaginous callus which results in rigidity of a segment of the canal. From a clinical point of view the several forms of tracheolaryngeal chronic catarrh from which old tracheotomized patients suffer can be considered as due to dysfunction of the tracheal canal because of rigidity of the segment in which the incision was made and to intratracheal stasis of catarrhal secretions in the sinuities corresponding to the evverted part of the canal which experiments prove to exist. No morphologic alterations of the trachea follow the tracheotomy with a window especially if the latter is made according to the size of the cannula to be used. The organ maintains the normal diameter of its lumen and the cylindric form of the canal after this operation. The reparation of tissues is perfect and the functions of the organ are good. Tracheotomy with a window is preferable to tracheotomy by incision.

Amputation of Tibia with Protection of Stump—Frassinetti's technic of amputation of the tibia is a modification of Macaggy's. The original technic, which was reported in the *Archivio italiano di chirurgia* 40 28 (April) 1935 consists in protecting the bone after resection by a muscular cushion. Macaggy prepares four flaps (two muscular and two cutaneous in apposition) as follows. A large posterior muscular flap and a large anterior cutaneous one, both larger than the diameter of the limb after resection and then a short anterior muscular flap and a short posterior cutaneous one both half the size of the former are prepared. The posterior muscular flap is placed around the surface of the resected bone and sutured to the anterior muscular flap and then it is covered by the anterior cutaneous flap which is sutured in turn to the posterior cutaneous flap. The technic results in the formation of a painless stump in which the bone especially the crest of the tibia is protected by a muscular cushion and the scar is located posteriorly which allows the use of the prosthesis without discomfort to the bearer. Frassinetti prepares only two oblique flaps in apposition (one posterior muscular and one anterior cutaneous) of the same size and larger than the diameter of the limb after resection. After amputation by the usual technic the muscular flap is placed in direct contact with the surface of the resected bone and sutured to the anterior border of the muscular surface and then covered by the cutaneous flap which is sutured in turn to the posterior border of the skin. Frassinetti's modification results in the same advantages of a painless

stump, adaptable to the use of a prosthesis and the formation of a scar located posteriorly. The technic is easier than the original one and the tissues are less subjected to trauma in the preparation of the flaps.

Giornale di Tisiologia, Naples

10 49 64 (April 30) 1936

Nontuberculous Hemoptysis Cases F Tronchetti—p 49

*Genesis of Edema F Bruno—p 58

Origin of Edema—Bruno made experiments with the aim of verifying the mechanism of production of edema. From his results and from observations of clinical cases, which he reports he states that all the different types of edema originate from only one factor either toxic or biologic, which is in relation to the primary disease. The biologic or toxic factor produces a rupture of the equilibrium between the blood and the tissues, a process of capillaritis and alterations of the tissues follow, and water and some constituents of the blood pass into the intercellular spaces and tissural lacunae, where they are retained because of alterations of the cellular protoplasm.

Pediatria, Naples

44 477 568 (June 1) 1936

Hematologic Investigations in Vivo on Bone Marrow in Early Childhood F Teculazic—p 477

*Therapeutic Efficacy of Certain Substances Contained in Apples in Diarrhea in Children C Sorrentino—p 493

Modifications of Alkali Reserve in Relation to Heliotherapy F Morganti—p 505

Acute Cerebral Tremor Following Varicella Case G Murano—p 521

Acute Articular Rheumatism of Malarial Origin Case V Quaragnoli—p 530

Apple Treatment of Diarrhea in Children—The administration of Moros apple diet in the treatment of diarrhea in children and the results were described in the *Klumsche II ochenschrift* 8 2414 (Dec. 24) 1929 (abstr. *THE JOURNAL*, March 1 1930 p 673). Further reports on the value of the treatment and results have been given in *THE JOURNAL* March 21 1931 page 987, Nov 18 1933, page 1673, Sept. 29, 1934, page 1013 and Sept 28, 1935 page 1062. Sorrentino's modification of the treatment consists in the administration of a concentrated extract of fresh ripe apples which contains the therapeutic principles of apples, especially pectin and tannic and malic acids. According to age and to the intensity of the gastro-intestinal disturbance, the patient receives daily a quantity of the extract that varies between two and four vials, the contents of which are dissolved in a cup of tea sweetened with saccharin. For the first eight or twelve hours the patient is on a hydiatic diet only. After that he may again be put on the diet proper for his age. The duration of the treatment is controlled by its effects. The author employed the treatment in fifty-one children thirty-eight infants under the age of 1 year and thirteen children ranging in age from 18 months to 3 years. The duration of the treatment in infants varied between one and four days, except in one case in which it was given for eight days. In children of the second group it varied between four and five days. Occasionally it was given for seven days. The results of the treatment being considered as a whole in the two groups were satisfactory in diarrhea of toxic alimentary origin fair in diarrhea of toxic infectious origin of mild intensity and negative in diarrhea secondary to grave infectious diseases. Diarrhea is the first symptom to be controlled the stools are formed restlessness and the gastric and humoral disturbances disappear, appetite returns and in a short time the patient begins to regain weight. The modified treatment has the following advantages over the original method. The period of exclusive hydiatic diet is greatly reduced the apple extract in saccharinized tea is palatable which makes it easy to give to children and nurslings and the extract is not expensive and can be obtained at any season of the year. The author believes that pectin is the agent of predominant therapeutic properties in the treatment.

Alkali Reserve and Heliotherapy—Morganti determined the alkali reserve in thirty-three children under the age of 3 before and after receiving sun irradiations. In the group of normal children the alkali reserve was normal before and after the treatment. In children suffering from rickets or nutritional disturbances the alkali reserve was diminished before the treat-

ment and normal after it. The normalization of the alkali reserve coincided with the improvement in the rickets, the nutritional condition and the general health of the patient. In a case of osteopsathyrosis the alkali reserve was diminished before the treatment and normal after it. In two cases of tracheobronchial adenopathy it was diminished before the treatment and was not changed by it. The author emphasizes the importance of heliotherapy in acidotic disturbances of children suffering from rickets and nutritional disturbances.

Rivista di Clinica Pediatrica, Florence

34: 289-384 (April) 1936

Influence of Diet on Curve of Provoked Glycemia in Children. Angiola Bertazzoli—p. 289

Favism Cases. P. Palombi—p. 324

*Utility of Honey in Diet of Infants. A. Farioli—p. 337

Iron and Arsenic Waters in Therapy of Lymphatism. P. Farnetti—p. 357

Honey in Diet of Infants.—Farioli substituted honey for sugar in the diet of eighteen artificially fed infants and found that because of its palatability it is well tolerated and controls vomiting, diarrhea and gastro-intestinal disturbances, thus increasing the weight and improving the nutritional condition of the infants. By a coprologic examination it is found that honey modifies the macroscopic aspect, nature and flora of the feces, which become uniformly constituted by gram-positive nonpathogenic saprophytes and fecal cocci in a small number. The pH of the feces does not become acid by the use of honey. The latter is not followed by glycosuria and the test of produced hyperglycemia after administration of honey gives the same results as that following the administration of sugar.

Sperimentale, Florence

90: 101-221 (April) 1936 Partial Index

Chronic Fetal Adhesive Meconium Peritonitis. Experimental and Anatomical Study. A. Giordano—p. 101

Influence of Block of Reticulo-Endothelial System on Determination of Hyperthermia from Intravenous Injections of Pyrogenous Bacteria. G. Brazzoli—p. 121

Influence of Tribrom Ethanol on Oxidation of Tissues. L. Imperati—p. 132

Neoformation of Reticulo-Endothelial (Mesenchymal) Cells from Elevation of Body Temperature and Burns. Experiments. E. Levi—p. 146

Influence of Anticoagulative Substances in Blood on Symptomatology of Anaphylactic Shock. L. Robuschi—p. 158

Cryoscopy of Human Renal Tissues. A. Ferrannini—p. 176

*Experimental Demonstration Significance and Bacteriologic and Histologic Demonstration of Bacteriuria. P. Pariscenti—p. 191

Experimental Production of Bacteriuria.—Pariscenti made experiments to ascertain the passage of bacteria from the blood through the kidney and the significance of the phenomenon. The experiments were performed in rats, rabbits, guinea pigs and cats, all of which were given intracardiac injections of bacteria (staphylococci, streptococci and the typhoid bacillus) which were recovered in the urine of the animals in about three minutes. The microscopic examination of the kidney proved that the elimination takes place through the normal glomerular rete mirabile. The renal tubuli do not intervene in the elimination of bacteria. The author's experiments are to prove that the normal kidney eliminates bacteria when the latter is present in the blood and that the phenomenon is of a physiologic nature.

Archivos de Cardiologia y Hematologia, Madrid

17: 141-170 (May) 1936

Hemopneukocytosis. Case. T. G. Perrin—p. 141

*Alterations of Blood Produced by Vaccinia Dermovirus and Neurovirus. Pathologic Granulations. J. Goyanes and F. Alonso Buroñ—p. 148

Teratoma of Pericardium. Case. G. Somolinos—p. 152

Alterations of Blood by Vaccinia Dermovirus and Neurovirus.—Goyanes and Alonso Buroñ studied the alterations of the blood that follow the intracerebral inoculation of neurovaccine and the intravenous inoculation of dermovaccine into rabbits with especial reference to the behavior and significance of pathologic (toxic) granulations of the granulocytes. These granulations appear early in the course of certain infections and in an acid medium (pH 5.4) take the Giemsa stain which is not taken by normal granulocytic granulations. In the authors' experiments the blood was examined for pathologic granulocytic granulations before inoculation in the course of

the experimental infection and shortly before death, which took place spontaneously or was produced on the fourth day in rabbits that were intracerebrally inoculated with neurovaccine and on the fifteenth day in those which were intravenously inoculated with dermovaccine. There were no pathologic granulations in the blood of rabbits in either group before the inoculation. The authors state that the clinical evolution of the experimental disease is nearly paralleled by a progressive increase of pathologic granulocytic granulations, which, in grave cases affects 94 or 98 per cent of the granulocytes. The important action that the vaccinia virus, both neurovaccine and dermovaccine, has on the development of pathologic granulocytic granulations indicates the part that the mesodermal structures play in the development of the infection.

Archivos Españoles de Pediatría, Madrid

20: 193-256 (April) 1936

Etiopathogenic Therapy of Rickets. J. Bravo y Frias—p. 193

*Prandial Diarrhea in Infants. R. M. Calzada Rodríguez—p. 212

Prandial Diarrhea in Infants.—Calzada Rodríguez says that prandial diarrhea in infants is a type of constitutional diarrhea the characteristic of which is the expulsion of diarrhetic feces immediately after or within a short time of feeding. As a rule, infants having prandial diarrhea suffer also from constitutional nutritional disorders and are subjected to neuropathic and exudative diathesis and sympathetic dysfunction, with predominance of the vagus over the sympathetic. Anaphylaxis and alimentary sensitization do not intervene in the etiopathogenesis of the disease. Infections are secondary factors. They have an influence on the evolution but not on the onset of the disease. The exaggerated gastrocolic reflex is the factor involved in the mechanism of production of the disease. Dystrophy and diminution of immunity, which is exteriorized by the frequent development of infections, are the most frequent complications. The intensity of the nutritional disturbance depends on the constitution of the patient, the type of feeding, natural or artificial and the frequency of appearance of intercurrent infections. As a rule the prognosis is favorable except in patients with intense diathesis, extensive eczema, grave nutritional disorders and frequent appearance of infections, especially if the disease is of a hereditary nature. Early treatment is advisable. The dietetic treatment consists in normalization and hygiene of natural feeding. If it cannot be given, the infant is placed on a mixed natural and artificial diet, and only as a last resort is he put on an artificial diet of buttermilk, albuminated milk and soy bean flour preparations. The medical treatment consists especially in the administration of drugs having a paralyzing effect on the vagus.

Lisboa Medica

13: 257-350 (May) 1936

Disease of Neck of Bladder in Women. R. dos Santos—p. 257

*Therapy of Arterial Hypertension by Roentgen Irradiation of Carotid Sinus. J. Moniz de Bettencourt and M. Corte-Real—p. 272

Twin Pregnancy Cases. M. Vicente Moreira—p. 288

Treatment of Arterial Hypertension by Roentgen Irradiation of Carotid Sinus.—Moniz de Bettencourt and Corte-Real attempted to control arterial hypertension in twelve patients by means of roentgen irradiations of the carotid sinus. The irradiations were given in doses of 50 roentgens. Each irradiation was given in a field 6 by 8 cm over the carotid sinus, first on one side and then on the other, with an interval of three or four days between irradiations, so that irradiations on the same field were given at an interval of seven days. The tension used was 190 kilovolts and the intensity was 4 milliamperes with a copper filter of 0.5 mg and a focal distance of 30 cm. The entire treatment consisted of six irradiations, three on each side. The authors state that the treatment results in lowering of arterial hypertension, which diminishes still more after completion of the treatment. They believe that the satisfactory results of the treatment are due to a stimulative action of the irradiations on local nervous reflexes and to a vasodilating action by which favorable changes of the local circulation are produced. The latter result in improving the metabolism of the local tissues and the condition of the carotid sinus. The authors advise resorting to the treatment in cases in which the production of hypotension is indicated.

Semana Medica, Buenos Aires

43 1657 1732 (May 28) 1936 Partial Index

- Treatment of Painful Acute Epididymitis by Incision and Drainage. J Salleras—p 1665
- Antitoxic Action of Several Substances in Poisoning by Mercury Comparative Experiments R. E. Carratala and C. Guerra—p 1668
- Ventriculography by Iodized Oil Image of Chiasmal Arachnitis R. Carrillo—p 1674
- Pregnancy and Pulmonary Tuberculosis Almeida Gouveia—p 1681
- Topographic Diagnosis of Myocardial Infarct A. Grapio and A. Bisogno—p 1690
- *Spinal Anesthesia in Children E. M. Echegaray and E. J. Lima—p 1696
- Parkinsonism and Roemer's Treatment C. Rossi Belgrano and J. Jacci—p 1699

Spinal Anesthesia in Children—Echegaray and Lima have performed more than 314 operations with spinal anesthesia on children ranging in age from 3 months to 17 years. The technique is that used in spinal anesthesia in adults except that a thin needle is used. The puncture is made at the middle line with the patient either in the sitting position or in lateral decubitus, the point of injection being determined by the region in which the operation is performed. The patient lies down immediately after the injection. The authors used procaine hydrochloride either in powder or in solution. In the first case the procaine was dissolved in 2 or 3 cc. of the patient's cerebrospinal fluid taken from the puncture immediately preceding the injection. The elimination of cerebrospinal fluid is not allowed if a procaine solution is used. The doses were of about 0.0012 Gm for infants and never more than 0.0003 Gm for children under the age of 15. Certain symptoms of a bulbar type and others that appear during the operation or after it are controllable by instructing the patient to take deep respirations by permitting vomiting and in some cases by administering caffeine injections. Serious accidents do not occur during the operation or after it.

Archiv für klinische Chirurgie, Berlin

185 1 188 (May 2) 1936 Partial Index

- *The Orr and the Löhrr Methods of Treatment of Chronic Osteomyelitis Dengler—p 1
- Excretion Urography of Renal Tuberculosis J. Jaki—p 16
- Calcified Cysticercus F. Sorge—p 31
- Shock Therapy of Heterogenous Blood Transfusion in Therapy of Certain Gastro-Intestinal Diseases S. Ryss and Xenia Strokova—p 38
- Bile Peritonitis Without Perforation of Biliary Tract T. Butkiewicz—p 55

Treatment of Chronic Osteomyelitis—According to Dengler, ninety-six patients suffering from chronic osteomyelitis were treated in the orthopedic clinic of Munich between January 1932 and January 1935. All cases were of a difficult type, presenting numerous suppurative processes in various bones, associated with joint contractures. Most of the patients were treated elsewhere by numerous operative procedures. In order to evaluate the Orr and the Löhrr methods of treatment, the author selected thirty-seven patients who were operated on not later than nine months previously. Forty-one operative procedures were carried out. Of the thirty-seven patients, three died of generalized infection. Twenty-three lesions were treated by the Orr and fifteen by the Löhrr method. Twenty-three patients completely recovered, presenting no fistulas, clinical recurrence or complaints nine months after the operative intervention. Eight had small fistulas but had otherwise recovered, while small sequestrums were removed in seven at variable periods after the operation. Pseudarthroses, extension of the suppurative process into the neighboring joint or metastatic abscesses did not take place in this series. While both methods were gratifying the results with the Löhrr method were superior. The wounds healed more quickly and left less conspicuous scars. The two methods present similarity as to the technique and the underlying principle. In both the diseased bony tissue is radically removed, the bone is saucerized and the resulting cavity is filled with gauze strips saturated with petrolatum in the Orr method and with a cod liver oil petrolatum mixture (unguentolan) in the Löhrr method. Orr applies a circular plaster-of-paris cast to the extremity while Löhrr first sutures loosely the soft tissues over the operative area and then applies a cast. In both instances the dressings are changed every three or four weeks. The underlying principle of both methods is rest to the tissues and avoidance of disturbance of fresh granulating tissue. The theoretical advantages of the cod liver oil

are its sterility, its bactericidal property because of the high vitamin A and D content and its stimulating effect on the mesenchymal and epithelial tissue repair. The unpleasant feature of both methods is the saturation of the dressings and the cast with discharges from the wound. The resulting bad odor may lead to loss of appetite, vomiting and impairment of nutrition but may be at least partly overcome by the use of deodorants. Maceration of the skin is successfully prevented by the use of a thick layer of Lassar's paste.

Klinische Wochenschrift, Berlin

15 697 736 (May 16) 1936 Partial Index

- Clinical Evaluation of Morphology of Fecal Flora F. O. Höring—p 697
- *Porphyrin in Plasma of Patients with Lead Poisoning E. Vigliani and C. Angeleri—p 700
- Psychic Behavior During Short Sojourn at 5000 Meter Altitude. H. Wespi—p 701
- Experimental Basophilism in Chronically Poisoned Rabbits C. R. Griebel—p 705
- *Method of Determination of Cevitamic Acid in Urine A. Jezler and W. Niederberger—p 710
- *Clinical Methods of Quantitative Determination of Traces of Morphine in Urine W. Deckert—p 714

Porphyrin in Plasma of Patients with Lead Poisoning—Vigliani and Angeleri investigated lead poisoning, because the porphyrin content is greatly increased. In nearly all cases examined by them, they detected a secondary fluorescence in the plasma. Heretofore the quantities of porphyrin have never been sufficient to permit a spectroscopic analysis. The peculiar behavior of the porphyrin toward solutions of hydrochloric acid induced the authors to study the nature of the porphyrin. In cases of new and rather severe lead poisoning, they were able to show by means of Schumm's grating spectroscope that the porphyrin in the plasma is protoporphyrin, for the absorption lines differ, that for protoporphyrin being at 632.5 and that for coproporphyrin being at 623.6. In discussing the origin of the protoporphyrin they suggest that it originates in the destroyed erythrocytes and point out that during lead poisoning the erythrocytes contain greater amounts of porphyrin than is normally the case and that they are more rapidly destroyed. The authors give descriptions of only four cases, but their observations were made on a large number of patients. They think that in some cases in which the acute symptoms have disappeared the plasma may contain coproporphyrin in addition to protoporphyrin, suggesting that a mixture of the two types of porphyrin may appear when the hemolysis is no longer severe and the liver is capable of more completely utilizing the porphyrin that is freed from the erythrocytes.

Determination of Cevitamic Acid in Urine—Jezler and Niederberger have modified Tillmans' method. They make three or at least two parallel tests each with 10 cc. of urine. Each portion of urine is placed in an Erlenmeyer flask and after being acidified with 1 cc. of glacial acetic acid, is diluted with 100 cc. of distilled water. The contents of the flask serve as a vehicle for the dichlorophenolindophenol solution, which is dropped into it from a 50 cc. buret until the resulting red coloration remains constant for thirty seconds. The result must be stated in milligrams and must take account of the total quantity of urine. The empty value should also be watched for. The titration should last only from thirty to 120 seconds, in order to avoid interference by other substances. The vehicle should be shaken mildly and continuously. Tillmans originally prescribed a pH of 7, which makes the cevitamic acid too oxygen sensitive, and the authors found that the fluid to be examined should be acidic with a pH of from 2.7 to 3. The empty value corresponded as a rule to 0.7 or 0.8 of the indicator solution. Since the amount of water increases the empty value, care must be taken that the water does not greatly exceed 100 cc. If this quantity is not sufficient to obliterate the urine's own color, smaller quantities of urine must be used. The method of titration originally used by Tillmans was rather complicated because of the preparation of the indicator solution from the dichlorophenolindophenol. This difficulty has been overcome by the use of ready prepared tablets (each corresponding to 1 mg. of cevitamic acid) which only have to be diluted in distilled water. The authors emphasize further that the titration of the urine should be done as soon after micturition as possible. For this reason they devised an apparatus which makes it possible to

perform the titration during the consultation hour or even at the patient's home. They illustrate and describe this apparatus and its use.

Determination of Morphine in Urine—Deckert describes a highly sensitive nephelometric procedure for the detection of morphine in the urine, which is prepared in the following manner. Ten cubic centimeters of filtered or unfiltered urine is transferred by means of a pipet to a beaker and is mixed with 0.3 Gm of sodium carbonate. It is heated until the first bubbles rise and then quickly cooled. Then it is poured into the shaking funnel, the beaker being rinsed with 2 cc. of water. Twenty cubic centimeters of acetic ether is added and the mixture is well shaken. After the layers have separated, the lower layer is drained off and the acetic ether is decanted through a filter into a small porcelain dish and evaporated on the water bath. In the presence of large quantities of morphine (more than from 30 to 40 micrograms), only a part of the acetic acid is evaporated. The author admits that, in case of a single shaking, only from 60 to 70 per cent of the morphine is extracted, but this percentage is so constant that the total can be found by multiplication. In order to separate the morphine from disturbing substances, the residue remaining in the porcelain dish, after having cooled, is diluted in 0.25 cc. of water with 1 drop of nitric acid (specific gravity 1.15) and 1 drop of molybdate solution (10 per cent of ammonium molybdate in water). After careful whirling of the porcelain dish, there follows filtration into a test tube through a compressed cotton plug (0.5 cm in length) placed in the upper part of the neck of a small funnel. The dish is first washed with 0.25 cc. of water and this is passed through the filter. Then the dish is rinsed with 0.15 cc. of water, which is again passed through the filter. The cotton plug is pressed down to the lower opening of the funnel so that no filtrate remains in the funnel. The filtrate is mixed with 2 drops of ammonium vanadate solution (2 per cent ammonium vanadate in water). Depending on the morphine content, a turbidity develops in the clear filtrate within a few seconds or only after several minutes. Immediately after the addition of vanadate the fluid becomes yellow, but this color pales. The maximum of turbidity is reached at the latest after twenty minutes. At this time the dilution (up to 5 cc.) with distilled water is made and the nephelometric determination follows. If this is done by means of standard solutions they should be prepared at the time of filtration through the cotton plug so that the vanadate can be added at the same time. The author emphasizes that this method permits the detection of traces of morphine in the urine even after a single administration of only 0.15 Gm. of morphine. It has the advantage that it can be made in any clinical laboratory and that it facilitates the supervision of morphine addicts.

Zeitschrift für Tuberkulose, Leipzig

75:1-44 (May) 1936 Partial Index

- Surgical Treatment of Pulmonary Tuberculosis with Regard to Public Welfare Work on Tuberculosis. T. Rehberg—p. 2
Spontaneous Cure of Tuberculous Cavities. H. Borgans—p. 12
*Study of Allergy in Tuberculosis. Local Blood Picture to Normal and Desensitized Skin. J. Zapatero Dominguez and E. López—p. 23
Bacillaria in Pulmonary Tuberculosis. A. Tsuge—p. 33
*Short Wave Treatment of Plastic Pleurisy. H. Schoenemann—p. 37

Allergy in Tuberculosis—Zapatero Dominguez and Lopez studied in fifty-four tuberculous women, the white blood picture of the tuberculin papule of normal skin as well as an area that had been desensitized by ultraviolet irradiation. In twenty-seven cases the tests were made twenty-four hours after the skin reaction and in the other twenty-seven cases forty-eight hours after the skin reaction. A comparison of the white blood picture of the papules of normal skin with that from the finger revealed an increase in the lymphocytes and a decrease in the neutrophils in the former. These manifestations were more frequent in patients with the severer forms of tuberculosis than in those with the milder forms, that is after twenty-four hours they were more frequent in the patients of the second than of the third stage, whereas after forty-eight hours the opposite was the case. The tuberculin papules of the desensitized skin in all but six cases were smaller than the papule of the normal skin. The papules of the desensitized skin usually reach the peak of their development after twenty-four hours and thus differ from the normal Pirquet papule

which reaches its peak only after forty-eight hours. The white blood picture of the papule of desensitized skin is characterized by a decrease in the lymphocytes and monocytes and an increase in the neutrophils and eosinophils. The decrease in lymphocytes is most characteristic and to a certain extent runs parallel with the reduction in the papular surface, which is effected by desensitization. The authors think that their comparisons of the cellular characteristics and of the sizes of the papules prove that desensitization is accomplished more readily in patients of the third than of the second stage, in the progressive than in the stationary forms, and in the stationary than in the latent forms. They conclude from these observations that the described tests have prognostic value.

Short Wave Treatment of Pleurisy—Schoenemann calls attention to the fact that the cessation of the pneumothorax frequently meets with great difficulties, because the lung shows no tendency to expand again and the patient complains of an unpleasant pressure, which is usually localized in the shoulder. Moreover, the respiration is somewhat difficult. The roentgenogram reveals in these cases frequently a thickened pulmonary pleura, which rigidly covers the lung and gives it a peculiar angular appearance. Refilling of the pneumothorax counteracts the pressure and pains. In such cases, in which the pneumothorax treatment cannot be broken off, the author obtained favorable results with short wave therapy by means of a spark-gap apparatus. Large electrodes are applied anteriorly and posteriorly over the pneumothorax and are left in place for from fifteen to twenty minutes. The patient should feel only a pleasant warmth, not piercing or drawing pains. As a rule the patient requires only a few treatments for soon the lung shows a tendency to expand and the subjective symptoms disappear. The author emphasizes that several factors, namely, the position of the patient, the distance of the electrodes from the body and their size, as well as the duration of the treatment, require careful attention. He recommends short wave therapy for all pleuritic processes, but particularly for the difficulties in cases of pneumothorax.

Wiener klinische Wochenschrift, Vienna

49:673-704 (May 29) 1936 Partial Index

- Pathophysiology of Hypophysis. J. Bauer—p. 673
*Necrosis of Pancreas with Masked Dorsal Course. W. Sinreich—p. 682
*Secondary Signs of Pregnancy in Man with Chorionepithelioma. E. Friedlander and E. Moses—p. 684
Freezing with Carbon Dioxide Snow in Treatment of Tuberculosis of Tongue. A. Iljisch—p. 687
Hematologic and Clinical Evaluation of Blood Platelets. L. Blacher—p. 688

Necrosis of Pancreas—Sinreich directs attention to cases of pancreatic necrosis the course of which is entirely obscure. The characteristic signs, namely, initial shock excruciating pain and radiation of pains toward the left, are absent. There are some abdominal symptoms with occasional vomiting and with little or no tension in the abdominal walls. There is no discrepancy between pulse and temperature, and even the diastase values are not increased. In spite of this deficiency of symptoms, the necropsy revealed later that a severe pancreatic necrosis existed. In these cases the necrosis had not taken the usual course. The activated pancreatic juice, instead of entering the free abdominal cavity or the omental bursa, had spread into the retroperitoneum—that is, the so-called dorsal course of spreading existed. If the pancreatic secretion enters the free abdominal cavity, the well known fulminant symptoms appear, probably as the result of acute intoxication which in turn is elicited by the autolytic disintegration of the pancreas. The toxic and peritoneal symptoms are milder or absent in retroperitoneal spreading, because of lesser resorption capacity of these tissues. That a subacute ileus may be simulated in the latter cases is probably due to the fact that as the result of the impairment of the nerve centers in the retroperitoneum, the intestinal function becomes disordered. Dorsal spreading of pancreatic necrosis, especially when the process originates on the head or the caudal portion of the pancreas, may also cause destruction of the fatty renal capsule, so that cavities of disintegration may develop in the retroperitoneal region and intestinally infected abscesses may appear. Thus a paraneuritic abscess may result and, if the abscess gravitates downward pelvic or prostatic abscesses may be simulated. On the

other hand, retroperitoneal abscesses involve the danger of later perforation into the free abdominal cavity with the aspects of a fulminant perforation peritonitis. The author calls attention to the frequent concurrence with gallstone disorders and to the postoperative appearance (prostatectomy, operations on varicose veins). In the described cases the direct cause of death was pulmonary embolism and the author points out that thrombosis and embolism are rather frequent in pancreatic necrosis and he suggests that a disturbance in the lipid metabolism might play a part.

Chorionepithelioma in Man—Friedländer and Moses report the history of a man, aged 36, who was hospitalized on account of pulmonary tumor and hemoptysis. The existence of a gynecomastia and the extremely malignant pulmonary metastases made a chorionepithelioma seem likely, the more so since the anamnesis disclosed a temporary enlargement of one of the testes some time previously. The Aschheim-Zondek test was made and, as it was positive, the case was diagnosed as chorionepithelioma. The gynecomastia, the gravidic emesis and the typical gravidic changes in the hypophysis were thought to be the result of the hormone activity of the chorionepithelioma. The patient died and the necropsy disclosed a testicular chorionepithelioma with metastases in the retroperitoneal lymph nodes and in the lungs.

Klinicheskaya Meditsina, Moscow

14 599 748 (No 5) 1936 Partial Index

- New Pathways in the Nourishment of the Sick. M. T. Perzner — p. 599
 Operative Indications in Diseases of Biliary Passages. Prof. G. Finsterer — p. 608
 Pathogenesis and Symptomatology of Nephrolithiasis. P. M. Fronshteyn — p. 619
 Surgical Treatment of Acute Appendicitis. G. V. Alkov — p. 626
 Changes in Certain Chemical Constituents of the Bile in Diseases of the Liver. L. S. Lifshits — p. 641
 Study of Cholesterolemia in Cholelithiasis. A. G. Gukosyan and E. I. Antonova — p. 646

Cholesterolemia in Gallstone Disease—Gukosyan and Antonova studied the blood cholesterol in 171 pregnant but otherwise normal women, of the ages between 18 and 35, in nine women during the second, the seventh and the ninth month of pregnancy, as well as two months after delivery. They draw the following conclusions. The first attacks of gallstone colic coincided with pregnancy in 35 per cent. Hypercholesterolemia is present in the greater portion of the gallstone cases. Blood cholesterol increases with the advance of pregnancy and returns to the normal level two months after the delivery. This increase is the result of functional alteration of liver cells due to initial intoxication of pregnancy. Since the placenta is impermeable to cholesterol its presence in small amounts in the blood of the new-born speaks for possible synthesis of cholesterol in the organism. Cholesterolemia developing in parenchymatous alteration of the liver is caused by the loss on the part of the liver of the capacity for retaining cholesterol. Alterations in the liver observed in gallstone disease are of a primary character and are the cause of hypercholesterolemia in cholecystopathies. Hypercholesterolemia in itself cannot cause gallstone disease.

Acta Radiologica, Stockholm

17: 209 309 (June 15) 1936 Partial Index

- *Protracted Fractional Roentgen Treatment of Malignant Tumors and Medum Coutard. J. Juul — p. 209
 Studies on Movements of Heart. V. Westermarck — p. 235
 *Measurement of Radiation to Which Roentgen and Radium Workers are Exposed. I. C. Jacobsen and J. Ambrosen — p. 252
 Experimental Studies on Radiologic Symptomatology of Circulatory Apparatus by Means of Postmortem Cardiovascularography. P. Cottentot and R. Heim de Balzac — p. 256
 Should Phrenic Exerec be Done in Case of Pneumothorax? V. Westermarck — p. 284
 Time Factor in Biologic Action of Roentgen Ray. R. M. Sievert and I. V. Forsberg — p. 290

Coutard's Method of Treatment of Malignant Tumors—Juul shows that opinions differ as to the manner in which Coutard's treatment should be carried out. One of the reasons for this is that Coutard himself never indicated a definite method but always insisted that he did no work according to fixed schematized rules. In general it can be said that Coutard's method of protracted fractional roentgen treatment

employs low intensity and frequent (daily or twice daily) relatively weak irradiations continued over long periods (minimum from three to four weeks). The total dose is high and the individual doses are determined not only according to physical measurements but also on the basis of biologic reactions. Although Coutard emphasized the latter factor, it was lost sight of by many who tried to imitate his method, but the author paid particular attention to this factor. In summarizing the results he obtained, he says that during the period from 1931 to 1934 he employed the protracted fractional roentgen treatment in 121 cases of malignant epithelial tumors of the upper air passages. Thirty eight of these patients, 31 per cent, are still free from symptoms after periods varying from one to five years. During the same period 106 cases of malignant epithelial tumors of the oral cavity were treated. Of these patients thirty-three are apparently well after periods varying from one to five years. Protracted fractional roentgen treatment was employed in seventy-three of the cases, of these, eight are symptom free as a result of the roentgen treatment alone, while ten others became so only after supplementary treatment by radium or electrosurgery. The author briefly considers several other forms of cancer in which the protracted fractional roentgen treatment may be used to advantage. After a detailed account of the manner in which the method is applied at the Radium Center in Copenhagen, the author describes a number of observations made there concerning the reactions produced by the radiation on the tumor, the normal tissues and the organism, and discusses the significance of those reactions. His experience has led him to extend the treatment over a rather long period and to try to keep the reactions within moderate degree. In this way the treatment becomes less trying for the patient without losing any of its effectiveness.

Measurement of Radiation to Which Workers are Exposed—Jacobsen and Ambrosen say that, in the modern roentgen installations with completely inclosed tubes, screening against stray radiation is very effective. Nevertheless there is still a possibility that through carelessness the staff may become exposed to considerable radiation. In the packing of radium applicators the circumstances are similar, but the danger is no doubt greater, since effective screening cannot be carried out. Measurement of the intensity of the radiation in different places combined with an estimate of the duration of the irradiation would give rather uncertain results and the authors think that measurement by means of condenser chambers carried by the persons under observation is much better. This method has the advantage that the intensity is measured right on the person and that the reading can be taken without interfering with the routine work. Moreover, the cost of the chambers is low enough to carry out simultaneously a considerable number of measurements. The author illustrates and describes the condenser chamber that was used for the tests described here. The measurements were carried out over a period of three months. It was found that persons in the x-ray department were exposed to a daily dosage of from 0.02 to 0.03 roentgen. In persons occupied with the packing of radium, the doses were from five to ten times higher.

Hospitalstidende, Copenhagen

79 509 536 (May 19) 1936

- Experimental Investigations on Gastrogenic Anemias (in Dogs). IV. Results of Operative Removal Partly of Whole Stomach Plus Brunner Gland Region in Duodenum Partly of Fundus. S. Petri, D. Bøggild and A. S. Ohlsen — p. 509
 Treatment of Disfiguring Scars (keloids). Defects and Malformations. E. Dujardin — p. 524
 Investigations on Meinicke Clarification Reaction and Muller Conglobation Reaction in Gonorrhea. H. Boas — p. 533

Gastrogenic Anemias in Dogs—Petri and his co-workers report that the operative removal of the whole stomach with the Brunner gland region in the duodenum in some dogs and of the fundus in others resulted in mainly normochromatic anemias of subacute subchronic character in part fatal in the first group and of more chronic stationary kind in the second group. In two animals in the first group which died after a longer period of observation there were degenerative changes in the gray substance of the spinal medulla. The changes observed after the first named operation, also in general condition and in appearance of the bone marrow, are assumed to depend partly on deficient vitamin metabolism.

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THE PROMOTION OF BLINDNESS

A CONSIDERATION OF SOME CONTRIBUTING FACTORS

CHAIRMAN'S ADDRESS

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In the day by day practice of ophthalmology there is much of routine, some of which may be uninteresting. Many of our patients weary us with an endless recital of complaints which arise from some minor surface irritation or error of refraction. Every day or so, however, we are brought up standing face to face with a situation fraught with grave danger to sight. If we give thought to all the attendant circumstances and delve deeply into all the causes that have led to this situation, we shall often become aware that some active factor or factors have operated to promote the impending or accomplished visual catastrophe. It is to a consideration of some of these factors tending to promote blindness that I invite consideration.

What has the ophthalmologist accomplished and what may he legitimately expect to accomplish, in reducing the incidence of blindness? Through personal research but more often in collaboration with workers in biochemistry and other basic medical sciences, he may eventually hope to attain a knowledge of the causes underlying some intra-ocular maladies that today slowly but surely tend to blind their victims. Only when the cause is known can there be intelligent prophylactic or therapeutic attack. Can any one aver that the ophthalmologist has exhausted the possibilities of surgery in preventing blindness or restoring sight? Let him ponder the recent marvelous advance in the operative treatment of retinal detachment, and the remarkable results from the newer methods of keratoplasty. Who knows but that the section papers presented at this meeting may open up new vistas in the surgery of glaucoma?

The young ophthalmologist working in the clinic will inevitably be impressed by the large number of patients who are losing or who have already irrevocably lost their sight from causes that might have been prevented. If he is imbued with humanitarian instincts, he will wonder what agencies are at work to diminish this needless blindness. His investigations will lead him to understand and admire the work of the National Society for the Prevention of Blindness. He will note that the incidence of ophthalmia neonatorum has lessened and that as a result blindness from this

cause has fallen to a new low level. He will note the decrease in accidental blindness from injuries in industry due to the increased use of goggles and other safety devices. He will learn of the decrease in the number of ocular injuries due to unwise celebration of the Fourth of July. He will observe with interest the efforts to prevent blindness from chronic glaucoma by the effective cooperation of the social service department. He will be interested in similar follow-up plans to prevent visual impairment from deep-seated ocular maladies due to tuberculosis, syphilis and focal infections. He will approve the ever widening extension of visual tests for school children in the lower grades and even in the kindergarten. In the initiation and development of all these means for preventing blindness and conserving eyesight he will be able to trace the direct or indirect activities of the National Society for the Prevention of Blindness.

Despite all these efforts of prevention and, indeed, when prevention in one form or another has been used, there still remains an appallingly large number of individuals who, if all the factors tending toward blindness had been combated or eliminated, would not have become blind. It would seem indeed, that the universal utilization of all methods of prevention now known or in the future to be discovered will not suffice to eliminate all unnecessary blindness. We must consider, in addition, all factors which tend actively to promote blindness, for it is only by stopping the "promotion of blindness" as well as by utilizing all measures of prevention that we may finally hope to reduce blindness to an absolute minimum.

Let us consider some of the active factors that promote blindness. I am concerned not only with the major catastrophe of bilateral but with the minor disaster of unilateral loss of sight. While the latter condition does not connote the tragic social and economic consequences implicit in the loss of the sight of both eyes, it does nevertheless present potentialities of subsequent disaster, as every member of this section would undoubtedly bear testimony to.

FACTORS IN CHILDHOOD

Let us begin with the new-born infant. In what percentage of all births is any type of prophylactic used? The careless and ignorant midwife is still practicing. How often actually do these women comply with state laws in the use of preventive drops? How often does the medical practitioner delivering women in remote country homes or in the hovels of the city slums use preventive measures? Does the fear of losing the good will of the parents by the use of eye drops in new-born babies' eyes with its supposed implication of parental immorality operate as a deterrent?

Failure to use prophylactic measures or failure to secure competent ophthalmic care in case ophthalmia develops must surely be regarded as a means of promoting blindness.

The fates seem to have conspired against the unfortunate youngster with cross eyes, or perhaps it should be said that various human agencies militate against the welfare of the child whose eye turns in. In the mind of the average physician, as well as in the minds of parents, the squint is regarded merely as a blemish to be corrected, if inveterate, by surgical means, but to be neglected in its earlier stages in the hope—usually vain—that the youngster "will outgrow it." It is perfectly true that in earliest infancy there is an incoordination of ocular movements, a condition which usually corrects itself. Recalling this transitory infantile incoordination, it is often assumed, erroneously, that an incoordination developing in childhood will also correct itself in time. The advice, therefore, to do nothing until the child is older promotes blindness or near blindness in the squinting eye by allowing the development and perpetuation of a degree of amblyopia that resists all efforts of refraction and training to restore the eye to useful vision. To be of the highest service to the cross-eyed child the ophthalmologist must come into contact with the patient early enough to develop the acuity to the point at which orthoptic training will have a fair chance of developing binocular single vision. The advice which leads to delay in the care of these little patients is reprehensible under any circumstances. It is especially so in large cities, where the opportunities for competent refraction and orthoptic training are available to the most indigent. Until it is borne in on the consciousness of the family physician, parents, nurses, friends and social service workers that the time to begin the care of the cross-eyed child is now, much of the work of orthoptics will prove futile.

Unilateral blindness or near blindness is far more serious than it has actually been regarded. With the pursuit of various forms of strenuous athletic sports during boyhood, youth and young manhood, the possibility of injury to the useful eye is a real hazard. The danger may be less during active adult life unless the individual engages in some industrial pursuit, but it is ever present. It has been my experience that, when in adult life an injury or visually crippling disease occurs to an individual with one amblyopic eye, it is more often than not that the better seeing eye is the victim.

Assuming that the squinting child receives the benefit of early and intelligent ophthalmic care the battle may not yet be won. We still have to cope with the inertia and carelessness of parents who, despite all our efforts, persist in regarding the condition as a minor defect and are all too prone to discontinue bringing the child to the clinic. In the case of private patients whose parents are in the moderate income class, the necessity of frequent visits with the attendant fees may make the undertaking out of the question. Then too, there may arise more serious complications in the household, such as illness or accidents which for the time being will absorb the attention and concentrate the anxieties thus leading to the neglect of the youngster with strabismus. And this neglect is almost certainly translated into a day by day deterioration of vision in the crossing eye.

ECONOMIC CONDITIONS

Let us consider for a moment the influence of the economic depression in promoting blindness. On no class of our people has the prevalent existence of poverty, the superpoverty of recent years, wrought more havoc than on the dwellers in the hills and mountainous regions of Kentucky, Tennessee, Missouri and Arkansas. Even under the best economic conditions these poor whites live neglected lives in one or two room shanties with never enough food to maintain the nutrition of the usually very large families. Under the best of conditions they glean a mere pittance from tilling the soil. As if conditions of life and livelihood were not bad enough, they have become afflicted, whole families of them, with that terrible scourge trachoma. Indeed, in their mountain cabins these people endure their afflictions resignedly, until loss of vision rather than pain, to which they seem to have become accustomed, forces some attempt at getting medical aid.

In Missouri and elsewhere, physicians of the United States Public Health Service have performed valiant service in ferreting out and caring for many of these people. The work, however, is truly discouraging, for the capacity of the trachoma hospitals is limited, hence only the worst cases can be accepted for hospitalization. Those who come are helped but before the disease can be arrested they are forced, for economic reasons or to make room for still more urgent cases to leave the hospital and return to their homes. As they are not cured a revisit or several revisits to the hospital are inevitable.

EDUCATION

All will recall how, at the turn of the century, the teaching of medicine in many small unendowed medical schools in this country was subjected to a searching survey by the American Medical Association. All are familiar with the devastating effect of these investigations on many of the weak sisters. The more hopeless of these schools found the pressure more than they could stand and so crumpled up and died. Others found that their continued existence implied a transfusion of blood from a stronger institution. Thus by slow degrees, the standards of medical education were elevated. The output of doctors decreased but the quality improved.

While in general there was marked betterment in the situation, the opportunities for the training of men desiring to specialize in ophthalmology left much to be desired. Sometimes the middle-aged practitioner, yearning for a less arduous and physically harassing existence than was inherent in general practice, sought to equip himself in as brief a time as possible as a specialist in ophthalmology and otolaryngology. There was a demand for the "get equipped quick" institution and that demand was supplied. These "specialist mills" turned out a product equipped with confidence (if nothing else) to prey—and I use the word advisedly—on the innocent communities wherein they elected to practice. It was a situation to make the judicious grieve, but some of the judicious, not content with grieving, set about to devise a means of testing the fitness of doctors who offered themselves as practitioners of ophthalmology. Thus was conceived and born in the minds of three of our most distinguished and far-seeing colleagues, Drs. Edward Jackson, Walter B. Lancaster and the late William H. Wilder, the idea of an American Board of Ophthalmology which should be fully representative of ophthalmology in the United

States and should have the power to issue certificates to those who proved by examination their fitness to practice our specialty. All honor to these pioneers who builded better than they knew. To these men and to others associated with them is due the conception of a truly great idea, an idea that has gripped the imagination of the leading men in all the different specialties. Today there are twelve similar boards organized or in process of organization in the twelve major specialties.

It is not pleasant to speak of the part played by poorly trained ophthalmologists in the promotion of blindness. A few such men are still in practice, but, happily, their numbers are diminishing year by year, largely as the result of the efforts of our board and the ever increasing opportunities for systematic training. Through ignorance due to lack of adequate training they are actually promoting blindness by wrong advice, failure to make correct diagnoses in ocular maladies tending to blindness, and clumsiness in operative work. Perhaps this incompetence is displayed most conspicuously in the management of patients with chronic glaucoma. In all fairness it should be stated that some of these practitioners may in reality recognize that they are dealing with glaucoma but, having convinced themselves of the futility of any measure other than the operative one to cope with this disease and not having the temerity to undertake any operation, have allowed such patients to drift into blindness. All will agree that such conduct is reprehensible and indefensible, for if there is one thing that is paramount it is the interest of the patient. Neither ignorance nor cowardice can exculpate an ophthalmologist who withholds from a patient the advice to seek more skilled care when he feels incapable of rendering such care.

Another active agent in the promotion of blindness from glaucoma is the attitude of the patient himself. There seems to be something in the insidious, slow, nearly painless progress of the disease, at first essentially confined to one eye, that numbs the initiative of the patient, rendering him incooperative with his adviser, and perfectly willing to let matters drift. This is especially characteristic of the clinic patient who interprets the cautious words of explanation and perhaps evasive manner of the ophthalmologist as an estimate of the hopelessness of his case, so he in turn promotes his own blindness by discontinuing visits or treatment, or both. It is this attitude on the part of the patient which has impelled most clinicians to insist on early operation, as experience has shown that not one in twenty of these patients will follow instructions and keep up for months and years the needed medical treatment.

THE ROLE OF THE OPTOMETRIST IN THE PROMOTION OF BLINDNESS

Here we come to a difficult and perplexing question. Unfortunately the legalizing of optometry and the licensing of its practitioners has developed a business widely accepted by the people as a profession, a conception that the optometrists themselves have done their utmost to promote and perpetuate. It is this conception of optometry as a profession with its offices, testing paraphernalia, diplomas, state certificates of licensure, and the use of the title "doctor" which so bemuddles the client. The acceptance by the vast majority of Americans of the optometrist as adviser in every case of failing vision is a sad commentary on the gullibility of our people as well as a tribute to the effectiveness of optometric advertising.

Let us freely grant that there are optometrists who are honest and, within the limits of their training and methods of examination imposed by law, reasonably competent. Some may have attained a modicum of diagnostic skill enabling them to hazard, at least, a shrewd guess as to the existence of a pathologic state in the eye. But unfortunately optometrists of this type do not predominate. They are powerless to prevent the entrance into the business of countless men whose sole purpose is to sell as many and as expensive eyeglasses and spectacles as possible.

NEOPLASMS AND INFECTIONS

Another factor in promoting blindness is the failure on the part of some physicians to recognize the existence of intracranial neoplasms before irrevocable damage to sight has occurred as a result of the development and long existence of papilledema.

Why, one may ask, in the presence of all the signs of brain tumor does the attending physician so often wait until the patient has lost most of his vision before counseling consultation with the ophthalmologist or neurologic surgeon? Perhaps it is too much to expect of the physician that he make a precise ophthalmoscopic diagnosis, but at least he should be sufficiently skilled to recognize the difference between a normal and an abnormal optic nerve head. One of the major sorrows of the neurologic surgeon is that, no matter how skilfully and completely he may remove a brain tumor, he is often powerless to restore vision, to paraphrase the old saying, "The operation was successful but the patient was blind." Even when the tumor cannot be localized or, if localized, cannot from its nature be totally eradicated, a decompression will usually promptly bring about a subsidence of the papilledema, and in cases in which optic atrophy has not begun, vision will be preserved to the end of the patient's life.

I have been impressed with the tendency of some physicians, in the presence of a brain tumor syndrome, to "try out" antisyphilitic treatment even in the absence of serologic or other evidence of syphilis. This period of trial may very well be that precious time when brain surgery would have saved sight. The prolongation of such unnecessary and contraindicated treatment will often bring the unfortunate victim to the ophthalmologist and neurologic surgeon too late to prevent total loss of vision.

In the presence of certain infiltrating diseases of the cornea, chronic iritis, cyclitis and uveitis, it is my impression that in the search for focal infections and syphilis the possibility that tuberculosis is the actual causative factor is frequently forgotten. Curiously enough, the victims of ocular tuberculosis are often individuals of robust appearance. They may have acquired a low grade pulmonary tuberculosis in childhood or early adult life and on account of native resistance have experienced a spontaneous arrest of the pulmonary process. No subsequent breakdown having occurred, the very late appearance of ocular tuberculosis takes the form of a clinical surprise. It is granted that the diagnosis of many of these cases is not easy and sometimes has to be arrived at by a process of elimination. If, however, the eye is actually a tuberculous one the elimination of foci of infection and the giving of antisyphilitic remedies may promote blindness or result in seriously impaired vision before the true etiology is discovered and appropriate treatment is instituted.

CONCLUSION

I have discussed a few of the factors that tend to promote blindness. Others, perhaps equally important, have not been touched on. If we ophthalmologists do not take cognizance of and valiantly strive to combat all factors which, either directly or indirectly, tend to promote blindness, we are not doing our share in the world-wide effort to reduce this affliction to an absolute minimum.

3720 Washington Boulevard

THE CHICAGO CITY-WIDE PLAN FOR THE CARE OF PREMATURE INFANTS

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The plan of procedure that I shall discuss was started in Chicago in March 1935, and an outline of the plan was presented at a round table discussion on prematurity at the meeting of the American Academy of Pediatrics, June 7, 1935.

The Premature Station at Sarah Morris Hospital, established in 1922, was the first of its kind in Chicago that was willing to receive premature infants born in other hospitals and in homes. The demand for such a station is evident, as shown by the gradual increase in the number of patients admitted, from nineteen in the first year of operation to 272 in 1935. As early as 1930 the station became overtaxed, and provision was made for the opening of a station at Cook County Hospital to care for infants born in the hospital and of patients received from other sources. The Cook County Hospital station for premature infants admitted 253 infants in 1934 and 286 in 1935. At the present time at least two other hospitals have plans well under way to open such special wards. At Cook County Hospital all patients are treated free of charge, and at Sarah Morris Hospital approximately 75 per cent receive free or very low cost service.

Infant death rates in many large cities have remained at much the same percentages with relation to the total of births during the five years preceding 1935. In Chicago the deaths per thousand live births (under 1 year of age) were 1930, 53.4, 1931, 56.4, 1932, 48.2, 1933, 48.8, 1934, 47.7, 1935, 40.1. A study of the reported causes of death led to the belief that efforts to reduce the death rates further must be directed toward conditions associated particularly with early infancy, such as maternal illness, birth injuries, premature birth and congenital malformations.

In Chicago a survey carried out by the United States Bureau of the Census during 1935 showed that there was 99.5 per cent registration of births. The infant death rate of 40.1 for 1935 may therefore be considered as a true figure of what is occurring in Chicago. It should also be noted that the stillbirth rate has been steadily declining during the same period. The smaller number of infant deaths recorded should therefore exclude the thought that there might be a tendency to classify as stillbirths infants born alive but dying soon after birth.

In attempting to clarify statistics covering survival and deaths due to prematurity from various cities and

clinics, it should be borne in mind that those from general and lying-in hospitals whose nurseries receive only infants born within their own institutions must of necessity be given a different interpretation from premature infant stations in children's hospitals, such as Cook County, Sarah Morris and Boston Children's, which receive infants from all sources. The municipal statistics cover all infants born in the city, just as those of the general hospital cover all infants born within its wards, while stations in children's hospitals cover only such infants as are received from various sources. It is to be remembered that many of the latter are received in poor condition, as the result of delay and exposure during transportation to the station. For this reason most special stations classify their deaths into time periods of twenty-four hours, forty-eight hours, ninety-six hours or later. In many instances, at least a temporary delay in transportation of the infants is justifiable, owing to the dangers of undue handling, if the infant can be properly protected against refrigeration.

With all these facts in mind and believing that deaths from prematurity might be lowered by well organized effort, Dr. Herman N. Bundesen, president of the Board of Health of Chicago, initiated the Chicago city-wide plan for the reduction of deaths associated with and due to prematurity.

Prematurity was stated as being the cause of death in 749 infants during 1934. During 1935, of 1,361 infants who died under 30 days of age, 795, or 58.4 per cent, were reported as being premature. A reduction in morbidity and mortality rates among prematurely born infants seemingly offered a promising field for lowering the death rate among new-born infants. It was felt that, if the same principles established in con-

TABLE 1—City of Chicago Vital Statistics 1930-1935

| Year | Total Live Births | Stillbirths | | Total Deaths Under 1 Year of Age | | Deaths Under 1 Month | | Deaths per 1,000 Total Population |
|------|-------------------|-------------|-------|----------------------------------|------|----------------------|-------|-----------------------------------|
| | | Number | Rate* | Number | Rate | Number | Rate* | |
| 1930 | 58,083 | 2,072 | 3.7 | 3,102 | 53.4 | 1,789 | 30.8 | 1.2 |
| 1931 | 52,993 | 1,006 | 3.0 | 2,087 | 50.4 | 1,662 | 31.4 | 1.3 |
| 1932 | 49,258 | 1,335 | 3.1 | 2,404 | 48.8 | 1,461 | 29.8 | 1.0 |
| 1933 | 46,655 | 1,405 | 3.0 | 2,278 | 48.8 | 1,454 | 31.0 | 1.0 |
| 1934 | 47,055 | 1,399 | 2.9 | 2,289 | 47.7 | 1,481 | 30.0 | 1.1 |
| 1935 | 49,432 | 1,328 | 2.6 | 1,983 | 40.1 | 1,361 | 27.5 | 1.2 |

* Per thousand live births.

ducting the premature station at Sarah Morris Hospital could be applied in a Chicago-wide program, many premature infants now lost might be saved.

The Sarah Morris station offers

- 1 Ambulance service by the hospital
- 2 Premature ward care with special equipment for oxygen therapy and other types of emergency therapy
- 3 Nursing service by a trained personnel
- 4 Breast milk obtained from wetnurses and visiting mothers
- 5 Field nursing service for instruction of the mothers, special attention being given to the promotion of breast milk secretion. Breast milk in the home reduces the number of hospital days.
- 6 A supply of a simple type of heated bed lent for the use of graduates in the home. This is of special value in reducing the number of return cases due to acute illnesses after discharge.
- 7 An outpatient clinic maintained for instruction of mothers and the care and supervision of graduates not having private physicians.

Therefore, the program here presented, which is an attempt to apply institutional procedures already found

successful, expanded to meet the demands of a large metropolitan community, was adopted by the Board of Health

It became apparent that it would be necessary to determine through a survey exactly what facilities the hospitals of Chicago afforded for the proper care of the premature infant. This seemed the more important in that an analysis of the death certificates of the year 1934 showed that the death rate of premature infants in institutions properly equipped for their care was much less than the rate in institutions in which such care was not available.

Before the survey was made, with the advice and help of the physicians who had specialized in the care of the premature infant, a set of minimum requirements for hospital care of premature infants was drawn up by the Board of Health. Not only did these requirements serve as a yardstick for the survey, but a copy was sent to every hospital, to be posted in a conspicuous place in the nursery.

MINIMUM REQUIREMENTS FOR HOSPITAL CARE OF PREMATURE BABIES

Accommodations—It is recommended that, if possible, a separate room be set aside for the care of premature infants. Otherwise they may be cared for in the nursery.

Every hospital should have some type of heated bed in the nursery or premature room.

Oxygen should be used whenever indicated and a supply for use in emergencies with necessary equipment should be kept in the room occupied by the premature infants.

Provision for the prompt transfer of the premature infant from the delivery room to the nursery should be made, so that there is no exposure of the infant to chilling.

Equipment for Nursing Care—Individual equipment should be provided for the premature infant, especially a bath basin and a thermometer.

If the premature infant is cared for in the nursery with the other infants, it is advisable to keep the feeding equipment for stored breast milk (droppers, nipples, etc.) in a separate place from that of the other infants.

Every baby should have his own catheter.

There should be running water in the room or nursery, or it should be easily accessible.

Cans or diaper bags should be available for soiled linen and diapers. If possible a warmer for clothing and diapers should be available.

The room or nursery should have a "high and low" thermometer (to show the temperature variation within twenty-four hours) and a hygrometer.

A heated bath table is desirable.

Nursing Care—The nursing care of the premature infant should be supervised by a graduate nurse who has had special training in the care of the premature infant. The Board of Health on request will send a nurse to give instructions in the management of premature infants. A twenty-four hour nursing service should be provided. Nurses and attendants with respiratory or intestinal infections should be excluded from the nursery.

A minimum amount of handling is advised for premature infants. There are few nursing procedures with the exception of weighing and bathing which necessitate removal of the infant from the heated bed.

Wool is the preferable material for the clothing of the premature, and the infant must at all times be guarded against exposure to cold during dressing.

It is recommended that physicians, nurses and all others entering the room in which the premature babies are cared for should wear a clean gown and face mask.

The room temperature should be 78-80 F.

Proper nursing hygiene, especially washing of hands is essential to prevent infections. Infected cases should be isolated.

It is advised that every premature baby receive breast milk. If the milk is obtained outside the hospital it should be boiled in the hospital for from one to two minutes before it is used.

The Board of Health, on request, will furnish information as to where breast milk for premature infants can be obtained.

Nurses caring for premature infants should be familiar with the methods of treating cyanosis in such infants.

It is strongly recommended that the obstetrics department in hospitals where it is customary to place the responsibility for care of the new-born on the pediatric department notify the pediatric department in advance of every delivery in which the uterogestation is expected to be less than term and more than four months. It is also suggested that the pediatric department respond to such notification by assigning to the delivery room an attendant especially trained in the early care of premature infants. Such attendant should be a member of the hospital personnel and constantly on call. The premature infant should always be placed under the care of the premature department immediately after birth.

Discharging Infants—No premature infant who will not be under the care of a private physician at home should be discharged from a hospital without first notifying the Board of Health. If parents are not financially able to have a private

TABLE 2—Scoring Sheet

| | |
|--|----|
| Hospital | |
| Accommodations | |
| Room | |
| Separate | 3 |
| Section of nursery | 2 |
| Incubators | |
| Grade 1 | 20 |
| Grade 2 | 15 |
| Oxygen | 6 |
| Delivery room satisfactorily located | 1 |
| Isolation room for infected cases | 2 |
| Equipment | |
| Individual equipment | |
| Bath basin | 2 |
| Thermometer | 1 |
| Running water in nursery or workroom | 7 |
| Cans for soiled linen or diaper bags | 1 |
| Hygrometer | 1 |
| Heated bath table | 1 |
| Separate equipment for premature infants | 1 |
| Sterilization process satisfactory | 2 |
| Provision for refrigeration of feedings | |
| Ice box in nursery | 2 |
| Other ice box | 1 |
| Nursing care | |
| Graduate nurse in charge of obstetric division during 24 hours | 5 |
| Satisfactory personnel | 3 |
| Supervision of health of nurses | 1 |
| Gown technic | 1 |
| Face masks | 1 |
| Temperature of nursery or room | 1 |
| Washing of hands | 7 |
| Consulting pediatrician | 7 |
| Satisfactory methods of resuscitation | 4 |
| Breast milk | 20 |

physician for the infant after its discharge from the hospital, the Board of Health will assign a nurse to the home to give instructions to the mother and to render the necessary follow-up service.

A graduate nurse, trained at the Sarah Morris Hospital Premature Station and experienced in the care of the premature infant, was assigned to make such a survey.

After the completion of the survey a scoring sheet was drawn up, and each hospital was rated on the basis of equipment for caring for the premature, as compared with the minimum requirements (table 2).

All hospitals that did not meet these minimum requirements were sent a detailed statement of the points in which they fell short. A follow-up investigation for assistance to the hospitals was also made by a physician experienced in the care of premature infants.

An interesting point brought out by the survey was that, while equipment is important, elaborate equipment does not necessarily mean efficient and effective service.

More important is an intelligent understanding of the care of the premature infant, especially in respect to such points as maintaining proper temperature, the treatment of cyanosis and knowledge of feeding, together with an enthusiastic staff

CARE OF PREMATURE INFANTS

For a better understanding of the causes of death of premature infants, a plan for the investigation of the death of every premature infant in the city after Jan. 1, 1935, was instituted

It immediately became apparent that in attacking the problem of prematurity, just as in an epidemic the number of cases of contagion must be known, it would be essential to have early reports of premature births. Therefore on March 5 the Board of Health passed a regulation making premature births immediately reportable by telephone, followed by written confirmation within twenty-four hours. Notification of this ruling was sent to all physicians, midwives and hospitals.

The public health nurse has demonstrated her value in so many life-saving activities that it was felt that she would be an essential factor in the carrying out of this program. However, if she was to render effective service, it would be necessary for her to be well trained in a rather highly specialized and, as a public health activity, new and untried phase of nursing.

Such a program of training was started at once. The nurses of the staff of the Board of Health were assigned in small groups at a time to Sarah Morris Hospital and Cook County Children's Hospital, which were conducting premature stations. As soon as three nurses had finished the training, the city was divided into three districts, and one of these nurses was assigned to each district. Each nurse is responsible for the premature infants in her district. As other nurses finished their training and as the work grew, additional nurses were assigned to the district as needed.

Twenty-three nurses have received instruction in the care of premature infants at the Sarah Morris Hospital. The course of instruction was for three weeks. One hundred and forty-two nurses received instruction at the Cook County Hospital, each for a period of six days. All of these 165 nurses were instructed in the method of hand expression of breast milk so that they in turn would be able to teach the mothers of premature infants to maintain the supply of breast milk.

The district nurse is responsible for every premature baby in that district whether the infant is at home or in a hospital. If the baby is in a hospital, the nurse maintains contact with the hospital so that she will know when the baby is to be discharged. A baby in a hospital may reside in a different district. Therefore the nurse in the district where the baby is hospitalized notifies the nurse in the district where the baby resides when the baby is to be discharged from the hospital. In all hospital cases the nurse goes to the home shortly after the birth and before the baby is discharged, if it is a hospital case to see that the necessary preparations are made for the proper care of the baby.

It is important to understand the relationship of the nurse to the private physician in this program. If an infant is under the care of a private physician the nurse checks with him before taking active charge of the case. The services of the nurse are at the disposal of the physician. At his request she goes into the home to help in such matters as maintaining the supply of

breast milk, teaching the mother manual expression and, if the circumstances of the family so indicate, assisting with the nursing care of the baby.

It was realized that there will always be infants who cannot have breast milk from their own mothers and that some of these will be prevented from having it from commercial supplies because of economic reasons. To provide for the latter group of infants a mother's breast milk station has been established by the city of Chicago. This brings the number of breast milk stations in the city to four, there are three in hospitals (two in the hospitals that maintain the premature stations previously mentioned) and a commercial station in another hospital. The first two hospital stations attempt to care primarily for their own needs, having only a limited amount for sale. It has been agreed with the commercial station that it will take any case in which there is ability to pay something, though below the price ordinarily charged. The board of health station is caring for the wholly free cases and has collected 46,765 ounces of breast milk during its first year of operation. It furnished milk for 144 babies and the average length of time that this group of babies received milk was 20 2/3 days, with an average of 309 ounces per baby. The approximate cost per ounce was 9 1/3 cents and the average cost per baby was \$28.89. The station at Cook County Hospital collected 76,960 ounces of breast milk during 1935.

If a feeding problem or illness occurs in the case of a premature infant whose parents are unable to provide a private physician, a physician experienced in the care of young infants is sent to make a special call.

The city also purchased a number of heated beds for lending to those institutions and homes in which other facilities are not available for maintaining the body temperature of premature babies. An incubator ambulance was also provided to transport these infants without charge from homes and institutions when proper facilities were not available. The service is also available to infants when they leave the hospital.

There have been established three conference clinics for premature infants not cared for by private physicians who have graduated from hospital premature stations and those born and cared for in their own homes—one each on the north, west and south sides of the city. The nurse in charge of that particular district will also be in charge of the conference on prematurity.

All cases from the Cook County Hospital needing antisyphilitic care are reported to the board of health and then are assigned to the field nurses for special follow up. This is to insure as nearly as possible the return of these women to the clinics for antisyphilitic treatment.

An illustrated pamphlet outlining the care of premature babies is also available.

A study of the death certificates also revealed that many of the premature infants died within several hours of birth. It was thought that possibly in some cases these deaths were the result of improper methods of resuscitation. In order to determine what the medical profession considered acceptable methods, a questionnaire was sent to a larger group of physicians practicing obstetrics. The replies to these questionnaires were tabulated. Some methods still in use were found to be in disrepute, while others were highly advocated. The conclusions were that postural drainage, pharyngeal and in exceptional cases, tracheal aspiration, oxy-

gen, oxygen and carbon dioxide mixtures, warm baths, and mild forms of artificial respiration were recommended. All strenuous handling that might traumatize the infant was condemned.

Many of the infants of mothers who received morphine, scopolamine and the various barbituric acid compounds during labor were born with the full effect of the medication. In some, respiration was established with great difficulty. Others died without emerging from their narcotized and asphyxiated state.

Of the 795 premature babies who died, 85, or 10.7 per cent, died within an hour of birth, and 554, or 69.7 per cent died within twenty-four hours.

Pathologic conditions in the mother which had a more or less direct influence on premature delivery were recorded in 355 histories or 44.6 per cent of all cases. Undoubtedly there are others not recorded in the obstetric records. The most frequent were toxemia, external injury fifty-four, abruptio placentae twenty-one, placenta praevia thirty-eight, syphilis twenty-five, other infections thirty, and nonobstetric surgery twenty-five.

For 450 infants, prematurity was the only assigned cause of death. In the remaining 345 various contributing causes were recorded, the more frequent being atelectasis 176, cerebral hemorrhage fifty-eight, malformations sixty-one. Of the latter, cardiac and cephalic malformations were the most frequent. Autopsy was performed on 251 of the infants.

Of the 795 premature infants who died under 1 month of age, 74.8 per cent were born in Chicago hospitals, 24.4 per cent were born at home, and 0.8 per cent were born outside the city or en route to a hospital, or the place of birth was not known. Five hundred and seventy-six died in the same hospital in which they were born, 105 died at home, five died en route to a hospital, and eighty-seven were born at home and died in a hospital.

TABLE 3—Data on Vitality of Premature Infants Graduated from Sarah Morris Hospital, 1922-1935

| Birth Weight In Gm | Total Admis- sions | Surviving | | | Gradu- ated | Per Cent | Per Cent Graduated of Infants Surviving First 48 Hours |
|-----------------------|--------------------------|----------------------|----------------------|----------------------|----------------|-------------|---|
| | | First 24 Hours | First 48 Hours | First 96 Hours | | | |
| Under 1,000 | 106 | 45 | 32 | 28 | 16 | 15.1 | 50.0 |
| 1,000-1,500 | 417 | 23 | 230 | 267 | 187 | 45.1 | 72.2 |
| 1,500-2,000 | 67 | 697 | 689 | 685 | 566 | 70.4 | 87.0 |
| 2,000-2,500 | 684 | 669 | 662 | 661 | 600 | 87.4 | 90.6 |
| 2,500-3,000 | 93 | 91 | 91 | 91 | 83 | 91.2 | 91.2 |
| Over 3,000 | 5 | 5 | 5 | 5 | 3 | 60.0 | 60.0 |
| Unknown | 50 | 47 | 41 | 41 | 30 | 60.0 | 73.1 |
| Totals | 2,122 | 1,837 | 1,779 | 1,768 | 1,505 | 70.9 | 84.6 |

In 1935, 1,862 infants out of 49,425 live births were classified as being prematurely born. This is a rate of 37.7 premature births per thousand live births. Seven hundred and ninety-five premature infants died in homes and various hospitals from all causes, with a mortality rate of 42.6 per cent. The average mortality rate of the Sarah Morris Hospital station of 24.06 per cent during the past five years and the marked decrease in the deaths among premature infants at Cook County Hospital from 49.2 in 1932, 37.3 in 1933, 34.2 in 1934, and 24.8 in 1935 demonstrate the possibilities for the saving of these lives.

Of greatest importance is adequate antepartum care of the mother as evidenced by the number of cases of

pelvic deformity, placenta praevia, toxemia, cardiac conditions and syphilis recorded as contributing to premature delivery. Serologic reactions were obtained on 413 mothers of 1,862 premature infants reported in Chicago during 1935. Of these twenty-three, or 5.6 per cent, were positive. At the Sarah Morris Hospital 8.1 per cent of all admissions over a period of twelve years were diagnosed as being born to syphilitic parents, of these, 31 per cent died in the station.

SUMMARY

1 While the results of one year of organized effort does not offer material for drawing conclusions as to the result in the lowering of deaths due to prematurity, a drop in deaths of all infants born in this metropolitan area from 47.7 in 1934 to 40.1 in 1935 per thousand

TABLE 4—Cook County Hospital

| | 1932 | 1933 | 1934 | 1935 |
|--------------------------|------|------|------|------|
| Premature admitted | 128 | 233 | 253 | 294 |
| Mortality rate | 49.2 | 37.3 | 34.2 | 24.8 |
| Excluding 24 hour deaths | 30.4 | 27.0 | 21.5 | 9.5 |

live births appears significant in that the program initiated may have borne results in lowering the death rate among all new-born infants.

2 During 1935 it was required that all infants that breathed be reported as live births, and this in all probability was a factor in the increased number of premature births reported over 1934 and therefore makes it impossible to draw comparative conclusions covering these two years. Attention is called to the decreased number of stillbirths reported 1,328 in 1935 as against 1,399 in 1934.

3 The decreased mortality among Cook County Hospital and Sarah Morris Hospital premature infants during the past five years is evidence of the results to be expected from a well organized program.

4 Of special importance are antepartum care of the mother and avoidance of extreme narcosis during labor, also traumatism in attempts at resuscitation and chilling of the infant at all times.

5 Breast milk, intelligent nursing care and proper instruction to the mother in the care of her breasts and her baby all tend to a lowered mortality.

6 Follow-up visits lower not only mortality but, equally important, morbidity.

104 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. MAURICE L. BLATT, Chicago. As a result of the untiring effort of Dr. Hess the premature infant born in Chicago finds a medical and nursing group specially trained and prepared to administer to its needs. A consciousness of the fragility of the life of the premature infant lessens its hazards. The widespread recognition of any continuous threat to human life challenges medical combat. We have accepted that challenge under Dr. Hess's leadership. If our co-workers, the obstetricians, will give us fewer infants under 1,250 Gm at birth, we will improve the vitality statistics of the past. I believe that in the near future the obstetricians will gain control of some of the other causes of premature birth just as they have reduced the incidents ascribed to congenital syphilis. The Premature Station at Cook County Hospital is an integral part of the city-wide plan. Its primary function is the care of the infant born in Cook County. It assumed as an additional function the teaching of the care of the premature to 143 public

health nurses of Chicago. These nurses were taken into our department in groups of six for half days on two successive weeks. They were familiarized with the care of premature infants by lecture and demonstration, and during their last periods were allowed to work in the wards with our infants. Needless to say, their work in the wards was preceded by throat cultures, Dick tests and Schick tests. All with any suspicion of infection were kept from this intimate contact in the ward until such infection had passed. While it was considered that using such infants for teaching purposes was a dangerous procedure, we had confidence in our technic. During the several months of such use no infection occurred in my ward. The nursing procedures in Cook County Hospital are based on aseptic nursing technic, the application of external heat, the feeding of adequate amounts of fluid, the use of breast milk from carefully selected wetnurses, and the establishment of a fixed personnel for the supervision and care of these premature infants. Our observation confirms that of many previous workers in that it has been found that manually expressed breast milk, aseptically collected and immediately iced, is the most satisfactory food for these infants. The accompanying table demonstrates the efficiency of the organization and procedures during 1935.

Data of Mortality During 1935

| Admission Weight Gm | Total Admissions | Surviving | | | Graduated | | Graduated Infants Surviving per Cent | |
|---------------------|------------------|-----------|-------|-------|-----------|----------|--------------------------------------|-------|
| | | 24 Hr | 48 Hr | 96 Hr | Number | Per Cent | 24 Hr | 48 Hr |
| Less than 1 000 | 16 | 3 | 2 | 2 | 2 | 12.5 | 66.6 | 100 |
| 1 001-1 250 | 20 | 8 | 6 | 5 | 5 | 25.0 | 62.4 | 83.3 |
| 1 251-1 500 | 43 | 34 | 34 | 32 | 32 | 74.4 | 97 | 97 |
| 1 501-2 000 | 98 | 94 | 91 | 89 | 82 | 83.6 | 87.2 | 90.1 |
| 2 001-2 500 | 100 | 97 | 96 | 96 | 95 | 95.0 | 97.9 | 98.0 |
| Unknown | 9 | 4 | 3 | 3 | 3 | 33.3 | 75 | 100 |
| Totals | 286 | 240 | 232 | 227 | 219 | 76.6 | 91.2 | 94.3 |

DR WILLIAM J. ORR, Buffalo. After listening to the splendid presentation of Drs. Hess and Blatt, I have little to offer save words of congratulation for their success. The sustaining of life in a premature infant has always presented a challenge to the medical profession. That challenge hasn't been met until recently, and then only in isolated instances. The work of Dr. Hess is noteworthy and he is to be congratulated on his achievement. The cooperation of obstetricians, physicians, pediatricians, public health authorities and hospitals is needed if the premature death rate is to be lowered. An educational program, similar to that which Dr. Hess, Dr. Blatt and others are carrying on in their communities, should become nationwide in its scope if we are going to be able to show that the problem is not a hopeless one and that the small lives are worth salvaging. Perhaps our failures in the past have been because the pediatrician has been forced to extend his efforts in an attempt to repair the damage already done before the premature infant became his charge. In the wards for premature infants at the Children's Hospital of Buffalo, most of the children admitted were in a desperate condition. I do not present these figures as a boast of achievement but rather as an illustration of the gravity of the problem that confronts the hospitals throughout the country. Over a period of three years we had 108 children admitted to our premature ward. Of that number seventy-four or 69 per cent died. One hundred weighed less than 2 000 Gm, fifty-six infants or about 56 per cent weighed less than 1 500 Gm, forty-one or 38 per cent weighed less than 1 250 Gm. Only 31 per cent of the total number admitted reached the hospital before they were 24 hours old, and in only eight instances were we so fortunate as to receive these patients before they were 12 hours old. In the seventy-four deaths thirty-six occurred within twenty-four hours following admission. Unquestionably with timely intervention and with cooperation and team play such as has been organized in Chicago these mortality figures could have been reduced considerably.

THE TREATMENT OF DELIRIUM TREMENS

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AND

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It is our purpose in this paper to present certain data on the history, etiology and pathology of delirium tremens and to call attention to a method of treatment which in our hands has given good results. In any discussion of delirium tremens it would hardly be possible to disregard entirely the larger problem of chronic alcoholism, of which delirium tremens is only a special phase or, one might say, a dramatic incident. However, if we refer at times to the problem of chronic alcoholism, it will not be in the attempt to contribute to its understanding but only better to clarify the various aspects of delirium tremens.

By way of introduction, it would seem helpful to explain just what we mean by the term chronic alcoholism, that is, at just what point in the scale does the user of alcohol cease to be a normal or heavy drinker and become a chronic alcoholic? Very few writers on the subject attempt to make such a differentiation, but Peabody¹ has adopted a criterion that would appear to be quite useful. He considers that normal drinkers are those to whom a night's sleep represents the end of an alcoholic occasion, that chronic alcoholics are those to whom a night's sleep is only an unusually long period of abstinence. In other words, chronic alcoholism properly belongs in the group of habituations.

It is only among the group of habitually severe and consistent users of alcohol, then, that delirium tremens develops. Many of those who come to us for treatment of delirium tremens are so-called spree drinkers, but in each case the spree has been an uninterrupted period of drinking day and night for weeks or months, or it may have been a period of unusually heavy drinking in one accustomed to have his daily pint of whisky over a period of years. Occasionally, a severe infection or injury in a steady drinker appears to have precipitated the illness. There would seem to be little relationship between the amount of alcohol consumed and the development of delirium tremens, beyond the amount of drinking necessary to qualify as a chronic alcoholic.

A word of introduction might also be said to draw attention to the importance of alcoholism and delirium tremens as a medical problem. Nicoll and Bellows² made a confidential survey of deaths in Westchester County in an effort to learn just how many were attributed wholly or in part to alcohol and syphilis. Their study revealed the surprising fact that alcohol contributed to or directly caused 7.3 per cent of deaths in males and 1.4 per cent of deaths in females during the years 1931-1933. In this connection Hunt³ says:

From almost every standpoint ethyl alcohol must be regarded as the most important poison with which medical men and jurists have to deal, no other poison causes so many deaths, or leads to or intensifies so many diseases, both physical and mental, as does alcohol.

From the Psychiatric Institute, Grasslands Hospital.
1. Peabody R. R. *Mental Hygiene* 14: 102 (Jan.) 1930.
2. Nicoll M., and Bellows M. T. *Am. J. Pub. Health* 24: 813 (Aug.) 1934.
3. Hunt R., cited by Peterson, Frederick Haines, W. S., and Webster R. W. *Legal Medicine and Toxicology*, Philadelphia: W. B. Saunders Company 2: 613 1923.

in the various forms in which it is taken." Thus it would seem that alcoholism is a real medical problem and not merely a social problem, as many would appear to believe. It is surprising, then, that standard medical textbooks and teaching concern themselves so little with therapy in alcoholic conditions, especially in view of the fact that a considerable body of literature dealing with this subject has accumulated during the past twenty-five years.

HISTORY

Delirium tremens was first accurately described by Sutton⁴ of Greenwich, England, in 1813. He observed it in sailors who indulged to excess in alcohol during their time ashore. Ware⁵ of Boston gave an excellent description in 1831 of the clinical manifestations in this condition. He stated that in his hands expectant and supportive treatment had proved much more effective than the drastic purges and venesection then used in this and most other medical conditions. Since the time of Sutton and Ware there have been very few improvements on the "expectant and supportive" therapy as far as the accepted general practice is concerned. In other words, during the last hundred years little or no progress has been made in the generally accepted treatment of delirium tremens.

ETIOLOGY

Beyond the fact that, as already stated, delirium tremens occurs as an incident in chronic alcoholism and that it often follows on injuries, operations and acute inflammatory disease, very little is known of the actual etiologic factors. Fractures are frequently mentioned as of etiologic importance, but it is well to remember that such injuries may have occurred in the prodromal period and are in such cases more apt to be a result than a cause of the illness. Pneumonia has been cited as the most commonly associated inflammatory disease, and the possibility of a causal relationship has been suggested.⁶ We have almost invariably observed that the delirium developed when the drinker's food intake was limited almost entirely to alcohol. This would seem to indicate that a nutritional factor, such as vitamin deficiency, might be responsible for the delirium. It has been demonstrated⁷ that polyneuritis in alcoholic addicts is due to a deficiency of vitamin B₁ in the diet and that alcohol as such does not have a direct neurotoxic effect. However, Jolliffe, Colbert and Joffe⁸ have found that there is no very clear correlation between the degree of vitamin B₁ deficiency and the presence or absence of involvement of the central nervous system. Further vitamin studies in the alcoholic psychoses would undoubtedly be of great value.

Two other hypotheses have been prominent in the discussions of etiology in delirium tremens. The theory of secondary or intermediate toxins was in vogue at the turn of the century. According to this theory, the delirium was directly caused by the action on the brain of a secondary or intermediate toxin arising in the gastro-intestinal tract,⁹ in the kidneys,¹⁰ or in the central nervous system.¹¹ Steinbach¹² also thought that a

toxic agent was present in the spinal fluid but did not attempt to demonstrate it.

The second and perhaps the most widely accepted theory in the past and at the present time is that delirium tremens results directly from the sudden deprivation of alcohol in the heavy drinker, the so-called abstinence delirium. Many capable clinicians still hold steadfastly to this traditional idea, which in our opinion is entirely erroneous. Ashworth,¹³ for example, states that he has never observed delirium tremens except in cases in which the alcohol had been abruptly withdrawn, and Williams¹⁴ and Lambert¹⁴ maintain that gradual withdrawal of alcohol is desirable or necessary if delirium is to be avoided in the treatment of the chronic alcoholic addict. Towns¹⁵ likewise holds that delirium tremens develops only when alcohol has been suddenly withdrawn. Osler¹⁶ and Meyer¹⁷ have also contributed to the survival of the abstinence theory.

On the other hand, Holitscher¹⁸ states that abstinence delirium, if it occurs at all, is extremely rare, and Bleuler¹⁹ says that in his experience in hardly one case in a thousand did delirium develop after abrupt withdrawal of alcohol, except when a careful history and examination at the time of withdrawal revealed prior evidence of early or impending delirium. This he emphasized with the terse remark "The omission of alcohol kills nobody. It is only the use of it that does."

In this connection Jelliffe and White²⁰ quote English prison statistics to the effect that of 63,000 inebriates imprisoned in 1907 only 246, or less than 0.5 per cent, developed delirium tremens. Also Wigert²¹ shows that during the Stockholm general strike of 1909, when alcohol was abruptly withdrawn from an entire populace that normally consumed 4.4 million liters of whisky in a year, there was an increase of at most a dozen cases over the average number. Further, Jelliffe and White,²⁰ Noves²² and Bleuler¹⁹ emphasize the point that in the prodromal period of delirium tremens the patient often experiences a disgust and intolerance of alcohol sufficient to cause abstinence for several days preceding the actual onset of the delirium and that this period of abstinence is sometimes mistakenly considered a cause rather than a result of the illness. White and Jelliffe²³ say that "administration of alcohol, either to prevent delirium tremens or as a subsequent therapeutic measure, is both unnecessary and illogical, and, further, tends to perpetuate a false belief in the therapeutic value of alcohol."

We have made a special effort to refute the theory of abstinence delirium, because we believe that it does not deserve the credit almost universally given it and that the ends of rational therapy are defeated when one attempts to treat gross intoxication by giving more of

4 Sutton T. Talks on Delirium Tremens etc. London 1813.
5 Ware J. Massachusetts M Soc Comm. Boston 5: 136-194 1831.
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the intoxicant. Moreover, we believe that a physician is not so likely to be sufficiently diligent in his search for broken ribs, pneumonic consolidations and fractured skulls when he erroneously believes that he already knows what has precipitated his patient's illness. It is our routine practice to withdraw alcohol abruptly, and we have yet to observe any ill results.

NEUROPATHOLOGY

There has been considerable confusion in the reported pathologic changes in cases of delirium tremens. This has been largely due to a failure to differentiate the changes in delirium tremens from those in chronic alcoholism. The dependence of the former on the latter has already been pointed out. It is the prevailing opinion that chronic alcoholism results in definite permanent brain involvement. Although Mott²⁴ was unable to find any specific lesions of the brain in the alcohol addict, Bender²⁵ states that these lesions are "specific both in the type of process and in the localization." She found that the parts most severely involved were those immediately in contact with the spinal fluid. The chief lesion was a productive and invasive ependymitis throughout the ventricular system with "an underlying vascular disturbance characterized by congestion and endothelial proliferation and degeneration, perivascular hemorrhages, capillary budding and organization." Noyes,²² White²⁶ and Ziegler and Horner²⁷ also hold that there are inflammatory and degenerative changes in the brain of the chronic alcoholic addict.

Delirium tremens is a separate pathologic entity arising on the basis of the changes just described. Holtscher,¹⁸ Steinbach,¹¹ Hoppe,²⁸ Strecker and Ebaugh,²⁹ Goldsmith³⁰ and Bogen³¹ believe that cerebral edema is present in delirium tremens, and each has advocated treatment by spinal drainage, of which more later. Lambert¹⁴ considers that cerebral edema ("wet brain") is a clinical and pathologic entity separate from delirium tremens, but this is not the generally prevailing view. Dana³² found cerebral edema and congestion, combined with dilatation of the pericellular and perivascular spaces. He also found that the ventricles are dilated and that the subarachnoid space contains an increased amount of fluid. It would thus seem that edema and congestion of the brain have been almost always found in cases of delirium tremens, and it is on this pathologic condition that we base our present therapy.

THERAPY

The traditional attitude of therapeutic defeatism in delirium tremens is fairly well exemplified by the following statement found in a standard, recently revised textbook of therapeutics:³³ "After one or more days of prodromal uneasiness and insomnia, the patient begins to tremble and becomes actively delirious, in which state he remains without sleep for an average period of five or six days and then slowly recovers or dies." Likewise Osler¹⁶ says that delirium tremens

in a large majority of cases runs a course very slightly influenced by medicine, and Lambert¹⁴ states that there is no specific treatment for delirium tremens. The most commonly recommended measures are baths, wet packs, catharsis, sedation and supportive treatment, with the use of physical restraint when necessary. Paraldehyde is the most widely recommended sedative.

In our hands wet packs have proved dangerous and of little value, and morphine, recommended by a number of writers, including Osler, is distinctly contra-indicated. Likewise we have found physical restraint decidedly harmful and, as we shall show, quite unnecessary.

In the moderately severe and mild cases recovery will probably occur with expectant and supportive therapy or with no therapy at all. The occasional severe case, however, represents a major medical emergency in which the outcome will often be fatal unless the activity of the patient can be checked. These patients are more active in resisting physical restraint than they would be with no restraint, and sedatives alone are practically useless.

Search of the literature disclosed the work of Steinbach¹¹ in Germany (1915), who advocated the use of spinal drainage in all cases of delirium tremens. He found that the course of the illness was nearly always milder and much shorter, that the motor restlessness usually stopped at once, and that the patient usually went to sleep promptly after spinal drainage, without the use of sedatives. Recurrences were treated with the same good result. The most significant advantage of this therapy was the early reduction of excessive activity, which greatly reduced the danger of circulatory collapse and made largely unnecessary the use of supportive measures. This author found that there was increased spinal fluid pressure in 78 per cent of his cases and that when a second drainage was necessary the pressure was again found to be high. He concluded that the increased pressure persists throughout the entire duration of the delirium and related it directly to the pathogenesis of the delirium. His speculations as to the toxic nature of the spinal fluid are interesting. He found that replacement of spinal fluid by physiologic solution of sodium chloride gave the same good therapeutic result and therefore postulated a toxic irritative effect of the spinal fluid on the meninges, and a consequent vicious cycle effect, i. e., the greater the accumulation of spinal fluid the greater the irritation, leading to fatal termination in cases in which the balance was not restored by either natural or artificial means.

The work of Hoppe²⁸ in 1918 in America clearly substantiates the observations of Steinbach. He removed from 30 to 60 cc of spinal fluid in each case of delirium tremens and used mild supportive treatment and alkalinization to supplement the drainage. There was almost always increased spinal fluid pressure in cases in which physical debility was not marked, and in cases in which more than one spinal drainage was necessary the pressure was again found to be high. This author reports his own mortality statistics in 129 cases of delirium tremens and shows that his treatment resulted in a substantial reduction of the prevailing death rate. He states that in the ten year period prior to 1915 the total mortality in delirium tremens was 25.9 per cent and that in uncomplicated cases it was 18.5 per cent as compared with his own total mortality of 10.8 per cent and 7.6 per cent in uncomplicated cases.

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32. Dana, C. L. *Diseases of the Nervous System*. Baltimore: Williams & Co. 1916, p. 47.
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More recently (1931) Goldsmith³⁰ has reported similar results in a series of ninety-six cases treated by spinal drainage, with a total mortality of 10 per cent. He agreed with Hoppe and Steinbach that spinal fluid pressure was almost invariably increased and that it remained at high levels as long as the delirium persisted. Also Ebaugh and Johnson³⁴ advised the routine use of spinal drainage in the treatment of delirium tremens. None of these authors observed any ill effect of the spinal drainage method.

Lambert³⁴ prefers to combat cerebral edema in cases of "wet brain" chiefly by the use of ergot. He reports that alcoholic wet brain occurs in about 15 per cent of delirium tremens patients and that about 61 per cent of the cases in which it occurs come to a fatal termination. Klemperer³⁵ and Steck³⁶ used insulin in a small number of cases with good results. They found that small doses of insulin had a sedative action in delirium tremens.

Ebaugh and Johnson³⁴ estimated the mortality at about 20 per cent. Mortality figures quoted by others vary widely. The lowest estimate, given by Henry³⁷ and by Noyes,³⁸ places the death rate at from 5 to 10 per cent. The usual figure given is from 10 to 15 per cent in the uncomplicated cases, rising sharply to 50 per cent in cases complicated by trauma. Schroeder⁹ quotes mortality figures reported by various German authors ranging from 9 to 35 per cent. Certainly it must be concluded, then, that delirium tremens is one of the most serious of medical emergencies.

We shall attempt to show on the basis of 616 cases of alcoholism observed during a two year period (1933-1935) that an alarming death rate in delirium tremens need not obtain, and that such has been the case in the past chiefly because the most effective therapy has been very little in general use. Certain comparisons are made between this group of patients and the group of 605 alcoholic patients admitted during the two year period immediately preceding the period covered by this report.

The treatment used in this study is our own modification of Steinbach's original method, based on the assumption that the increased spinal fluid pressure in delirium tremens is intimately concerned in its pathogenesis and that the most effective method of attack is thorough cerebral dehydration, both by direct and by indirect means. Our routine treatment is outlined as follows:

- 1 Spinal drainage, from 50 to 75 cc. of fluid
- 2 Intravenous dextrose, from 50 to 100 cc. of 50 per cent solution
- 3 Magnesium sulfate, by mouth from 1 to 2 ounces (30 to 60 cc.) of saturated solution
- 4 Limitation of fluid intake to 1,000 cc. for twenty-hour hours
- 5 Paraldehyde for sedation from 2 to 4 drachms (7.8 to 15 Gm.) by mouth or by rectum

This treatment was given, usually on admission to the hospital, in all cases in which there was actual or impending delirium. In those cases in which there was doubt that a delirium existed or was impending, the treatment was limited to intravenous dextrose and water restriction, and to paraldehyde as needed. In

rare cases there was simple acute intoxication, which was treated by sedative doses of paraldehyde or not at all. Alcohol was not given at any time. The result of this immediate treatment was to abort many cases of early delirium tremens, we believe, and these cases were not classified in the delirium group. Many patients were described by relatives or friends as having been delirious before admission but did not have hallucinations in the hospital. These cases also were excluded from the delirium tremens group.

Our diagnostic criteria were the finding of tremor, apprehensiveness and motor restlessness, and the occurrence of visual or auditory hallucinations while in the hospital. The single application of the routine treatment described usually sufficed. Most patients went to sleep immediately after the treatment, sometimes without a sedative, and awoke after from four to six hours of sound sleep, shaky but able to take liquid nourishment. Paraldehyde was ordinarily repeated once or twice particularly at night, and the patient usually showed a prompt return to a stable physical state and was ready for discharge within four or five days. Occasionally it was necessary to repeat the treatment once or twice, and in each case the spinal fluid pressure was elevated, as it almost invariably was in the first instance. Occasionally there was difficulty in obtaining a sufficient amount of spinal fluid to produce a good therapeutic result, and in these cases the drainage was repeated after an interval of from six to twelve hours. In the second drainage there was always a more copious flow of fluid followed by the usual clinical improvement. This type of reaction calls to mind Quincke's theory (quoted by Steinbach¹¹) that elevation of spinal fluid pressure above certain limits causes distortion and blocking of the drainage channels, which is best relieved by direct removal of the spinal fluid so that a more normal circulation may obtain. Perhaps this is the explanation of the freer flow of spinal fluid on the second drainage when little was obtained on the first. Rarely it was necessary to do three or four spinal drainages to control delirium. In the more severe deliriums it was sometimes necessary to give intravenously from 2 to 4 grams (0.13 to 0.26 Gm.) of phenobarbital sodium to help control excessive motor activity and to induce sleep. In such cases we did not hesitate to give these rather large doses since extremes of motor activity are apt to lead quickly to vasomotor exhaustion and collapse and death and the longer one delays such treatment the less effective it is likely to be.

We have had to make all manner of adjustments in our clinical procedure to fit the needs of the various patients. For example, in pneumonia, in which maintenance of body fluid balance is essential, we did not restrict fluids but instead gave more dextrose and kept up the fluid intake to required levels. Occasionally we had to omit spinal drainage in cases in which the physical stress would have been harmful. We might say also that our spinal drainage was carried out with due consideration of the principles of intracranial hydrodynamics. There was of necessity a relatively rapid reduction of spinal fluid pressure, but we attempted always to remove the fluid without causing too sudden decompression. There were no untoward results of this procedure beyond a rare late spinal puncture headache. Masserman³⁸ states that rapid drainage of spinal fluid actually causes cerebral edema and usually is followed by immediate and severe postpuncture symp-

³⁴ Ebaugh F. G. and Johnson G. S. *The Cyclopedia of Medicine* (Piersoll) Philadelphia F. A. Davis Company.
³⁵ Klemperer E. *Monatschr. f. Psychiat. u. Neurol.* 74: 163-220 (Dec.) 1929. *Psychiat. neurol. Wchnschr.* 34: 117 (March 5) 1934 (March 12) 1932.
³⁶ Steck H. *Schweiz. med. Wchnschr.* 60: 61-84 (Jan. 18) 1936.
³⁷ Henry G. W. *Essentials of Psychiatry* ed. 2 Baltimore Williams & Wilkins Company 1931 pp. 104-106.

³⁸ Masserman J. H. *Cerebrospinal Hydrodynamics*. *Arch. Neurol. & Psychiat.* 32: 523-553 (Sept.) 1934.

toms, but careful study of his data reveals that by the term "rapid drainage" he refers to forcible aspiration of from 35 to 50 cc in from two to three minutes, for purposes of experiment. In our cases there was never any such rapid drainage as this, and there was never an immediate postpuncture syndrome. However, we are forced to assume that the alcoholic patient is relatively tolerant of spinal drainage, since it seems that postpuncture reactions in our treated cases are actually less frequent than in patients who have had lumbar puncture for diagnostic purposes. We have made no careful study of the number of such reactions in our series, but we feel that the incidence is practically negligible.

RESULTS

By far the most significant result of the two year period (1933-1935) of combined cerebral dehydration therapy was the sharp reduction of mortality in the alcoholic group as a whole, and the lowering of the death rate in delirium tremens to an unusually low level. There was a reduction of slightly more than one half in the percentage of alcoholic deaths to total deaths in the Psychiatric Institute as compared with the two year period immediately preceding that covered by this report, a reduction of from 25 per cent to 12.2 per cent. In the delirium tremens group of 157 cases there were six deaths and in each of these cases a serious illness complicated the delirium tremens. The complicating illnesses were intestinal obstruction, hemorrhagic encephalitis, pellagra, coronary thrombosis and, in two cases bronchopneumonia. Thus the mortality rate in delirium tremens was 3.82 per cent. During this period the alcoholic admission rate and the incidence of delirium tremens and other alcoholic psychoses were higher than at any time during the past five years. We offer no direct comparison of the mortality rate in delirium tremens in the two periods because such a comparison is invalidated by differences in diagnostic criteria. However, no such objection can be made to comparing the results in the alcoholic group as a whole in these two periods. In this group we have included all cases in which alcoholism was an important factor, primary or secondary, all the alcoholic psychoses and all medical and surgical conditions complicated by alcoholism.

During the two years covered by this report the number of patients committed to state hospitals because of chronic alcoholic psychoses was reduced to thirty-two as compared with forty-three during the preceding two years and the number of alcoholic patients released against advice was seven as compared with thirteen during the preceding two years. Furthermore, the average duration of hospital residence in the alcoholic group was reduced from 7.94 days in the earlier period to 6.69 days in the period of this study. It is interesting to note that in the total psychiatric hospital population including the alcoholic group there was an increase in the average duration of hospital residence from 12.98 days in the earlier period to 13.70 days in the later period. Thus we find not only a greatly reduced mortality rate in the entire alcoholic group but also a significant reduction in the number of alcoholic patients committed to state hospitals and a definite reduction in the duration of hospital residence of the average alcoholic patient.

We recognize the objection that statistical comparison between two such consecutive periods, even in the same hospital might not be regarded as entirely reliable because of the fact that the prohibition amend-

ment was repealed at approximately the beginning of the second period. However, we know of no better means of showing objectively the value of our therapy, and we may allow the reader to make his own evaluation of our results in the light of the following considerations. Garvin³⁹, Bigelow⁴⁰ and Gregory⁴¹ found that there was a definite change both in the drinking habits of alcoholic patients and the quality of liquor available during the earlier years of prohibition. Garvin and Gregory observed that alcoholism encountered at that time in hospital practice had changed abruptly from the usual chronic alcoholism seen in preprohibition days to a condition of acute poisoning and that the recovery rate was higher and the ordinary features of chronic alcoholism (polyneuritis, cardio-nephritic conditions, alcoholic hallucinosis and paranoid conditions) were much less frequently seen than in the years before prohibition. They attributed this difference chiefly to the change in drinking habits due to the difficulty in obtaining liquor and, in less degree to the poor quality of the liquor consumed and the use of substitute intoxicating beverages. Gregory states that during the few years prior to 1930 liquor had again become easily obtainable and that the drinking habits of the patients and the character of the alcoholic psychoses were returning to the preprohibition type. According to Jolliffe,⁴² prohibition during its last five years was 100 per cent ineffective in reducing alcoholic admissions to Bellevue Hospital. Moreover, Hunt⁴³ and Lythgoe⁴⁴ reported in 1928 that examination of numerous samples of bootleg liquor revealed that these beverages were no more toxic than was the ethyl alcohol they contained. Both of these investigators reported that bonded whisky was in fact more toxic than the illicit variety and attributed this to the increase of secondary toxic bodies incident to the aging process.

These observations tend to support our own opinion that there was very little essential difference between the two periods other than the therapy employed. Certainly the last two years of prohibition saw little real limitation of the use of alcoholic beverages, and the incidence of alcoholism as revealed by our hospital records changed hardly at all. (In the first period there were 605 alcoholic admissions, and in the second there were 615.) Therefore we feel that this possible factor of error is of little importance, particularly in view of the fact that our results also compare very favorably with recorded statistics in other institutions here and abroad. The degree of error due to prohibition certainly was not great enough to account for all the benefits observed. For these reasons, then, we have ventured to offer a direct comparison of results in the two periods as a fair indication of the value of the outlined therapy.

In addition to our statistical studies we might add some personal observations on the results of this therapy. It was unusual to find a patient who did not experience immediate subjective improvement following the institution of cerebral dehydration, and many patients dated the beginning of their recovery from the time of the initial spinal drainage. Because of the dramatic results ordinarily obtained and probably also because of the tolerance of alcoholic patients for spinal

39 Garvin W. C. *Am. J. Psychiat.* 91: 739-754 (Jan.) 1930.
40 Bigelow G. H. *New England J. Med.* 108: 227-228 (March 27) 1928.
41 Gregory M. quoted by Garvin.
42 Jolliffe N. *Science* 82: 396-399 (March 27) 1936.
43 Hunt R. *New England J. Med.* 108: 230-234 (March 27) 1928.
44 Lythgoe H. C. *New England J. Med.* 108: 228-230 (March 27) 1928.

drainage, most of our patients were grateful for this treatment and a number returned on their own initiative for treatment in the stage of impending delirium. We have also found that there is a remarkable difference in the problem of management of these patients in the hospital since the introduction of this treatment. Formerly the delirium tremens patient was often very difficult to handle, even with the facilities of a psychiatric hospital at our disposal, such was the degree of psychomotor restlessness and overactivity encountered. Occasionally the patient continued for days in a state of increasing excitement and overactivity with a total lack of sleep and little nourishment until circulatory collapse ensued, the temperature rose abruptly to a high level, and the patient died from exhaustion. Since the introduction of the cerebral dehydration routine there has not been a single death of this type. Rather, those who died showed the ordinary terminal symptoms of the complicating or coexisting illness. A most gratifying result of cerebral dehydration treatment was the definite limitation of overactivity that enabled us to dispense entirely with the use of any form of physical restraint. The usual mild early delirium tremens patient actually presented no more of a problem than one might expect from the ordinary general hospital patient. These observations have led us to believe that the ordinary case of delirium tremens might easily be treated in the general hospital, provided early and adequate cerebral dehydration was instituted. With such treatment we believe that transfer to a psychiatric hospital would rarely be necessary. Most of our patients come to us as a last resort after ordinary medical treatment has failed to abort or control the delirium, and no doubt the majority of chronic alcoholic patients in an acute episode are successfully treated at home or in the general hospital by expectant and supportive measures. However, if all such patients were treated as having possible early delirium tremens and given intravenous dextrose, water restriction and saline purges when called to the attention of the physician, we are convinced that there would be a marked decrease in the number in whom delirium tremens develops. If spinal drainage were done at the first sign of impending or actual delirium, few cases would overtax the facilities of a general hospital. In delirium tremens as in many other acute medical conditions, treatment need be much less intensive if begun early.

Finally, we should like to emphasize the inadvisability and the futility of the "tapering off" treatment that is so widely used. As already stated, we believe that alcohol has no place in the treatment of alcoholism. Moreover, the psychologic effect of such treatment on the patient is definitely a harmful one. The alcoholic patient is hardly ever at a loss to rationalize his intemperance, but certainly the weight of medical opinion should not be placed at his disposal for this purpose. This point has been repeatedly stressed in the literature and its importance should not be underestimated.

SUMMARY

1 Delirium tremens is a disease of obscure etiology. No satisfactory explanation of its development on a background of chronic alcoholism has yet been advanced. The concept of "abstinence delirium" has been shown to be erroneous and misleading.

2 The pathology of delirium tremens consists essentially of acute cerebral edema and a consequent increased intracranial pressure. The latter persists throughout the duration of the delirium.

3 A rational procedure for the treatment of delirium tremens consists of cerebral dehydration by spinal drainage and by a brief period of water restriction combined with administration of hypertonic solutions intravenously and by mouth.

4 The results of this method have been uniformly good.

5 We have pointed out the value of this method of treatment in the management of the acutely disturbed delirious patient. We have emphasized that the sedative action of spinal drainage in these cases is particularly suited to the uses of a general hospital. We believe that widespread extension of the therapy in the general hospital field would for the most part obviate the need for psychiatric hospital treatment of delirium tremens.

GARLIC BREATH ODOR

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AND

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CINCINNATI

The fetid odor that persists for many hours on the breath of one who has eaten garlic or onions is such a common occurrence that no one has any curiosity about it. Because the odor is so persistent, even though the mouth is clean, the belief has prevailed for many years that the odor comes from the blood by way of the lungs.

The first experimental studies on the disposition of alliaceous essential oils (garlic and onion) in the body were reported in 1930 by Lehmann.¹ He concluded from his studies that during digestion such oils pass into the blood stream, are then aerated from the blood into the lungs, and so pass into the expired air.

The belief in a systemic origin of garlic breath odor is rarely questioned, but recently a report of experiments² from a department of applied physiology was published, stating that such was not the case. The experiments proved, according to the authors, that the odor "arises solely from particles of onion or garlic retained in the structures of the mouth."

Many years ago one of us (M. A. B.) also questioned the assumption that garlic odor comes from the lungs and tested the matter by determining whether or not a garlic breath could occur if garlic was excluded from the mouth. The subject of the experiment was a patient who was suffering from complete stoppage of the esophagus by cancer and who nourished himself through a gastric fistula. The result of these early tests on feeding garlic through a gastric fistula was that the patient did develop a garlic breath every time he "ate" garlic. It seemed quite obvious, therefore, that the odor came in some way from the blood. Since this experiment proved what every one already believed, we did not think enough of our idea to make a report.

Now, however, with newer methods, especially quantitative chemical determinations carried out to the fifth decimal as were recently reported, there is some doubt about the subject which arouses interest. The matter is important as well as interesting because the recent experiments, if correct, have given a way to cleanse the mouth and thereby make the eating of garlic and onions pleasant to every one concerned.

From the Department of Internal Medicine, University of Cincinnati College of Medicine, and the Cincinnati General Hospital.
1. Lehmann, F. A. Untersuchungen über Allium sativum (Knoblauch). Arch. f. exper. Path. 147: 245, 1930.
2. Haggard, H. W., and Greenberg, L. A. Breath Odors from Alliaceous Substances. J. A. M. A. 104: 2169 (June 16) 1935.

We have therefore repeated our experiments on three subjects. Because the chemical methods, recently used to prove that garlic odor does not come from the lungs, were described by the authors as not being specific for onion or garlic, we have resorted to different methods, namely, smelling the breath principally.

REPORT OF EXPERIMENTS

EXPERIMENT 1—W S, who, because of carcinoma of the esophagus, could not swallow anything, including contrast medium for x-ray purposes, was fed garlic soup through a gastrostomy fistula. Lycopodium and methylene blue were mixed with the garlic soup to determine whether or not any of the soup might be regurgitated into the mouth. After three hours and for a period of over twelve hours a strong garlic odor could be detected by all who were asked to smell his breath. Meanwhile saliva and sputum were collected and examined for lycopodium and for methylene blue. None was found. This indicated that the patient had not regurgitated any of his gastric contents, hence the fetid breath could not have come from "particles retained in the structures of the mouth." This experiment was repeated with an infusion of onions and a third time with 0.4 Gm of dipropyl disulfide (garlic oil)³ introduced through a tube lying in the gastric fistula. Each time a fetid odor resulted and no evidence of regurgitation could be found. Seven days after the last test was made the patient died and the pathologist dissected the esophagus for us. He reported that the lumen was obliterated completely and that the membranes were destroyed for 2 inches by a cancer. It was his opinion that the esophagus had been obstructed completely at the time of our experiments.

EXPERIMENT 2—A man, T L, who had had his respiratory tract separated entirely from his pharynx as a result of an operation years before which removed the larynx because of cancer, was given a mixed vegetable salad, including Bermuda onion and garlic. The patient, sent to us by Dr. Iglauer, who performed the operation, breathed comfortably through a tracheotomy fistula and could not in any way exhale his breath through his mouth. If, then, onion or garlic particles might lurk as the residue of his recent meal, such particles could not contaminate his expired air. Three hours and again four hours after eating his salad he was brought to the laboratory and we tested him by smelling his breath. There was a strong and unmistakable odor on the air blown through his tracheotomy wound. This lasted for as long as six hours and could be detected even when the patient kept his mouth firmly closed and an assistant pinched his nose shut. In this circumstance, it was quite obvious that the odor came from the lungs, bronchi or trachea and could not have come from the mouth.

EXPERIMENT 3—This was essentially the same as experiment 2, except that a younger patient was used and the substance given was the essential oil of garlic. R P, a boy, aged 11, was equipped with a tracheal fistula because of stricture of the larynx. There was a small sinus connecting the pharynx with the larynx, but by closing the mouth and pinching the nose it was possible for him to expel the expired air entirely through the fistula and not at all through his mouth or nose. On two occasions a capsule containing 0.4 Gm of dipropyl disulfide (garlic oil) was given and swallowed whole. Three six and twelve hours later the boy was brought to the laboratory where three observers tested his breath by smelling. It was found on each occasion that his breath smelled strongly of garlic even when it was exhaled through the fistula. Breath from the nose and from the mouth gave the same odor but in less degree because the volume of air from this source was very small. Breath from the tracheal fistula in this circumstance came directly from the lungs and could not have been contaminated by mouth odors. A mixed vegetable salad similar to the one used in experiment 2 was given and in two hours and as late as six hours the air expelled through the tracheal opening smelled unmistakably of garlic.

The results of these experiments give strong evidence that garlic and onion odors come from the blood by way of the lungs and do not arise from "particles of onion or garlic retained in the structures of the mouth."

Since the advocates of the latter theory claim that garlic breath odor can be cured immediately and completely by the use of chloramine, a mouthwash containing chlorine, the following study was undertaken to test this hypothesis.

EXPERIMENT 4—Three patients were given garlic in a mixed vegetable salad with their evening meal. Approximately eighteen hours later and after their usual breakfast, a very marked garlic odor could be detected on the breath of all three subjects. Each was then given a 1 per cent solution of a chloramine mouthwash and frequent observations were made on the odor of the breath. For a period of from thirty minutes to one hour the garlic odor was scarcely noticeable and the odor of chloramine was pronounced. However, after one hour and again after the evening meal, a garlic odor could be detected by all who were asked to smell the breath. It is apparent, therefore, that chloramine merely masks the garlic odor temporarily and does not cure it.

COMMENT

In our experiments we have relied on the sense of smell as the method of testing for volatile substances that come from onions and garlic. Since these odors are so commonly recognized, we called to our aid various unbiased witnesses who did not know the nature of the experiment and who, therefore, were not misled in their testing by the "will to believe." These witnesses, who were interns, residents and laboratory technicians, agreed in their replies without significant exception.

Our experiments are all subject to the criticism that no "exact methods" were employed, i. e., no exact chemical assay of the expired air for volatile substances which smell like onions or garlic. On the other hand, the aforementioned experiments, indicating that garlic breath odor comes only from the mouth, are subject to serious criticism in that a nonspecific test was used to prove that a specific substance was absent. This, we claim, is not an "exact method."

In the present experiments we used the best methods possible, namely, smelling the breath, to prove that a fetid substance was present, we also used other very direct methods to prove whence that fetid substance came. Under most circumstances the question of breath odors is complicated by the fact that the breath is exhaled through an opening, the mouth, which is contaminated by the intake of food. In our experiments that complication was surmounted by selecting subjects four in number, who ingested food and breathed through separate openings. This method together with the test of smelling the breath, we believe, is exact and precise and proves with our four examples that garlic and onion odors come from the air passages and not from the food passages. We think these observations are important because they correct misinformation published from a laboratory using exact chemical methods wrongly interpreted. We believe it is important to reopen the question as to whether or not mouth washing will cure garlic breath. We think it will not.

CONCLUSIONS

1. Garlic and onion breath odors come from the blood by way of the lungs and do not arise "solely from particles of onion or garlic retained in the structures about the mouth." This has been demonstrated by experimental studies on four patients who breathed and ingested food through separate openings.

2. Mouth washes merely mask the offending odor and do not cure it.

³ Dipropyl disulfide was furnished through the courtesy of Dr. E. A. Sharp of Pacific Davis & Co.

THE GALVANIC FALLING REACTION
IN PATIENTS WITH VERIFIED
INTRACRANIAL NEOPLASMSEDWIN J BLONDER, MD
AND
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Augustine¹ in 1803 demonstrated that stimulation of the ear region by the galvanic current produced falling. By 1874, as a result of the investigations of Purkinje, Hitzig,² Breuer³ and others, it had been demonstrated that closure of the galvanic circuit through the labyrinth produced anodal falling and nystagmus toward the cathode, and that opening of the circuit caused a reversal of the direction of both nystagmus and falling. Further clinical and experimental observations regarding galvanic stimulation by Neumann,⁴ Barany,⁵ MacKenzie,⁶ Alexander⁷ and a host of other investigators resulted in confusing and controversial evidence regarding the value of galvanic stimulation of the ear. The impression gained by many otologists was that when a small amount of current was used the stimulation was limited to the labyrinth. The contradictory clinical results obtained by galvanic stimulation of the labyrinth has caused its infrequent application and observations of galvanic falling have been submerged by the large number of clinical reports on galvanic nystagmus.

In testing for galvanic falling some investigators had the patient stand upright with the feet together or the heel of one foot in front of the toe of the other. Mygind⁸ used the sitting position. Wodak and Fisher⁹ had their patients stand upright with the feet together, arms horizontally forward and eyes closed. The inconsistent results obtained in the clinical application of the galvanic falling reaction have been due to (1) voluntary interference by the patient, (2) a current of large amounts which produced a spread reaction, and (3) pain, which besides being disagreeable produced additional movements to those induced by vestibular stimulation.

One of us⁸ recently described a clinical application of the galvanic falling reaction by the use of a balance board, which proved to be as accurate as the caloric test and produced consistent results. The balance board consists of a platform 16 inches wide, 21 inches long and three-fourths inch thick, under which was a fulcrum 3½ inches wide and seven-eighths inch high. The patient was placed in the normal standing position with the eyes closed, on the platform of the balance board, which was arranged so that a normal patient could maintain his equilibrium without effort. Any change in the patient's center of gravity would immediately be

registered by a lowering of one side of the balance board. Circular moist electrodes, connected to the galvanic machine, were used. For unilateral stimulation of the labyrinth, one electrode was placed on the mastoid and the other on the sternum.

One hundred and fifty-four individuals, including 100 normal persons, were tested for the galvanic falling reaction with the use of this balance board. Closure of the circuit through the labyrinth with from 0.5 to 5 milliamperes, of current resulted in lowering of the platform toward the anodal side with each normal patient. There were no doubtful reactions. The falling obtained was present without a visible nystagmus (convex lenses were not used) and generally without or occasionally with only a slight vertigo, which when present was not rotatory in character. The patients felt as though they were pushed or pulled over. The fifty-four pathologic subjects included nineteen patients with intracranial neoplasms verified at operation by one of us, five patients who are under observation for a suspected intracranial neoplasm, twelve with idiopathic epilepsy, twelve with cochlear defects, six of whom had previous mastoidectomies and six patients with one of the following conditions: labyrinthine fistula, a recently recovered serous labyrinthitis, myasthenia gravis, migraine otitis externa and an acute catarrhal otitis media. Twelve labyrinths in this group of pathologic subjects inactive to caloric stimulation failed to react to galvanic falling when from 10 to 20 milliamperes of current was used. More than 5 milliamperes of current produced pain of varying degrees. In patients who had only one inactive labyrinth the following reactions took place. When the anodal or cathodal electrode was placed on the mastoid with the dead labyrinth, and the other electrode was placed on the sternum, no falling took place with from 10 to 20 milliamperes of current. When the anodal electrode was placed on the mastoid of the active labyrinth, and the cathode was placed on the sternum, closure of the circuit with a small amount of current caused lowering of the platform on the side of the anodal electrode. With the cathode on the intact side and the anode placed on the sternum, falling toward the diseased side took place on closure of the galvanic circuit. These reactions in patients with unilateral dead labyrinth indicated that a single labyrinth can be stimulated when one electrode is placed on the mastoid and the other on the sternum, also that each labyrinth may be negatively or positively stimulated by the galvanic current. The following conditions were present among those patients with inactive labyrinths to caloric stimulation and galvanic falling: basilar skull fracture through the labyrinth, concussion of the internal ear, inactive inner ear following epidemic meningitis, inactive labyrinth following a chronic suppurative otitis media, acoustic neuroma, cerebellopontile angle tumor, and one patient with a right temporal lobe tumor, whose left dead labyrinth was not associated with the tumor.

The nineteen patients with intracranial neoplasms verified at operation by one of us (L. D.) included five with cerebellar astrocytomas, two with acoustic neuromas, four with frontotemporal lobe tumors, one with a frontal lobe tumor, three with parietal lobe tumors, one with a postoperative cerebellopontile angle tumor, which had involved the eighth nerve and one patient with a glioma involving the brain stem. Of these nineteen patients, all but four reacted to galvanic falling. Patients with supratentorial lesions required

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¹ Cited by Hitzig, E. Ueber die beim Galvanisiren des Kopfes entstehenden Störungen der Muskelnervation und der Vorstellung vom Verhalten und Raume Gehirn 180 1874.

² Breuer, J. Neue Versuche an den Ohrbogengängen. Arch. f. d. ges. Physiol. 44: 135 1889.

³ Barany, Robert. Physiologie und Pathologie des Bogengang Apparats beim Menschen 1907, p. 34.

⁴ MacKenzie, G. W. Klinische Studien über die Funktionsprüfung des Labyrinths mittelst galvanischen Stromes. Arch. f. Ohrenh. 77: 1 1908.

⁵ Alexander, G. and Kreidl, A. Ueber die Beziehungen der galvanischen Reaction zur Angeborenen und erworbenen Taubstummheit. Arch. f. d. ges. Physiol. 80: 475 1902.

⁶ Mygind, S. H. Vestibular Examinations in Normal Individuals. Acta oto-laryng. 19: 527, 1924.

⁷ Wodak, E. and Fisher, M. H. Die Vestibulären Körperreflexe und die "Fall Reaction." Arch. f. d. ges. Physiol. 202: 525 1924.

⁸ Blonder, E. J. Galvanic Falling in Clinical Use, read before the Chicago Neurological Society in March 1936. Arch. Neurol. & Psychiat., to be published.

less galvanic current than those having an infratentorial lesion, in spite of the fact that those with infratentorial lesions were more ataxic. The average amount of current required to cause patients with supratentorial lesions to fall was 13 milliamperes and 28 milliamperes for patients with infratentorial tumors. Four patients with intracranial tumors, including two with neurinomas of the eighth nerve one with an angle tumor and one patient with a temporal lobe tumor on the side opposite to the dead labyrinth failed to react to falling on stimulation of one ear with the galvanic current of from 10 to 15 milliamperes and also failed to produce nystagmus and past-pointing on caloric stimulation.

To confirm our clinical evidence that galvanic falling performed with the balance board was due to stimulation of that portion of the peripheral apparatus concerned with posture and not due to brain stem stimulation, and that the galvanic falling was independent of nystagmus, two cats were decerebrated by the anemic method described by Pollock and Davis.⁹ The experiments of Magnus and De Kleyn,¹⁰ Pollock and Davis,¹¹ and others demonstrated that the decerebrated cat is an excellent experimental animal with which to test labyrinthine postural reactions because the complicating and inhibitory effects of the higher centers are released. The cat decerebrated above the nucleus of the seventh nerve was placed in the position of maximum extensor tonus, namely, on his back with the nose 45 degrees above the horizontal. The neck reflexes were controlled by fixing the cat's head to the examining table. One electrode was clamped in the ventral midline of the neck. The second electrode was inserted in the auditory bulb in the roof of the mouth. The electrodes were connected to the same galvanic machine that we had used to test galvanic falling clinically. On closure of the galvanic circuit with from 1 to 2 milliamperes of current, extensor tonus diminished in the forelimb toward the anodal side, and simultaneously the extensor tonus in the opposite forelimb increased. Repeated tests with the electrode in either auditory bulb revealed the same phenomena of antagonistic increase and reduction in the extensor tonus in the forelimbs. This experiment is analogous to our clinical test in that the balance board immediately registers the change of tonus in the limbs of the patient stimulated with galvanic current. Our decerebrated animal failed to show nystagmus on stimulation of the ear with galvanic current, with ice water or by turning, because the pathways concerned with nystagmus were destroyed. Since it is almost generally agreed by present-day physiologists that the otolithic apparatus regulates posture, it may be assumed that the galvanic falling reaction is due to otolithic stimulation.

To rule out stimulation of the brain stem by galvanic current as we used it both eighth nerves were cut at the exit of the internal meatus. Ten days later this cat was decerebrated. We subjected this decerebrated cat with section of both eighth nerves to the same galvanic tests as were performed on the first animal. With from 15 to 20 milliamperes of galvanic current no change in extensor tonus occurred on closure of the circuit. When a stronger current was used the current spread throughout the entire animal.

CONCLUSIONS

1 The galvanic falling test with the use of the balance board is an accurate, simple clinical test for determining the integrity of the vestibular postural arc.

2 A series of 154 patients tested for galvanic falling with the use of the balance board indicated that individuals with peripheral labyrinthine defects fail to react to the test. A group of patients with supratentorial tumors required on an average less galvanic current to produce falling than patients with infratentorial tumors.

3 Experimental evidence obtained on decerebrated cats indicated that the galvanic current, as used with the balance board to produce falling, is not localized to the brain stem but has a peripheral action.

4 The galvanic falling reaction appears to be a test for otolithic labyrinthine function, which we hope with the accumulation of a large series of patients with defective vestibular arcs will lead us to isolated lesions in the vestibular postural pathway.

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VESTIBULAR (BARÁNY) TESTS IN THE DIAGNOSIS AND LOCALIZATION OF INTRACRANIAL LESIONS

A REPORT OF SIXTEEN PROVED CASES

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Recently one of us¹ presented a review of the practical application of the vestibular tests in otology. We present at this time a group of sixteen cases in which diagnoses of intracranial lesions were made and proved at operation or autopsy. These cases illustrate the added usefulness of these tests in the field of neurology.

Our primary interest in the vestibular studies has been to determine for ourselves, if possible, the accuracy of these observations and the extent of their usefulness in this field. Our examinations, therefore, have been independent of all other data in the study of these cases so that we might be in a position to evaluate them on the merits of these vestibular observations.

In presenting this report it is not our aim to overemphasize the importance of the Barany examination nor is it our thought to minimize the value of any other procedure in the study of these cases. These vestibular tests constitute but one of the links in the chain of studies before a case is submitted for surgical intervention, for there are occasions when all the available information is inadequate in reaching a diagnosis.

It is important to recall that the classic cardinal symptoms of increased intracranial pressure are lacking in many of these patients. Even papilledema considered by many observers the most valuable pressure sign has been shown² to be absent in from 15 to 30 per cent of brain tumors. In a recent report³ of twelve

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¹ Shuster, B. H. Section of Otolaryngology of the College of Physicians, Philadelphia, March 20, 1935.

² Ornato, Michael. General Criteria for the Diagnosis of Brain Tumors. General Symptomatology. J. A. M. A. 99: 2012-2019 (Dec. 1918).

³ Bennett, A. L., and Keenan, J. J. Cerebral Neoplasms. The Diagnosis in the Absence of Generalized Intracranial Pressure. J. A. M. A. 104: 16-17 (Jan. 3) 1933.

⁹ Pollock, L. J., and Davis, Loyal. Studies in Decerebration. A Method of Decerebration. Arch. Neurol. & Psychiat. 10: 391 (Oct.) 1923.

¹⁰ Magnus, R. Körperstellung. Berlin, Julius Springer, 1924.

¹¹ Davis, Loyal, and Pollock, L. J. Studies in Decerebration. The Labyrinth. Arch. Neurol. & Psychiat. 16: 555 (Nov.) 1926.

verified cases of cerebral neoplasm, studied at the University of Nebraska College of Medicine generalized intracranial hypertension was absent in all. Although it is emphasized in that report that more patients die of unrecognized brain tumors than the literature would indicate, and there is a plea for earlier diagnosis of brain tumors by the more general use of the various diagnostic measures, it is noteworthy that no reference is made to the vestibular tests either in their case studies or in the discussions.

We hope to illustrate in this short series of cases the manner in which the vestibular tests may serve to confirm the data obtained by other studies, how they may supply information which gives direction to otherwise apparently conflicting observations, and occasions when they may be the only study to point clearly to a solution when all other examinations give vague, inconclusive or negative results.

It must also be stated, however, that cases are encountered particularly in the supratentorium, in which the vestibular changes are insufficient to justify a diagnosis of a definite brain lesion and yet such a lesion is found at operation, the diagnosis having been made by other means. Even under these circumstances, however, the examination may still be of value in excluding certain well defined areas of the brain as possible sites of lesion, and in this way assist in localization by exclusion.

The cases of brain tumor, which comprise twelve of this series of sixteen will be considered first, the others, four cases of brain abscess, will be taken up as a group subsequently.

Of the patients with brain tumor, four were male and eight were female, all were white. The youngest was 3 years of age, the oldest 54, five were children 15 years of age or under. In their symptomatology, impairment of vision occurred in seven cases. Disturbances in olfaction occurred twice. Headache was a complaint in eight cases. Vomiting occurred six times. Unilateral deafness was present in three, unilateral tinnitus and bilateral tinnitus each occurred twice. Vertigo was a chief complaint in six cases, and disturbance of gait occurred in six. Speech disturbances occurred in two. In one instance, the youngest patient in this group, there were convulsions, and one case presented a history of loss of consciousness.

In three cases symptoms had existed for eight weeks or less, in only five of this group was there a history of symptoms dating back more than six months. One case presented symptoms of ten years' duration and in another they dated back fifteen years.

All these patients were studied between September 1933 and November 1935. Ten of them in the service of Dr. Patten and his colleagues at the Graduate Hospital, came to Dr. Grant's service for operation, of the other two, examined at the Jewish Hospital, one came to Dr. Fay's service for operation and the other subsequently transferred to the University Hospital, was operated on by Dr. Frazier.

REPORT OF CASES⁴

CASE 1.—D. K., a girl aged 12, was admitted to the Graduate Hospital, service of Dr. Peter March 26, 1934. Her chief complaint was impaired vision. She began to lose her vision especially in the right eye about two months previously, when it was noted that she bumped into chairs and other objects.

⁴ We wish to express our appreciation to Drs. Grant, Patten, Yaskin, Alpers and Leavitt of the Graduate Hospital for the opportunity they have afforded us to study their cases. It is only through the cooperation of such neurologists who approach the subject with an open mind and encourage the neuro-otologist in the pursuit of this work that substantial progress can be made in this field.

There had been some mild frontal headache the past few days but no other complaints.

The neurologic report was essentially negative and concluded "All tests for cerebellar disturbance negative" (Dr. Drayton). Ear, nose and throat examination (Dr. Dunn) revealed diseased tonsils and the presence of adenoid tissue.

Eye studies by Dr. Spaeth March 27 showed edema of the disks and engorgement of the vessels and the visual fields showed central scotomas, ocular movements were normal. On April 3 optic nerve atrophy was reported, more marked on the right side.

Roentgen study showed evidence of increased intracranial pressure and concluded "There is possibility of a lesion in the region of the sella turcica but this is not at all positive." All laboratory examinations, including the Wassermann and cerebrospinal fluid, were negative.

Bárány examination was done March 30. The vestibular examination indicated the presence of an intracranial lesion. Localizing signs pointed to the posterior fossa in the midline with pressure on the brain stem from behind.

The vestibular signs of intracranial lesion in this case were (1) perverted responses from the vertical canals on both sides (horizontal instead of rotary nystagmus), (2) marked disproportion between after-turning nystagmus and vertigo, and (3) occasional spontaneous vertical nystagmus on looking up. The complete absence of sensitivity to the tests with the eighth nerves intact in the presence of the foregoing observations pointed to the posterior fossa as the site of the lesion. The presence of good hearing and responses from both labyrinths suggested a midline localization. That there was pressure against the brain stem was suggested by the spontaneous vertical nystagmus, and the markedly hyperactive response and the exaggerated amplitude of nystagmus from all semicircular canals.

She came to operation April 9. Dr. Grant has summarized so beautifully his opinions and the operative observations in this case that we quote in some detail from his report. This girl was a very surprising case. As far as we could see either from her history or from other indications there was absolutely no evidence of cerebellar disease or increased intracranial pressure. Her chief complaint was unexplainable loss of vision. There were apparently no headaches or vomiting. Her neurologic examination was certainly negative on a number of occasions.

Dr. Spaeth reported that she had a postpapillitic atrophy without measurable choking of the disks. The roentgenogram showed very slight separation of the sutures and slight convolutional atrophy anteriorly. I thought she probably had toxic amblyopia from bad tonsils.

We tried three or four days ago to make an encephalogram but the results had been unsuccessful from failure of the air to reach the subarachnoid spaces. Owing to her marked loss of vision I thought we had better determine definitely whether or not she had a brain tumor. A ventriculogram performed in the usual manner showed dilatation of the lateral and third ventricles with block apparently at the outlet of the fourth ventricle. Dr. Duane and I were then of the opinion that she probably had a chronic arachnoiditis blocking the foramen of Luschka and Magendie.

The usual cross-bow suboccipital craniectomy was performed without difficulty and with practically no bleeding. There was considerable fluid and air in the basilar cisternae but the arachnoid was not thickened. The dura was opened over the upper cervical vertebrae, as was the arachnoid. The cerebellar tonsils were then separated and to my great surprise, the nose of a tumor was seen presenting from the fourth ventricle. An incision was made in the vermis and a soft infiltrating tumor occupying the roof of the fourth ventricle and extending down onto its side wall was then exposed.

The operation consisted of suboccipital craniectomy with removal of a midline cerebellar tumor.

In this case the vestibular examination provided the only positive evidence of a brain lesion and correctly localized it in the midline of the cerebellum. It is noteworthy that encephalography and ventriculography were inadequate here either in localizing the lesion or in suggesting the diagnosis. This to our mind is of some importance because of the tendency of some

neurosurgeons⁵ to discount the value of the vestibular tests on the basis that encephalography and ventriculography although attended by greater risk are more helpful than the Barany tests in making a diagnosis

CASE 2—M S, a girl, aged 15 years, was admitted to Dr Patten's service July 6 1935. The chief complaints were headache and vomiting, and a tendency to stagger to either side on walking. There was also a slowing and slurring of words in her speech. There were no eye symptoms and her hearing was normal.

Neurologic examination recorded an ataxic gait, internal strabismus on the left side and nystagmus on looking left. There was some difficulty in articulation. Finger to nose and heel to knee tests were negative. The Romberg sign was positive.

Eye examination (Dr Shoemaker) July 8 showed the left pupil larger than the right and the disks swollen about 3 diopters. Visual acuity was normal.

X-ray examination showed deformity of the sella turcica and evidence of increased intracranial pressure 'such as occurs from a ventricular block the result of a posterior fossa tumor'.

Vestibular examination on the same day indicated a 'midline cerebellar lesion exerting pressure on the brain stem'. The presence of an intracranial lesion was indicated by (1) spontaneous vertical nystagmus (2) perversion from both sets of vertical canals to the caloric test (i.e. horizontal instead of rotary nystagmus), (3) exaggerated nystagmus from both horizontal canals to turning and (4) all nystagmus responses of very large amplitude. The absence of sensitivity to all tests and very poor vertigo and past pointing localized the lesion in the posterior fossa and good hearing and the presence of vestibular responses on both sides placed it in the midline. The spontaneous vertical nystagmus and the exaggerated nystagmus from all semicircular canals suggested pressure on the brain stem.

A suboccipital craniectomy July 13 revealed a cystic tumor arising in the floor and right lateral wall of the fourth ventricle, evidently making pressure on the cerebellum posteriorly. The pathologic report was astrocytoma. The patient was discharged from the hospital July 31 markedly improved.

The significant evidence in this case from the standpoint of localization was contributed by the roentgen and vestibular examinations.

CASE 3—C B, a girl aged 7 was admitted to Dr Grant's service Nov 7 1935. The chief complaints were vomiting, staggering and, at times, impaired vision. She was apparently in good health until three months preceding this admission when projectile vomiting occurred.

Examination of the cranial nerves was negative except for choked disks and lateral nystagmus to right and left. Hearing was normal. There was a tendency to deviate to the left in walking. Cerebellar signs were vague.

Vision in each eye was 6/12—2. The fundus in the right eye was elevated 5 diopters in the left 6. The visual fields showed no gross defects (Dr Spaeth).

Roentgen examination of the skull showed marked widening of all the cranial sutures of the vault. It concluded that there was increased intracranial pressure, probably due to a posterior fossa tumor.

Laboratory studies including examination of the cerebrospinal fluid were negative.

Vestibular examination November 8 limited to the caloric test revealed the following evidences of an intracranial lesion: (1) spontaneous vertical nystagmus on looking up (2) delayed response from the right vertical canals with subsequent perverted and inverted nystagmus (i.e. horizontal to right instead of rotary to left) (3) no response from the left vertical canals and (4) exaggerated and prolonged responses from the horizontal canal on each side. The absence of sensitivity to the tests and the apparent absence of vertigo in the presence of the foregoing observations pointed to the posterior fossa as the seat of lesion, the presence of good hearing and responses from both labyrinths suggested a midline localization. That there was pressure against the brain stem was suggested by the spontaneous vertical nystagmus, the inversion from the right vertical canals and the exaggerated responses from the

horizontal canals. The vestibular diagnosis, therefore, was 'a mass lesion in the posterior fossa, midline, influencing the brain stem by pressure'.

A suboccipital craniectomy was done November 16. Dr Grant reported that the cerebellar lobes were symmetrical, the vermis was only slightly widened. However, when the cerebellar tonsils were separated, the nose of a purplish apparently unencapsulated tumor presented itself at the lower end of the fourth ventricle. The operation consisted of partial removal of a midline cerebellar tumor.

Here again a case in which there was a midline posterior fossa tumor manifested characteristic vestibular appearances. In this case, as in the two previous cases of a similar nature in which midline posterior fossa lesions involved the brain stem at the fourth ventricle, there was a persistent absence of the rotary type of nystagmus that is normally elicited on stimulating the vertical canals. In all these instances the responses from the vertical canals were perverted, i.e. they were horizontal instead of rotary.

CASE 4—S G, a girl aged 6 years, was admitted to the Jewish Hospital, in the service of Dr Schless Aug 21 1934. The chief complaints, of six weeks' duration, were morning vomiting (not projectile) and pain in the back of the head. Two weeks preceding this admission the tonsils and adenoids were removed in another city and no vomiting occurred during the four day stay in that hospital.

Neurologic examination showed the cranial nerves to be normal except for a slight vertical and horizontal nystagmus. There was some ankle clonus on the right side and occasionally on the left. Her gait showed a tendency to veer to the left. The retinal veins were markedly dilated and there was some blurring of the left disk.

X-ray examination of the skull on August 28 was entirely negative.

A Barany study was made on the same date. The vestibular examination pointed to a mass lesion of the posterior fossa near the midline involving the vermis and influencing the brain stem. The vestibular pathways on the left appeared to be more markedly affected at this time than those on the right.

The opinion of intracranial lesion was based on (1) the presence of spontaneous nystagmus, oblique on looking up and rotary and occasionally vertical on looking down (2) spontaneous falling back and to right irrespective of the position of the head and spontaneous past pointing to the right with the left hand and (3) perverted nystagmus from all canals during the caloric test (i.e. horizontal from the vertical canals and oblique upward from the horizontal canals). Its location in the posterior fossa was indicated by the complete absence of shock reactions in the presence of these conditions. The poor pelvic girdle movements and the spontaneous phenomena suggested involvement of the vermis and influence on the brain stem. Abnormal vestibular responses on both sides and good hearing in both ears suggested that the lesion was near the midline, but the very poor response from the left vertical canal to doubling and the hyperactive and occasional perverted nystagmus (i.e., rotary instead of horizontal) on turning to the right—thus testing particularly the left horizontal canal—caused us to suspect that the vestibular pathways on the left side were more markedly affected than those on the right.

The neurosurgical service of Dr Temple Fay advised surgical intervention. The patient refused operation and left the hospital against the advice of the attending physicians.

The child was later found to have been admitted to the University Hospital in the service of Dr Frazier Aug 30 1934.

The various studies at this time duplicated closely the conclusions previously recorded. Neurologic tests for cerebellar dysfunction September 30 were essentially negative.

Operation was finally decided on and on October 5 a suboccipital craniectomy was done by Dr Frazier. The following notes are extracted from Dr Frazier's report: 'Attempted ventriculogram was a failure because the ventricles were not dilated. On passing an exploratory cannula directly backward through the left hemisphere we came to a point of increased resistance 3 or 4 cm beneath the surface. This we interpreted as a solid tumor of the left hemisphere.'

Operative diagnosis: tumor of left cerebellar hemisphere.

⁵ Sachs, Ernest. The Diagnosis and Treatment of Brain Tumors. St. Louis: C. V. Mosby Company, 1931, 134.

The earliest definite evidence of the presence of an intracranial mass lesion and its location in this case was provided by the vestibular examination. Here too it is noteworthy that ventriculography was impossible.

In commenting on this group of cases, it seems to us not inappropriate to suggest that a study which can be entirely objective in its nature, as illustrated in the examination of these four children, which may be conducted by examiners untrained in neurology, and which presents possibilities of usefulness such as are indicated in these case reports, merits a place in the routine examination of these patients.

CASE 5—C G, aged 54, under the care of Dr Leavitt, admitted to the Graduate Hospital Jan. 25 1935 had diplopia and blurred vision for two months, occipital headache, vomiting and weakness of the left side of the face for about six months, and progressive deafness and tinnitus in the right ear and unsteadiness in gait dating back two years. There had been a loss of 35 pounds (16 Kg) during the past year.

The right disk showed an elevation of 15 diopters with engorgement of the veins. There was bilateral concentric contraction in the fields, more marked in the right eye. Neurologic examination showed ataxia in the finger to nose test on the right, a tendency to fall to the right and some weakness of the lower left side of the face. The right ear was deaf.

Vestibular examination, Jan 26, 1935, revealed a condition typical of a cerebellopontile angle tumor on the right side, i e, a nonresponsive right ear with deafness on this side, and no response from the left vertical canals with perverted nystagmus from the left horizontal canal (mixed horizontal and oblique), there were no shock reactions. Spontaneous vertical nystagmus occurred on looking up.

X-ray examination indicated a large shadow in the region of the right cerebellopontile angle.

Operation January 28 revealed a semicystic tumor, containing about 15 cc. of yellowish fluid, which extended from about the level of the vagus up into the cerebellopontile angle on the right side. This was separated from the adjacent nerves and the brain stem and removed.

Here the vestibular observations dovetailed accurately with the clinical, neurologic and roentgen observations in the diagnosis of a cerebellopontile angle tumor on the right side.

CASE 6—L R, a woman aged 26, admitted Jan 3, 1935, complained of pain in the back of her head. There was a history of recurring headaches and vertigo for two years. Hearing in the left ear had been impaired since the birth of a child two years previously, and there had been tinnitus in both ears for several months.

Examination at the Orthopedic Hospital, just prior to this admission, revealed choking of both disks of 3 to 4 diopters, a decreased left corneal reflex, and some weakness of the right lower region of the face. There was no ataxia and her gait was normal. Laboratory studies were negative.

At the Graduate Hospital the right disk was found to be swollen 4 diopters and the left 5. The blind spots in the visual fields were markedly enlarged. Vision in each eye was 6/12. Further examination revealed weakness of the left external rectus and horizontal nystagmus on looking to right and left. X-ray study, showing an erosion of the dorsum sellae and the clinoid processes bent forward, was suggestive of an enlarged or pulsating third ventricle such as might be caused by a posterior fossa tumor.

Analysis of this case at a neurologic conference held January 4 concluded that a cerebellar type of lesion was present but that a more definite localization was not feasible at that time.

Vestibular examination on the same day revealed definite characteristics of a cerebellopontile angle lesion on the left side. The left ear was nonresponsive as to both hearing and vestibular function; there was perverted nystagmus from the right horizontal canal (i e, oblique up and to left instead of horizontal); past pointing and vertigo responses were poor and sensitivity to the tests was absent.

Operation by Dr Grant, January 10, revealed an encapsulated tumor about half the size of a hen's egg involving the left cerebellopontile angle.

'Neurologic examinations in this case pointed to "a cerebellar type of lesion," and roentgen signs were "such as might be caused by a posterior fossa tumor.' The precise localization of a lesion in the left cerebellopontile angle, reported in the vestibular examination was confirmed at operation.

CASE 7—H G, a man, aged 25, admitted Dec. 30 1933, complained chiefly of blindness; there was only light perception. Momentary attacks of dim vision first occurred six months previously. A refraction was done but the vision gradually declined and vertigo developed. Occasional occipital and right temporal headaches occurred during the past month. He had been deaf on the left side since 1931. There was no history of tinnitus, otorrhea or vomiting.

Studies at the Wills Hospital, prior to this admission, suggested a pituitary tumor. Neurologic examination at the Graduate Hospital (Dr Yaskin) concluded that although an angle tumor on the left side was to be considered a definite diagnosis could not be made at this time. Some light perception in the nasal part of the right eye and in the superior temporal part of the left suggested a high degree of right homonymous hemianopia, both disks were raised from 5 to 6 diopters.

X-Ray examination revealed that the deformity was not that commonly seen in the posterior fossa tumors. While this possibility could not be excluded the roentgen signs would be more in favor of a cerebral lesion.

Vestibular examination December 26 pointed to a lesion in the occipital lobe on the left side, which was influencing by pressure the structures below the tentorium; there was no response to the caloric test from either vertical or horizontal canals on the left side and hearing in this ear was almost nil but there was some preservation of the higher tones. Responses on the right side were normal in character but hyperactive with nystagmus of very wide amplitude. Past pointing after rotation was exaggerated and prolonged. There was complete absence of sensitivity to all tests. Spontaneous horizontal nystagmus was present to right and left and a questionable vertical nystagmus occurred on looking up.

Suboccipital craniectomy, December 30, exposed a large tumor behind the cerebellar lobes involving the brain stem and extending forward toward the angle on the left side. But part of the growth could be removed and its complete extent apparently, could not be determined at this time.

Roentgen examinations on two occasions pointed to a cerebral lesion. The visual fields suggested a high degree of right homonymous hemianopia. Neurologic examination concluded that "a definite diagnosis could not be given," although an angle tumor on the left side was to be considered.

Vestibular examination pointed to an occipital lobe lesion on the left side influencing by pressure the structures below the tentorium. This case showed some vestibular characteristics of an angle lesion (i e, non-responsive vestibular function and almost complete loss of hearing on the involved side), but there were other signs which seemed to challenge this diagnosis, i e, markedly exaggerated past pointing (which is usually not present in posterior fossa lesions) and normal or even hyperactive responses from the internal ear on the opposite side.

Operation exposed a large tumor behind the cerebellar lobes and extending forward toward the left angle. Only part of the growth could be removed and its complete extent apparently could not be determined at this time.

CASE 8—E K, a woman, aged 43, was admitted to Dr Grant's service Nov 26, 1934. The chief complaint was blindness for a year and a half. There was history of gradual loss of the sense of smell six years previously and frontal and right temporal headache for ten years.

Eye studies (Dr Spaeth) revealed bilateral primary optic nerve atrophy.

X-ray study of the skull pointed to a supratentorial lesion on the right side.

Only the caloric test was requested in this case. The conclusion was as follows: "There is definite vestibular evidence of an intracranial lesion supratentorial, anterior to the brain stem, and close to the base of the brain. Further localization is near the midline, but inclined more to the left side." Perversion and inversion of nystagmus from the right vertical canals (i. e., horizontal to right instead of rotary to left) and perverted responses from those on the left side (i. e., horizontal instead of rotary) were definite vestibular signs of an intracranial lesion in this case. Its site was the supratentorium, because the presence of very marked shock reactions eliminated the posterior fossa. Perversion of nystagmus from the vertical canals of both sides pointed to a midline position, but the added inversion of responses from the right vertical canals—in a supratentorial lesion—suggested that the lesion was more inclined to the left. Exaggerated and prolonged responses from all semicircular canals and the inverted response suggested a location close to the base of the brain and influencing the brain stem.

She came to operation December 6. Dr. Grant reported that "a probe introduced through the cortex of the left frontal lobe encountered a hard tumor mass at a depth of about 2 cm. Removal of the cortex in this region revealed a tremendous meningioma lying in the midline, involving the olfactory groove, and extending upward from the base of the brain." An olfactory groove meningioma lying on both sides of the falx was removed.

This patient subsequently developed an edema of the brain, which resulted fatally.

It is of some interest to speculate whether vestibular studies early in the progress of this case might not have suggested the lesion and thereby enhanced the possibility of successful surgical intervention.

CASE 9—C. B., a man, aged 43, admitted to Dr. Grant's service Feb. 7, 1934, had occasional headaches and vertigo for fifteen years but worked as a street car conductor without interruption until five months before this admission, when his eyesight began to fail and the headaches became more severe and more constant. Recently he had noticed peculiar odors and tastes which he could not explain, had become weak, and had lost considerable weight.

Neurologic examination by Dr. Alpers threw suspicion on a tumor in the left frontotemporal region. Examination of the eyes revealed a right homonymous hemianopia and an elevation of 2 diopters in both nerve heads.

X-ray studies at the Graduate Hospital, and also at the Orthopedic Hospital prior to this admission, were entirely negative.

Vestibular study, limited to the caloric test, suggested a left sided supratentorial lesion. There was perversion of responses from the vertical canals on the right side (i. e., horizontal instead of rotary) and a normally responding left ear, the posterior fossa and angles were eliminated by the presence of good hearing in both ears and the fact that responses passed through both internal ears and eighth nerves, sensitivity to this test was slight and there were no abnormal spontaneous manifestations.

As the patient was becoming stuporous and the temperature, pulse and respiration were rapidly mounting, operation was decided on. His condition permitted only decompression through a left temporoparietal craniotomy. The case subsequently came to autopsy and revealed a large glioma occupying the left temporoparieto-occipital region.

In the repeated absence of x-ray evidence of a brain lesion the vestibular observations in this case confirmed the neurologic and eye examinations in the diagnosis of a supratentorial lesion on the left side.

CASE 10—J. G., a man, aged 29, admitted to Dr. Grant's service Jan. 16, 1934, first noticed blurring of vision four months before. About ten days later severe frontal headache developed and 'buzzing' started in his ears especially in the left ear. He then complained of attacks of dizziness and there was a tendency to fall to the left. There was difficulty at times in finding words with which to express himself.

Neurologic examination was inconclusive, suggesting 'either a right supratentorial lesion or a left infratentorial lesion.' Eye studies (Dr. Spaeth) revealed a vision acuity of 1/60 in

both eyes and a papilledema of 3 diopters. There was a right homonymous hemianopia, confirmed by reexamination, which pointed to a left sided lesion. The cerebrospinal fluid was under 20 mm. of mercury pressure and showed an increase in globulin.

A partial vestibular examination in this patient pointed to a supratentorial lesion on the right side. The presence of good hearing and, after stimulation, response from both horizontal canals, vertigo, normal past pointing and sensitivity excluded as possible sites of lesion the posterior fossa, cerebellopontile angles, eighth nerves and both labyrinths. Very marked exaggeration of the nystagmus (fifty-three seconds) with disproportionate diminution of vertigo from the left horizontal canal (on turning to the right) tended to localize it on the right side.

X-ray examination and a ventriculogram indicated a large mass lesion in the right temporoparietal region.

Operation January 20 disclosed a large glioma lying inside the right lateral ventricle and extending forward under the motor cortex.

The results of the neurologic examination in this case did not permit of a definite diagnosis, while the ophthalmologic studies pointed to a left sided lesion. Vestibular manifestations pointing to a right sided supratentorial lesion, were supported by the x-ray examination and ventriculogram and were confirmed at operation.

CASE 11—E. T., a girl, aged 3 years, was admitted to the Jewish Hospital Aug. 25, 1933, with convulsions. She was apparently in good health until eight weeks before this time, when there was a history of a cold and a convulsion occurred four hours later the child apparently lost the use of the right arm and leg. She was admitted to the Mary Drexel Home where the symptoms soon disappeared. Spinal fluid, Wassermann, blood and urine, and eye examinations were negative, and she was returned home in four days. During the following week there were momentary twitchings of the right side of the mouth and face. Gastro-intestinal disturbances then occurred with vomiting (not projectile) and moderate fever, and the child was admitted to the hospital.

The usual studies, including the neurologic, were essentially negative, except that the eyegrounds showed an optic neuritis and a possible choking of both disks. The cerebrospinal fluid was normal and under 6 mm. of mercury pressure.

August 30 the caloric test, by mass douching, showed delayed responses from the vertical canals of each side with very poor responses on the left. This was strongly suggestive of increased intracranial pressure but of little localizing value, and it was suggested that the test be repeated in a few days. The child appeared comfortable at this time and seemed to act normally for a child of her age. Before the test could be repeated, however, the vomiting recurred, she became drowsy, and a slight right hemiparesis developed.

September 2 an emergency decompression was done by Dr. Temple Fay's service. The dura was found thickened and under great tension. Splitting of the dura disclosed a large glioma in the left frontoparietal region, and this was shelled out. The child died the following day.

In this child all the studies were inadequate in establishing a diagnosis. The optic neuritis, revealed in the eye examination, was accompanied by but little choking of the disks. The vestibular manifestations, although not of localizing value in this case, did suggest the increased intracranial pressure reflected in the terminal symptoms and operative disclosures.

CASE 12—R. S., a youth, aged 18, was admitted to Dr. Grant's service with the chief complaint of 'headaches.' His first illness occurred in 1930 three years preceding this admission, when he suddenly became dizzy, developed severe headache and lapsed into unconsciousness. He remained unconscious ten days, with periods of violence which required restraint. When he recovered from this 'spell' there was marked weakness and the vision in his left eye was almost entirely gone. An eye study at that time showed marked pallor of the left disk and vision in the left eye was limited to motion. Vision in the right eye was normal.

This continued about five months, when he began to have severe frontal headaches and attacks of vomiting. Following an operation on the left ethmoidal sinuses at that time these symptoms subsided and aside from the loss of vision in his left eye, he remained comfortable for a year. Headache and vomiting then recurred with increasing severity and frequency.

Our vestibular examination revealed signs of an intracranial lesion, supratentorial, anterior to the brain stem and influencing it, and probably in the midline. The vestibular signs of an intracranial lesion were (1) absence of response from the vertical canals on both sides in the presence of good response from both horizontal canals and good hearing, and (2) occasional dissociated eye movements. Marked sensitivity to the tests pointed to the supratentorium as the site of the lesion, and obliteration of both sets of vertical canals suggested a midline position. The tendency to dissociation of eye movements suggested an influence on the brain stem (i.e., pons).

Transfrontal craniotomy by Dr. Grant resulted in the exposure and partial removal of a suprasellar tumor believed to be a meningioma. The patient subsequently was discharged improved.

A point of added interest in this case is that the symptoms, including those of the eyes, were at first thought to be secondary to sinusitis. Following operation on the sinuses the patient remained comfortable for a year. The associated symptoms then recurred and eventually the case proved to be one of brain tumor.

Following is a group of four cases of brain abscess—three of otitic origin and one case secondary to frontal sinus infection—in which vestibular tests (either the complete examination or the caloric test alone) were done sometime during the course of the illness.

CASE 13—S. F., aged 10, presented a chronic suppurative otitis media on the right side with involvement of the mastoid. Simple mastoidectomy was done without apparent improvement. There was a prolonged postoperative illness with fever, loss of weight and headache, and various intracranial complications were suspected. The lateral sinus was opened and the internal jugular vein ligated but pus was not found. The right temporosphenoidal lobe and the right cerebellum were searched for abscess but none was found. There were no localizing neurologic signs until shortly before the patient died.

Eleven days before the appearance of the first localizing neurologic sign (astereognosis) a caloric test revealed on the right side (1) delayed response from the vertical canals and (2) when the head was tilted backward to test the horizontal canal, instead of a horizontal nystagmus there appeared vertical nystagmus upward (i.e., perversion). Responses on the left side were normal.

At postmortem an abscess was found in the right temporoparietal region and another deep in the right cerebellum.

CASE 14—W. B., aged 11, gave an indefinite history of trauma to the head followed by right frontal sinusitis. The patient complained of persistent headache and vomiting, and a right frontal lobe abscess was suspected. There were no localizing neurologic signs.

A complete vestibular study revealed (1) very poor pelvic girdle resistance, the patient falling like a stick at the slightest tilt; (2) marked hyperirritability on turning to the left (stimulating the right horizontal canal); (3) delayed response to the caloric test on the right side (one minute thirty seconds); and (4) very significant persistent past pointing of the left hand following each stimulation as if that hand had escaped the volitional control of the brain. In contrast the right hand past pointed normally.

Based on the poor pelvic girdle reaction and the peculiar behavior of the left arm during past pointing with the delayed response from the right vertical canals a diagnosis was made of a right frontal lobe abscess influencing the motor area. Sensitivity to the tests was absent, an unusual finding in frontal lobe lesions. At operation a right frontal lobe abscess was found. Postmortem revealed this abscess to be well encapsulated and about the size of a small hen's egg.

There was a possibility of confusing these vestibular observations with those of an occipital lobe lesion but the type of bizarre past pointing manifested by the left hand was unlike

that found in occipital lobe lesions, which are characterized by exaggerated distance of past pointing, ataxic in character due to pressure on the cerebellum from above. In this instance, however, the distance of past pointing was small but its persistence for a very long time seemed to indicate a loss of volitional control.

CASE 15—P. F. was a man aged 31, in whom a diagnosis of left temporosphenoidal lobe abscess was made and confirmed at operation. A caloric test preceding operation showed complete absence of responses from the vertical canals on the affected side, all other responses were practically within normal limits.

CASE 16—M. K., a girl, aged 17, with a history of bilateral otorrhea since infancy, presented symptoms that were suggestive of brain abscess. Neurologic roentgen and eye examinations revealed no evidence of intracranial involvement. Barany examination, however, showed definite vestibular evidence of intracranial disturbance: perverted responses from the horizontal canals to both the rotation and caloric tests (i.e., rotary instead of horizontal nystagmus, also mixed rotary and oblique nystagmus from the left horizontal canal after douching). The presence of sensitivity to the tests pointed to the supratentorium, and the more bizarre responses from the left horizontal canal tended to indicate more particularly the left side of the brain.

Exposure of the middle fossa on the left side July 10, 1934, revealed the dura under marked tension. Subsequent exploration disclosed a left temporosphenoidal lobe abscess.

These cases of brain abscess are presented merely to show that they do manifest vestibular signs of an intracranial lesion. While their localizing value is not as satisfactory as in brain tumor possibly because the pathologic condition here is more rapid and less space taking than in brain tumor, nevertheless these vestibular signs of intracranial involvement at times are present long before there is any localizing neurologic sign.

This conclusion is in accord with that of the late S. McCuen Smith,⁶ who reported his experiences in the diagnosis and localization of brain abscess of otitic origin. He detailed three cases in which vestibular tests were done prior to operation. One case of cerebellar abscess showed vestibular changes typical of a cerebellopontile angle lesion. A second case showed absence of responses to the caloric test from the vertical canals of both sides. His third case (as with our case S. F.) yielded a perverted response to douching from the horizontal canal on the affected side (i.e., a vertical instead of horizontal nystagmus appeared on tilting the head back).

In summarizing his experiences with the vestibular tests in the diagnosis of brain abscess Dr. Smith stated at that time: "They are useful in that frequently they are the only tests that indicate with any degree of definiteness the presence of intracranial involvement."

SUMMARY AND COMMENT

In this series of sixteen cases—confirmed at operation or autopsy—are presented (1) three with midline posterior fossa tumor involving the fourth ventricle, (2) one case with tumor of the left cerebellar hemisphere, (3) three cases of mass lesion involving the cerebellopontile angle, (4) five cases of tumor above the tentorium involving the olfactory groove, the temporoparieto-occipital area, the temporoparietal lobe, the frontoparietal area and the suprasellar region, respectively, and finally (5) four cases of brain abscess, one involving the temporoparietal lobe as well as the cerebellum, one in the frontal lobe and two with temporosphenoidal lobe involvement.

This report emphasizes the usefulness of the vestibular examination as an aid in the diagnosis and

⁶ Smith S. M. Consideration of Otic Brain Abscess with Special Reference to Diagnosis and Localization. *Laryngoscope* 34: 534 (July) 1924.

localization of intracranial lesions. It illustrates the manner in which these tests may serve to confirm the data obtained by other studies, how they may supply information which gives direction to otherwise apparently conflicting observations and occasions when they may supply the link that makes possible diagnosis in a group of cases among the most difficult and fraught with the most tragic consequences in the entire field of medicine.

With some lesions, as with those involving the cerebellopontile angle, the vestibular examination often makes possible diagnosis before the appearance of general clinical phenomena and at a time when operation promises the best results. Since tumors of the cerebellopontile angle comprise a large percentage of all brain tumors, a test that is so helpful in either localizing them or excluding them from this region is of the utmost importance. The consideration of angle lesions is of particular importance to the otologist, since the initial symptoms, as a rule, are deafness and tinnitus and the otologist is the first physician consulted.

In closing we should like to urge the cooperation of those concerned in the management of these cases to the end that not only there may be recorded a vestibular examination in their study but that the neuro-otologist may be given the opportunity to compare his observations with those at operation or, even more important, at autopsy, for it is not uncommon for a tumor or brain abscess to remain hidden at operation and its presence be revealed only subsequently at necropsy.

It is only by such opportunity to examine a large number of cases and to check the results that the vestibular examination may be interpreted with greater accuracy, that localization may be made with greater precision, and that diagnosis may be suggested at an earlier stage in the progress of these lesions.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BLONDER AND DAVIS AND DRS. COATES, SHUSTER AND SLOTKIN

DR. WINCHELL MCK. CRAIG, Rochester, Minn. The difficulties encountered in accurately diagnosing and localizing intracranial lesions are frequently so great that any refinement or innovation in the testing of the cranial nerves which will tend to expedite the situation is very welcome. The double function of the acoustic nerve makes it extremely important from the standpoint of the various tests and especially is this true of the vestibular portion. This nerve carries impulses from the semicircular canals to a number of nuclei in the medulla, dorsal auditory nucleus, nucleus of Deiter and nucleus of Bechterew, with a few fibers passing directly to the cerebellum and other fibers connecting with the motor nuclei of the ocular muscles and vestibulospinal tract. The different ramifications often complicate an attempt to differentiate any dysfunction in contrast to the normal. A careful study of a series of cases is of value in clarifying controversial points and I think the papers of Drs. Coates and his colleagues and Drs. Blonder and Davis may prove of great value in allowing for a more complete examination. However, several anatomic facts which influence the diagnostic value of these tests should be kept in mind in evaluating them. The vestibular nuclei lie very close to the floor of the fourth ventricle, so that any pressure on the fourth ventricle is very likely to produce dysfunction. The most important sources of error in interpreting the results of these tests are due to the fact that the pathways through which the vestibular nerve acts are crowded together in the floor of the fourth ventricle and pons. A large percentage of tumors of the posterior fossa very soon cause an obstruction to the aqueduct of Sylvius and the accumulation of cerebrospinal fluid in the ventricles compresses these pathways. When little or

no internal hydrocephalus is present, as in acoustic neuromas or other tumors of the cerebellopontile angle, these tests may be of great value. It is true that the results of all special tests must be considered in conjunction with the complete general and neurologic examination, as one is sometimes prone to emphasize certain symptoms and place undue diagnostic importance on tests the results of which do not fit into the picture as a whole. It is generally agreed that intracranial tumors are being seen at a much earlier stage of development than formerly and that reliance must be placed on a finer differentiation of tests that have been used or on the development of new tests, which will be of greater value in making a differential diagnosis and aiding in localization. Many advances in neurosurgery have been made possible by studies such as these carried out in the special allied fields, and it is by continued cooperation in efforts toward a more accurate and comprehensive diagnosis that the entire field of medicine, and especially neurology and neurosurgery, is being advanced.

DR. CLAUDE T. UREN, Omaha. These papers show what cooperation between neurologists and otologists can produce and yet only recently an eminent neural surgeon in the discussion of a paper on vestibular vertigo said that he would not subject a patient with a possible intracranial lesion to the Barany tests because of possible serious results from a severe reaction. The Barany tests have a distinct advantage over some of the other physiologic tests in that the responses resulting from the tests are not under voluntary control of the patient. The evaluation and interpretation of the results are under the control of the examiner and a careful evaluation of the subject and his responses are necessary in order that the test may be of value in diagnosis. One who is hypersensitive to motion and gives a history of car sickness or sea sickness is most likely to show violent reaction from the test, while a subject normally hyposensitive to motion or with a heavy, thick, bony labyrinth or chronic thickening of the drum and tympanic mucosa will show delayed responses to the caloric test. These facts should be considered before a diagnosis of supratentorial or infratentorial lesion is made. Vertical nystagmus up or down, perverted nystagmus, inverted nystagmus and oblique nystagmus are found with rare exceptions only in intracranial disease. An analysis of the cases reported by Drs. Coates, Shuster and Slotkin show how frequently these types of nystagmus are found in cases of brain tumors and their importance in the diagnosis and localization of brain lesions. Absence of vestibular responses from one side, together with absence or perversion of responses from the opposite side, is most often indicative of an intracranial lesion. The so-called angle syndrome, supposedly diagnostic of tumors of the cerebellopontile angle, has been reported in cases of brain concussion and multiple sclerosis and is by no means constantly found in angle tumors. The cochlear portion of the eighth nerve should not be overlooked as a guide to intracranial troubles. In increased intracranial pressure there is a falling off of the high frequencies sometimes without noticeable loss of hearing. In many extracerebral lesions there is found a loss of hearing on the affected side, and in the case of pontile angle or acoustic nerve tumors the loss of hearing is usually an early symptom which in spite of confusing contralateral nerve symptoms is often of importance in diagnosis and localization. The paper of Drs. Blonder and Davis may prove beneficial in differentiating peripheral from intracranial lesions.

DR. J. CHARNLEY MCKINLEY, Minneapolis. In our experience with the Barany tests at the University of Minnesota Hospital, my associates and I have often been confused in attempting to localize a lesion of the brain and have tended to depend more on the total neurologic configuration. I do not mean to say that we have never had help from the Barany test. Since the series of cases presented by Drs. Coates, Shuster and Slotkin indicates a surprisingly great reliability of these tests, I should like to ask a question or two. First have they had any cases in which they could not make a diagnosis by means of the vestibular examination alone? Second I understand perfectly well that the authors have not had time to go into the neurologic examination but I wonder how much additional help in focal diagnosis came from the neurologic examination in these cases. I would emphasize with Dr. Craig that the vestibular tests refer to one portion of one cranial nerve and constitute simply one phase of the neurologic investigation.

DR SAM E. ROBERTS, Kansas City, Mo I am happy to see that Dr Coates and his co-workers are going ahead with the splendid work that Dr Fisher started In his report of more than 100 cases in 1928 he proved his angle syndrome and it has not been disproved since There are other conditions that will produce it It is, however, a valuable neurologic sign No one ever maintained that these tests are final, they are only aids to the other neurologic examinations Last year we had two cases at the University of Kansas Hospital, one a child under 2 years of age in whom we made a diagnosis of a midline lesion As near as we could tell the child's hearing was normal Douching produced no response on either side from the vertical canals We got beautiful responses from both horizontals We made the diagnosis of the midline lesion and stopped there It was shown at autopsy that it was a midline lesion and in the vermis Inside two months we had a similar case with identical vestibular observations in a child 10 years of age In this case we knew positively that the hearing was normal because we could make functional tests, while with the baby we could not We made a diagnosis of midline lesion, probably vermis At operation a vermis tumor was found I don't recall in Fisher's classic report whether he mentioned the vermis lesions or not, but we had two in such a short time at the university that we were all impressed with the importance of these observations

DR EDWIN J BLONDER, Chicago I regret that no direct questions were asked with regard to the galvanic falling test The reason we brought up this matter is that we hoped that this test will differentiate those cases with lesions affecting the postural vestibular tracts from those in which lesions are present in the tracts concerned with production of nystagmus, when the ears of a large series of patients with intracranial neoplasms are examined galvanically One of the discussants mentioned cooperation between groups This is quite evident in our paper, for the co-authors are a neurosurgeon and an otologist All the patients were completely examined by a neurologist, usually Dr Lewis J Pollock and Dr Loyal Davis and I conducted the ear examinations We utilize all ear tests in the analysis of the case and have found to date that our galvanic falling test has given us similar responses to those resulting from caloric stimulation The point was brought out that sometimes the Békány test could not be used just before an operation In that regard we have used the galvanic falling reaction from twelve to twenty-four hours before an operation, and I have also performed the test on patients from ten days to two weeks after an operation There are no violent or disagreeable reactions with the galvanic falling test We have repeated the test from time to time on the same individual, with the same results While these patients were at the hospital, the galvanic falling test did not interfere in any way with the other examinations that were being conducted

DR GEORGE M COATES, Philadelphia We have presented nothing new in this paper but have tried to emphasize the fact that the vestibular tests are of value in the diagnosis of intracranial lesions Our interest was stimulated because a recent paper by a well known neurologist discussing intracranial diagnosis in a large series of cases failed to show that these tests had been utilized They are not in themselves sufficient to make an operative diagnosis but should support or be supported by every other method known in neurology These tests are not difficult to perform, and if done systematically and if the information obtained is charted under a definite but simple system much valuable knowledge may be obtained In this small series of proved cases we have given our preoperative vestibular examination diagnosis which was made without consulting the neurologic examination until afterward This was done to satisfy our own minds We have attempted a broad and very simple classification of observations which was long ago worked out by Dr Shuster What Dr Roberts has said is perfectly true These observations are not absolutely diagnostic They are only suggestive I fear neurologists have the feeling that we otologists have claimed for our methods a better way of diagnosing intracranial lesions than their well tried and proved methods have been and that at times they have become somewhat antagonistic This is far from being the case We claim only that the vestibular tests will often—not always—be of help and that in these obscure cases only too often all available methods are not sufficient to give the neurosurgeon an exact

localization Dr McKinley asked whether there were cases that we could not diagnose by these methods Yes indeed there were These methods, after all, are only suggestive As a rule we make no attempt to reach too close a diagnosis These diagnoses were made for our own information to see what we could do without the help of the other examinations, and we report them as such The neurologic observations are all in the full paper, which, of course, we did not have time to report here Dr McKinley also asked whether we had any help from the neurologists Indeed we did but only after our neurologic diagnosis had been definitely recorded We simply reported this as a vestibular test study to see what we could do and to make this plea for more cooperation between the different branches that have to study these cases of intracranial lesion They are difficult enough, and many times all our methods are not sufficient to arrive at a diagnosis, they have to be studied over and over and over again, but we do feel that vestibular testing is of decided help

THE MODERN HEALTH RESORT

AN APPRAISAL OF ITS POSSIBILITIES

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What is the status today of the modern health resort in medical practice? What value does it have? What does the "cure" consist of? Can the spa offer more to the patient than just a mineral spring with "beautiful gardens and an excellent band," as Sir James Mackenzie thought? In these days of purely scientific medicine, can the spa be as great a therapeutic factor as it was in more empirical medical days?

Such questions are of prime importance to the physician who contemplates referring a patient away for a "cure" Unfortunately, many physicians believe that the spa offers no more than it did in the early Greek and Roman days, namely, a mineral spring water that is either taken internally or used externally for a course of baths While most resorts are located at or near natural mineral springs the waters of which are used for treatment purposes, this feature of the spa regimen is only one of many advantages such resorts should offer the physician and his patient It is not my purpose to discuss here the various types of waters found in this country or abroad or to discuss the use to which they are put Many articles have been and are being written describing the use and efficacy of such waters and references are readily available Rather is it my hope to describe here those additional features which all resorts deserving of medical confidence should share in common—features which far outweigh the value of the waters alone and thus make the use of these waters per se often of secondary rather than of primary consideration when it comes to referring patients away for a "cure"

The position of the health resort of today is a unique one midway between the home and hospital environment It has advantages of both without many of their disadvantages It cares for people who should be isolated from home and business and yet do not need the specialization or the atmosphere of hospitalization The true health resort is not a diagnostic clinic or a research institution Its position in modern medicine is a very definite one and its limitations are sharp and well defined Its clientele should therefore be selected with care, the referring physician realizing its limitations as well as its value to the patient

What should the physician expect from a health resort for his patient and how best can the spa serve him? Unfortunately the American Medical Associa-

tion has not as yet laid down qualifications for such resorts, so that the referring physician, unless he himself knows the resorts or has made a study of them, is often unable to decide to which one he can with confidence send his patients. There are certain features which these resorts should have in common, regardless of their mineral springs, in order to serve the patient best. Such features are based on hygiene in its broadest sense and should include competent medical supervision, a proper dietary, systematic rest, regulated exercise, a proper knowledge of the reserve the patient possesses so that he can live sanely within that reserve, and proper physical therapy, hydrotherapy and electrotherapy given by competent attendants, the whole to be so planned and regulated that the patient's day is entirely occupied. Psychic elevation of the morale and the development of a proper philosophy toward the disease from which he suffers should be additional features the spa should see accomplished for the patient.

COMPETENT MEDICAL SUPERVISION

Of prime importance to the home physician is whether or not his patient will receive competent, ethical medical care while away, so that he can with perfect confidence advise that patient to be separated from him. Confidence must exist between the spa and home physicians, so that the suggestions of one will be mutually respected by the other. The spa physician often has certain advantages for the patient's care which the home physician cannot have, for he sees the patient intensively every day. He lives with the patient and knows how he spends his time, how and what food he eats, when he goes to bed, and how well he sleeps. He knows his domestic problems and his habits and from all this is able to treat him intelligently as a real individual with an individual problem. It is only through competent medical supervision that the features hereafter described can be supervised and directed for the patient. It is only through competent medical supervision that the correct regimen can be laid out for the patient, so that he will obtain the greatest possible benefit from his "cure."

PROPER DIETARY

There is no greater service the health resort can give, nor one more open to fad, than that of the dietary. Probably no subject can today be more readily or easily exploited in medicine than the problem of nutrition. It is not enough to give him a list of "foods allowed" and "foods to avoid" and then dismiss the subject. The ordinary person, either sick or well, is intuitively interested in the subject of a correct diet. He usually finds it difficult to follow such a diet list alone, or else makes an honest effort to do so only to be enmeshed in a hopeless maze of foods and calories. It is the duty as well as the opportunity of the health resort not only to see that the patient receives the proper food but to go further and instruct him so that he can carry on after he goes home without undue effort and caloric arithmetic. The ethical resort has plenty to do in the way of dietary if it follows conservative, legitimate and well known laws of nutrition without capitalizing on the layman's gullibility for food fads.

ELIMINATION

The "drinking of the waters" has always been a prominent spa feature. Most resorts have natural springs of a cathartic or diuretic action which the patient sips as he takes his early morning walk. No discussion of such waters will be given here. Suffice it to say that the use of such waters should be taken

on prescription only and that, while attention to elimination is always of importance, daily purging by saline cathartic waters is more often to be condemned than encouraged.

SYSTEMATIC REST

Opportunity for an abundance of rest is the secret back of the success of many resorts and is a feature *par excellence* that all spas should offer. Rest is obtained in three ways. First, the whole tempo of life at a spa is slow. Second, at least one hour's rest after all treatments is compulsory and is recognized as an integral part of the "cure." It is this rest period following a treatment, whether it be a bath or massage, which gives to that treatment its greatest value. An relaxing treatment is valueless if no rest follows it. Similarly a hot treatment, as a cabinet or pack can be dangerous if rest following it is not insisted on. Many of the larger hotels have today installed apparatus for treatment by hydrotherapeutic and physical therapeutic means. These treatments have in many cases done considerable harm rather than good, not only from their indiscriminate prescription but also from a failure to insist on a proper rest period following their use. Early to bed constitutes the third method of obtaining rest. There is a mass psychology for the patient taking the cure, which makes that patient want to retire early with the result that an abundance of rest during the twenty-four hours is assured for him.

REGULATED EXERCISE

Regulated exercise is of enormous value to all individuals and can be carried out with success at the resort, for here are found the time, facilities and supervision for it. Passive exercise in the form of the Zander apparatus, and active exercise in the gymnasium or in the form of golf, horseback riding or tennis, for those able to take these strenuous forms, should be available. For the incapacitated, passive exercise in the form of massage, and later the selective active resistance exercises of Schott, give a substitute for the active forms. Simple walking is the most popular form of exercise and the form best suited to the majority of patients at the spa. This form of exercise is encouraged by having definite graded and measured walks, so that the physician can tell which walk to take and then note the response knowing exactly how far and on what grade that patient has been. Such walks have the advantage too of determining the reserve each patient has, so that he learns exactly how far he can exercise with safety to himself. A definite time as well as amount and type of exercise should be prescribed, as it is considered as definite and curative a part of the regimen as any other single procedure.

KNOWLEDGE OF RESERVE

How much leeway can a patient have with perfect safety to himself and his disease? During a "cure" period such a question should be satisfactorily answered for that patient. This applies particularly to heart patients. Nothing will do more to prolong the life of an ambulatory cardiac patient than a proper knowledge of his myocardial reserve, so that he can live within it. Heart patients must be taught to live with the hearts they have live within the reserve which that particular myocardium possesses, know the signs which warn them that they are overstepping. The majority of heart patients however have not been taught their own limitations most of them either overstepping and getting into difficulties or else going to the other extreme and making needless invalids of themselves. The response to graduated walks and other forms of

activity coupled with daily intensive observations on the patient should enable the spa physician to determine accurately the patient's reserve and impart that knowledge to him so that he can live with the greatest comfort and longevity

PHYSICAL THERAPY AND HYDROTHERAPY

Probably no group has done more to advance the field of physical therapy and hydrotherapy than spa physicians who utilize not only the better known physical therapeutic, electrotherapeutic and heliotherapeutic procedures as massage, diathermy and infra-red light but other hydrotherapeutic measures which they believe in as valuable therapeutic agents. No patient at any resort should ever be allowed to prescribe such procedures for himself. That is the specialized duty of the spa physician. The legitimate spa physician does not believe that a certain mineral bath is a panacea. He prescribes it rather as he would a drug, believing that a beneficial result will ensue if properly given. If a mineral water has value and is not a "cure all," it automatically follows that its use in therapeutics is limited and must therefore be given on medical prescription only. Any bath or treatment that can be taken indiscriminately is of no value. Similarly if the water has value and its use is indiscriminate it will do harm just as often as it will ever do good.

It is not my purpose here to enter into any discussion as to the use or value of the various mineral waters found at the various spas. While the value of such waters in certain disease states seems to be empirically proved, the scientific explanation for their action is still lacking. This applies to other physical therapeutic measures as well. Most physicians believe in the value of massage and yet it is difficult to measure quantitatively the beneficial effects of this universally recognized procedure. Empirically various peoples have received benefit from such treatments from the earliest days of Hippocrates and it is difficult to believe that any treatment which has stood such a test of time with ever increasing popularity is without some value. The severest critic of the use of mineral waters for treatment purposes however, has to admit three facts: (1) that such treatments, if properly prescribed can do no harm, (2) that there is a tremendous beneficial psychic effect on the patient following their use, (3) that the hour or more rest which the patient takes following such a procedure cannot help but be of benefit to him.

PSYCHIC ELEVATION OF MORALE

Most patients come to a spa in a hopeful expectant attitude ready to cooperate to the fullest extent and make a business of getting well. The spa should cultivate this attitude further. The isolation from the home and business environment the elimination of business worries and the depression incidental to nagging relatives with their many "don'ts" coupled with a change of environment new faces and the peace and relaxation which they find give a tremendous boost to their morale. In addition to this is the systematization of a daily routine with a definite schedule to follow prescribed for their own particular needs and a constant interest shown in their welfare. All this gives to the patient a psychic uplift which accounts in part for the tremendous success the spa has had in the past in the cure of various neuroses and functional disorders of the nervous system.

The health resort must offer to the patient the opportunity for recreation and entertainment. Nothing will sooner break down his morale than his own introspec-

tion. This is especially true of sufferers from functional neuroses, who thrive on the discussion of their own complaints thus ever keeping them alive. A bored patient is an uncooperative and dissatisfied patient. A good hostess can often be more valuable to a neurotic patient's morale than can any other form of treatment.

DEVELOPMENT OF A PHILOSOPHY

When as too often happens it is impossible to cure a patient entirely of a disease state so that the patient must carry on with a chronic disease process a proper outlook for that patient is of prime importance. To be able to accept these disabilities is important to the patient for his future happiness. The spa is often the buffer between a serious illness and the return of a patient to a limited life of usefulness in the economic plan. Let us consider as an example a man who has always been well. He has been a success in business and a power in his community. He is suddenly stricken with a coronary thrombosis. He spends a long period in bed either at home or in the hospital and then comes to the convalescent stage when he is getting back on his feet to a new life of narrowed activities and with it a depressed mental state because of his future incapacities. If during the convalescent period he goes to a health resort and gets in addition to proper medical care proper dietary, abundance of rest and proper exercise a knowledge of his physical reserve so that he knows exactly what he can and cannot do he still has not received enough for he must in addition develop a proper philosophy toward his incapacities. He must become reconciled to them, must accept them graciously, so that he can live happily in his new narrowed existence. He must learn to develop some hobby that will keep his mind active but save his heart. If the health resort does this and it should it has served a great purpose.

COMMENT

It is hoped that the foregoing discussion of features the modern health resort should and can offer the patient will be of interest to the physician. Such features offer the medical profession a unique and advantageous spot to which it can send certain types of patients. Because of its characteristics, the spa caters to a limited clientele. The ambulatory and chronically ill are candidates for its regimen. In addition the convalescent the fatigued and that great class of people who are well and wish to remain so can be benefited from its "cure." Any bedridden patient who is likely to remain so is far better off at the hospital or at home in his own bed for there is nothing miraculous about the "cure." It is simply a sane regimen of living wherein hygiene forms the keystone of treatment and physical methods supplant pharmacologic ones when by so doing the patient will be benefited.

There are resorts in this country ethically managed and ethically supervised, which offer to the patient the advantageous features here discussed. There are also resorts unfortunately which do not so qualify—resorts that depend on the exploitation of a mineral water of doubtful value the prescription of which is left to the whims of patients attracted by its unethical advertising.

How can the physician decide to which resort he can with confidence send his patient? A study of the advertising personal inspection and correspondence with its medical staff constitute the only means of so doing until such a time as the American Medical Association sees fit to adopt standards and classify these resorts as it does hospitals.

XANTHOMATOSIS (SCHULLER-CHRISTIAN'S DISEASE)

ROBERT A. STRONG, MD

NEW ORLEANS

While a wide diversity of opinion is reflected in an increasing literature the terms xanthomatosis and Schüller-Christian's disease are more frequently used to describe a syndrome which is beginning to follow a sufficiently typical course to justify its recognition as a disease entity. In all descriptions of this syndrome, three clinical features have been outstanding. They have been certain bony defects of the skull, diabetes insipidus and exophthalmos. Opinion seems to be quite unanimous that this clinical syndrome known today by various terms was first described by Hand¹ in 1893. He presented at that time the case of a 3 year old boy with exophthalmos and polyuria in whom an autopsy revealed a soft movable, yellow spot about 2.5 cm in diameter, involving the entire thickness of the skull in the right parietal region. He believed that it was due to tuberculosis. Kay² is credited with the second case in 1905. This was followed by reports of other cases by Pusey and Johnstone³ and Dietrich.⁴ Apparently nothing of consequence was reported until two years later when Schüller⁵ reported two cases, one in a boy aged 16 years with dystrophia adiposogenitalis, exophthalmos and marked cranial bone defects and the other in a girl aged 4 years with polyuria, exophthalmos and similar defects of the skull. Schüller felt that both of these cases were skeletal defects secondary to disease of the hypophysis cerebri. Three years later Christian⁶ reported a case showing similar defects in the bones, exophthalmos and diabetes insipidus and called attention to Schüller's case maintaining like Schüller, that the syndrome was due to a pituitary disturbance. In the years following many other cases of this syndrome were reported. In some of these reports many most interesting phases of the disease, together with theories of its etiology are discussed. Among the most interesting of them was



Fig. 1—Appearance of the patient showing degree of exophthalmos of the right eye.

one by Thompson, Keegan and Dunn,⁷ in which one of the earlier postmortem studies is reported. They suggested that the disease was due to infection and cited the work of Bailey and Bremer,⁸ and of Curtis,⁹ to support the contention that the symptom of polyuria was caused by an involvement of the hypothalamic region caused by pressure changes secondary to the cranial defects. In further support of this Denzer¹⁰ in 1926 called attention to the fact that in the chronological development of three symptomatic features of the syndrome in a case which he reported, the bony defects were primary and the exophthalmos and diabetes insipidus were secondary and not necessarily essential lesions. Since then analyses of series of cases not only confirm this but indicate that the bony defects are predominantly the initial symptom.

In the many reports, numerous terms have been used to describe the condition. The earlier authors spoke of it as Hand's disease and since then it has been spoken of as Schüller's disease, Christian's syndrome, and combinations of all three names. Extensive bibliographies have been attached to several of these articles, but without doubt the most elaborate contribution to our knowledge of the disease was made by Rowland¹¹ in 1928. He reviewed the literature extensively, presented two cases of his own and was the first to prove that Schüller-Christian's disease belonged in the same class with all the other diseases due to defective lipid metabolism. The term xanthomatosis was therefore suggested by Rowland to describe it and while all conditions due to disturbed lipid metabolism can be described under this term, there are several other names that have been retained for those not identical in their several manifestations to the original Schüller-Christian syndrome.

Five clinical entities have been included under the general heading of xanthomatosis by several writers. They are Gaucher's disease, Niemann-Pick's disease, Schüller-Christian's disease, the xanthomas occurring in uterine, diabetes and pregnancy, and the so called essential xanthomatosis. According to an analysis by Sosman¹² the first type, Gaucher's disease, involves chiefly the spleen, occurs at any age, but most frequently in female children, is familial and is fairly benign. Niemann-Pick's disease which has been spoken of sometimes as hepatosplenomegaly because of the marked enlargement of both the liver and the spleen is racial rather than familial occurring almost entirely in infants of the Jewish race, and is rapidly fatal. Schüller-Christian's disease occurs most frequently in children under 10 years of age, but by no means entirely, and is manifested by involvement of the bones of the skull and occasionally other bones, frequent evidence of diabetes insipidus, exophthalmos, occasional dwarfism, adiposogenital dystrophy and jaundice. It is neither racial nor familial and is fatal in about one third of the cases. The other two types show lipid deposits cutaneously, in tendon or tendon sheaths but have none of the other symptoms observed in the first three. These two are quite benign.

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Read before the Section on Pediatrics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

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The etiology of this syndrome is unknown, but the etiologic factor common to all the members of the group is apparently a disturbance of lipid metabolism or of lipid excretion resulting in the storage of various forms of lipid material in the organs or tissues of the patient, either widespread and diffuse as in Niemann-Pick's and Gaucher's disease or localized in granulom-



Fig 2—Skull showing areas of decreased density about six weeks after roentgen therapy

atous deposits, as in the Schuller-Christian syndrome and the cutaneous xanthomas

According to Rowland,¹¹ a xanthoma was first described as a rare disease of the skin, and while it is still classed as a dermatologic condition he contends that it should be considered a systemic process with the skin and tendon sheath lesion as outward manifestations. Its chief characteristics macroscopically are the sulfur yellow to yellowish brown lesions and microscopically the large bright cells with vacuolated or foamy protoplasm in consequence of a high content of a fatlike substance. After numerous theories were advanced opinion seemed to have been crystallized that xanthoma may be considered as a variable symptom complex resulting from a disturbance of lipid metabolism and especially of cholesterol. As work progressed and information accumulated on the reticulo-endothelial system a new interest was aroused, according to Rowland in the xanthoma problem. Histopathologic studies suggested that the varied manifestations of xanthoma were not all in reality neoplasms of any organ or tissue but manifestations of the phagocytic action of the reticulo-endothelial system. The xanthoma cell is a cell of reticulo-endothelial origin infiltrated with lipoids and the reticulo-endothelial system is said either to remove an excess of lipoids from the tissues or to store an excess in areas in which trauma or infections may have stimulated a collection of histiocytes.

Apparently then in the light of our present limited knowledge much of which may be found in Rowland's paper¹¹ analyzing these several clinical syndromes xanthomatosis may be regarded as being a clinical disease due to a disturbed lipid metabolism which is not necessarily related to the general metabolism of fats but is in a large measure influenced by the part played by the reticulo-endothelial system. According to Rowland's interpretation of the process lipid and other substances when in excess in the body fluids become pathogenic to the individual. There is at first an irri-

tation of the vessel walls, then perivascular cell infiltration takes place, the lesions increasing as a result of the progressive blockage of the reticulo-endothelial system. In each of the conditions that have been previously enumerated under the general head of xanthomatosis there is a difference in the clinical form in the pathologic structure of the lesions and in the nature of the lipoids concerned but Rowland believes that they all represent the same irritative proliferation of connective tissue elements or reticulo-endothelial hyperplasia. They are all manifestations of the same pathologic process but are probably modified by certain differences in the individual patient's general metabolic state. He thinks that the bone destruction exophthalmos diabetes insipidus dwarfism and infantilism often present and frequently regarded as evidence of disturbed pituitary function are the results of this pathologic state.

The case that I report seems to fall quite definitely into the class of the Schuller-Christian syndrome of xanthomatosis.

REPORT OF CASE

J. T., a white boy aged 6 years, was admitted chiefly for protrusion of the right eye. About three years before the patient fell against the rocker of a chair, striking the left side of his head. This caused a swelling which was peculiar in that at times it would appear and then disappear. The father stated that about one year later he noted a slight protrusion of the right eye, which was downward and forward. At no time did the child complain of any symptoms except an occasional headache. He was first seen about six months after the father observed the protruding eye, because it was growing worse. The child never complained of pain in this eye and the vision



Fig 3—Anteroposterior view of skull illustrating decreased density to the right of orbit showing exophthalmos

was never impaired. About the time that the eye protruded the patient began losing some of his teeth. They became loose and were easily extracted.

There was nothing remarkable about the past history and the only disease of childhood that the patient had had was whooping cough. He had never had orange juice or any of the conventional sources of vitamin D as an infant. In a like manner there was nothing remarkable about the family history of the child. As far as could be determined the patient had

never been exposed to tuberculosis and there was no history of neoplasms or syphilitic disease in the family. The father was 30 years old and was in good health. The mother was 27 years old and lately had been said to be suffering from kidney trouble. The patient had three brothers aged 11 years, 3 years, and 2 months and one sister aged 9 years. All of them were in good health. The family lived in a rural community under fairly good conditions.

When first seen the child appeared to be perfectly well. He was of a quiet disposition and talked very little. He understood all the questions that were asked him and his answers

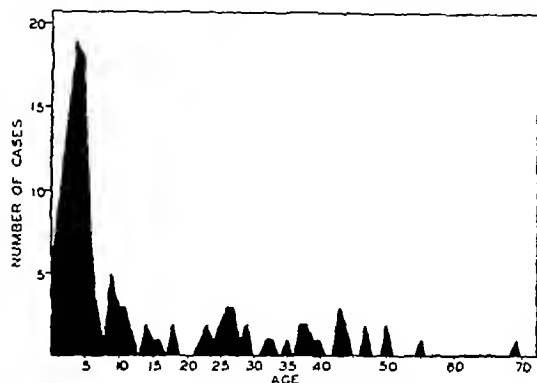


Fig. 4—Frequency of symptoms in Schüller-Christian's disease—Sundelius

were quite prompt and intelligent. He was very cooperative when he was being examined. He was an ambulatory patient and was able to eat a regular diet and play around the ward with the other boys of his age.

The cranium was fairly well shaped. The hair was thin and soft to touch, and there were no lesions or scars. There were no marked protuberances or depressions, and there was no pain on palpation anywhere on the skull. When the child was first seen by Dr. Mims Gage of the department of surgery, he found very definite soft spots, which could be elicited on careful palpation of the skull in positions which later proved to be areas of decreased density to the X-rays. These irregular defects were rather widespread in lateral and anteroposterior roentgenograms of the skull. They were especially well defined in both frontal regions, the right orbital roof and the occipital region. The original plates unfortunately are not available but some of these areas are still shown in lateral and anteroposterior views of the skull of this child which were taken several months after roentgen therapy. They have shown some improvement but can still be seen.

The child's vision seemed to be perfect but the right eye showed a marked degree of exophthalmos. It was about 2 cm. below the left; its defect is shown in figure 1. He could not be made to say that the eye hurt and there were no inflammatory changes in the conjunctiva nor was there any purulent discharge. There was some increased lacrimation in the defective eye occasionally. The pupils of the two eyes were equal and responded to light and in accommodation. There were no opacities of the cornea and no edema or swelling of the eyelids. No pain could be elicited on palpation of either eyeball. Notwithstanding the downward and forward protrusion of the right one the eyebrows of the two eyes were on the same level.

There was no excessive thirst, nocturia, polyuria, hematuria or pyuria. A complete examination of all other organs revealed nothing pathologic or abnormal.

Several roentgenograms of the head were made and revealed the bony defects. This supplied the second pathognomonic sign of the triad by which Schüller-Christian's disease is recognized. The long bones, pelvis and chest showed no roentgenologic evidence of bone changes at any time.

Six roentgen treatments were given over a period of three months following the date when the patient was first examined, and X-ray studies made at intervals of about six or seven months following treatment showed some improvement in the areas of decreased density in the skull (figs. 2 and 3).

Following Rowland's practice the patient was put on a very low fat diet and the calories were made up with carbohydrate. Because of the satisfactory results that have been obtained with the banana diet in celiac disease and other conditions in

which there is an inability properly to utilize fats the surgical consultant Dr. Mims Gage, suggested that a considerable part of this carbohydrate should be supplied in the form of ripe bananas.

At no time since the patient has been under observation has there been any evidence of diabetes insipidus. There has been gradual improvement in the bony defects of the skull shown in the frontal region in the lateral roentgenograms but the defect in the parietal bone has remained unchanged to any marked degree. There has been little if any improvement in the exophthalmos.

Several blood pictures have been made of which the following is representative: red blood cells 4,200,000; white blood cells 5,750; hemoglobin 75 per cent; small mononuclears 34 per cent; large mononuclears 5 per cent; eosinophils 1 per cent; neutrophils 60 per cent.

The urine was not remarkable. It was clear and had a specific gravity of 1.024, the reaction was alkaline and there was no albumin, sugar or bile. The sediment revealed nothing abnormal. The blood chemistry varied little from the following: nonprotein nitrogen 29 mg. per hundred cubic centimeters of blood; urea nitrogen 14 mg.; creatinine 1.2 mg.; blood sugar 63 mg.; cholesterol 49 mg.

COMMENT

The diagnosis in this case was obviously the Schüller-Christian type of xanthomatosis and confirms the frequently expressed opinion that there may be some variety in the signs and symptoms of any given case. In this instance only two of the triad of symptoms were present, because the child has never developed any evidence of diabetes insipidus. This may be explained by the fact that there are probably no lipid granulomas situated so that they would affect the region of the tuber cinereum or the posterior lobe of the hypophysis. Another positive finding was a more than ordinary loosening of the teeth which is listed as one of the chief symptoms and is believed to be due to destructive processes in the superior and inferior maxilla. The blood cholesterol in this case was 40 mg. per hundred cubic centimeters of blood and if the upper normal of the total blood cholesterol is considered to be 230 and the minimum 100 it will be seen that there was no hypercholesterolemia. Rowland, however, has invited attention to the fact that the cholesterol need not be increased.

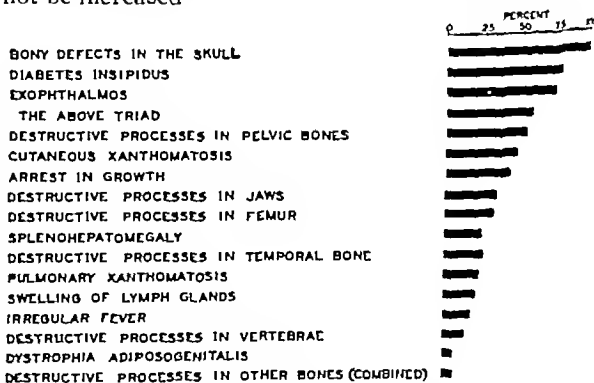


Fig. 5—Age incidence in Schüller-Christian's disease in 134 cases collected from the literature by Jankovsky.

From a review of the literature the impression is gained that there may be any combination of the signs and symptoms with any chronological appearance. It will be noted in this history that the child was struck on the left side of the head when he fell against the rocker of a chair but that the exophthalmos which appeared one year later was in the right eye. Again there is adequate evidence in the literature to indicate that while symptoms may be initiated by trauma or infection they have appeared without either.

Sundelius¹³ has just made a most careful review of the literature and was able to collect information on eighty cases. In sixty-three of these he was able to tabulate the frequency with which various symptoms were encountered. The graph shown in figure 4 was prepared from the figures that he collected. At the time of his review forty-two patients were alive and twenty-one were dead. He was able to determine the sex in only fifty-six of the patients, forty-one were male and fifteen were female. Initial symptoms were traceable in fifty-seven cases and they occurred in the order of frequency shown in the accompanying table.

Dauksys,¹⁴ who tabulated the literature in reporting a case of his own, contends that it is his impression that 123 cases had previously been reported. Seventy-eight of these were males and forty-one were females and in the five others the sex was not mentioned. Almost half of the cases (fifty-nine of the 124) are reported in children under 6 years of age, and two thirds of them in children of 12 years or under. The maximum number of cases was in the second, third and fourth years. The age incidence at the appearance of the first symptom in the 124 cases collected by Dauksys is shown in the graph in figure 5. Beyond the first decade of life the age distribution was fairly general, except in the third decade in which he found

Initial Symptoms in Fifty Seven Cases

| | |
|-------------------------|----|
| Defects of skull | 20 |
| Diabetes insipidus | 14 |
| Loosening of teeth | 9 |
| Gingivitis | 9 |
| Cutaneous xanthomatosis | 6 |
| Arrest of growth | 3 |
| Splenomegaly | 2 |
| Jaundice | 2 |
| Symptoms in the femur | 2 |
| Exophthalmos | 1 |

fifteen of the cases grouped. The blood cholesterol ranged from 525 down to 120 mg per hundred cubic centimeters.

Because of the fact that roentgenology and diet seem to hold out more therapeutic encouragement they were the only two measures used in this case and while it can be said that there has been some improvement in the bony defects of the skull the exophthalmos has not changed to any appreciable degree. No conclusive evidence has appeared to indicate that the administration of endocrine extracts offers any hope of influencing the metabolism of fats or the pituitary secretion.

SUMMARY

1 From the collected literature as well as from observation of the course in this case the impression is gained that Rowland has offered the most plausible explanation of the syndrome which is most frequently referred to as the Schüller-Christian type of xanthomatosis. Until proved otherwise it must be considered to be due to a disturbance of lipid metabolism with an occasional but constant increase in blood cholesterol and a subsequent deposition of lipoids chiefly in the form of cholesterol or its esters in various organs and tissues of the body as well as in the reticulo-endothelial system. Local trauma or infections may determine the location of the deposition of lipid material but apparently neither is necessary.

2 The three characteristic clinical symptoms are bony defects of the skull diabetes insipidus and exophthalmos. The symptoms less frequently encountered

are gingivitis, dwarfism, bone defects of the skeleton other than the skull and occasional adiposogenital dystrophy. A diagnosis of the condition may be made in the absence of one or more of these symptoms, but defects in the skull should be made an indispensable condition for the diagnosis of Schüller-Christian's disease.

3 The most hopeful treatment for this condition is through diet and roentgen therapy applied to the areas of lipid deposit. This apparently benefits the bone defects but does not improve the exophthalmos.

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ABSTRACT OF DISCUSSION

DR H. R. WAHL, Kansas City, Mo. The use of the term 'xanthomatosis' in the title of this paper is confusing. It is apt to be regarded as synonymous with Schüller-Christian's disease when in reality it is a broad term including a wide variety of lesions characterized by an abnormal accumulation of lipid substances. Schüller-Christian's disease is similar to Gaucher's disease and Niemann-Pick's disease in that it represents an accumulation of lipid substances in the reticulo-endothelial system but differs in the type of lipid substance deposited. In Gaucher's disease the lipid is a cerasin, in Niemann-Pick's disease it is a lecithin while in Schüller-Christian's disease it is a cholesterol compound. The concept that xanthomatosis is a metabolic disturbance of lipids with involvement of the reticulo-endothelial system is based on two assumptions neither of which has been proved. The first is that the xanthoma cell is derived from the reticulo-endothelial system. This apparently is true of the three diseases just mentioned but there is much difference of opinion in the nature of the cell in other forms of xanthomatosis, for example xanthomatous deposits in giant cell growths of tendon sheaths. In the second place it assumes that there is chemical evidence of a metabolic disturbance such as hypercholesteremia when the fact is that in most instances such a change cannot be demonstrated. It may be absent even in Schüller-Christian's disease. Moreover xanthomatous deposits are not more frequent in cases in which there is a high blood cholesterol, for example, pregnancy and chronic jaundice. The essential diagnostic feature is the demonstration of lipid deposits (biopsy) in various bones especially of the skull. Other symptoms are usually referable to the location of these deposits, for example exophthalmos and diabetes insipidus. These lipid deposits should be confirmed by suitable lipid stains. Chronic osteitis cystica may resemble this disease but can be eliminated by the evidences of normal phosphorus and calcium metabolism. I am wondering whether the phosphorus and calcium content of the blood was determined in this case. There is another disease that may be confused with Schüller-Christian's disease especially if the latter shows no cholesteremia and that is malignancy with metastasis to bones and skull. Recently such a case in a young child was diagnosed Schüller-Christian's disease but the autopsy revealed a neuroblastoma arising in the celiac plexus and sympathetic trunk with extensive metastasis to the bones and to the skull with exophthalmos.

DR JOHN ZATORSKY, St. Louis. Dr. Strong has done good service in bringing the subject of xanthomatosis before us. Sometimes an intensive study of a rare disease brings out new and important facts. This is a rare disease. In the forty years of my practice I have seen only one case in which I thought this particular triad was present. I have diagnosed two cases of Gaucher's disease one of which was proved to be such by the finding of characteristic cells after removal of the spleen. I was interested in Rowland's intensive study. All his work as well as some recent papers seem to me to have confused the subject very much. These authors have tried to bring all these diseases under the term of reticulo-endotheliosis but this was objected to because a reticulo-endotheliosis is found in many infectious diseases. A recent textbook has these diseases grouped under the name of lipid disturbances and yet a lipid disturbance has not been proved in many of the cases. Consequently we pediatricians are very much confused in the interpretation of this disease. We have been still more confused

¹³ Sundelius, Harald. The Lipoidosis, with Special regard to The Schüller-Christian Type. Acta Med. Scand. 57: 40, 1936.

¹⁴ Dauksys, Joseph. Xanthomatosis. Schüller-Christian's Disease. Missouri Med. J. 32: 40 (Dec.) 1937.

recently by a paper, by Abt and Denenholz, describing the so called Letterer-Siwe's disease, in which a tremendous hyperplasia of the macrophages was demonstrable in the spleen, bones and other organs, but the cells did not contain lipid substances. In the past we have been diagnosing some of these cases as chloroma, and some of them as Banti's disease. I met a similar syndrome years ago in a case which I diagnosed as multiple myeloma. This subject has no great practical clinical importance. It remains for the research men, the histologist and the chemist, to dig us out of this terrible confusion.

DR. ROBERT A. STRONG, New Orleans. Because of the lateness of the hour I have stated only a small part of what was in this paper, and if it is published a considerable number of the points brought out in the discussion will be answered. I realize that this is an unusual and rather rare disease. For that matter, so is erythroblastic anemia. It is scarcely 9 years old. We don't know anything about it, but that is no reason why we should not try to find out something about it. If these cases were brought to our attention, we would probably know more about the disease than we know now. The differential points in the various types of xanthomatosis have been brought out and analyzed in the paper. There are Wilson's disease, erythroblastic anemia, xanthem subitum and several other unusual diseases about which we would like to know more. Concerning the practical value, after all we are in the business of saving children, and children die from these unusual things as well as they do from appendicitis, about which we have heard so much this afternoon.

LYMPHOBLASTOMA OF THE STOMACH

REPORT OF CASE, WITH ESPECIAL REFERENCE
TO THE GASTROSCOPIC APPEARANCE

JOHN F. RENSHAW, M.D.
LOS ANGELES

The gastroscopic appearance of lymphoblastoma of the stomach seems to have been observed in only two cases.¹ The case to be described in this report not only is the third of this type to be recorded but also presents several noteworthy features.

REPORT OF CASE

Mrs. L. L., aged 51, a housewife, seen first Nov. 3, 1932, by Dr. Alexander Brunschwig, complained of a swelling in the neck, of loss of weight and of shortness of breath. The "swelling" in the neck had been discovered two years previously by a physician who was treating the patient for "gallbladder" trouble. The diagnosis was based apparently on an attack of epigastric pain which "doubled her up," nausea and a pale and sallow skin, although definite jaundice had not been present. The painless swelling in the neck had remained about the same size during the two years the physician had had the patient under observation. There had been a loss of 20 pounds (9 Kg.) in one and one-half years, although the appetite had remained fairly good. The shortness of breath on mild exertion had been noted for two months.

The past history and system inquiry were negative except for tonsillectomy in May 1932 for salivation which had given only slight temporary improvement. There was no history of carcinoma in the family.

The patient was fairly well nourished. There was nothing unusual about the skull, eyes, nose or ears. The tongue was large. The papillae at the base of the tongue were enlarged and inflamed. The sublingual veins were engorged and cyanotic. The sublingual glands were prominent. Below the midportion of the mandible on the left side there was a firm swelling about 4.5 cm. in diameter. It was not tender and the overlying skin was freely movable. The neighboring glands were

not palpated, nor were the epitrochlear and inguinal glands. The thyroid was normal on palpation. The percussed area of cardiac dullness was normal and the tones were clear. The pulse was 80 per minute. The lungs were normal. The abdomen was soft. No abnormal masses were palpated. A rectopelvic examination was not made. The extremities and reflexes were normal.

Blood examination revealed erythrocytes 5,000,000, hemoglobin (Sahl) 94 per cent, leukocytes 10,100, with 87 per cent polymorphonuclear leukocytes, 6 per cent large lymphocytes, 3 per cent small lymphocytes, and 4 per cent mononuclear lymphocytes. This blood study was repeated two days later with a similar result. The blood Wassermann and Kahn tests were negative. The urine was normal. A roentgenogram of the chest revealed no evidence of enlargement of the mediastinal glands. November 4 a group of firm, discrete cervical lymph glands was easily excised with the submaxillary gland in toto. Microscopic examination disclosed that the normal architecture was largely destroyed, although a few remnants of germinal centers could be seen. Under low power the nodes were uniformly cellular, with definite invasion of the capsule (fig. 1). The cells appeared uniform in size and had a rounded nucleus with a dense chromatin network and a small amount of cytoplasm. There was no eosinophilic infiltration or fibrosis. No mitotic figures were seen (fig. 2).

Radiation therapy was given for three successive days, the daily dose being 393 roentgens measured in air, through a 15 by 15 cm. portal covering the lateral surface of the neck. Following this the patient felt quite well, gained 5 pounds (2.3 Kg.) in the first month and had no evidence of recurrence until twenty months later (Aug. 29, 1934), when the shortness of breath recurred. A roentgenogram of the chest revealed questionable evidence of mediastinal lymphadenopathy. Additional radiation therapy was given, the daily dose being 306 roentgens through a 20 by 20 cm. anterior chest portal for three days followed two months later by 314 roentgens daily for three days through a 15 by 15 cm. posterior chest portal. Following this course of irradiation the patient was completely relieved of the shortness of breath. Roentgenograms of the chest revealed no evidence of mediastinal lymphadenopathy.

Sixteen and one-half months later, Jan. 14, 1936, the patient reappeared and complained of epigastric pain of one month's duration. A severe pain had appeared suddenly beginning



Fig. 1—Section of cervical lymph gland. Normal architecture is largely destroyed by lymphoblastoma. Delimited penetration of capsule. Red cell from a photomicrograph with a magnification of 120 diameters.

under both costal margins and radiating toward the umbilicus. It had lasted several hours and then persisted as a dull pain and soreness with a sensation of epigastric fullness. Physical examination revealed no lymphadenopathy. There was marked epigastric tenderness, but no masses were palpated. Blood studies were repeated revealing erythrocytes 4,300,000, hemoglobin 144 Gm. (Newcomer), leukocytes 6,800 with 68 per cent polymorphonuclears, 14 per cent small lymphocytes, 6 per cent monocytes, 3 per cent basophils and 9 per cent eosinophils. Roentgen examination revealed faint visualization of the gall bladder after oral administration of the dye. The esophagus and duodenum were normal roentgenologically, but the gastric rugae were markedly enlarged and could not be obliterated by

From the Department of Medicine and the University Clinics, University of Chicago.

1. Schindler, Rudolf. Die gastroscopische Diagnose des diffusen Lymphosarkoms des Magens. *Klin. Wchnschr.* 1: 2046 (Oct. 14) 1922. Thirty Cases of Neoplasms. *Arch. Int. Med.* 32: 635 (Oct.) 1923. Leberbuch und Atlas der Gastroscopie. Leipzig: Lehman, 1923. Moutier, F. Traité de gastroscopie et de pathologie endoscopique de l'estomac. Paris: Masson & Cie, 1913.

pressure. The conclusion was reached that the appearance was due to a marked submucosal infiltration which had not broken through the mucosa, but from the x-ray examination alone it was not possible to differentiate definitely between a marked hypertrophic gastritis, a submucosal infiltrating carcinoma and in view of the biopsy an infiltrating lymphoblastoma (fig 3).

Gastroscope with the Wolf-Schindler flexible gastroscope² was performed with ease January 17 all parts of the stomach

The gastroscopic appearance was spectacularly changed. The stomach was almost normal. The angulus was smooth and the large nodes and ulcers had disappeared. A few small nodes persisted in the lesser curvature but all other parts were normal. Dr Rudolf Schindler also observed both gastroscopic examinations and concurred in the observations and diagnosis.

COMMENT

This case of lymphoblastoma of the stomach presents several noteworthy features. It is the third case of this type to be observed gastroscopically and reported.

Two types of lymphoblastoma of the stomach have been observed gastroscopically. The first two cases reported (Schindler and Moutier) were diffuse infiltrating processes involving the whole stomach. This case was circumscribed.

Schindler's patient was a woman aged 60, who complained of epigastric pain, vomiting, anorexia and weakness. Physical examination was negative. The blood, urine and stools were all normal. There was no free hydrochloric acid with the Ewald test meal. Roentgen examination of the stomach was reported negative. The gastroscopic appearance, however, was striking. The entire mucous membrane was soft and loose. It was covered with a large number of mucous patches and contained unusual mucosal hemorrhages, many of which formed hemorrhagic vesicles and bullae. Many folds throughout the stomach were thickened, rigid, and studded with nodules. Postmortem examination four months later confirmed the diagnosis of lymphoblas-

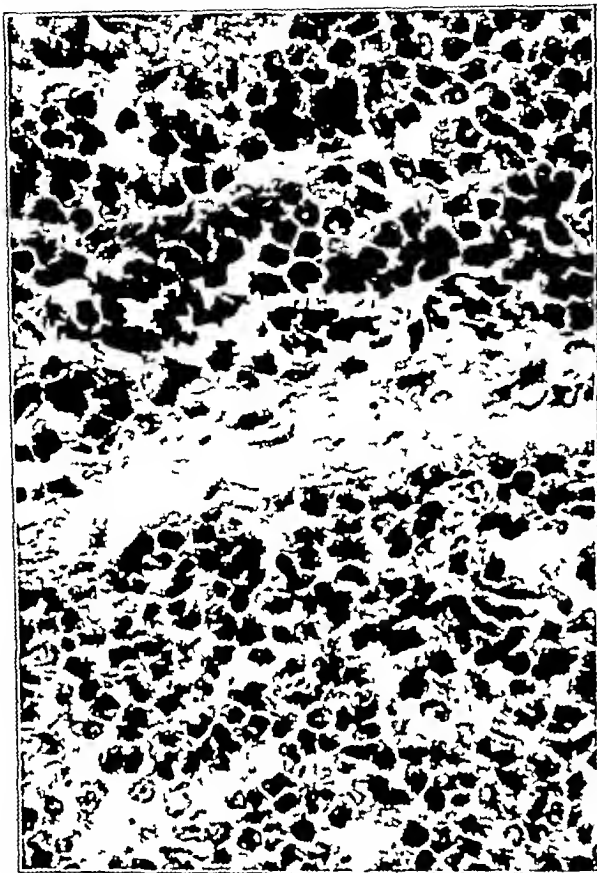


Fig 2—Section from figure 1. Tumor cells are seen in and on both sides of the capsule. Reduced from a photomicrograph with a magnification of 1,160 diameters.

being well seen except the lesser curvature of the antrum. The region of the angulus contained marked changes (fig 4). The angulus was a scalloped nodular curve with a whitish ulceration toward the posterior wall. The musculus sphincter antri was cordlike and nodular. It contained a greenish gray linear ulceration about 2 cm long and 3 mm wide. There was a small hemorrhagic spot on the greater curvature of the antrum in a swollen mucous membrane without folds or nodes. In the lesser curvature of the body just above the angulus there were many large nodes. These extended over the posterior wall of the lower third of the body. The upper parts of the posterior wall were normal as was the entire anterior wall which showed the normal delicate network of folds. The entire mucous membrane was the usual glistening orange red. The surface of the tumor was not smooth but irregular and cauliflower-like yet not definitely papillomatous.

Radiation therapy for the stomach was given 200 roentgens daily through a 20 by 20 cm epigastric portal for five treatments and 200 roentgens daily for three treatments through a lower thoracic upper lumbar portal. One month later February 14 the roentgen examination of the stomach revealed marked improvement. During fluoroscopic examination the stomach appeared normal except for slightly enlarged rugae which however were pliable and could be obliterated with slight pressure. The roentgen film (fig 3) revealed mottled rugae in the upper parts of the stomach and several folds radiating from a point near the angulus. No ulcer crater was demonstrated.

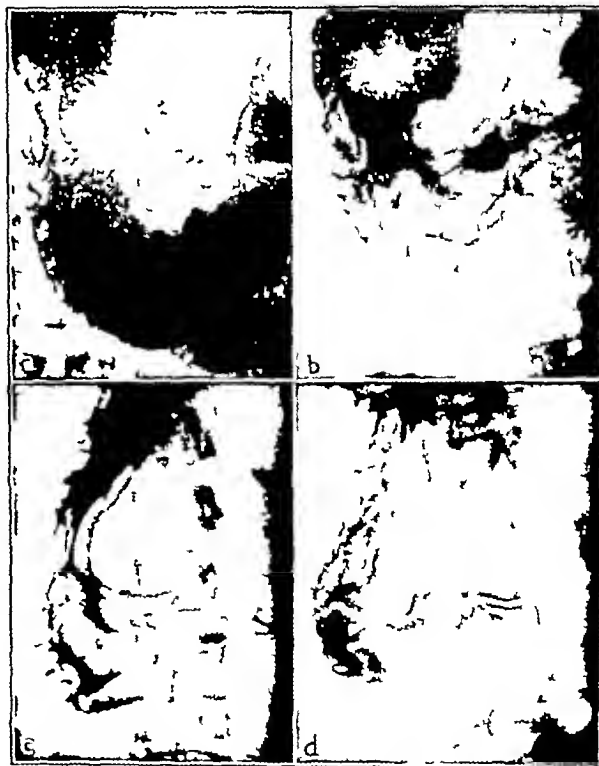


Fig 3—Before treatment: a, no evidence of abnormal contour in filled stomach; b, marked filling defect and thick rugae in filled stomach with compression technique; c, thick folds demonstrated by mucosal relief with a single swallow of barium sulfate. One month after treatment: d, smaller folds and radiation of folds from a point near the angulus.

toma of the entire stomach. Schindler believes that the appearance of the diffuse infiltrating process is characteristic and cannot be mistaken for anything else.

Moutier describes his case as an infiltration of the antrum, lesser curvature and anterior wall. The color was dark or brown red. There were many nodules

² Schindler, Rudolf. Gastroscope with a Flexible Gastroscope. *Am J Digest Dis & Nutrition* 11: 656 (Feb.) 1946.

and erosions and hemorrhagic ulcerations. The mucosa was friable and bled at the slightest trauma. Unfortunately, he omitted a statement of how the gastroscopic diagnosis was confirmed.

In contrast to the diffuse type the circumscript lymphoblastoma is less characteristic.

The differential diagnosis of the gastric lesion of the case reviewed in this report would have been more difficult had there not been a cervical biopsy. The gastroscopic appearance was not characteristic, and the other methods of diagnosis had been of little value. Stool, blood, urine and gastric studies were negative. Roentgen examination of the stomach by means of mucosal relief methods was of little aid. It was not possible to differentiate definitely lymphoblastoma from carcinoma, severe hypertrophic gastritis, granulomas or other submucosal infiltration which had not broken the mucous membrane. Any of these infiltrating lesions cause stiffening of the gastric wall and enlarged rigid rugae.

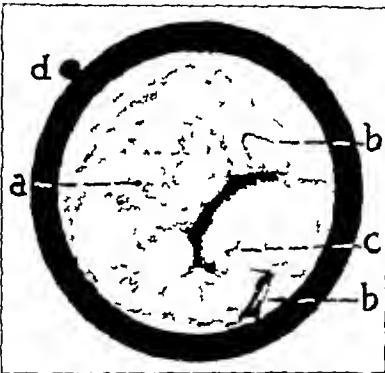


Fig. 4—Gastroscopic appearance before treatment. Marked nodular infiltration (a) two ulcers (b, b) mucosal hemorrhage in greater curvature of antrum (c) position of gastroscopic objective (d)

Without the knowledge of the cervical biopsy and the response to radiation therapy the diagnosis of lymphoblastoma of the stomach would not have been made. This case was a localized nodular process in contrast to the widespread hemorrhagic, nodular infiltration in Schindler's case. This case appeared more like adenocarcinoma. Yet it would be unusual to find such smooth well demarcated ulcers in such a large carcinomatous mass. The carcinomatous ulcer is either a superficial extensive necrosis or a deep crater with a rough base and poorly defined margins. There is more color change as a rule in carcinoma with ulcerations. The dramatic response to radiation therapy, which was inadequate for carcinoma substantiates the statement that this was not carcinoma. A severe hypertrophic gastritis has never been described with the appearance of this case. A severe gastritis is more diffuse and the nodes are never as large as in this case, even in "pseudopolypoid" hypertrophic gastritis. The cases of syphilis observed have had no constant characteristics. There have been tumors with and without ulcers. A positive blood serum reaction is the only definite differential point. In this case the Wassermann and Kahn tests were negative. Tuberculosis of the stomach presents at postmortem irregular ulcers with nodular bases and margins, sometimes with tumor formation. Tuberculosis of the stomach has not been observed gastroscopically. Other granulomas have not been observed.

From the standpoint of therapy and prognosis the differential diagnosis is important. Every means of diagnosis should be employed. Gastroscopy is a definite aid in the diffuse infiltrating form of lymphoblas-

toma. In the circumscript form gastroscopy may be of value if an alert gastroscopist considers the possibility of lymphoblastoma when the gastroscopic appearance is not "typical" of other conditions. Gastroresection was not done in this case because of the previous involvement of the cervical and mediastinal lymph glands and the excellent result from the radiation therapy. Gastroscopy may be of value in the future when dealing with possible recurrences and in evaluating the effect of therapy.

1930 Wilshire Boulevard

Clinical Notes, Suggestions and New Instruments

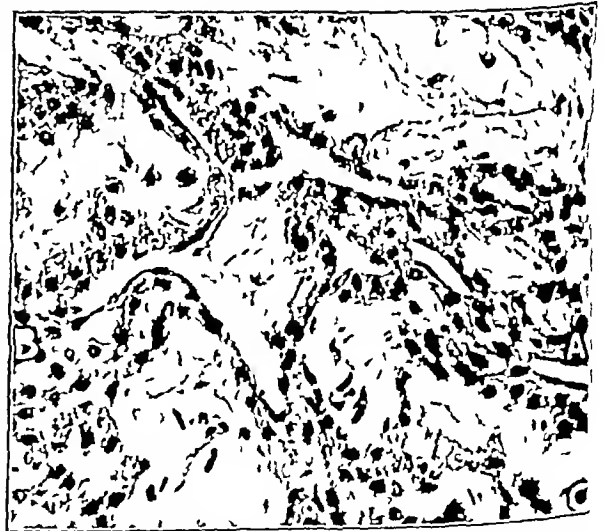
GLOMUS TUMOR ARTERIAL ANGIO-NEUROMA OF MASSON

H. N. COLE, M.D. AND W. E. SROUB, M.D. CLEVELAND

Mrs. J. S., aged 33, a patient of Dr. Sroub's complained of a persistently painful little finger of the left hand Nov. 8, 1933. She stated that seven years before the tip of this finger began to be tender and that this had increased to the present time. It was at this time so exquisitely painful that she could get no relief, day or night. The pain traveled up her arm to the shoulder. She was constantly shielding the finger. There was no history of previous trauma. The nail had been trimmed by Dr. Sroub. Roentgenograms showed nothing. All local measures had been in vain. The patient was frantic.

Physical examination showed a blood pressure of 200 systolic, 110 diastolic, with the left border of the heart in the nipple line. The second aortic sound was accentuated. A roentgenogram showed no cervical rib. Otherwise the general physical examination was negative.

The outer aspect of the nail of the little finger of the left hand showed an area with a faint reddish blue color under the nail and extending out on the soft parts. The area was exquisitely tender to the lightest palpation. There was a suggestion of atrophy of the digit as compared to the right.



Microscopic section from tumor. A, vascular spaces with flat endothelial cells; B, large epithelioid cells with reniform nuclei; C, mucoid neural elements.

Having in mind the complete review and report of Kohn¹ and Mayer² and the report of Lewis and Geckler³ of their experience at Johns Hopkins we made a diagnosis of probable

From the Department of Dermatology and Syphilology of the Western Reserve University School of Medicine.
¹ Kohn, Victor, and Mayer, J. R., *Tumor of the Nail*, *Ann. Surg.* 1934, 100: 111 (June), 123.
² Lewis, Dean, and Geckler, C. F., *Clinical Medicine*, 1934, 105: 775 (Sept. 7), 193.
³ Lewis, Dean, and Geckler, C. F., *Clinical Medicine*, 1934, 105: 775 (Sept. 7), 193.

glomus tumor This was based on its location under the nail on its long duration and on its exquisite tenderness

Under gas ether anesthesia the nail was removed by Dr Sroub and an incision was made along the outer border down to the subcutaneous tissues When these were laid back a small sharply defined, apparently encapsulated, somewhat elongated bluish tumor 1 by 0.5 cm was found The tumor, with the surrounding tissues, was excised in its entirety, fixed in solution of formaldehyde, run through paraffin and cut

A section stained with hematoxylin and eosin revealed a normal epidermis, corium and subcutaneous tissue. In the extreme depth of the section at one end was a fibrous encapsulated portion showing many long vascular spaces lined with flat endothelial cells Outside these spaces were numerous cells with pale staining reticular-like protoplasm containing a deeper stained oblong nucleus—epithelioid cells Scattered freely in between these cells were numerous mucoid like areas representing neural elements of the glomus

COMMENTS

Report is made of a long standing glomus tumor involving a little finger Barre and Masson,³ with special staining methods, concluded that these tumors are benign outgrowths of a structure normally present in the skin and subcutaneous tissue of the whole body The glomus bodies through their neurogenous components, act as regulators of the blood supply of the capillaries and arterials of the skin and thus indirectly regulate skin temperature The tumors are hardly more than enlargements of the normal glomus and are benign

In differential diagnosis one might think of a subungual papilloma, of a subungual fibroma, of a ganglion, of a melanotic whitlow of Jonathan Hutchinson, and finally of a glomus tumor A melanoblastoma would develop more rapidly Moreover, histologic study would tell the story The long duration of a lesion, its increasing painfulness and tenderness, and yet its apparent benign character, the underlying light bluish color of the area all should lead one to suspect a glomus tumor This patient within two days after the operation, experienced complete relief from all symptoms We now feel that with better knowledge of this condition it will be found to be far from a rare entity

1352 Hanna Building

CONTACT DERMATITIS FROM MENSTRUAL PAD

FRANK E. CORMIA M.D. MONTREAL

Psychogenic factors until recently¹ have been given a position of shifting importance in the causation of certain lesions of the skin Kriebich² has stated that many cases diagnosed as contact dermatitis are in reality examples of neurodermatitis with local precipitating factors In a recent case this concept has been strikingly illustrated and will be briefly considered

REPORT OF CASE

History—A generally healthy white Canadian woman, aged 35, a widow, seen in my office Nov 29, 1935 presented an acute sharply margined dermatitis limited to the genital region and adjacent surfaces of the thighs and lower part of the abdomen

Six days previously she first experienced a generalized pruritus, which rapidly became severe being especially pronounced in the genital region Two days later one day before the termination of the last menstruation an acute erythema developed on both labia majora the anterior aspect of the perineum the inner aspect of the groins and the adjacent surfaces of the thighs in a fanlike distribution the mons veneris and the adjacent surface of the lower part of the abdomen The eruption rapidly became elevated owing to an in situ edema, but no macroscopic vesiculation was seen There was an accompanying intense pruritus and burning The area of dermatitis corresponded almost exactly with that covered by the menstrual pad except that the posterior portion of the perineum and the lower inner aspects of the buttocks were spared

The general physical examination revealed only a grade 1 ichthyosis and a mild dermatophytosis in the toe webs There was no history of dietary indiscretion, drug ingestion or use of irritating soaps She did not take douches

Of significant interest, however, was the fact that for some years the patient had been under a severe nervous strain, engendered on the one hand by a markedly restricted budget and consequent financial worries and on the other by the home environment, she and her two children being compelled to live with a sister with whom she was constantly engaged in domestic altercations It is noteworthy too that she was an aggressive and irritable type, with some degree of sexual repression About ten days before the onset of the dermatitis, she underwent the severe mental shock of being unsuccessful in an attempt to obtain a more lucrative position which would have made her financially independent It was during this period of anxiety and acute depression that the generalized pruritus and subsequent dermatitis appeared

The past history included typhoid at 10 years and scarlatina at 30 About one year before the present trouble a markedly pruritic circumoral dermatitis developed The lesions were acutely erythematous, with some edema, and residual lichenification and scale The dermatitis appeared in three attacks, each lasting about five days The onset of each attack corresponded with that of the menstrual period, although a definite endocrine causation could not be found (It is of interest to note here that since the involution of the present trouble there has been a recurrence of the dermatitis this time in the intermenstrual period The only significant associations accompanying all four attacks have been periods of worry and nervous depression) The past and family history was otherwise irrelevant

Contact Incitation—On the day following the onset of the dermatitis in the genital regions, patch tests were done on the forearm flexures with Lux laundry flakes, dilute household ammonia, house water, house dust, cat fur, rayon and woolen bloomers, flannel and silk nightgowns, outer gauze, intermediate and inner cellulose layers of the menstrual 'Kotex' pad, and a control During and after the application (and handling) of the test materials, the patient complained of increasing pruritus and erythema in the lesions The patches were removed after twenty-four hours and no reactions were observed but four hours later the sites of application of both the intermediate and the central layers of the menstrual pad became pruritic and erythematous Vesiculation did not appear but the redness persisted for several days The remainder of the patch tests were negative

Two months after the involution of the eruption (the dermatitis subsided rapidly with soothing local and autohemotherapy), the patient was again tested with the two layers of the menstrual pad to which she had previously reacted The results were interesting Positive erythematous reactions were obtained on the forearm as before, with both intermediate and central layers of the "Kotex" pad There were no reactions in the areas of previous dermatitis

A few days after the completion of this investigation and following a bitter quarrel with her sister the patient developed acute erythema nodosum-like lesions with large surrounding erysipelatous flares on the upper inner aspects of both legs These persisted for about two weeks and were definitely aggravated during three separate periods of nervous stress The fact that fungi were demonstrated from a mild dermatophytosis of the toe webs and that the lesions disappeared two days after treatment of this focus with Whitfield's ointment suggested that the lesions were of the dermatophytid type.³ However a local trichophyton test gave only a delayed response without the development of actual nodose lesions and this supposition could not be definitely verified No foci of infection were evident and the tuberculin test was negative

COMMENT

This patient presented, successively an acute circumoral neurodermatitis, a contact dermatitis from the menstrual pad, and erythema nodosum-like and erysipelatous lesions on the legs A common factor of high tension and nervous shock accompanied all three eruptions

The menstrual pad dermatitis is apparently a dermatologic rarity since a search through the literature did not reveal a

3 Traub Eugene Dermatomyiasis with an Erysipelatous Dermatomyiasis of the Legs abstr Arch. Dermat. & Syph 33:196 (Jan) 1936

3 Barre J A and Masson, P Bull Soc franç de dermat et syph 31: 145 1924

1 van de Erve I M and Becker S W Functional Studies in Patients with the Neurodermatoses J A M A 105 1098 (Oct. 5) 1935

2 Kriebich C Neurodermatitis und Neurodermie Arch f Dermat u Syph 152 672 1926

similar instance. Dr Lloyd Arnold of Chicago⁴ reported that he had heard of a single, although unproved case. Two other patients developed urticaria after the use of "Kotex" pads, but no causal connection was proved. The author has observed, in a case of urticaria due to house dust the rapid appearance of large urticarial lesions (in the contact area) following the application of the menstrual pad. These lesions were observed with two standard types of pad. It is possible that the dust antigen contained sufficient cellulose particles to account for the contact reaction. Dr Arnold also kindly submitted the following information in regard to the manufacture of "Kotex": "Kotex" wadding is pure cellulose. The whole process is for the removing of all other substances, organic and inorganic. There is no foreign material of any kind added to this cellulose."

The mild dryness of the skin was apparently unrelated to the rapidly developing generalized pruritus which was seemingly of neurogenous rather than endocrine (premenstrual pruritus) origin. It is noteworthy that the patient had previously worn the same type of menstrual pad for years again confirming the well known fact that local cellular sensitization may not occur until after many years of intimate contact. The paucity of irritating effects from the use of "Kotex,"⁵ plus the fact that the patient exhibited only a delayed erythematous reaction to the patch test performed at a distant site, suggests that the sensitivity was of low grade. The association of the dermatitis with a period of emotional and nervous shock pointed to a lowered cutaneous threshold to the previously innocuous contact due to an increased protoplasmic irritability thus allowing development of the dermatitis. The negative reaction to the patch test in the area of previous dermatitis was probably the result of a prolonged refractory period.

SUMMARY

In a proved case of contact dermatitis from "Kotex" pads the dermatitis was apparently precipitated by nervous shock, with an underlying contact factor.

2068 Sherbrooke Street West

SOME DIFFICULTIES ARISING IN THE USE OF PROTAMINE INSULINATE

FREDERICK M. ALLEN, M.D., NEW YORK

Observations which I have been enabled to make¹ have corroborated the delayed action and the clinical benefits in suitable cases of diabetes as reported by the first writers on protamine insulinate.² Since this new compound was devised particularly with a view to a better control of the severe and difficult forms, the cases for my first trials were selected chiefly from this class. The tentative conclusion formed up to the present time is that some such cases, characterized by the most labile and fluctuating blood sugar, offer special difficulties for the new treatment. The following summary of one case is illustrative.

A Jewish chauffeur, aged 22, seen in 1920 complained of diabetes, which had begun in 1916. The early record has already been published.³ He passed into a more severe stage through several lapses from treatment, and though the insulin requirement was not extreme the lability of the blood sugar created unusual difficulties. Four insulin injections were given each twenty-four hours until a better plan was found in the timing method which I first described in 1924.⁴ During the following years the blood and urine were kept almost constantly normal on a diet of 80 Gm. of protein, 150 Gm. of

carbohydrate and 2,000 calories, divided into three meals and three extra periods of nourishment of 10 or 15 Gm. of carbohydrate (forenoon, afternoon and bedtime), with 68 units of insulin divided into doses of 30 units one hour before breakfast, 20 units immediately before lunch, and 18 units two hours after supper. Minor readjustments of both the quantities and the timing were made according to occasional tests, and the patient scrupulously followed the exacting program because of his experience of unpleasant consequences from even slight infractions. Some irregularities arose from the sensitiveness to exercise which is common in such cases. They were preventable whenever the patient could foresee the day's activities and add or subtract a few units of insulin. Otherwise he was subject to occasional heavy glycosuria on a day of rest and severe hypoglycemic attacks after especially heavy work. He was warned at the outset to change his occupation but ignored the advice because he knew of no other way to make a living. He thus has been the driver of a taxicab in New York City during most of the time since 1922 and has never had an accident. The saving feature has been that he invariably feels the beginning of one of his infrequent reactions in time to take a lump or two of sugar even in the midst of his driving. During this time he has married and has two children.

The trials of protamine insulinate were carried out during a period of unemployment. Preliminary studies of the blood sugar were made under direct observation and showed satisfactory delayed reduction with the protamine insulin. The later management had to be conducted at home, but the patient's intelligence and training qualified him for particularly accurate cooperation.

Two general plans were tried.

First a prolonged attempt was made to find any quantities or timing of doses that would control the sugar with one, two or three daily injections of the protamine insulin alone. This should theoretically be possible if the only new factor is a delayed absorption and if the convenience of injections by day or by night is ignored. This attempt was unsuccessful.

Second, combinations of old and new insulin doses were tried, given simultaneously or at different times according to the usual method of the Danish investigators. The finding of a satisfactory combined treatment seemed impossible, and the use of the protamine insulin had to be abandoned in this case.

Instead of a greater potency there was found an inability to control the sugar with considerably more than 68 units of the new insulin. On some occasions the dosage was raised as high as 96 units a day in the attempt to stop heavy glycosuria, which was terminated only with the onset of severe hypoglycemia. Instead of smoother blood sugar curves the fluctuations of hyperglycemia and hypoglycemia were more violent than with the old insulin. In one reaction at home the family had to give the semiconscious patient successive carbohydrate feedings up to a total of 100 Gm. before they could revive him. Instead of greater warning of reactions this patient, who had always had clear warnings became subject to attacks of mental confusion or deep unconsciousness, sometimes requiring large amounts of dextrose by vein. The unpredictable times of these attacks, which could not be prevented by any arrangement of injections and nourishment such as is feasible with the old insulin seemed to be only partly accounted for by a cumulative effect of the new insulin over several days. These irregularities of glycosuria and hypoglycemia were the essential cause of failure in this case.

Such difficulties seem to be tacitly implied in some of the earlier writings. The large experience of the Danish workers has apparently given them some reasons for preferring to retain at least one daily dose of the old insulin in most cases. Wilder and his associates describe the careful studies necessary for adjusting even the ordinary types of cases. The paper from Joslin's clinic mentions some difficulties and emphasizes that protamine insulinate is in an experimental stage also. Hagedorn is quoted as suggesting that the compound may not be absorbed at the same rate in all persons. Some of the troubles are presumably due to inexperience. Beyond this there may be some suspicion of irregular rates of liberation of insulin from the protamine compound in the same person, or other variations which may be inappreciable or unimportant in average patients but may have a magnified effect in the most severe or labile diabetic cases.

⁴ Arnold Lloyd. Personal communication to the author.

⁵ The possibility of the source of the dermatitis being an unidentified chemical in the "Kotex" could not be eliminated.

¹ I am indebted to Dr. H. C. Hagedorn and to Eli Lilly & Co. for material they supplied.

² Krarup, N. B. Clinical Investigations into the Action of Protamine Insulinate. Copenhagen 1935. Hagedorn, H. C., Jensen, B. G., Krarup, N. B. and Wodstrup, I. Protamine Insulinate. *J. A. M. A.* 106:177 (Jan. 18) 1936. Root, H. F., White, Priscilla, Marble, Alexander and Stotz, E. H. Clinical Experience with Protamine Insulinate. *ibid.* 106:180 (Jan. 18) 1936. Campbell, W. R. Paper read before the Association of American Physicians in May, 1936. Sprague, R. G., Blum, B. B., Osterberg, A. E., Kepler, E. J., and Wilder, R. M. Clinical Observations with Insulin Protamine Compounds. *J. A. M. A.* 106:1701 (May 16) 1936.

³ Allen, F. M., and Sherrill, J. W. *J. Metab. Research* 2:818 (Nov. Dec.) 1922.

⁴ Allen, F. M. Timing of Insulin Doses. *J. A. M. A.* 82:1937 (June 14) 1924. The Timing of Insulin Doses. *J. M. Soc. New Jersey* 21:223 (July) 1924.

Whether due to lack of skill or to limitations of the method, such results are apt to lead to discouragement and undeserved condemnation if the new treatment is undertaken by the general medical profession with only the guidance of optimistic reports and without warning of difficulties or exceptions.⁵ The present experience suggests two conclusions

First, the present form of protamine insulinate is most fully adapted to the more moderate grades of diabetes. It has not settled the problem of the control of sugar in the most severe and difficult cases, in which the old insulin must still be used either partially or wholly

Second, the great fluctuations of blood sugar with the old insulin as revealed in some of the recent publications should mostly be prevented by proper timing and other simple devices. Likewise the best results with the new insulin will probably not be obtained on any arbitrary general plan but only by adaptation to meet individual needs

Since the foregoing was written, trials of the new metal compounds from Eli Lilly & Co., and of the Stearns crystalline insulin, together with developments in other laboratories, seem to indicate rapid progress toward the goal of dependable forms of insulin absorbable at different rates to suit the individual needs in different cases. Dr Hagedorn's brilliant work may therefore receive credit for the pioneer opening of what promises to be a new era of insulin treatment, apparently of greater complexity as well as greater success

1031 Fifth Avenue.

Council on Foods

REPORTS OF THE COUNCIL

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENTS

FRANKLIN C. BING, Secretary

STATEMENT ON SCOPE OF CONSIDERATIONS OF THE COUNCIL ON FOODS

The Council on Foods has acted recently to limit somewhat the scope of products which it will include in the list of accepted foods. From its inception, the Council decided that fresh fruits and vegetables, fresh meats and eggs and ordinary milks embrace problems of food merchandising which are effectively controlled by local governmental agencies. The scope of products considered was accordingly confined to packaged foods or to foods treated by various means because of a desire to improve their nutritive qualities. The Council however, has always considered it to be a duty to review nutritional claims made in advertising of all food products when such action in the interests of the public and the profession is considered desirable

The Council now has decided to limit its scope further, believing that in so doing its facilities profitably can be concentrated on those food products which require its attention. Accordingly the Council has voted that the following products henceforth shall not be considered, as the need to pass on them no longer exists: ordinary breads and similar well known bakery products the nutritional features of which are generally recognized, frankfurters and other sausage products, carbonated beverages and their syrup bases, dyes for coloring foods and Easter eggs. If any products falling in the foregoing classes should be developed which have nutritional value beyond that of ordinary products, or if special claims are advanced, the Council will consider such claims and report on them when such action is considered desirable

Manufacturers and distributors of accepted products falling within the foregoing classes have been given a reasonable time to use up their present supplies of labels and advertising which bear the seal of acceptance.

⁵ Likewise Winnett, in an article of generally favorable tone (Winnett, E. B. The Treatment of Diabetes with Protamine Insulin. J. Iowa M. Soc. 28: 231 [May] 1936) concludes that much more clinical experience is necessary before protamine insulin is brought into general use.

The Council wishes to take this opportunity to express its appreciation to the manufacturers and distributors of the aforementioned products who have cooperated with the Council in its endeavors to encourage truthful advertising of wholesome food products

From time to time the Council may include other foods in the class of articles not falling within its scope

FOODS FOR WEIGHT REDUCTION

With the changes in the mode of living that characterize present-day urban existence, a considerable proportion of the adult population indulges in comparatively little muscular activity. Eating habits developed during adolescence when the demands of physical activity necessitate a large food intake, may be continued after the need for a high energy intake has ceased. The result is a gradual gain in weight, not conducive to the best health. It is hard for most people to believe how a small quantity of food can influence weight. An intake of 100 calories a day above the energy expenditure means an increase in weight of about 10 pounds in a year. Reducing by increased exercise is not an easy matter, frequently is ineffective, and in some cases may even be injurious. Those who wish to get rid of accumulated body fat must eat fewer calories than they expend in activity

Restriction of the energy intake must be accomplished without reduction of other dietary essentials. The daily intake of protein, minerals and vitamins should be much higher in proportion than that provided by the ordinary diet. Hence a reducing diet should be two or more times richer in these dietary essentials than the ordinary diet

It is now possible to plan for the person whose natural tendency is to eat beyond his caloric requirements a diet which will enable him to burn accumulated body fat and at the same time protect him from the dangers of undernutrition. This may be accomplished in a variety of ways, but the daily program must be definite and one that can be faithfully followed for a long enough period to achieve results. A reducing diet is most successful when it differs radically from the individual's eating habits. The natural foods of which such a diet principally ought to be composed are skimmed milk, leafy vegetables prepared without fat of any kind, fruits without added sugar, and lean meats. In addition, vitamins A and B₁ must be supplied in concentrated form

Under circumstances such that the foods named are obtainable with difficulty, special foods of low energy value may be used to enrich the reducing diet in protein, minerals and vitamins. These do not in the least do away with the necessity for restricting the energy intake, but they enable the person who cannot control the preparation of his own meals or does not know how to plan a diet of low caloric value rich in protein, minerals and vitamins to get a diet of higher nutritive value than would otherwise be possible. Taken in measured quantities, such special purpose foods also serve as a daily reminder of a different dietary regimen and a defense against the solicitations of family and friends to indulge in favorite foods

It is important that the contributions to the day's diet made by any so-called reducing food be clearly indicated. If the product is intended to replace one or two meals a day, suitable suggestions for the other meal or meals should be made. The advertising also should carry a statement that dieting to reduce is not without certain dangers, and it should be undertaken only under medical guidance.

Any foods which purport to reduce weight without alteration of the ordinary dietary program are either of little real value or contain drugs which ought not be administered without the supervision of a physician. Such foods will not be considered acceptable.

Foods intended as adjuncts to restricted diets will be accepted under the category of special purpose foods, with the restrictions as to advertising which apply to Special Purpose Foods, provided always that the name of the preparation is accompanied, wherever it appears on the label or advertising, by the statement "Food Supplement for a Reducing Diet"

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 8, 1936

SERUM TREATMENT OF ACUTE POLIOMYELITIS

In more than one locality this summer the perennial question of the efficacy of convalescent serum in acute poliomyelitis will again be raised. A diagnosis of poliomyelitis can be established in a large percentage of cases days prior to the onset of paralysis, particularly during an epidemic. In New York State¹ in 1931 the diagnosis was made in the preparalytic stage in 55 per cent of cases. The diagnosis and differentiation from other conditions is determined by examination of the spinal fluid in relation to the history and physical examination. It is assumed that early diagnosis offers optimal conditions for effective treatment with convalescent serum.

In a review of this subject in 1934, Harmon² could find no statistical proof of the value of any type of serum based on experiences recorded in the literature. He was careful to point out, however, the almost universal observation of rapid symptomatic response with a drop in temperature and improvement in symptoms, even with the small doses of serum that were in vogue at that time. He stated that this alone was enough encouragement to continue the use of convalescent serum. Park³ denied that convalescent serum had value, as a result of his summary of the observations of the pediatricians of the New York Academy of Medicine on the treatment of alternate cases during the New York City epidemic of 1931. Among 509 patients treated in the preparalytic stage the fatality rate was 38 per cent, as compared to a similar rate of 9 per cent in 408 untreated preparalytic patients. Among the treated group 68.8 per cent had no paralysis at any time, as compared to 73.7 per cent in the untreated group. Persistent paralysis after three to five months was noted in 19.6 per cent among the treated patients.

1 Laidlaw F W. Poliomyelitis in the State of New York in 1931. J. A. M. A. 99: 1053 (Sept. 24) 1932.

2 Harmon P H. Poliomyelitis. I. Experimental and Theoretical Basis for Serum Therapy. Am. J. Dis. Child. 47: 1179 (June) 1934.

II. Results of Treatment in the Acute Disease. Analysis of Reports of 4400 Patients Treated with Serum. Observations on 2660 Untreated Patients. Ibid. p. 1216.

3 Park W H. Therapeutic Use of Antipoliomyelitis Serum in Preparalytic Cases of Poliomyelitis. J. A. M. A. 99: 1050 (Sept. 24) 1932.

and in 11 per cent of the untreated. The strenuous epidemic circumstances under which these observations were made nullify to some extent the magnitude of the study and the value of the conclusions drawn. Indeed, in an almost simultaneous report of the same cases by the New York Academy of Medicine,⁴ it was said that "the untreated group was indeed a much milder group than the treated group. The results of the study are therefore inconclusive." In a smaller series of eighty-two cases in the same epidemic in Hartford, Conn., and in Brooklyn, Kramer and his co-workers⁵ were unable to find any far reaching difference between the treated and untreated cases, which were about equally divided in number.

In both of these studies, as well as in many contributions appearing before this time, the end result two or more years later is not known in relation to serum administration. It is now believed that orthopedic treatment is as much of an emergency procedure in acute poliomyelitis as the administration of serum and deserves equal attention by physicians who treat these patients. A fair estimate of probable recovery from paralysis cannot be made until the end of the first convalescent year. Indeed, many patients show some recovery of muscle strength during the second year. Until such end results are determined, serum should be administered in the early paralytic stage particularly in cases of slowly advancing paralysis and smoldering temperature elevation. The treatment of alternate cases with serum appears questionable from both the public health administration and the practical point of view.

Little attention has been given to the antiviral content of serums used for therapeutic purposes in man. It is well known that from 25 to 60 per cent of convalescents from poliomyelitis possess no neutralizing substances against the virus. This objection is obviated by some serum centers by preparation of pools of serum from fifteen to twenty donors. Even these serum pools do not neutralize the virus in dilutions beyond 1:10 to 1:50, varying with the technique used. Such facts point clearly to the need for concentration of serum or larger doses.

The few studies on treatment that have been made with pooled normal adult serum from man, which carries an equal or greater content of neutralizing substances, show that such serum gives practical results equal to those obtained with convalescent serum. The most potent neutralizing serums so far obtained have been produced in animals. These are not ready for application to man, since reactions from intraspinal administration contraindicate their use. Purification and limitation to extraspinal use might obviate the difficulties.

Data from the therapeutic tests of serum on experimental monkeys cannot be applied to the human disease.

4 Report of Study of Administration of Convalescent Serum in Treatment of Poliomyelitis. Bull. New York Acad. Med. 8: 613 1932.

5 Kramer S D, Aycock W L, Solomon C I and Thomsen C L. Convalescent Serum Therapy in Preparalytic Poliomyelitis. England J. Med. 206: 432 (March 3) 1932.

because of the difference in severity of the disease and the difficulty in management of monkeys with the acute disease. Thus the observations of Brodie,⁶ Gordon⁷ and Schultz and Gebhardt⁸ that convalescent or other neutralizing serum had no effect on the experimental disease, even if administered early, cannot be directly applied to man. However, it must be remembered that some prophylactic value was observed for serum by Schultz and Gebhardt⁹ in experimental monkeys, as they reduced the mortality of that fulminating disease from 7 per cent surviving to 30 per cent. Even though it is improbable¹⁰ that any type of antibody can reach the virus once virus cell union has taken place, neutralization of virus in dead cells and that in transit from cell to cell can take place. So little is known about the distribution of virus in the cord during the preparalytic stage in man that spread within the cord may take place during this and later stages, so that there may be some effect of antibody even at these stages. There are no experimental data on the penetration of antibody into the nervous system at any stage of the disease.

While it is contended by some that there is a smaller incidence of paralysis in the group of cases diagnosed in the preparalytic stage than in those seen after paralysis has set in, independent of serum administration, such a conclusion is not certain, as cases seen after paralysis frequently give a history of a prolonged preparalytic phase. However that may be, the practical results that have been obtained in three recent reports are alone enough evidence to warrant continued use of serum. Jensen¹¹ in the Denmark epidemic of 1934 found there was less acute paralysis, the earlier serum was given in the preparalytic stage, but reported a low total incidence of paralysis. Cowie and his co-workers¹² have reported no residual paralysis in eighty preparalytic cases treated with both human convalescent serum and transfusions from normal adults. Levinson,¹³ in 149 preparalytic cases of the seasonal endemic type in the Chicago area during the past four years observed paralysis in only a few cases. This for the most part, disappeared within a few weeks. He has been especially impressed by the decline of acute symptoms in both the preparalytic group and in early paralytic cases following serum administration.

Large doses of convalescent serum (100 cc or more) given intravenously and small doses (from 10 to 15 cc)

intraspinaly at the time of the spinal puncture are recommended. The intravenous dosage should be repeated in from twelve to twenty-four hours if the temperature is still elevated or symptoms are not subsiding. If future epidemic results can duplicate those here mentioned, the treatment of acute poliomyelitis will be satisfactory and harmless to the patient. There is no other treatment that is even of debatable value. The early and continued use of orthopedic measures will improve results in the acute paralytic disease and in cases in which only paresis appears.

MAD DOGS AND MR. TERHUNE

The recent cinema on the life of Pasteur reacquainted hundreds and familiarized thousands with the importance of the Frenchman's contributions to science. The lay world knows him best as the conqueror of rabies, that common knowledge has played a real part in the acceptance by laymen of the prophylactic treatment of the dread disease. As a result there has been cooperation with the medical profession in waging effective war against it, and the incidence of this animal-borne infection has been greatly reduced in practically every corner of the world. When attention lapses, however, rabies promptly assumes menacing proportions, as illustrated by the quarantine on dogs recently instituted in Cook County, Ill., because of the high incidence of rabies found in dogs that have bitten Chicagoans.

Unfortunately, a lowered incidence of smallpox, rabies or diphtheria always seems to bring scoffing by antivaccinationists, antivivisectionists and others, who charge that attempts to continue prevention constitute a racket. An example of this subversive attitude is an article by Albert Payson Terhune,¹ author and dog fancier, in the August 1936 *Reader's Digest*. The article is well titled—"Beware of the Dog"—and consists for the most part of advice on how to avoid being bitten by a dog. Mr. Terhune, as a well known lover of dogs, is qualified to give this advice and most of it seems entirely reasonable. Unfortunately he includes this additional "information":

One or two more advisory tips. If your technique fails and you are bitten by a dog remember this—not once in many thousand times is the dog rabid. Rabies exists, but it is very rare. Of the almost uncountable bites inflicted during a term of years on attendants in the New York City dog pounds, not one caused a case of rabies.

The bite of a healthy dog is only as dangerous as would be a similar wound inflicted by a piece of metal or bone—plus such possible food infection (not rabies) as may have been on the animal's teeth. If the bite is where your lips can reach it suck it out thoroughly. Then bathe it in luke warm (not hot) water and paint it with iodine. And don't worry. You are in no danger.

If you are afraid the biter had rabies—which he almost never has—use the same treatment but paint the wound with carbolic acid instead of iodine. The acid will burn for a short time but you will be safe.

This advice certainly leaves the reader with the impression that rabies is something that probably won't

1 Terhune, A. P. *Reader's Digest* 29: 39 (Aug.) 1936

6. Brodie, Maurice. The Role of Convalescent Serum in Preparalytic Poliomyelitis. *J. Immunol.* 28: 353 (May) 1935.

7. Gordon, F. B. Active and Passive Immunity in Experimental Poliomyelitis. *abstr. Arch. Path.* 21: 558 (May) 1936.

8. Schultz, E. W. and Gebhardt, L. P. Observations on the Therapeutic Value of Specific Immune Serum in Experimental Poliomyelitis. *J. Pediat.* 6: 615 (May) 1935.

9. Schultz, E. W. and Gebhardt, L. P. Observations upon the Prophylactic Value of Specific Immune Serum in Experimental Poliomyelitis. *J. Pediat.* 7: 332 (Sept.) 1935.

10. Rous, Peyton, McMaster, P. D. and Hudack, S. S. The Fixation and Protection of Viruses by Cells of Susceptible Animals. *J. Exper. Med.* 61: 657 (May) 1935.

11. Jensen, Claus. The 1934 Epidemic of Poliomyelitis in Denmark. Preliminary Report of the Epidemiology, Clinical Features and Convalescent Serum Therapy. *Proc. Roy. Soc. Med.* 28: 1007 (June) 1935.

12. Cowie, D. V., Parsons, J. P. and Lowenberg, K. Clinicopathologic Observations on Infantile Paralysis. Report of 125 Acute Cases with Special Reference to the Therapeutic Use of Convalescent and Adult Blood Transfusions. *Ann. Int. Med.* 8: 521 (Nov.) 1934.

13. Levinson, S. O. A Five Year Review of Anterior Poliomyelitis in the Chicago Area. Illinois M. J. to be published.

happen anyhow, and that at any rate this treatment is entirely adequate. Granted that the incidence of rabies was decreasing in most countries before 1914, that following the World War there was an increase in the number of rabid animals and in human rabies, and that since 1924 "*with the restoration of control measures*"² [italics ours], it is not granted that the disease is so rare as to warrant Mr. Terhune's lackadaisical attitude.

The following statistics are interesting in connection with Mr. Terhune's figures from the New York City dog pounds. They appeared in an article by Lois Stice³ in the July 1935 *Hygeia*.

The health department of Ohio, for instance, recently reported that from Jan. 1, 1934, to March 15 this year [1935], the state laboratory found that 416 out of 1,922 dogs' heads sent to the laboratory for examination showed infection with rabies. During the past ten years fifty-eight persons have died of rabies in Ohio, and other states can probably produce similar records. In these cases health officers usually find that Pasteur treatment was not given or that it was begun too late to win the race with the deadly infection.

An article by Cornwall⁴ in the *British Medical Journal* in 1923 included these figures:

| | |
|--|-------------|
| Number of persons bitten (by animals proved to be rabid) and not given Pasteur treatment | 423 |
| Dead from hydrophobia | 148 |
| Mortality | 35 per cent |

The first Pasteur treatment was given almost fifty years ago and yet the figures from Ohio are for the last year and the last decade and Cornwall's series was reported only thirteen years ago. The failure of victims to avail themselves of this formidable weapon against a disease that is always fatal² can be attributed largely to ignorance, carelessness, indifference, and the widespread dissemination of such advice as that found in Mr. Terhune's article.

The least that can be done in case of dog bite is to cauterize the wound and place the biter under observation in the city pound or a dog hospital. If he develops the disease, begin the Pasteur treatment at once if it has not already been started. If the dog is alive and well at the end of the three weeks, he did not have rabies when he inflicted the wound.⁵ The inconvenience to the dog cannot be weighed in the balance with a horrible death of a human being from rabies. Anyone who has ever seen a child die of this disease would have no hesitancy in making a decision. Although time is an all important factor in the cauterization of these wounds, Mr. Terhune's self cauterization should be recommended only if a physician is not available. His comparison of dog bites with other more ordinary wounds is not warranted because of the many pathogenic organisms found in the dog's mouth.

The effectiveness of the Pasteur treatment cannot be denied or even questioned. True, in adults⁴ there is an occasional case of paralysis following vaccination (3 in 20,000)⁶ which is generally transient (but some times fatal), but this is certainly no contraindication to its use. In ninety-nine out of every hundred cases treated, Pasteur treatment protects against a disease that is always fatal once it develops.² A mortality of 1 per cent in those bitten by rabid animals compared with Cornwall's⁴ figure of 35 per cent should leave no doubt in the mind of any one that it is a most useful measure.

When the average man wants a dog he should consult a dog fancier. But when a dog bites a man the breeding and training of the dog are not matters of chief concern. The possibility of rabies and its prevention are matters for public health officials and physicians. The *Reader's Digest* served its readers badly when it promulgated Mr. Terhune's advice on dog bites.

THE HEALTH OF WOMEN

The profound economic and social changes that have occurred in the lives of most American women and those of other civilized countries during the last fifty years have directed new interest to the health problems which concern women particularly. Theobald¹ has recently considered some effects of "emancipation" on the health of women. The freedom that has resulted from the achievement of economic independence of women has played and continues to play, he believes, a distinct rôle in the causation of maternal mortality. The deleterious effect is based on the fact that it is frequent for women to continue in unsuitable occupations late into pregnancy and also that independence has probably resulted in a marked increase in the number of abortions. While there are probably many advantages in the relatively free association of the sexes, Theobald believes that many undesirable features have accompanied the changed situation. He believes that some effort should be made to educate the young concerning their personal responsibilities resulting from the "new freedom." Furthermore, the economic conditions that have led to the "taxi" dance halls and their equivalents should be remedied if for no other reason than the effect on maternal mortality.

Competitive sports among women have increased to a degree unprecedented in recent times. Theobald believes that physical exercise is as good for women as it is for men but that excessive exercise is more harmful to women than to men. Biologically it must be axiomatic that nothing can be good for a girl that renders her less capable of maternity. Exercise by itself does not appear to have a harmful effect on child bearing, but it is not yet determined whether violent exercise exerts any effect on the development of the

² Rice, T. B. and Beatty, N. *Am. J. Pub. Health* 18: 421, 1928, cited by Zinsser, Han, and Bayne Jones. *Stanhope. A Textbook of Bacteriology*, New York and London: D. Appleton Century Company, 1935, pp. 927-934.

³ Stice, Lois. *Pasteur's Conquest of Rabies Fifty Years Ago*. *Hygeia* 13: 558 (July) 1935.

⁴ Cornwall, Brit. M. J. 2: 298, 1923, cited by Zinsser and Bayne Jones.

⁵ Beckman, Harry. *Treatment in General Practice*, Philadelphia: W. B. Saunders Company, 1931, pp. 62-64.

⁶ McCoy, G. W. *Pub. Health Rep.* 45: 1898 (Aug. 15) 1931, cited by Zinsser and Bayne Jones.

¹ Theobald, Geoffrey. *Some Effects of Emancipation on the Health of Women*. *J. State Med.* 44: 359 (June) 1936.

uterus or on subsequent fertility. The modern cult which permits even violent exercise during menstruation has no sound foundation. The nervous strain of competitive sport is probably greater for women than for men. The indulgence in competitive sports, from the author's observations, seems to have little effect on the posture of women, which in itself is probably of considerable importance. Few of the picked British female athletes had really good chest expansion and many were anemic. The mental aspects of women's emancipation may be equally important. As one critic of the modern girl said, "She demands to be treated as an equal, she expects to be treated as a duchess and she behaves like a washerwoman." Theobald goes on to say

She copies the coolie woman of the Chinese bazaar in plucking her eyebrows, the Siamese peasant in bobbing her hair, the Arab in letting her nails grow like claws and painting them a hideous red, the courtesan in painting all visible parts of her anatomy, and in painting and powdering herself in public betrays incredible vulgarity. She is so restless that she cannot sit peacefully at home, she cannot eat her meals without smoking, and is unhappy unless she is at the dance or cinema.

Although probably more applicable to the particular than to the general, no exception can be taken to the thesis that wanton expenditure of nervous energy begets nervous instability. But it is still too soon to determine what the ultimate effects of mass removal of women from the home will have on their nervous systems and those of their descendants. The question is debatable and if the divergences from biologic normality are not too great the results can be good as well as evil.

Perhaps a corollary of the so-called emancipation of women is the specific health problem that is faced by women who marry. Goodwin² states that when a woman marries there are four main directions in which her life is to be altered profoundly: (1) responsibility for domestic management, (2) companionate life, (3) sex life and (4) reproductive life. With possible occasional exceptions these are all to be new experiences which may in one form or another profoundly affect a woman's physical and mental health. The responsibility for domestic management generally involves a much greater output of physical energy than that to which a woman has been accustomed. This fact should be realized by both parties and attempts made to minimize the possible danger of sudden change by various expedients, such as the adoption of a definite period of rest each day. The problem of companionate existence for a woman who marries is likely to be more difficult than for a man. This is largely because most men have been always to some extent dependent on female supervision while a woman generally develops a philosophy of independence to the opposite sex. Furthermore, a woman cannot so easily escape the problems which the changed mode of life occasion. The third great change, that dealing with sexual life, has lately received much

more adequate medical recognition, but it is certainly still true that in civilized Anglo-Saxon communities the adaptation is usually more abrupt and more difficult than it should be. Preliminary education should do much toward solving this problem. Finally, the problem of reproduction is one which practically every married woman has to face at some time. Here again the possibilities for physical and mental damage to the health are numerous. If carefully contemplated, both physical and mental reactions, however, can be modified in the proper direction. In spite of these difficulties, which might lead one to believe that the health of a married woman is more precarious than that of her unmarried sister, the reverse is actually the case. The biologic norm is more closely fulfilled by marriage, and there can be no question that marriage will increase rather than diminish the mental and bodily well being of a woman, provided simple rules of health are followed.

The questions brought out in these two articles are provocative. The significance of such studies is important from the point of view of individual health and also from that of the community.

Current Comment

THE MARCUS WHITMAN CENTENNIAL AT WALLA WALLA

The American Medical Association and other national organizations will participate in a four day celebration at Walla Walla, Wash., August 13-16, to commemorate the career of the first American physician to practice west of the Rocky Mountains and the first white man to establish a home in the Northwest country—Dr. Marcus Whitman. On a widely varied program Dr. Frederick C. Waite of Western Reserve University, Cleveland, will speak Thursday morning in Pioneer Park on "The Medical Education of Dr. Marcus Whitman." "Medical Practice One Hundred Years Ago" will be the subject of an address by Dr. Olof Larsell of the University of Oregon. The subject of an address by Dr. Harold Behneman of Stanford University will be "One Hundred Years of American Medicine." A portrait of Dr. Whitman, presented by the physicians of the Pacific Northwest, will be unveiled and the public will be invited to the museum of Whitman College, where the medical instruments and books used a hundred years ago will be on exhibition. The second day's celebration will be in honor of Mrs. Whitman, who accompanied her illustrious husband into the Northwest and became the mother of the first American white child to be born west of the Rocky Mountains. The third day will be historians' day, and Sunday will be a religious day. Born in New York in 1802, Dr. Whitman attended the College of Physicians and Surgeons at Fairfield and some years later established himself in practice at Wheeler, N. Y. Dr. Whitman's ambition was to become a medical missionary in the great unexplored Northwest. Although rejected by the American Board of Missions on account of ill health, he persisted and finally received an appointment to

² Goodwin, Aubrey. The Health of the Married Woman. J. State Med. 44: 249 (May) 1936.

accompany Samuel Parker on his explorations Dr Whitman was to be taken aboard the boat of the American Fur Company at Liberty Landing, Mo., but after he had waited three weeks for the boat to arrive it passed him by at the wharf. The Whitman party then proceeded overland through rough and dangerous Indian territory, reaching Fort Walla Walla on the Columbia River Sept 1, 1836. Dr Whitman set about to establish a chain of missions among the various Indian tribes and to explore this country on behalf of the United States. He drove in covered wagons many hundreds of miles over roadless and mountainous land to Fort Boise, to Fort Hall, and back and forth to the missionary stations which he had established and rode thousands of miles over trails no other white man had ridden before, to care for the sick. Other settlers began to trickle into this great undeveloped country and they brought with them some of the contagious diseases. Epidemics of measles and scarlet fever broke out among hostile Indian tribes among whom Dr Whitman had practiced his profession, and many Indians lost their lives. It was a custom in some tribes to slay the medicine men who failed to save the lives of the sick, and that custom is believed to have led to the massacre in which Dr and Mrs Whitman were slain, together with several others on the mission grounds. More than fifty women and children were held as captives by the Indians until ransomed by the fur company. At Wanlatpu on the site of the Whitman mission and home stands the Whitman monument, erected on the fiftieth anniversary of the massacre in 1897. Congress has made this mission site a national monument. Thus through these memorials Dr Whitman's life will continue to inspire others to devote themselves to their country and to the traditions of the medical profession.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Society News—At a meeting of the San Joaquin County Medical Society in Stockton June 4 Dr Charles A. Broadus, Stockton, among others, discussed "Balance of Eye Muscles."—Dr Joseph L. McCool, San Francisco, addressed the Humboldt County Medical Society, June 3, on "Strabismus—Etiology and Treatment."—Funds have been appropriated to establish a department of public health nursing at the University of California at Los Angeles with full academic status.

Graduate Courses—Stanford University School of Medicine cooperating with the San Francisco Department of Health and the San Francisco Hospital will offer graduate courses in the specialties for practicing physicians, September 14-18. There will be a registration fee of \$25, entitling each physician to take a morning and afternoon course and attend all the general meetings. All applications must be mailed to the dean Stanford University School of Medicine, 2398 Sacramento Street San Francisco, not later than September 10. The subjects covered will include obstetrics and gynecology, gastroenterology, pediatrics, cardiology, hypertension and nephritis, neurology and psychiatry, fractures and traumatic surgery and proctology. The general meetings will deal with x-ray therapy, backache, blood diseases and the diagnostic methods and therapeutic agents of syphilis.

GEORGIA

Outbreak of Malaria—Newspapers reported an outbreak of malaria in Cobb County, July 10, which approached an epidemic. There were about 100 cases, most of which were said to be in the southern part of the county. Plans are being hastened to dredge creeks and low lying areas in the country it was stated.

ILLINOIS

First Outbreak of "Milk Sickness" This Year—The state department of health reports that an outbreak of 'milk sickness,' the first recorded this year, "occurred in Perry County in June, affecting five members of one family living on a farm near Denver. The source of the illness, apparently, was milk from cows that had eaten white snakeroot, a poisonous plant that grows in moist, shady places. The disease is now rare, although it was formerly common in Illinois. Settlers are said to have avoided large areas in Illinois for fear of milk sickness during pioneer days, when the disease was known as "Indian trembles." In *THE JOURNAL*, Dec 8, 1928, an item based on an article in the *Atlantic Monthly* by Wilma Frances Minor stated that when the Lincoln family migrated from Kentucky to southern Indiana, their first shelter in Indiana was a shack on a half acre which Thomas Lincoln cleared on Little Pigeon Creek, not far from the Ohio River. When they moved into a more substantial cabin later, about them grew a poisonous plant known as snake-root, deerwort or squaw-weed. "Cows eating it developed a strange malady which attacked also the people who drank their milk. With this mysterious disease Nancy [Abraham Lincoln's mother] became infected. Betsy and Thomas Sparrow, Nancy's aunt and uncle, who, with her cousin Dennis Hanks, had come to live with the Lincolns, had already been stricken and died. Now, in October, 1818, Nancy herself succumbed. In 1830, occurred another epidemic of 'milk sick.' Mrs Lincoln was alarmed [Abraham's father had remarried] and again the family moved, Thomas Lincoln disposing of his land to James Gentry, and journeying with his wife and Abraham 200 miles to a thickly wooded spot on the bluffs of the Sangamon River about six miles west of Decatur, in Macon County, Illinois."

Chicago

Personal—Dr William Allen Pusey was recently elected an honorary member of the Austrian Dermatologic Society.—Dr Percival Bailey, professor of surgery and neurology, School of Medicine, Division of Biological Sciences, University of Chicago, gave a lecture in Carmi, July 2, on the history of the Armenian village Zeitouri in Asia Minor.

Society Sponsors Window Exhibits—A lobby window in the Annex Building of Marshall Field and Company has been given to the Chicago Medical Society, free of rental and service charges, for the display of health educational material. The exhibit now on display is a moving, electrically lighted model showing the circulatory system, lent by the University of Illinois College of Medicine. The background of the window is an allegorical painting representing figures of heart disease, pneumonia, cancer, nephritis and tuberculosis. There is also a card in the window giving the number of deaths from these diseases in Illinois during the first four months of 1934 as reported by the state department of health. The first exhibit, presented early in July, was on eye injuries, especially those caused by Fourth of July accidents. The displays are planned and prepared by the educational committee of the Illinois State Medical Society.

KANSAS

Personal—Dr Francis A. Carmichael has resigned as superintendent of the state hospital for the insane in Osawa-tomic, effective August 1, after twenty-three years service.—Announcement is made of the appointment of the following physicians to the Kansas State Board of Health: George I. Thacher, Waterville; Harry L. Aldrich, Caney; Walter J. Eilerts, Wichita and William C. Lathrop, Norton.

Society News—At a joint meeting of the Brown County Medical Society and the Brown County Dental Study Club in Hiawatha, June 26 Dr Walter Roger Moore, St. Joseph, Mo., among others discussed "Immunization Against Contagious Diseases."—Dr Edward H. Skinner, Kansas City, Mo., was the guest speaker at a meeting of the Butler-Greenwood County Professional Society in Eureka, June 19. He spoke on "Practical Methods for Control of Cancer."—Dr Emmannuel Raymond Gelvin, Concordia, addressed the Clay County Medical Society in Clay Center, June 8 on "Management of Acute

Empyema."—Among others, Dr Edgar A Hines Jr, Rochester, Minn, addressed the Ford County Medical Society in Dodge City, June 12, on "Essential Hypertension."—Among others, Dr Kellogg F Bascom, Manhattan, addressed the Golden Belt Medical Society in Manhattan, July 2, on "Some Aspects of the Anatomy and Physiology of the Testis."—Speakers before a recent meeting of the Reno County Medical Society in Hutchinson included Dr John A Dillon, Larned, on "The Psychiatric Point of View."—The medical societies of Marion, Harvey and McPherson counties held a joint meeting in Newton, June 1, speakers were Drs LaVerne B Spake, Kansas City, on "Acute Infections of the Ear and Mastoid", John A Billingsley, Kansas City, "Acute Inflammations of the Eye," and Fred E. Angle, Kansas City, "Undulant Fever and Its Treatment."

MASSACHUSETTS

Alumni Reunion—Dr David L Belding Hingham, was chosen president of the Alumni Association of Boston University School of Medicine at its recent reunion, and Dr Rudolph Jacoby, Newton, was named secretary. Speakers included Dr Winfred Overholser, commissioner of the state department of mental diseases, Daniel L Marsh, Ph.D., president of Boston University, Dr Alexander S Begg, dean of the medical school, Dr Reginald Fitz, Wade professor of medicine, Dr Henry Clute, professor of surgery, and Mr Walter Mulvihill, Worcester, president of the senior class. Dr Cecil W Clark was toastmaster.

Outbreak of Typhoid—The New York Times reported an outbreak of typhoid in Lowell involving forty-three cases and one death between June 21 and July 25. Sixteen were children in St Joseph's Orphanage. The origin of the outbreak is believed to have been the St John's Day banquet sponsored by the Union St. Jean Baptiste, June 21, in Lowell. The Times reported that the outbreak had been traced to a carrier who was a milk handler. Health authorities in New Hampshire and Rhode Island were urged to watch for typhoid, since several persons from these states attended the dinner. The first immunization clinic was opened in Lowell July 21, and up to 1 p.m. 286 persons had taken advantage of this service. In addition, more than 200 persons who attended the dinner both as guests and as food handlers were immunized.

MISSISSIPPI

Society News—At a meeting of the Mississippi State Pediatric Society in Jackson, July 2, Dr Harvey F Garrison, Jackson, was elected president, Dr John K. Bullock, Jackson, vice president, and Dr Guy C Jarratt, Vicksburg, was reelected secretary.—The North Mississippi Medical Society was addressed in Como, July 15, by Drs Dudley R Moore, Byhalia, on coronary thrombosis, John C Culley Oxford, treatment of fractures, and William W Walker, Memphis, complications of pregnancy.

Health Department News—The state department of health announces that after August 1 no certificates for births occurring more than two years ago can be accepted. A recent WPA project has dealt with checking these records in an effort to obtain missing information. Birth records were searched from November 1912 through the year 1927.—The Commonwealth Fund is considering the selection of a third county in Mississippi for its cooperative service. Either Jones or Lowndes County will be chosen, it is reported. The fund is now assisting the units in Pike and Lauderdale counties.—Dr Ransom J. Jones has been named director of the Pearl River County Health Department, with headquarters in Poplarville. He succeeds Dr Cecil C. Smith, who has been named full time health officer for the newly organized unit in Madison County, with headquarters at Canton.

NEBRASKA

Health at Omaha—Telegraphic reports to the U.S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended July 25 indicate that the highest mortality rate (25.8) appears for Omaha and the rate for the group of cities as a whole was 11. The mortality rate for Omaha for the corresponding week of last year was 13 and that for the group of cities, 10.2. The annual rate for the eighty-six cities for the thirty weeks of 1936 was 12.9 as compared with 11.9 for the corresponding period of 1935. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

NEW MEXICO

Study of Dysentery—The National Institute of Health, U.S. Public Health Service, is continuing a study begun in 1935 of the cause of summer diarrhea in New Mexico. Dr Albert V Hardy, New York, is director of the study and the staff includes Martin Frobisher, Sc.D., Baltimore, Bertha Kaplan Spector, Ph.D., Chicago, Dr James Watt, U.S. Public Health Service, and Dr Teresa McGovern, New York.

Health Officers' Conference—A conference of district health officers was held in Santa Fe, July 9-11, with the state bureau of public health. Among other speakers, Dr John Rosslyn Earp, Santa Fe, state health officer, discussed public health administration, Dr George S. Littell, Santa Fe, director of child health, the maternal and child health program and Dr Albert V Hardy, New York, dysentery. A resolution was adopted urging the New Mexico Pharmaceutical Association to take whatever steps it finds practicable to discourage and to prevent the prescription by drug store clerks and pharmacists of remedies for syphilis and impress on their customers the importance of immediate medical treatment.

NEW YORK

Milkborne Epidemic of Septic Sore Throat—Forty-two cases of septic sore throat in a village of 666 inhabitants were reported in *Health News*, June 22. A culture from a milk handler on the dairy farm was found positive for the hemolytic streptococcus. He had been ill with septic sore throat May 30. Pasteurization of the suspected milk supply was put into effect June 11.

Society News—The Central New York Pediatric Club held a meeting in Rochester recently, with the following speakers, among others: Drs Samuel W. Clausen, on "Alleged Harmful Effects of Cod Liver Oil", Paul W. Beaven, "Incidence of Tuberculosis in Children", Jerome T. Syverton, "Recent Advances in the Study of Influenza", and Charles M. Carpenter, "Undulant Fever in Children".—The Western New York and Ontario Urological Society, branch of the American Urological Association, will hold its next meeting at the Guthrie Clinic, Sayre, Pa., October 10.

Dr Dougherty Made Secretary Emeritus—At the recent annual session of the Medical Society of the State of New York, Dr Daniel S. Dougherty, New York, secretary of the society since 1925, was made secretary emeritus. The emeritus position was created by the house of delegates to continue during Dr Dougherty's lifetime. Dr Dougherty has been secretary of the Medical Society of the County of New York since 1916. He is 75 years old and was graduated from New York University College of Medicine in 1884. For many years he has been professor of otology at New York Polyclinic Medical School and Hospital.

New York City

Death from Rabies—A 2 year old child died of rabies July 25 in Queens General Hospital, after having been bitten by a dog June 27, the New York Times reported. It was said that this was the first death from the disease ever listed in the borough. The biting of several others by dogs has recently been reported and police issued warnings against unmuzzled dogs.

WPA Workers Assigned to Marijuana Eradication—Squads of WPA workers specially trained to recognize marijuana have been placed on duty in the boroughs of the Bronx, Brooklyn, Queens and Richmond to eradicate the weed from vacant lots, in cooperation with the police and health departments. Each squad is accompanied by an officer from the narcotics squad of the police department, who is responsible for turning the weed over to the police for destruction. So far this year the Brooklyn squad has dug up seventeen tons in all four boroughs about forty tons have been eradicated. To prevent spread of the weed it is necessary to dig up the root completely since it sometimes multiplies ten times from one season to the next.

Changes in Staff of Rockefeller Institute—The Board of Scientific Directors of Rockefeller Institute for Medical Research announce the promotion of Dr Irvine H. Page from associate to associate member, Alexandre Rothen, Sc.D., Dr John M. Steele and Robert S. Tipson, Ph.D., from assistant to associate. Dr William Halsey Barker, Rollin D. Hotchkiss, Ph.D., Hubert S. Loring, Ph.D. and George L. McNew, Ph.D., from fellow to assistant. The following new appointments were also announced: Dr Rafael Lorente de No, formerly of

Washington University School of Medicine, St. Louis, associate, Dr Robert D Baird, New Haven, Conn., Dr George K. Hirst, Cleveland, Dr Horace L Hodes, Baltimore, Dr Austin L Joyner, Durham N C, Charles L Mehlretter, Ph.D., Bridgeport, Conn., Dr Benjamin F Miller, New York, Carl G Nieman, Ph.D., Madison Wis., Dr John A. Saxton Jr., St. Louis, and Leonard C Kreider, Ph.D. assistants, Dr Carl G Hartford, St. Louis, and August A Di Somma, A.B., New York, fellows. These changes were effective July 1.

PENNSYLVANIA

Society News—Dr Oliver E. Mattas, Altoona, addressed the Blair County Medical Society, Altoona, recently on "Treatment of Acute Gonorrhea in the Male."—Dr Frank A. Evans, Pittsburgh, addressed the Crawford County Medical Society, Meadville, recently on "Essential Foodstuffs."—Dr Samuel D. Shull, Chambersburg, presented a paper on leukemia at a meeting of the Franklin County Medical Society in Chambersburg recently.—Dr Leonard G. Rowntree, Philadelphia, addressed the Luzerne County Medical Society, Wilkes-Barre, recently on "Organotherapy from the Internist's Point of View."—Dr Samuel Wolman, Baltimore, addressed the Cambria County Medical Society, Cresson, July 9, on tuberculosis.

SOUTH DAKOTA

Society News—Dr Anders E. Johnson, Watertown, was recently elected president of the South Dakota Academy of Ophthalmology and Otolaryngology and Dr F. C. Nilsson, Sioux Falls, vice president. Dr Howard L. Saylor, Huron, was reelected secretary.

Tuberculin Tests in Cattle Not Mandatory—The supreme court of South Dakota handed down a ruling June 24 that mandatory testing of cattle cannot be carried on under existing laws. The decision will prevent the state department of agriculture from forcing farmers to submit their cattle to tuberculin tests.

TEXAS

Testimonial to Physicians—Drs John T. Moore and Marvin L. Graves, Houston, were guests of honor at a dinner given by Harris County physicians June 17 at the Houston Club. The two physicians were recently made members emeritus of the Texas State Medical Association. Dr Claude C. Cody was toastmaster, and congratulatory speeches were made by Drs Howard R. Dudgeon, Waco, president of the state association, Birt T. Vanzant, Charles C. Green, J. Edward Hodges, Moise D. Levy and Merle B. Stokes, Houston. Engraved signet rings were presented to both guests of honor. Both are former presidents of the state medical association.

WASHINGTON

The Marcus Whitman Centennial—As noted in the editorial pages in this issue, the one hundredth anniversary of the arrival in the Pacific Northwest of Dr Marcus Whitman will be celebrated at Pioneer Park in Walla Walla, August 13-16. The first day of the observance will be devoted to honoring the memory of Dr Whitman. Dr Park Weed Willis, Seattle, representing the American Medical Association, will preside and addresses will be made by Frederick C. Wate, Ph.D., Cleveland, on "The Medical Education of Dr Whitman", Olaf Larsell, Ph.D., Portland, Ore., "The Practice of Medicine One Hundred Years Ago" and Dr Harold M. F. Behneman, San Francisco, "One Hundred Years of Medical Progress." In the afternoon a portrait of Dr Whitman will be presented to Whitman College by physicians of the Northwest in a ceremony at which speakers will be Drs James L. S. Stewart, Boise, Idaho, representing the contributing physicians, Dr Ralph A. Fenton, Portland, representing the American Medical Association, and Mr Allen H. Reynolds, president of the board of trustees of Whitman College. The second day of the centennial is dedicated to Dr Whitman's wife as a pioneer mother, musician and teacher. Saturday August 15 will be "Historians' Day" and Sunday a commemoration of Dr Whitman as a missionary. Each day there will be a parade picturing the development of the Northwest emphasizing the program feature of the day. Each evening an outdoor pageant built around the lives of Dr and Mrs Whitman will be presented. Dr Whitman is believed to have performed the first surgical operation west of the Rocky Mountains when he removed an arrow head from the head of Jim Bridger the famous Indian scout.

WISCONSIN

Cancer Institute at State University—The University of Wisconsin Medical School, Madison, announces a cancer institute to be given under the auspices of the Alumni Research Foundation, September 7-9. The first day's addresses will be on "Cancer and Inheritance," the speakers being Dr Lew Kreyberg, Oslo, Norway, Dr Madge Thurlow Macklin, London, Ont., Clarence C. Little, Sc.D., Bar Harbor, Maine, Edgar Allen, Ph.D., New Haven, Conn., and Howard B. Andervont, Sc.D., biologist, U. S. Public Health Service, Boston. Dr James Ewing, New York, will speak Monday evening on "Cancer, a Public Health Problem." Speakers Tuesday will be Gioacchino Failla, Ph.D., New York, on "Influence of Wavelength on the Biologic Action of Radiation", Dr Henri Coutard, Radium Institute, University of Paris, "Reaction of Tissue Cells to Irradiation", Dr Warren H. Lewis, Baltimore, "Tissue Study in the Study of Cancer", Dr Stanley P. Reimann, Philadelphia, "Biology of the Cancer Cell", and Dr James B. Murphy, New York, "Filtrable Viruses in Malignant Neoplasms." Wednesday's session will be a joint meeting with the State Medical Society of Wisconsin, at which the following addresses will be presented:

Dr Ewing, Biopsy in the Recognition and Treatment of Early Malignancy.
Dr Murphy, Relation of Filtrable Viruses to Malignant Neoplasms.
Dr Andervont, Effect of Bacterial Products on the Growth of Malignant Tumors.
Dr Emil Novak, Baltimore, Recognition and Treatment of Early Malignant Lesions of the Uterine Cervix.
Dr Coutard, Treatment of Cancer of the Breast.
Dr Kreyberg, Genetic and Constitutional Aspects of Spontaneous and Induced Tumors.
Dr Allen, Glandular Dysfunction and the Development of Malignant Tumors.
Dr Macklin, Occurrence of Cancer in Different Individuals of the Same Family.

There will also be round tables Monday and Tuesday afternoons on diagnostic problems, filtrable viruses, surgery and irradiation, cytology and etiology. Dr Little will address a public meeting Tuesday evening in Great Hall, Memorial Union, on "A Program for the Control and Prevention of Cancer." Glenn Frank, LL.D., president of the university, will give an address at the opening session.

GENERAL

New Offices of Ophthalmology Board—The American Board of Ophthalmology announces the removal of its executive offices to Room 1002, Beaumont Medical Building, 3720 Washington Boulevard, St. Louis, July 1. Dr John Green is secretary-treasurer.

Academy of Tuberculosis Formed—The American Academy of Tuberculosis Physicians was organized at a meeting in Kansas City, Mo., recently. Membership is open to physicians specializing in tuberculosis and other diseases of the lungs. Officers are Drs Charles O. Giese, Colorado Springs, president, J. Arthur Myers, Minneapolis, and Samuel H. Smider, Kansas City, vice presidents, and Arnold Minam, Denver, secretary-treasurer. Dr William T. Little, Paducah, Ky., was chosen historian.

Society News—The American Nurses' Association, the National League of Nursing Education and National Organization for Public Health Nursing held their biennial convention in Los Angeles, June 21-26.—The National Conference of Catholic Charities was held in Seattle, August 2-6. Speakers included Rev. Alphonse M. Schwitalla, S.J., dean, St. Louis University School of Medicine, St. Louis, president of the Catholic Hospital Association of the United States and Canada on "Medical Social Service and Outpatient Departments" at a meeting of the committee on health (physical division).—National Pharmacy Week will be observed for the twelfth year during the week of October 19.

Prevalence of Infantile Paralysis—Five hundred and twelve cases of infantile paralysis had been reported in thirty-eight states since June 13, according to an announcement from the U. S. Public Health Service appearing in the New York Times, July 31. Alabama led the list with 209 cases and Tennessee was second with sixty. California had fifty-two, Illinois twenty-seven, New York twenty-four and Mississippi fifteen. Several states had only one case, it was stated. For the week ended July 30, 117 new cases were reported, two fewer than during the preceding week. Alabama reported thirty-nine new cases, compared to thirty-five the previous week. States in which the disease had not been reported were New Hampshire, Wisconsin, Minnesota, South Dakota, Nebraska, Delaware, Arkansas, Wyoming, Colorado, Oklahoma and the District of Columbia.

The Sesquicentennial of the Constitution.—The United States Constitution Sesquicentennial Commission, established by a resolution of Congress in 1935, has announced tentative plans for celebration of the one hundred and fiftieth anniversary of the formation of the Constitution. The celebration will begin Sept. 17, 1937, and continue through April 30, 1939, the sesquicentennial of the inauguration of Washington as President, the day on which the World Exposition in New York will be opened. The President of the United States is chairman of the commission and its membership includes the Vice President, the Speaker of the House, five Senators, five Representatives and five commissioners appointed by the President. It is planned to have the initial celebration in Philadelphia at Independence Hall, where the Constitution was signed, special celebrations in the original thirteen states on the anniversaries of the dates on which their respective conventions ratified the Constitution, and celebrations in other states on the dates of their admission into the Union. Governors and mayors, organized groups, libraries and schools have been asked to participate and the commission is preparing many types of material to be used in these celebrations. Representative Sol Bloom of New York is director general of the commission.

LATIN AMERICA

Congress of Physical Therapy.—The Latin American Congress of Physical Therapy, X-Ray and Radium will hold its annual convention in Guatemala City August 17-23. Those attending the congress from the United States will leave from Philadelphia on the United Fruit Liner *Castilla* August 11 and return August 30. Physicians interested in presenting papers and attending the convention may inquire of Dr. Norman E. Titus, 730 Fifth Avenue, or Dr. Cassius L. De Victoria, executive director, 1013 Lexington Avenue, New York.

Deaths in Other Countries

Sir Henry Wellcome, head of the pharmaceutical firm of Burroughs, Wellcome and Company, London, died in London, July 25, aged 82. Sir Henry was born in Wisconsin, spent his early years in Minnesota and graduated from the Philadelphia College of Pharmacy and Science in 1874. He was governing director of the Wellcome Foundation, which has maintained the Wellcome Research Institution in London, to which are affiliated the Physiological Research Laboratories, founded in 1894, the Chemical Research Laboratories, 1896, the Bureau of Scientific Research and the Historical Medical Museum, 1913, the Museum of Medical Science, 1914, and the Entomological Field Laboratories 1920.

Government Services

Use of Narcotic Drugs for Research or Instruction

Medical schools, laboratories and similar institutions using narcotic drugs in laboratories principally for research instruction and analysis are no longer to be classified under the Harrison Narcotic Act as "compounders" of narcotic drugs and subjected to an annual tax of \$24. By an amendment to the act named, approved June 22, 1936, and effective as of July 1, a person, association or corporation, not registered as an importer, manufacturer, producer or compounder but authorized by state law to obtain and use narcotic drugs in a laboratory for the purpose of research, instruction or analysis may register under a new special class of registrants, Class 6, on the payment of an annual tax of \$1.

The use of narcotic drugs for research instruction and analysis was apparently given no consideration by Congress when the Harrison Narcotic Act was passed in 1914. The Commissioner of Internal Revenue undertook to enable medical, dental, veterinary and pharmacy schools, and other scientific schools, colleges and universities, such as were using narcotic drugs primarily in experimental, analytic and research work, to obtain the necessary drugs by classifying them as "compounders" within the meaning of the act. As compounders, however, they were required to pay a federal tax of \$24 a year and to keep and to file periodically the same records required of compounders generally, which were adapted only with difficulty to the uses of the institutions named. Under the amendment to the act recently adopted, registrants in Class 6 must keep such special records relating to receipt, disposal and stock on hand of narcotics as the Commissioner of Narcotics with the approval of the Secre-

tary of the Treasury, may by regulation require. Following is the regulation with respect to record keeping.

'Special Records Required of Registrants in Class 6.—Persons who are lawfully entitled to obtain and use in a laboratory any narcotic drugs or preparations for the purpose of research, instruction or analysis, and who are registered in Class 6, are required to keep complete records relating to the receipt, disposal and stocks on hand, of all narcotic drugs and preparations. Duplicate copies of official order forms used to obtain narcotic drugs and preparations shall be retained (see Art. 70 of Regulations No. 5, as amended) and inventory on Form 713 shall be prepared, the original of which must be kept on file by the maker and the duplicate forwarded to the collector of internal revenue with the application for registration (see Art. 6 of Regulations No. 5). A special record shall be kept showing the date, kind and quantity of narcotic drug or preparation used, the particular purpose or object of such use, and of the identification and disposition of the narcotics or resulting products or residues so used, showing the date, quantity of resulting products or residues, and manner of disposition. The Government does not furnish blanks for the keeping of this record, but it should be in the following form, which lists sample items as a guide.

| | | | | Identification and Disposition of Narcotics or Resulting Products and Residues | | |
|---------------|----------------|----------|---------------------------|--|---------------|--|
| Narcotic Used | | | | Prod- ucts or Resi- dues | Quan- tity | Disposition (Destroyed Retained or Returned) |
| Date | Kind | Quantity | Purpose | Date | | |
| | The- baine | 1 oz. | Experimental synthesis | None | None | All residues de- stroyed |
| | Mor- phine | 1 oz. | Experimental synthesis | Co- daine | 1/2 oz. | Retained for in- structional ex- hibit |
| | Narco- tine | 50 gr. | Mineral analysis | None | None | Consumed in analysis |
| | Crude opium | 1 lb. | Assay | Crude opium | 1/2 lb. | Returned to registered per- son describing assay on order form No. |

"Official order forms shall be used to cover all transfers of narcotic drugs to and from registrants in Class 6, including preparations and remedies which might otherwise be exempt from this requirement under Section 6 of the Harrison Narcotic Law, as amended. Articles 65 and 106 of Regulation No. 5 are modified accordingly.

"Any product or residue resulting from the use of a narcotic drug or preparation obtained upon order form, which is desired to be retained for further research instruction or analysis, shall be placed in a container legibly labeled with the name of the narcotic drug or preparation and the date produced.

"Any sale of a narcotic drug or preparation by a registrant in Class 6 shall render him liable to registration and to payment of tax in Classes 1 or 2, as the facts may warrant, and to compliance with all other requirements of the law and regulations governing sales by registrants in Classes 1 or 2."

Dr. Williams in Charge of Quarantine Service

Dr. Charles L. Williams, senior surgeon U. S. Public Health Service and officer in charge of the Algiers Quarantine Station, New Orleans, has been promoted to assistant surgeon in the service in charge of the foreign quarantine division for the entire United States, it is reported. Dr. Williams was to have left New Orleans for Washington July 1. He will be succeeded at the Algiers station, where he has been in charge three years, by Dr. Harry E. Trimble, who has been stationed in San Francisco.

Appointed Rear Admirals

Capt. Will Melville Garton and Capt. Ulys Robert Webb were recently raised to the rank of rear admiral in the medical corps of the U. S. Navy. Captain Garton who is on duty as medical aid in the eleventh naval district, San Diego, Calif., was commissioned an assistant surgeon in the navy Aug. 5, 1898, during the Spanish-American War. Captain Webb, in command of the Naval Medical Center, Washington, D. C., was appointed in the navy Oct. 21, 1901.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 20, 1936

Health Insurance and the Voluntary Hospitals

The British Medical Association has submitted to the Voluntary Hospitals Commission an important memorandum, which shows the great changes that have taken place in the hospitals in recent years. At the beginning of the century the voluntary hospital (so called because maintained by the voluntary subscriptions of the charitable) was a place where the poor could obtain medical service, today it serves four fifths of the community, for the majority of whom it has become an agency for the provision of specialist institutional service. One cause of the change is the progress of medical science with its more elaborate methods of diagnosis and treatment, which cannot be easily obtained outside the walls of an institution and which, when they can, are extremely expensive. On the other hand, persons who attended hospitals because they could not afford to pay ordinary medical fees are now provided for by the national health insurance system (except as regards specialist services) or by provident schemes. The British Medical Association therefore thinks that the voluntary hospital should confine itself to the services which hospitals alone can provide, insisting that all its patients should obtain other necessary attention elsewhere. The outpatient department should be exclusively consultative, accepting, except in emergencies, only patients recommended to the hospital by their own physicians as requiring specialist attention.

There has long been in this country another hospital system, which has also undergone great change recently—what used to be called "the Poor Law Hospital" but is now termed the municipal hospital and has a bed capacity twice that of the voluntary hospitals. These hospitals were maintained by taxes and their medical staff was whole time and paid. They were open only to the destitute and were to a large extent infirmaries where many of the poor ended their days. Now they have become well equipped hospitals, rivaling in some ways the voluntary hospitals and they are open to all the inhabitants of the area. Those who can afford to pay are charged according to their means. The one important difference from the voluntary hospital lies in the medical staff. They are full time and paid in the municipal hospital, and their whole careers lie in its service. In the voluntary hospitals the staff work for only part of their time and are unpaid. The advantage is that the voluntary hospital is the one portal to consultant and specialist work. It also supplies the medical teachers. Thus its staff has much greater prestige than that of the municipal hospitals. Even this difference will probably diminish in time. Already the municipal hospitals have appointed paid part time consultants from the staffs of the voluntary hospitals. Though these hospitals are steadily increasing in importance the British Medical Association does not in this memorandum make any recommendation with regard to them.

REORGANIZATION OF THE VOLUNTARY HOSPITALS

It is pointed out that the majority of persons obtaining treatment at the voluntary hospitals now pay something and that the field of private practice has inevitably become contracted and consultants particularly the younger ones are finding increasing difficulty in maintaining themselves. In the view of the British Medical Association the medical staff should be remunerated for all medical service in hospitals for which payment is made directly or indirectly—by contributory scheme, local authority employer or patient. The voluntary hospital

and the municipal hospital are serving the same section of the community, and the principle of remuneration for services should apply to the two.

The small voluntary hospitals that exist all over the country away from the large cities are a different problem, as they are staffed by general practitioners. The British Medical Association holds that the importance to a general practitioner and to the efficiency of his service to the community of association with a hospital is difficult to exaggerate. There is a growing need for more extensive provision of the type of hospital in which he can treat cases falling within his sphere of competence.

The problem of the hospital outpatient has assumed considerable dimensions. The growth of the contributory scheme is responsible for the misuse of outpatient departments. The public has been slow to realize that a person is entitled to outpatient benefit only when in the view of the medical staff his condition demands it. The public has been slow to realize that the outpatient department should be complementary to and not a substitute for the medical care obtainable from private physicians. The one remedy recommended is that, except in emergency, all patients on presenting themselves at a hospital should produce an introductory letter from their own physician.

Race and Culture

The misuse of racial arguments for political purposes has caused the Royal Anthropological Institute and the Institute of Sociology to appoint a committee of anthropologists, including Sir Grafton Elliot Smith, Profs. Le Gros Clark, H. J. Fleure, J. C. Flugel, R. Ruggles Gates, J. B. S. Haldane and others to consider the racial factor in cultural development. Some difficulty was experienced in defining the term race and in the report a series of definitions by different members is given, but it was agreed that a race is composed of one or more interbreeding groups of individuals and their descendants, possessing in common a number of innate characteristics which distinguish them from other groups. In the present state of our knowledge we are dependent on physical characteristics for differentiating races. Sir Grafton Elliot Smith, chairman of the committee, observes that it is important not to fall into the common error of confusing race with nationality. The conception of race is analogous to the biologist's idea of species. A nation is a man-made assemblage of peoples, usually of various races, associated as a result of historical circumstances who in the course of time cooperate in building up a distinctive set of customs and beliefs. These become their "social heritage" not in the sense of something which they inherit in the biologic sense from their forerunners but of something which the latter have adopted, modified and handed on. National culture is stated usually to be the adoption of alien practices and ideas and their adaptation to the circumstances of the adopters at the time. It is so often assumed, particularly in the recent discussion of the Aryan question, that there is an innate tendency for certain races to develop distinctive types of culture and character which make them particularly desirable or undesirable elements of the population. There is no evidence to justify such a belief. The acquisition of culture is not due so much to innate qualities as to historical circumstances and quite arbitrary factors, though temperament may play some part in the acquisition of culture. Prof. Ruggles Gates points out that while in the past isolation was the evolutionary factor in the production of race, intermixture has largely taken its place and evolution still goes on, but in a different way.

A Diver's Ordeal

Mr. James Mearns, aged 56, a diver was working in a Scotch loch 170 feet below the surface when water entered his suit and at this high pressure paralyzed his legs. When he sent a message to the surface the men above knew that if they did not

him up slowly he would almost certainly drown and that if they pulled him up quickly he might die as a consequence of the sudden change of pressure on his body. They decided to pull him up fairly quickly, and the rapid change caused bubbles of nitrogen to form in his blood, which threatened to stop the circulation. Twice he was sent down again in another diving suit and brought up slowly in an endeavor to drive out the bubbles. But he was unable to stand the cold until these measures were successful, and it was decided to send him to University College Hospital, London. From the hospital he was sent to the premises of Siebe, Gorman & Co, submarine engineers, where he was again placed in a decompression chamber. While a careful watch was kept through the observation window, the air pressure was slowly increased until equal to that to which he was subjected when 170 feet under water. Slowly he moved his limbs about, striving to drive out the nitrogen bubbles. Six hours later the pressure was slowly reduced. He derived considerable benefit and was able to move his right leg strongly and his left a little. He was then taken back to the hospital.

PARIS

(From Our Regular Correspondent)

July 6, 1936

The Future of Medicine in France

The recent wave of socialization of industry in France is having its influence on the medical profession. In an editorial by the secretary of the society that looks after the economic relations of the physicians of the department of the Seine, Barlerin writes that, since our ideas are subject to constant evolution, physicians should not be astonished that certain individuals are attempting to modify the manner in which medicine should be practiced. It is true that the profession should not stand still but adapt itself to the problems of the hour. One of the fundamentals of the art of healing which the profession wishes to keep intact is our independence, which permits us to utilize in our relations with patients the qualities of kindness, prudence and devotion, which are indispensable. If the physician maintains his independence, he can carry out his obligations toward the sick in a dignified and conscientious manner according to the precepts of Hippocrates. Certain political doctrines more in favor at present than at any previous epoch, have a tendency to wish to subordinate all the activities of a nation to control by the central government. Using "social progress" as a pretext, physicians would be obliged to care for the sick only at the command of state officials who have elaborated regulations which are incompetent from the medical standpoint. Now, experience in France has shown that it is the patient who suffers from making medicine subservient to bureaucrats. The protagonists of state medicine will not suffer, because they know how to escape such a maladjustment of the practice of medicine. Workers of all classes will pay for these experiments of futurist medicine by inadequate service if the medical profession does not rise up and make an organized effort to check the threatened invasion. One of the essentials on which modern medicine rests is the free choice by the sick of his or her medical attendant. This cannot exist when administrative (state) medicine requires a physician to report to the officials the diagnosis he has made in every case forbids the use of certain drugs, and last but not least limits the fees to such an extent that a great many patients must be seen every day in order that enough can be earned to support the family. It follows that very little time can be devoted to the individual case. These conditions exist already in certain public and private administrations, railroads and factories, so that when the employees of such organizations really feel the need of competent medical advice they prefer to consult a physician not connected with the respective organization, only calling on the

physician of the latter to issue a certificate allowing them to be absent from work. Many young physicians, faced with the difficulties of earning a living in private practice, regard bureaucratic medicine as a means of escape, because the hours are limited there is less individual responsibility, vacations are paid and there is a prospect of a pension on retirement. Such recent graduates have made the struggle against state medicine difficult in France. They do not understand that they are giving up their professional independence and thus are unable to give their patients the care which a personal relation without bureaucratic dictation demands.

Where Does the Money Go?

In the report made in March 1936 by the secretary of labor on the functioning of the social insurance law for 1933, some interesting figures were cited. The Parisian region (including the department of the Seine, in which Paris is situated, and four adjacent departments or counties) received about a third of the entire amount received as premiums in all of France. This third is 583 million francs (about 38 million dollars). About 54 million francs (about three and a half million dollars) was disbursed for medical care, 47 million francs for drugs and 50 million francs for hospitalization, 110 million francs was spent for loss in wages and awards for breast nursing 7,800,000 francs for medical controllers or supervisors (administrative) and 25 million francs for other costs of administration. Finally, 257 million of the total 583 million francs was placed in the reserve fund. The outlay for medical care represents only 10 per cent of the total received for premiums from employers and employees, so Drouet, in an article citing these figures and published in the *Journal de médecine* March 26 asks the question "Where does the money go?"

Some Difficulties of Social Insurance

At a recent meeting of a regional office for collection of dues from employers and workers, a speaker called attention to one of the most difficult problems which the social insurance administration in France has to meet. This is the failure of many employers to turn over to the caisses, or regional centers, the sums received from their employees as well as their own proportion of the premiums. These employers only too often utilize such funds in the conduct of their business so that, when they go into bankruptcy or are forced by judicial action to liquidate, the social insurance cards of the employees show unpaid premiums. Another difficulty is the decrease in some regions of the number of assured. In his own district this amounted to one third of those formerly insured. The increase in the number of so-called mild illnesses, for which the assured claim full compensation, has become very noticeable since unemployment has become more marked in France. This item shows five times as many claims in 1935 as in 1931, during which period the number of claims for "severe illnesses" has also risen. Whereas there is a rise in the amount of premiums paid by the employers and employees and the sums disbursed to the assured worker is decreasing, the administrative costs remain the same. Sums amounting to billions of francs have been lost on poorly selected investments of the funds held by the central bureau, which receives a certain proportion of the premiums. The fees received by the medical profession which has been most loyal in its cooperation with the social insurance authorities, account for only a minimal proportion of the funds received by the administrators of the law.

Professor Vaquez, Eminent Cardiologist, Dies

One of France's most distinguished physicians, Professor Vaquez, died in April at the age of 75 years. Up to within a few weeks of his death he took part in the meetings of the *Académie de médecine*. He had been a pupil of Potain and did not cease during his entire career to glorify the teachings

of Potain. In clinical research, Vaquez was the acme of precision and the possessor of a spirit of self criticism which he had acquired from Potain. Vaquez always seemed to be in good humor and his clinics were visited by cardiologists from all parts of the world. He was professor of clinical therapeutics, first at the Hôpital St Antoine and later at the Hôpital de la Pitié. In hematology, the work of Vaquez on polglobulism and erythremia will always be regarded as an important landmark. His contributions to cardiovascular pathology played a more important part in the development of this field of internal medicine than that of any other French clinician. His papers were translated into most of the modern languages and his reputation attracted patients from every foreign country. This homage did not alter his modesty. At medical meetings his concise and clear discussions attracted the attention of every one. He had many friends, representatives of the best in medicine, letters and arts.

BELGIUM

(From Our Regular Correspondent)

May 12, 1936

Congress on Forensic Medicine

The International Congress on Forensic Medicine was held recently at Brussels.

SOCIAL MEDICINE AND FORENSIC MEDICINE

Dr Sand addressed the congress on the extent to which social medicine may be combined with legal medicine. Although certain aspects of social medicine may be profitably included within a course in legal medicine, it does not follow that all social medicine should be incorporated within the framework of legal medicine. If such were the case, other branches of medicine would be impoverished. Social medicine cannot be considered a specialty, on the contrary, it represents a synthesis, a general point of view with which neither student nor practitioner should be unfamiliar. A professor should effect an understanding with his colleagues whereby a question which clearly belongs in the province of forensic medicine or of hygiene or of clinical medicine should be left to the instructor in those subjects. On the other hand, the professor should outline the constituent elements of social medicine and point out the connection with special fields.

POSTTRAUMATIC NEUROSES

Dr Castedoat stated that posttraumatic neuroses are of many varieties. They differ from ordinary neuroses only by virtue of the circumstances under which they occur. The symptoms are similar to those of apparently spontaneous neuroses and neuroses of constitutional origin. Accordingly it is to be asked what influence, if any, the traumatism exercised. A true neurasthenia involving the entire organism can apparently be created by a shock directly affecting the nerve centers. Manifestations of hysteria do not occur subsequent to traumatism excepting among predisposed persons, but one should be loath to regard such a predisposition as a pathologic state or even as specific. It is difficult to evaluate the ingenuousness of apparently hysterical manifestations in a given case. If analysis of somatic symptoms furnishes no clue and the mental condition of the hysterical patient presents absolutely nothing characteristic, one can only resort to extramedical arguments devoid of real scientific value. Moreover, certain cases exhibit an apparent combination of good and bad faith. These considerations have influenced the development of the policy adopted by civil experts in cases of industrial accidents (grant of a small income convertible into capital) as well as that adopted by military experts in time of war (presumption in favor of the victims' good faith and abstention from imposition of dis-

ciplinary penalties). Posttraumatic neurasthenia is due, at least in some instances, to active organic lesions or to cerebral and meningeal cicatrices. In general the dysfunctions manifested are genuine and important. Emotional neurosis and psychasthenia observed following traumatism may be without exception considered as preexistent, the accident acts only to externalize and aggravate these latent conditions. Sinistrosis is not a specific disease. The term may apply to diverse mental conditions, some of which, wholly or in part, are of a pathologic nature, while others may be imputed to a bad faith bred of avarice. Thus by a veritable abuse of the term, the character of pathologic conditions may be attributed to actual simulations. Correct usage of the word "sinistrosis" is therefore not easy. Even if hysterotraumatism is no longer indemnified according to the "ready reckoners" established in 1915 for service men, indemnification continues to be granted on the basis of these tables in cases of industrial accidents. Only motivation of other than a medical nature can explain this discordance.

The Air Service in Medical Emergencies

The Royal Aero Club of Belgium announces that the emergency airplane section formed from its membership and placed under the patronage of Queen Elizabeth is soon to hold its initial meeting. The organization of this unit imposes an obligation on all. The use of the airplane in emergencies created by accident and disease has been productive of marvelous results. It has made possible the saving of human life in tens of thousands of instances in which sick or injured persons would otherwise have been condemned to certain death accompanied by much suffering. Evacuation by airplane of the sick and injured will not often be resorted to in our home country with its various transport facilities and its abundance of highly specialized hospital equipment manned by an army of physicians of the first rank. But the colony is less fortunate. There the introduction of airplane emergency service is urgently needed. In the Congo, where vast regions are deprived of all means of speedy communication, a person who does not receive necessary medical attention within twelve to eighteen hours after sustaining a serious injury is doomed. The airplane can traverse, in hours, distances that would necessitate an agonizing journey of from six to ten days by other means of transport. Regardless of cost, the colonial subjects of Belgium will be provided the best possible opportunity for medical attention.

National Prosthetic Service

Victims of industrial accidents whose condition necessitates a prosthetic appliance have heretofore received certain funds to cover the renovation, upkeep and replacement of the appliance, but there has been no advisory body to aid and guide these persons in the administration of such funds. A bureau has been set up to meet this need. Its duty will be to furnish advice to and administer the affairs of the victims of industrial accidents and other similarly disabled persons. This bureau is to be known as the "National Prosthetic Service" and it owes its creation to the minister of labor and social security. This service is to supervise the upkeep and renovation of orthopedic and prosthetic appliances issued to the victims of industrial accidents. The administration of the maintenance allowance will be confided to the bureau by the recipients. The National Prosthetic Service is directed by an administrative board composed of (a) two physicians, (b) two workers, representatives of the principal labor organizations, (c) three representatives of approved industrial accident insurance companies and (d) two representatives of the principal organized groups of persons maimed in industrial accidents. In addition two deputies of the minister of labor and social security are attached to the administrative board in the capacity of governmental commissioners.

ITALY

(From Our Regular Correspondent)

May 30, 1936

Treatment of Empyema

In a lecture recently delivered before the Accademia Medica of Rome, Professor Stefanini reported the results of drainage between the eighth and tenth ribs, with negative pressure, in the treatment of acute postpneumonic empyema. The speaker obtained satisfactory results in thirty-six cases. The advantages of the method, in comparison with open drainage, are diminution of mortality, absence of pneumothorax, rapid expansion of the lung and early adaptation to the parietal pleura and rapid recovery.

Prof Raffaele Bastianelli stated that the criteria hitherto followed in operations for empyema frequently have been arbitrary and not based on physiopathologic principles such as are the fundamentals of constant aspiration. The results obtained in cases of general empyema especially in patients in the hospital, should be a warning to avoid performance of open drainage in total empyema. Open drainage in these cases may result in development of secondary infection and fistulas. The speaker advised a small incision in thoracotomy, making the following steps, whenever possible, with a negative pressure. In cases of general empyema, aspiration is the preferable treatment. He stated that the incision over the fourth and fifth ribs, between the two axillary lines, is preferable to the lower incision, because the former prevents the formation of thoracic fistula whereas in the latter the diaphragm, during elevation, may come in contact with the drainage tube and disturb the free elimination of the exudates.

Professor Chiasserini showed his preference for the use of a rubber tube in the drainage, instead of using Pezzet's drainage. A drainage with a valve is not to be used in putrid empyema.

Professor Egidi did not share the optimistic opinions of his colleagues. Aspiration has been known in hospitals for a long time and its failure to achieve popularity shows that its results are not satisfactory. The maintenance of negative pleural pressure establishes favorable conditions for respiration and also for the return of normal expansion of the lung.

Aspiration of the secretions and lavage of the pleural cavity are useful means of controlling sepsis. But, according to the speaker, this type of treatment is similar to the closed one, both of which are insufficient. In some cases of putrid empyema the fibrin masses block the tubes and sepsis extends to the thoracic wall. The expansion of the lung can be obtained by bronchial hyperpressure as well as by pleural hypopressure. Bronchial hyperpressure does not prevent the treatment of pleural sepsis and can be produced by simple, although not perfect means.

Professor Alessandrini supported Dr Stefanini's method. The use of drainage with negative pressure reduces the duration of the treatment and gives better results than aspiration under positive pressure. Stefanini said that the drainage from the fourth to the sixth space is insufficient to permit complete elimination of the exudates when aspiration of about 50 cm. of a water column is used. The speaker did not agree on the use of a large incision in the pleura because of the difficulties presented during pleural suture.

Chronic Appendicitis

Professor Tramontini, in a lecture recently delivered before the Società di Scienze Mediche di Conegliano e Vittorio Veneto, discussed chronic appendicitis the existence of which is admitted by some surgeons and authors and denied by others. From a medical point of view it cannot be denied since Leotta and his pupils of the Bari University systematized the disease in the complicated syndrome of the right abdomen. The disease does not represent acute appendicitis in miniature with typical symptoms and muscular defense, but it has its proper picture as a

form of chronic intestinal or gastric dyspepsia. At operation, more or less strong adhesions and inflammatory conditions of the appendix, ecchymotic points and canalicular suppuration may be found, or else perivisceritis of a type of membranous pericollitis with remote reactions on the upper crossway (duodenum and pylorus) can be observed. Frequently dyspepsia produces pain, with an eccentric painful point, metabolic disturbances occur and the patient becomes emaciated. The diagnosis is made by the roentgen examination by which, six hours after ingestion of the opaque meal, peristalsis and spasm of the cecum and of the ileum are seen at a point in the internal border of the cecum. Medical treatment fails in producing a cure of the condition. A treatment by sedatives, aiming to calm the painful reflexes, is administered before the operation, which should be performed only during a period of amelioration of the symptoms.

Society News

At a recent meeting of the Società di Dermatologia e Sifilografia of Padua, Professor Fiocco spoke on chronic keratotic dermatitis of the hands which affects workers in the broom industry. The disease is due to trauma of the hands by the stems of the plant. It is characterized by erythema, hyperkeratosis and formation of fissures on the hands. The subjective symptoms are a sense of local warmth, pruritus and pain. The prognosis is good.

Professor Freund reported a case of scrotopenile elephantiasis from inguinal lymphogranuloma. The diagnosis was made by the Frei test, twelve years after onset of the disease. Formerly the disease consisted of inguinal buboes without any primary lesion. A radical operation then seemed to have resulted in cure, but a large tumefaction recurred on the penis and scrotum a few months later. The speaker emphasized the importance of an early Frei test in suspected cases of inguinal lymphogranuloma in order to administer treatment early and thus prevent serious complications.

Professor Levi, from his experience in a dispensary for the treatment of venereal disease, said that nonrecognized syphilis is frequent and is often transmitted to the family and the offspring. The speaker advised the organization of special departments for treating syphilitic persons in whom a diagnosis has not been previously made.

Professor Ravalico reported satisfactory results from intramuscular injections of strychnine, without association with any other treatment, in gonorrheal vulvovaginitis in little girls.

RIO DE JANEIRO

(From Our Regular Correspondent)

June 15, 1936

Control of Narcotics

The government of Brazil has entered the international committee for controlling and supervising the traffic of narcotics. The Brazilian committee consists of Mr J S da Fonseca Hermes, foreign minister, and Drs João de Barros Barreto, director of public health and social service, Roderyal Cordeiro de Farias, inspector of medical practice, Rubens M de Figueiredo, procurator of the department of national education and public health, Democrito de Almeida, substitute delegate for the federal district, Pedro Pernambuco Jr, head of the Botafogo Sanatorium, Maria Saraiva, head of the institute for clinical teaching, and J Soares Brandão and Edison Pitombo Cavalcanti, representatives from the ministerial offices of justice and labor.

Anniversary of Instituto Oswaldo Cruz

Ceremonies were held at the Instituto Oswaldo Cruz of Mangueiras May 7, to celebrate the thirty-sixth anniversary of the foundation of the institute. Dr Cardoso Fontes, director of the institute made speeches in memory of Baron de Pedro Afonso, founder of the institute in 1898. Some cases of bubonic plague developed in Rio de Janeiro in 1898 and the Baron de

Pedro Affonso, with the collaboration of Oswaldo Cruz, Figueiredo Vasconcellos, Ismael da Rocha and Henrique de Toledo Dodisworth as well as of the government, went to Europe and came back with the necessary equipment for production of antiplague serums and vaccines in this country. From that time to the present the work of the institute has been valuable. During the ceremonies, a bust of Baron de Pedro Affonso was unveiled in the central hall.

Treatment of Shock by Acacia Solution

Dr. Eduardo Etzel, in a recent lecture, reviewed theories on the mechanism of production of shock and emphasized the important role of nervous disorders and hemorrhages in the production of shock. There is a difference between hypotension and shock in hemorrhage. The former is controlled by intravenous injections of sodium chloride solutions, whereas the latter requires morphine to control the nervous condition, tonics for improving vascular derangements, cardiac stimulants and heat. The treatment directed to control the failing circulation consists in injections of a 6 per cent acacia solution in a 9 per cent sodium chloride solution. The speaker administered acacia injections to eighty patients who were suffering from shock and obtained recovery from postoperative, obstetric and hemorrhagic shock respectively in 86 per cent, 100 per cent and 90 per cent of the cases. Toxic and traumatic shock are little influenced by the injections of acacia solution. It is advisable to give the injections early in the production of shock. Its action is mechanical.

Hospital for Children

The São Zacharias Hospital, located at avenida Carlos Peixoto and Botafogo in Rio de Janeiro, will open in the near future for the care of children of poor families. Dr. Calazans Luz has been appointed head of the hospital, which is a modern four story building with 230 beds.

X-Ray Department Opened

A department for x-ray work was recently opened at the Botafogo Polyclinic in Rio de Janeiro. The expense of constructing the pavilion and of buying the x-ray apparatus was met with donations. Dr. Victor Cortes has been appointed director of the department.

JAPAN

(From Our Regular Correspondent)

June 15, 1936

Sterility Among Japanese Women

At the thirty-fourth meeting of the Gynecologic Society of Japan, Dr. T. Shinoda of Tokyo Imperial University read a paper on the etiology and treatment of sterility. In his paper, which contained numerous statistics, he said that in the five years ended in December 1935 he had in the university hospital 1,211 women patients with primary sterility and 706 women with secondary sterility. He found that the pregnancy rate in the first year of marriage in this group was 67.9 per cent, in the second year of marriage, 40.5 per cent, in the third year, 18.7 per cent, in the fourth, 12.9 per cent, in the fifth, 8.8 per cent, in the sixth, 4.1 per cent, in the tenth, 0.7 per cent, and in the twentieth 0.1 per cent. Ninety per cent of the cause lay in women who have never conceived and between 2 and 3 per cent of sterility was found when both the husband and the wife were healthy. The chief causes seemed to be inflammatory troubles among 1,211 cases. 82.8 per cent of the women were suffering from inflammation mostly caused by gonorrhea, but in not a few cases caused by tuberculosis. Simple endometritis, catarrh of the cervix, retroflexion of the uterus, and irregularity of menstruation may cause sterility but there is nevertheless a great possibility of conception. Hystero-graphy that is taking a roentgenogram after the injection of iodized

oil into the fallopian tubes, is not only necessary for diagnosis but is highly effective also as a method of treatment. In this group of cases, forty-two women became pregnant within several months merely by this means without any other direct treatment. Besides this, examination of the endometrium and the microscopic examination of the husband's semen are essential to determine the cause of sterility. Nothing is more difficult than the diagnosis and treatment of sterility, at least these three measures must be employed.

The Leprosy Campaign

Dr. M. Miyagawa reported at the general meeting of the Japan Leprosy Association to the effect that the campaign against leprosy in this country has now entered the period of activity, having left the period of investigation behind. This is clearly shown in the increased number of antileprosy societies which sympathize with the lepers. An unsolved problem is that of finding out the exact number of lepers in this country. Five official investigations have been made by the home office since 1904, and according to these the number of lepers has considerably decreased. But the official reports cannot be said to be correct, for many cases are supposed to be concealed. At any rate the official number is reported as follows: 1904, 30,357; 1906, 23,851; 1919, 16,261; 1925, 15,351; 1930, 14,741; 1935, 15,274. Reports, however, made by Dr. M. Murata give entirely different figures. He says there are 109 lepers per thousand of population, which means that there are over 62,000 lepers here. He insists that leprosy has never decreased but is on the increase. The office knows that what it announced was not correct and believes the true number to be about 17,000. There are eight government and public and seven private leprosy sanatoriums. These fifteen can accommodate 5,938 lepers. Within the coming five years 10,000 beds are expected to be given over to the lepers, for the Leprosy Prevention Association, which was organized in 1930, is going to become active. One petition was filed with the government that a special prison for leper criminals should be built. The leprosy campaign is seen on all sides throughout the country.

Outbreak of Rice-Cake Poisoning

May 10 the rice-cakes which are stuffed with bean jam (called "daifuku" or great happiness) were given to 1041 pupils of the Hamamatsu Middle School in Shizuoka Prefecture after the athletic meeting was over on that day. Each pupil received six cakes. Of those who ate the cakes, 2,500 pupils and their family members fell sick on the next day with vomiting, diarrhea, pain in the abdomen, pain in the chest and a temperature of 38 to 39 C (100.4 to 102.2 F). Within a few days forty-three patients were dead and ninety-four others were still in a serious condition. Forty doctors were hurriedly dispatched to the scene to aid the practitioners in that city. The real cause is not officially reported, but it is believed to be in the bean jam, which easily becomes contaminated.

Medical Graduates

The number of graduates this year from seven medical departments of imperial universities, twelve medical universities and fourteen medical colleges, public or private, was 322, including 397 women graduates. This number is only twenty-four less than last year, but when compared with 1930 it is 1,047 larger. The oversupply of physicians in the near future is much discussed in medical circles.

Takayama Elected President of University

Dr. Masawo Takayama, president of Nagasaki Medical College has been elected president of the Kyushu Imperial University. He was born in Tokyo in 1871 and is a graduate of the Tokyo Imperial University. In 1900 he went to Germany to study medicine staying about six years. Three medical men are now presidents of the imperial universities.

Marriages

EPPIE CHARLES POWELL JR., Rocky Mount, N C, to Miss Eleanor L Bizzell of Goldsboro, July 1, in New York

PHILLIP AUGUSTUS DEGNAN, Waynesboro, Pa, to Miss Eva Mae Riehl of Washington, D C., May 11

CARL WILLIAM IULER, Columbus, Ohio, to Miss Mildred McKee Blair in Ashland, Ky, in May

JAMES ROBERT LYMAN, Hartford, Conn., to Miss Charlotte Cox Litchfield of Westport, May 30

WILLIAM M MOUNT, Rochester, Minn, to Miss Muriel Millet of Indianapolis, May 5

JULIUS L GOLDENBERG to Miss Bernice Chutkow, both of Los Angeles, recently

HOWARD R CAMPBELL to Miss Dorothy Schaffer, both of Dayton, Ohio, in May

THOMAS HALE HAM to Miss Fanny Chapin Curtis, both of Boston, May 16

GEORGE J HOGGEN to DR MARGARET M LODER, both of Rye, N Y, May 12

Deaths

Charles Harrison Frazier of Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1892 Chairman of the Section on Surgery of the American Medical Association from 1913 to 1914, professor of clinical surgery from 1900 to 1922, dean from 1902 to 1909, and since 1922 John Rhea Barton professor of surgery at his alma mater, professor of neurosurgery at the graduate school of medicine, during the World War was consultant in neurosurgery to the Surgeon General of the U S Army, and in 1920 represented the Surgeon General as a member of the Interallied Surgical Conference in Paris, member of the American Surgical Association Society of Clinical Surgery, Society of Neurological Surgeons and the Association for Research in Nervous and Mental Disease, member and past president of the American Neurological Association, fellow of the American College of Surgeons, in 1933 was made a member of the German Academy of Natural Sciences, in 1913 a founder and for many years president of the Public Charities Association of Pennsylvania, surgeon in chief of the Hospital of the University of Pennsylvania, member of the board of trustees of the University of Pennsylvania, author of numerous scientific articles, aged 66, died, July 26, at his summer home in North Haven, Maine.

Carl Theodor Gramm, Downers Grove, Ill College of Physicians and Surgeons, Keokuk, Iowa, 1893, member of the Illinois State Medical Society, also a dentist, at one time held the chair of dental and oral surgery and pathology at his alma mater, treasurer, professor of stomatology and histology and director of the biological laboratories of the Illinois College of Medicine, Chicago formerly connected with the dispensaries of the United Hebrew Charities and St. Joseph's Hospital, aged 74, died June 30, in the Edgewater Hospital Chicago, of carcinoma of the bladder

Carroll Fox of Medical Director, U S Public Health Service, Staten Island N Y, University of Pennsylvania Department of Medicine, Philadelphia, 1897 chief officer of the U S Quarantine Station at Rosebank, entered the public health service as an assistant surgeon in 1899, was promoted to passed assistant surgeon in 1904, surgeon in 1913 and medical director in 1930 was sanitary adviser to the navy during the World War aged 61, died, May 24 in the U S Marine Hospital Stapleton, of coronary thrombosis

William Allan Claxton, Jacksonville, Fla, Queen's University Faculty of Medicine, Kingston Ont., Canada, 1909 member of the Florida Medical Association served during the World War, at one time health officer of Morgan County, Fla and Miami and superintendent of the Oak Lawn Sanatorium Jacksonville, formerly district health officer and tuberculosis clinician state board of health of Florida aged 51, died May 21, in the Veterans Administration Facility, Oteen, N C., of pulmonary tuberculosis

Arthur Jacob Wolff, Hartford Conn., Texas Medical College and Hospital Galveston 1876 Bellevue Hospital Medical College New York, 1883, member of the Connecticut State Medical Society for many years bacteriologist for the city health department and member of the state board of health

formerly on the staffs of the Mount Sinai Hospital and St Francis Hospital, aged 81, died, June 22, of carcinoma of the colon

Samuel Ravaud Benedict of Birmingham, Ala., University College of Medicine, Richmond, Va, 1908, fellow of the American College of Surgeons, attending surgeon to St Vincent's Hospital, chief surgeon to the Alabama Power Company, district surgeon to the Illinois Central Railroad and surgeon to the Mobile and Ohio Railroad and Pullman Company, aged 53, died, May 10, in a hospital at Baltimore, of splenomegalia

Oscar Evald Olson, Red Oak, Iowa, University of Nebraska College of Medicine Omaha, 1921 member of the Iowa State Medical Society, formerly secretary of the Montgomery County Medical Society served during the World War, on the staff of the Murphy Memorial Hospital, aged 44, died, May 5, in the Jennie Edmundson Memorial Hospital, Council Bluffs, of scarlet fever

George Tilton Doolittle, Spokane, Wash, Yale College Medical Department New Haven, Conn, 1884, member of the Washington State Medical Association, formerly member of the board of health, city health officer, member of the state legislature and city council for many years on the staff of the Sacred Heart Hospital, aged 75, died, May 2 of erysipelas

Thomas Eli Anderson, Statesville, N C, Jefferson Medical College of Philadelphia, 1878, member and past president of the Medical Society of the State of North Carolina formerly secretary and member of the state board of medical examiners, for many years a member of the state board of health and at one time secretary and vice president, aged 84, died, May 19, of acute nephritis

Robert Lee Gardner, Chesterfield S C, Atlanta (Ga) School of Medicine, 1909 member of the South Carolina Medical Association past president and secretary of the Chesterfield County Medical Society member of the board of trustees of the school district and health officer, served during the World War, aged 50, died, May 5, in the McLeod Infirmary, Florence, of pneumonia

Matthew Cushing O'Brien of Philadelphia Temple University School of Medicine, Philadelphia, 1908, served during the World War for many years physical director in public schools, formerly demonstrator of anatomy and clinical surgery and instructor in chemistry at his alma mater aged 63, died, May 22, in the Temple University Hospital, of rupture of the heart

James Harvey Paul, Jamesville, N Y, Queen's University Faculty of Medicine, Kingston, Ont Canada 1898, president of the village board of education health officer of the town of De Witt physician to the Onondaga Penitentiary, on the staff of the Crouse-Irving Hospital, Syracuse, aged 62, died, May 10 of coronary thrombosis

James Clinton Hawkins of Blackwell, Okla Washington University School of Medicine St Louis, 1910, past president and secretary of the Kay County Medical Society, on the staff of the Blackwell Hospital aged 52 died in May, in a hospital at Weaubleau, Mo, of injuries received in an automobile accident

Horace Martin Evans, Indianapolis, Northwestern University Medical School Chicago 1892 member of the state industrial board, formerly president of the Valparaiso (Ind) University and bank president, served during the World War, aged 76, died, May 12, of coronary occlusion

John Milton Fouts, Richmond, Ind, Central College of Physicians and Surgeons, Indianapolis 1898 member of the Indiana State Medical Association formerly county health officer, on the staff of the Reid Memorial Hospital, aged 64, died May 10 of coronary thrombosis

Lawrence Edward Coen, Clifton N J, Long Island College Hospital Brooklyn 1910, for many years school and city physician, on the staffs of St. Joseph's Hospital Paterson and the Passaic (N J) General Hospital, aged 48, died, May 12, of coronary thrombosis

Francis De Revere, Staten Island N Y, College of Physicians and Surgeons Medical Department of Columbia College New York, 1888 for many years diagnostician for the health departments of the city of New York and Staten Island aged 71 died May 12

Frank McCollum Cox, Chicago, Hering Medical College, Chicago, 1901 College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1909 aged 59, died May 8 in the Augustana Hospital, of myocarditis

James M Freeman, Lavonia Ga Georgia College of Eclectic Medicine and Surgery Atlanta, 1893 member of the

Medical Association of Georgia, aged 67, died, May 16, in a hospital at Royston, of acute intestinal obstruction

Simon Francis Curran ☉ Boston, Tufts College Medical School, Boston, 1902, past president of the Norfolk District Medical Society, served during the World War, aged 61, died, May 19, of carcinoma of the sigmoid and rectum

Robert Russell Bridges ☉ Scottsboro, Ala., Vanderbilt University School of Medicine, Nashville, Tenn. 1913, past president and secretary of the Jackson County Medical Society, aged 47, died May 16, of mitral stenosis

Reuben Taylor Harrod, Oktaha, Okla., University of Tennessee College of Medicine, Nashville, 1891, member of the Oklahoma State Medical Association, aged 68, died, May 18, of carcinoma of the head of pancreas

Andie Cleon Calvert, Italy, Texas (registered by Texas State Board of Medical Examiners under the Act of 1907), member of the State Medical Association of Texas, aged 53, was drowned while fishing, May 5

Cassius Mentor Coldren, Omaha, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1889, aged 75 died, May 10, in the Methodist Hospital, of coronary thrombosis and cholelithiasis

Charles Leissring Sommers, Jr., Baltimore Johns Hopkins University School of Medicine, Baltimore, 1935 aged 26, intern at the Baltimore City Hospital, where he died, April 8, of rheumatic heart disease

John Patterson Bishop, Aline, Okla., Medical College of Ohio, Cincinnati, 1901, member of the Oklahoma State Medical Association, aged 60, died, May 20, in the Masonic Hospital, Cherokee, of embolism

William H. Connelly, Kingston, N. Y., New York Homeopathic Medical College, 1885, member of the board of police commissioners of Kingston, aged 71, died, May 10, of arteriosclerosis

Nathaniel Crew Hamilton, Kokomo, Ind., Miami Medical College, Cincinnati, 1900, aged 62, died, May 16, in the Good Samaritan Hospital, of coronary occlusion and diabetes mellitus

George Frank Greenleaf, Chicago, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899, aged 61, died, May 30, of hypertension and cerebral hemorrhage

William Robert Dabney, Cincinnati, Medical College of Ohio, Cincinnati, 1893, aged 64, died, May 14, in the Cincinnati General Hospital, of hypertrophy of the prostate

Joseph McGahhey, Niota, Tenn. (licensed in Tennessee in 1905) aged 70, died, May 5, in the Force Hospital, Athens, of injuries received in an automobile accident

Rudolph Jacob Tyrna ☉ Belleville, Mich., Detroit College of Medicine and Surgery, 1931, aged 36, died, April 19, in a hospital at Wayne, of pneumonia

Owen A. West ☉ Sabina, Ohio, Eclectic Medical Institute, Cincinnati 1891, aged 72, died April 6, in the McClellan Hospital, Xenia, of coronary occlusion

Jose Chalmers Hill, Hallsville, Texas Nashville (Tenn.) Medical College 1878 aged 85 died, May 16, of pneumonia following an automobile accident

Monroe M. Ghent ☉ St. Paul, Rush Medical College, Chicago, 1901, served during the World War, aged 66 died suddenly, May 6, of heart disease

William Alexander Buckner, Chicago, Harvey Medical College, Chicago, 1900, aged 72 died, May 6, of carcinoma of the prostate and lobar pneumonia

H. C. Cook, Diboll, Texas (registered by Texas State Board of Medical Examiners under the Act of 1907) aged 84 died May 1, of hypostatic pneumonia

James William Powell ☉ Detroit, University of Arkansas School of Medicine, Little Rock, 1905 aged 57, died, April 14 of myocarditis and pneumonia

Edgar Harold Morrison, Virginia Beach, Va., Medical College of Virginia Richmond, 1908, aged 61, died, April 2, of toxic cirrhosis of the liver

Theodore Milton Johnson ☉ New York University of Pennsylvania Department of Medicine Philadelphia 1887 aged 73 died May 7

Edward Benjamin Haslam, Brooklyn New York University Medical College, 1897 aged 61 died May 9, of carcinoma of the prostate

Lewis Johnson Day Chicago, Chicago College of Medicine and Surgery 1910 aged 65 died, May 31

Correspondence

"LEUKEMIA WITH THROMBOCYTOSIS"

To the Editor—In THE JOURNAL, May 23, appeared a communication entitled "Leukemia or Polycythemia," from Dr. William Dameshek, in which he expressed the opinion that my case report entitled "Leukemia with Thrombocytosis" should have been labeled polycythemia

I was greatly interested in Dr. Dameshek's opinion. I sent him a blood smear of the patient in question and was pleased to receive a reply from him in which he said in part "I am rather sorry that I took exception to your diagnosis of leukemia, but I did feel that I wanted to bring out the fact that polycythemia is really not entirely a red cell disease but one in which in certain cases the white cells or the platelets are very much more involved than are the red cells. You are undoubtedly familiar with the cases of polycythemia which in the course of time have become pretty typical examples of myelogenous leukemia. Whether or not it is possible to distinguish one situation from the other in the process of transition is questionable."

It is my opinion that my case is just such a one as he mentions—one suggesting a polycythemia clinically although the red cells never exceeded 5,800,000 but in the course of observation presented the blood picture of a leukemia with stem cells and leukoblasts

Before reporting the case a smear was submitted to Dr. Hal Downey of the University of Minnesota and he concurred in the diagnosis of leukemia. He makes the point after seeing the report of a more recent examination of a blood smear in this case, taken May 5, 1936, that stem cells, leukoblasts and promyelocytes are not expected in ordinary cases of polycythemia. He also calls attention to the fact that myelogenous leukemia may be a "panmyelosis," or only one line of the myeloid system may be involved, in my case apparently the megakaryocytes primarily. CARL B. DRAKE, M.D., St. Paul.

TREATMENT OF ACID BURNS OF THE EYE

To the Editor—New textbooks on the eye continue to advise neutralization of acid burns of the eye with weak alkaline solutions and neutralization of alkali burns of the eye with weak acids

In an experimental study by C. K. Cosgrove and W. B. Hubbard (Acid and Alkali Burns of the Eye, an Experimental Study, *Ann. Surg.* 87:89 [Jan.] 1928) it was found that the proper treatment of acid and alkali burns of the eye was immediate thorough dilution by irrigation, other types of treatment being contraindicated or unimportant.

The experiments were carried out on a large group of rat and rabbit eyes. (Some of the animals on which the experiments were being conducted and the results were exhibited at the meeting of the American College of Surgeons in Detroit, and later the results were demonstrated with pictures and slides before the National Safety Council at Chicago.)

Our experiments agreed with the study of Davidson, who showed conclusively that the intensity of an acid or alkali burn of the skin is increased by the use of a neutralizing agent and demonstrated that dilution was more effective than neutralization as a first aid method

In our experiments we found that immediate dilution by irrigation was of paramount importance. Water, being abundant, is the proper fluid for irrigating. Speed in the removal of the chemical is absolutely necessary as the extent of the injury depends on the length of time the chemical has acted. We found that neutralization without irrigation is absolutely contraindicated. Thorough irrigation immediately with a re-

tralizing fluid in preference to water is of questionable value and is not practicable. Neutralization after irrigation with water had no important effect in our cases.

A possible explanation of our observations follows. Attempted neutralization with a weak solution without irrigation does not adequately neutralize the offending chemical, and it would be illogical to use a very strong neutralizing fluid. Neutralization after irrigation is not of great importance. In an eye that has been burned by an acid and has had treatment by immediate irrigation, one of two conditions exists. Either there is no free acid present or free acid is present in extreme dilution and unimportant. The base of the ulcer is covered by an insoluble acid proteinate. The addition of weak alkali may now dissolve this proteinate and react with the exposed cells to cause some further injury. In case of an alkali burn the proteinate is soluble and the alkali tends to withdraw water from the cells. These two actions of an alkali probably account for the fact that alkali burns are more severe than acid burns. Addition of a weak acid would have a tendency to form an insoluble proteinate and prevent further removal of water from exposed cells, and thus possibly do some good. Since, however, all excess alkali has been removed by irrigation, such treatment would be of little importance. The production of heat and of salts and new inorganic acids and alkalis when an attempt is made to neutralize may cause some further injury in an eye burned by an acid or an alkali.

Let me stress that immediate removal is the treatment of first importance after acid and alkali burns of the eye. Neutralization without removal is improper treatment. The most that can be said for the use of weak neutralizing substances after removal is that it may do a little good after alkali burns and may do some harm after acid burns.

W B HUBBARD, M D, Flint, Mich

COEXISTENCE OF DIPHTHERIA AND SCARLET FEVER

To the Editor—With regard to the incidence of the coexistence of diphtheria and scarlet fever the wide divergence in opinions of Levinsohn in *THE JOURNAL*, June 27, page 2253, and of Zabin in the May 2 issue, page 1588 can be accounted for only by an apparent misunderstanding in evaluating the diagnosis. A diagnosis of concomitance of the two infections is not always easily made even by one having an extensive experience. One must bear in mind that the finding of diphtheria organisms in the throat confirms but one thing, namely, that the organisms are present. They may be virulent or avirulent and both are found in carriers. Then, if the organisms present are found to be virulent, the clinical picture also must be present to complete the diagnosis. Using these criteria, which are the only tenable ones, for a diagnosis, the coexistence of these diseases is found to be rather uncommon in the first week of the scarlet fever infection. I was much interested in this problem when actively associated with Willard Parker Hospital, New York, from 1928 to 1932, during which period I found this picture occurring only four times in 5,000 cases of scarlet fever. However, the incidence of diphtheria in the convalescent stage is more common and the reason was shown in the work of Kojis and Craig (*Am J Dis Child* 49:383 [Feb] 1935).

With regard to the statement that diphtheria occurs in negative Schick individuals it should be emphasized that because an individual was Schick negative at one time does not mean that he will remain so for all future time. The significance of this is appreciated when one considers that the fluctuation of diphtheria antitoxin in the blood is definitely influenced by different factors and conditions which are described in the reference cited.

FERDINAND G KOJIS M D New York

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

PREMATURE BALDNESS

To the Editor—I have under my care a youth aged 18 years a college student, who for the last year has been losing his hair. There is no dandruff. His scalp is dry. His general condition is good except for a chronic nasal pharyngeal infection. He had his tonsils removed nine years ago and a septum operation two years ago. He spends his summers at camp in the open air and gets a good nutritious mixed diet. His father and uncle lost their hair around 30 years of age. There is no apparent endocrine disturbance. He belongs to the thyroid type of individual. He has tried the usual massage and antiseptic lotions without any effect. Is the boy doomed to early baldness or can it be prevented? Can you suggest any medication or literature that I may look up on the subject? Please omit name. M D New York.

ANSWER—The early onset of the alopecia with paternal heredity in a man in an intellectual pursuit gives a gloomy prognosis for salvation of the hair. Every effort should be made, however, to save what hair is now left. The combings of two days should be counted in two parts, those over two inches and those shorter. If the hair is very short at present this may not be helpful, but under ordinary conditions the prognosis can be estimated by the proportion between long and short hairs that are being lost, as well as by the total number of hairs lost each day. From thirty to forty hairs daily is a normal loss. Short hairs should not exceed a fifth of the long ones. Repetition of the count at intervals of a month will give information as to the success or failure of treatment.

The general health should be kept at the highest possible plane. Overwork, particularly mental, or overplay and bad hours should be avoided. A light, soft hat or none at all should be worn. He should not wet his scalp daily in order to comb his hair easily but should brush the dry hair vigorously for ten minutes once a day and massage in the ointment or lotion at another time for ten minutes.

An ointment of salicylic acid 3 per cent, sulfur and liquor carbonis coal tar solution N F, of each 5 per cent in rose water ointment, is a good one to begin with until the loss of hair is checked. If stronger measures are desired, lactic acid from 10 to 20 per cent in 50 per cent alcohol may be rubbed on every third day or oftener until the scalp is red. There are many formulas for ointments and lotions. Treatment is discussed by

Jackson and McMurtry *Diseases of the Hair* Philadelphia Lea & Febiger, 1912
Ormsby O S *Diseases of the Skin* Philadelphia Lea & Febiger 1934
Sutton, R L and Sutton R L, Jr *Diseases of the Skin* St. Louis, C V Mosby Company 1935

Ultraviolet therapy has probably been tried already but can be repeated after the tanning effect has worn off. It is helpful, particularly if given vigorously to cause a definite sunburn.

DESTRUCTION OF INTERVERTEBRAL DISKS

To the Editor—A patient complained of pain in the back and on roentgen examination a diagnosis of destruction of the intervertebral disks was made. The patient states that he was struck on the head about one year ago and that since that time the back has been hurting. At present he is in a body cast with slight hyperextension. Please give me your opinion as to the etiology with regard to trauma and further treatment of this type of case. Please omit name. M D Pennsylvania.

ANSWER—The intervertebral disks are frequently injured by traumatism. In some cases the nucleus pulposus may be forced through its enveloping annulus fibrosus and into the substance of the body of the vertebra immediately above or below. In milder cases, tears in the wall of the annulus may lead to desiccation or absorption of the disk. Calcification of the nucleus may occur, usually after long-continued mild traumatism.

The disks are rapidly destroyed in cases of tuberculosis of the spine, and on the other hand, are quite resistant to malignant metastasis. This is one of the important signs in the differential diagnosis between these two conditions.

If the destruction in the present patient is at or below the seventh dorsal vertebra a plaster-of-paris body cast or a Taylor back brace will give efficient support which must be continued for at least three months. The spine should be held in marked hyperextension to relieve the pressure on the damaged disks and to facilitate a possible regeneration of the disks.

If roentgen examination at this time shows no regeneration, a mild kyphosis will gradually develop in spite of conservative treatment. Pain may appear in the nerve roots, because of the diminution in size of the foramina through which the roots emerge, owing to the collapse of the disk and the consequent overlapping of the articular facets.

When severe pain and marked kyphosis are present, it might be advisable to perform a spinal fusion operation, to produce a bony ankylosis of the vertebrae in the region involved. This can be done safely and satisfactorily by the Albee or the Hibbs technic or preferably by a combination of the two methods.

In most cases, prolonged protection by a brace or a body cast will afford sufficiently good results.

SEX FUNCTION AFTER PROSTATECTOMY

To the Editor—In the matter of prostatectomy it strikes me as very strange that little or nothing ever appears in the literature regarding its effect on the sexual function nor can much definite information be elicited on this point by inquiry among surgeons of my acquaintance of considerable experience in this line. An active man of 64 in excellent physical condition with undiminished sexual libido and power having experienced no discomfort save some diminution in the force of the stream in voiding is suddenly seized after a hard day's work with a chill and an acute cystitis, the symptoms continuing several days with pus and considerable free blood in the urine. Consultation and examination by a surgeon disclosed a moderate enlargement of the prostate and operation was advised which was accordingly performed—the usual two stage operation. This was four years ago. The man is still strong and active as ever in his profession but has ever since been sterile and practically impotent sexually. Erection is imperfect if orgasm occurs it is feeble and there is no ejaculation. I should like to know whether this is the common experience in such a case and if so whether the operation of transurethral section now considerably in vogue is followed by the same destruction of the sexual function. It seems to me that in certain cases this phase of the subject is deserving of more consideration than it receives. Please omit name.

M D Massachusetts

ANSWER.—The effect of prostatectomy on sexual function has been referred to in a number of articles on treatment of the prostate gland and in textbooks on genito-urinary diseases. It is generally recognized that there may be a distinct diminution and loss of this function following prostatectomy.

It has been claimed that the function of the verumontanum and the ejaculatory ducts is maintained more fully following perineal prostatectomy than suprapubic prostatectomy. However, this is disputed by the adherents of the latter method.

The exact cause for this loss of function is a matter of contention and doubtless the factors involved are variable. In some cases function returns in the course of time and is due to loss of strength and vitality consequent to operation. In other cases the imagination plays a large part and any changes noted are largely on a functional basis. That an organic lesion may follow the operation, however, which will affect the condition, is undoubtedly true. One of the advantages of transurethral prostatic resection is that loss of sexual function is caused in a comparatively small percentage of cases. This would substantiate the argument that trauma to the ejaculatory ducts and the verumontanum is undoubtedly a factor in causing these symptoms, since such trauma is largely obviated by transurethral resection.

No treatment other than treatment of residual prostatic infection has had any appreciable effect on this condition.

TENDERNESS OVER AORTA

To the Editor—I frequently see patients in whom while doing a gastro-intestinal examination I find nothing abnormal with the exception of marked tenderness on deep palpation over the spine or the abdominal aorta. I have been unable to find any reference to the significance of this observation.

M D Michigan

ANSWER.—The tender aorta particularly in women who have borne many children and have a flabby abdominal wall is well known to the experienced clinician. Among the Mexican women of the Southwest it is sometimes the main complaint. At first sight it would seem that this should be due to an arteritis of some kind and in some persons this may be the case. Somewhat against this view is the fact that very often the pathologist finds at necropsy a badly ulcerated abdominal aorta or in other cases the roentgenologist sees the tube outlined by calcified plaques and yet the patient will not have complained of pain in the abdomen. In many women it may be that the aorta is tender just as many other tissues of the body are exquisitely but unaccountably tender.

There doesn't seem to be any definite treatment for the disease. Fortunately in most cases the woman can put up with the pain if she can be assured that many others have had it

without coming to any bad and early end. Iodides might be tried in small doses and perhaps theobromine. Most helpful probably would be a regimen of rest and sedatives that would serve to lower the general level of hyperesthesia and to raise thresholds of sensation.

DERMATITIS

To the Editor—My wife has been troubled for some years by a punctate rash in the fold at the bend of the elbow. It is about 3 inches in diameter and is located on both arms. The rash is bright red and does not itch but it is not desirable for cosmetic reasons. It seems worse at times and then almost suddenly disappears. It is present during the summer when sleeveless dresses are worn as well as during the winter months. There is no rash on any portion of the body and the general health is excellent. No drugs are used over long periods of time. Lotions and greasy ointments made the condition worse. A gauze bandage over the arm seems to help more than anything else. Please omit name and thank you.

M D New Hampshire

ANSWER.—The fact that the eruption is bright red is of variable acuity, disappears suddenly, and is relieved when the part is protected by a gauze bandage over the arm suggests the likelihood that the condition is dependent on some external factor for its exciting cause. External irritant contacts should be carefully ruled out, such as strong soaps, perfumes (which are sometimes applied in these areas) and dyes that may be present in garments that were worn. In most of these eruptions, however, there is usually some associated itching and burning, and vesicles are often present.

Neurodermatitis must also be given consideration but in this condition there is more of a tendency toward the development of lichenification with grayish or brownish discoloration of the skin. Associated lesions are also usually present in the popliteal spaces and on the neck, face and chest.

Scrapings from the surface should be examined to rule out the possibility of an atypical fungous infection, and the urine should be examined for sugar.

Treatment should consist of the continuation of a protective bandage, a low carbohydrate diet, the avoidance of external irritant contacts, the use of bland soaps, and bland local applications. In view of the fact that greasy ointments are not well tolerated, wet dressings of aluminum subacetate solution 1:16 may be employed. Cautious unfiltered x-ray therapy, from 50 to 75 roentgens weekly for four to six doses may prove beneficial.

SYPHILIS AND HEART DISEASE

To the Editor—A man aged 47 had attacks of dizziness about fifteen years ago. The Wassermann reaction is positive. He was treated four years and the Wassermann reaction has been negative since. About six months ago the patient felt as though an electrical shock was running from the buttocks down the legs into the arms and wrists and he had a peculiar feeling in his head. There was slight pain around the heart. These feelings come on early in the morning while he is sitting in a chair and pass off and return about 10 or 11 o'clock. After lunch the patient feels good then again when he goes to bed the feelings return but pass off. After ascending stairs and doing laborious work he has the feelings almost every day. There is a slight aortic murmur. The reaction is negative for sugar and albumin. The blood pressure is 136 systolic, 70 diastolic. He has the same feeling next day after too much indulgence in alcohol and at times after a full meal and when walking on the street. Please suggest diagnosis and treatment. Omit name and address.

M D Connecticut

ANSWER.—Since the patient has had syphilis, a reinvestigation of his status with regard to this disease is indicated even though there has been a Wassermann reversal on his blood. All the symptoms listed may be on a syphilitic basis. The electrical shocklike sensations extending down the arms and legs suggest a variant of the lightning pains of tabes dorsalis in which it is common enough to find a negative blood Wassermann reaction. No mention is made of neurologic examinations. Proper examination should decide this question. In the event that the results of physical examination are not conclusive examinations of the spinal fluid, including serologic tests, should be made.

The precordial pain in association with the other symptoms coming on after effort, after a full meal or after the consumption of large amounts of fluid is especially significant. This type of pain, much more characteristic of the syndrome of angina pectoris may be present in syphilitic aortitis. The aortic systolic murmur might be accounted for either on the basis of aortitis with aortic dilatation or on the presence of atheromatous degenerative changes in the ascending portion of the arch of the aorta. Other neurologic disorders might be considered even cord tumor which would be located rather high if symptoms are to include the arms. However in the absence of syphilis atherosclerotic disease of the coronary arteries and

the aorta would seem to be most likely from the symptoms and manifestations given. An electrocardiogram might be of value.

It would be logical to treat this patient on the basis of angina pectoris under such conditions. The program should be based on increased rest and limitation of activity below the level at which pain is experienced. Small feedings at more frequent intervals, and limitation of fluid intake are important. Vasodilator drugs may be of value. Glyceryl trinitrate or its equivalent may relieve the symptoms of pain and distress after they have appeared. In some cases theobromine, theophylline or their salts may be useful in limiting the frequency and severity of the attacks. Even if syphilis is found to be responsible for aortic disease, such therapeutic measures often result in some relief until appropriate treatment has become effective.

BITTERLING TEST FOR ESTROGENIC SUBSTANCE

To the Editor—Has there been any recent work on the so-called pregnancy test in which the Japanese bitterling is used? I have the report of Kanter, Bauer and Klawans published in the Dec. 29, 1934 issue of *THE JOURNAL*. Here in our diagnostic laboratory we have been conducting the Friedman modification of the Aschheim-Zondek test for several physicians in this vicinity. The results on a whole have been satisfactory but every year about this time our supply of rabbits becomes depleted. If the test using fish is dependable we should like to obtain some. Is there any place closer than the Breeding & Laboratory Institute, 567 Third Avenue, New York, where these may be obtained?

E. F. WALLER, Instructor, Veterinary Pathology, Ames, Iowa.

ANSWER—The test on the bitterling has not been advocated as a test for pregnancy to replace the Friedman test. So far the work has indicated that this is a test for estrogenic substance, although it may indicate androgen. The Friedman test makes use of the anterior pituitary gonadotropic hormone, a factor the excess of which appears in the urine very early in the course of pregnancy, excess of estrogenic substance not ordinarily becoming apparent until the gestation has progressed further. It is not deemed advisable for the ordinary laboratory to substitute the bitterling test for the other biologic tests now in general use. In cases in which a question of diagnosis of ectopic pregnancy, missed abortion or placental polyp has existed the bitterling test has been found valuable because of the apparent existence of excess of estrogenic substance when the excess of gonadotropic substance has been dissipated.

EFFECTS OF FACIAL MASSAGE

To the Editor—I have been asked by two women patients of mine whether facial massages can be given too frequently. Various opinions have been had from different beauty parlors here, some beauty workers maintaining that they should not be taken more than once in two weeks and others once a week; others say that they cause sagging of the facial muscles. I have said that they cannot be taken too often and are stimulating. I have suggested that if one must take them once a week is not too often and is stimulating and that one has no fear of causing sagging and the resultant wrinkles from such massage. What is your opinion on this? Please omit name and address.

M. D. Ohio

ANSWER—So far as known, the most important effect of massage on muscle is to increase the circulation and thereby its nutrition. Chemically it is observed that massage will aid in preserving the tone of muscles. There is no reason to believe that this should not also apply to the facial muscles.

Scientific massage is an effective treatment in cases of facial paralysis to prevent the sagging of facial muscles. Daily treatment is usually given to these patients with benefit.

It would seem that correctly applied massage could also be given to normal muscles at the same frequency with no harmful effects. The additional cosmetic treatment of beauty parlors is another consideration.

ETIOLOGY OF HERPES

To the Editor—In *THE JOURNAL*, February 15, page 564, I find a statement that the lesions of herpes are due to efferent nerve impulses liberating a histamine-like substance in the skin. Would you if possible kindly supply me with the authority for this statement?

TRYGVE GUNDERSEN, M.D., Boston

ANSWER—Sir Thomas Lewis and H. M. Marvin (*Heart* 14:27 [April] 1927) brought forward experimental proof that the action of the so-called antidromic impulses of Bayliss originating from lesions of the posterior root ganglion is to produce vasodilatation of the arterioles and capillaries which in turn is due to the local liberation of the H substance, a chemical body the action of which on these minute vessels is the same as that of acetylcholine and histamine. He included the formation of herpetic vesicles and trophic changes in the skin among the effects of the peripheral release of the H substance. More

recently some evidence has accumulated that there are vasodilator efferent pathways in the posterior root. The literature has been summarized by Kahr and Sheehan (*Bram* 56:265 [Sept.] 1933). According to some of these studies the vasodilator impulse producing herpetic vesicles does not travel in the ordinary sensory pathways, as thought by Bayliss, but is carried in the efferent vasodilators of the posterior root.

DIAGNOSIS OF PREGNANCY AFTER ABORTION

To the Editor—A patient who in the past has had regular menses with periods twenty-one days apart was due to menstruate January 25 and having gone four days past this date consulted an abortionist who as near as she knows, sounded the uterus and gave her quinine. Two days later menstruation began and continued for three days. Not being cognizant of the history I had an Aschheim-Zondek test done which was positive. Would the hormone content of the urine remain high enough throughout the month that has ensued to cause ovulation in the rabbit or is the positive test indicative of the fact that either the pregnancy was not terminated or the patient has again become pregnant? She has not menstruated since the period following her manipulation and according to her old cycle was two days overdue at the time the test was done. Please omit name.

M. D. Kansas

ANSWER—The positive Aschheim-Zondek test speaks for a pregnancy, either a new one or the old one going on uninterrupted. In most cases the test is negative by the tenth day post partum or post abortion. The possibility of an ectopic pregnancy or of a missed abortion must be considered. If the size of the uterus is consistent with the period of amenorrhea it is most likely a uterine pregnancy which was unaffected by the instrumentation. If the uterus is smaller and a mass is present on either side, an ectopic pregnancy is the most likely probability. This diagnosis would be strengthened if the amount of blood lost following the attempt at abortion was less than the amount passed during a normal period. Again, if the uterus is smaller than one would expect to find after the missed periods, a missed abortion is one of the greatest possibilities.

APICAL ABSCESSSES OF TEETH

To the Editor—In *THE JOURNAL*, January 4, in *Queries and Minor Notes* you state that the clinical and laboratory history in thousands of such cases have shown that such conditions can be cured and the patient remain perfectly well in more than 70 per cent of the cases. This statement referring to apical abscesses of the teeth. While I agree with the general thought expressed I should like to know on what authority this statement is made.

LOUIS I. GROSSMAN, D.D.S., Philadelphia

ANSWER—The statement quoted by the correspondent was of course more or less general. It was based on the records of the department of pathology and therapeutics in the treatment of pulpless teeth in the clinic of the College of Dentistry of the University of Illinois. The department has clinical records of 7,922 cases. Of this number 1,953 have been studied which means that they have been followed for from one to sixteen years after the completion of treatment. At the last tabulation of the 1,953 cases studied, 76 per cent had remained negative throughout the period of observation and this is without any selection whatever, even with regard to the original condition of the tooth when treatment was started, or the personnel of the students carrying out the treatment. A new tabulation of cases is now in progress and will be furnished to inquirers when completed.

TREATMENT OF FRACTURES IN ELDERLY PATIENTS

To the Editor—A man aged 84 is suffering from a fracture of the hip. He is in poor physical condition having had strokes previously. I have him in a new extension splint of DePuy with a cast on each leg and a splint attached to each leg with a set screw for extension and pressure on the well leg. A young man with a spiral fracture of the lower part of the tibia is unable to hold it in good apposition although it is straight. I have him in a cast. What treatment do you advise in each of these? Please do not publish name.

M. D. Oklahoma

ANSWER—The patient of 84, with the fracture of the hip is not likely to obtain a bony union by the use of the DePuy splint, if the fracture is through the neck of the femur. If it is a fracture at the base of the neck or through the intertrochanteric region the result may be good. Fractures through the small part of the neck in old persons are best treated by the Whitman abduction and inward rotation, with a long plaster-of-paris spica cast for at least four months. If the patient is a good surgical risk much time can be saved by performing a Whitman reconstruction operation, removing the head of the femur and transplanting the trochanter major downward on the shaft. The Brackett operation might be considered but the possibility of necrosis of the head at the age of 84 must be admitted.

Spiral fractures of the lower part of the tibia may be treated conservatively by traction in a Thomas splint, a Sinclair skate being glued to the sole of the foot and further fastened by short strips glued to the dorsum of the foot. The general tendency of the times is to make the traction by Kirschner wires through the upper and lower ends of the tibia, enclosing the wires later in a plaster-of-paris cast. Good results have been attained also by open operation, with use of the Parham-Martin band. The latter method is not free from the danger of infection and possible failure of union.

ABSORPTION OF CITRATES

To the Editor—Please tell me something of the metabolism of citrate (of sodium and potassium). 1 When given by mouth is it absorbed as citrate? Is it oxidized at once in the liver to bicarbonate or does it reach the general circulation as citrate? If so for how long does it persist as citrate in the blood? 2 When given intravenously, in doses of say, 2 to 5 Gm. (from 100 to 250 cc. of 2 per cent solution) how long does it persist as citrate in the general circulation? Where is it oxidized to bicarbonate? 3 Some years ago it was asserted and denied that bitartrate was oxidized to bicarbonate giving alkaline urine will you please tell me whether there was any authoritative conclusion? Please omit name.

M D, New York.

ANSWER.—Citric acid occurs regularly in the blood and urine of man and of many animals. It is also found in milk. The daily elimination in the urine amounts to about 0.1 to 0.5 Gm.

1 It is absorbed as such when given by mouth but is rapidly destroyed, so that only about 0.2 per cent of the ingested quantity is found in the blood. After ingestion of 20 Gm of citric acid only 2 Gm is eliminated as such, the maximum of elimination is reached in about two hours. There is experimental evidence suggestive that the liver and, to a much less extent, the kidney are capable of oxidizing citric acid.

2 When given intravenously therefore it will not persist in the circulation very long and it will be oxidized in the liver.

3 Tartaric acid differs greatly from citric acid in that the former is destroyed by the intestinal bacteria probably to the extent of about 80 per cent. The remaining 20 per cent appears in the urine unchanged. Recent investigations have shown that tartaric acid is not oxidized in the system and that after intramuscular injection practically all of it can be recovered in the urine within ten hours.

IRREGULAR MENSTRUATION AND SAFE PERIOD

To the Editor—Apropos of the query on sterility (*THE JOURNAL*, February 22 p 646) I have a patient who can definitely place her last two pregnancies on coitus within forty-eight hours of her menstrual period—both occurring before menstruation. Her periods are very irregular. Would this fact influence the safe period? Kindly omit name.

M D North Dakota

ANSWER.—A woman whose periods are very irregular, i. e., whose written record of her menstrual cycles for a period of eight months or more shows a variation of more than ten days between the shortest cycle and the longest cycle, cannot, for practical purposes, determine her safe period. If the patient in question falls within this class, it is obvious that she cannot say with confidence that coitus which resulted in conception occurred within forty-eight hours before her expected menstruation because the fact that menstruation did not recur, coupled with an admitted great irregularity, makes it impossible to determine what the length of the current cycle would be and consequently impossible to state with confidence that the coitus in question occurred within forty-eight hours of menstruation. (If this case does not fall within this class, it would be necessary to furnish further data on the case, as outlined in the rules to be followed in the use of the safe period, contained in the article "Natural Conception Control," published in *THE JOURNAL*, Oct. 19, 1935, in order to point out the causes for any disappointment.)

LIQUID PETROLATUM AND VITAMIN A ABSORPTION

To the Editor—I have recently heard the statement that mineral oil used as a laxative absorbs many of the vitamins from the system and therefore is not a proper product to use. Is this fact or fancy? Please omit name.

M D New York

ANSWER.—There are experimental observations on record which show that the ingestion of a very large proportion of liquid petrolatum in the food of animals does interfere with fat-soluble vitamin absorption especially if the animal is on a vitamin low diet. There is no proof however available that the ordinary therapeutic use of liquid petrolatum taken in conjunction with normal diet will induce a hypovitaminosis in the human being.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

- ALASKA Juneau Sept. 1 Sec. Dr W W Council Juneau
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CONNECTICUT Basic Science New Haven, Oct 10 Prerequisite to license examination Address State Board of Healing Arts 1895 Yale Station New Haven
FLORIDA Jacksonville Nov 16-17 Sec. Dr William M Rowlett, P O Box 786 Tampa
GEORGIA Atlanta, Oct 13 Joint Sec. State Examining Boards Mr R. C. Coleman 111 State Capitol Atlanta
IDAHO Boise, Oct 6 Commissioner of Law Enforcement Hon. Emmitt Pfost, 205 State House Boise
ILLINOIS Chicago Oct. 20-22 Superintendent of Registration, Department of Registration and Education Mr Homer J Byrd Springfield.
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LOUISIANA New Orleans, December Sec. Dr Roy B Harrison, 1507 Hibernia Bank Bldg New Orleans
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MICHIGAN Lansing Oct. 14-16 Sec. Board of Registration in Medicine Dr J Earl McIntyre 202 3-4 Hollister Bldg Lansing
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MONTANA Helena Oct 6 Sec. Dr S A. Cooney 7 W 6th Ave. Helena.
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NEW JERSEY Trenton Oct. 20-21 Sec. Dr James J McGuire, 28 W State St., Trenton
NEW MEXICO Santa Fe, Oct. 12-13 Sec. Dr Le Grand Ward Santa Fe.
NEW YORK Albany Buffalo New York and Syracuse Sept. 21-24 Chief Professional Examinations Bureau Mr Herbert J Hamilton, 315 Education Bldg., Albany
NORTH CAROLINA Raleigh Nov 30 Sec. Dr Ben J Lawrence 503 Professional Bldg Raleigh
OKLAHOMA Oklahoma City Dec. 9 Sec. Dr James D Osborn Jr. Frederick.
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PUERTO RICO San Juan Sept. 1 Sec. Dr O Costa Mandry Box 536 San Juan.
VIRGINIA Richmond Dec. 9-13 Sec. Dr J W Preston 73½ Franklin Road Roanoke.
WISCONSIN Reciprocity Madison Sept. 8-9 Sec. Dr Robert E. Flynn, 401 Main St., La Crosse Basic Science Madison Sept. 26 Sec. Prof Robert N Baner, 3414 W Wisconsin Ave. Milwaukee

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- AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY Philadelphia June Sec., Dr C Guy Lane 416 Marlboro St. Boston
AMERICAN BOARD OF INTERNAL MEDICINE Written examination will be held simultaneously in different centers of the United States and Canada in December. Practical or clinical examination will be given in St. Louis in April. Chairman Dr Walter L Bierring 406 Sixth Ave. Des Moines
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AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec 29-30 Sec. Dr Walter Freeman 1028 Connecticut Ave Washington, D C
AMERICAN BOARD OF RADIOLOGY Cleveland Sept 25-27 Sec. Dr Byrl R. Kirkin Mayo Clinic, Rochester Minn

Illinois April Examination

Mr Homer J Byrd, superintendent of registration Illinois Department of Registration and Education reports the written and practical examination held in Chicago, April 7-9 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-one candi-

dates were examined, 39 of whom passed and 2 failed The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|-------------------------------|-------------------|----------|
| Chicago College of Medicine and Surgery | (1935) 83 | 85 | 77 |
| Chicago Medical School | (1935) 87 | (1936) | 86 * |
| Loyola University School of Medicine | (1935) 87 | (1936) | 84 |
| Northwestern University Medical School | (1933) 86 (1935) 86 (1936) 81 | 82 † 83 84, 84 84 | 84 † |
| Rush Medical College | (1932) | (1932) | 84 |
| School of Medicine of the Division of the Biological Sciences | (1934) 84 | (1935) | 86 |
| University of Illinois College of Medicine | (1935) 84 | (1936) | 84 † |
| Tufts College Medical School | (1934) | (1934) | 76 |
| University of Rochester School of Medicine | (1931) | (1931) | 84 |
| McGill University Faculty of Medicine | (1932) | (1932) | 86 |
| Friedrich Wilhelms Universität Medizinische Fakultät, Berlin | (1933) | (1933) | 82 † |
| Hamburgische Universität Medizinische Fakultät | (1934) | (1934) | 84 † |
| Universität Zürich Medizinische Fakultät | (1934) | (1934) | 81 |

| School | FAILED | Year Grad | Number Failed |
|--|--------|-----------|---------------|
| Chicago Medical School | (1932) | (1932) | 1 |
| Medizinische Fakultät der Universität Wien | (1932) | (1932) | 1 |

Thirteen physicians were successful in the practical examination held in Chicago, April 9, for reciprocity and endorsement applicants The following schools were represented

| School | PASSED | Year Grad | Reciprocity with |
|---|----------|-----------|------------------|
| Loyola University School of Medicine | (1934) | (1934) | Ohio |
| Rush Medical College | (1935) | (1935) | California |
| State University of Iowa College of Medicine | (1934) | (1934) | Iowa |
| Johns Hopkins University School of Medicine | (1930) | (1930) | Penna. |
| (1931) Maryland | (1931) † | (1931) † | Michigan |
| Detroit College of Medicine and Surgery | (1934) † | (1934) † | Missouri |
| St. Louis University School of Medicine | (1932) | (1932) | Missouri |
| Washington University School of Medicine | (1933) † | (1933) † | N B M Ex. |
| Northwestern University Medical School | (1935) † | (1935) † | N B M Ex. |
| School of Medicine of the Division of the Biological Sciences | (1929) † | (1929) † | N B M Ex. |
| Harvard University Medical School | (1933) † | (1933) † | N B M Ex. |
| Duke University School of Medicine | (1933) † | (1933) † | N B M Ex. |

* Average grade not reported

† License has not been issued

‡ Verification of graduation in process

Hawaii April Examination

Dr James A Morgan, secretary Board of Medical Examiners, reports the written examination held in Honolulu, April 13 16, 1936 The examination covered 10 subjects and included 55 questions An average of 75 per cent was required to pass Three candidates were examined, 1 of whom passed and 2 failed The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| Indiana University School of Medicine | (1934) | (1934) | 84 |
| School | FAILED | Year Grad | Per Cent |
| University of Michigan Medical School | (1933) | (1933) | 77 * |
| Creighton University School of Medicine | (1933) | (1933) | 69 |

* Failed in three or more subjects

New Mexico April Examination

Dr Le Grand Ward, secretary, New Mexico Board of Medical Examiners, reports the examination held in Santa Fe, April 13 1936 The examination covered 12 subjects An average of 75 per cent was required to pass One candidate was examined and passed The following school was represented

| School | PASSED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| Jefferson Medical College of Philadelphia | (1934) | (1934) | 87 |

Twenty-two physicians were licensed by endorsement from April 16 through June 26 after an oral examination The following schools were represented

| School | LICENSED BY ENDORSEMENT | Year Grad | Endorsement of |
|---|-------------------------|-----------|----------------|
| College of Medical Evangelists | (1931) | (1931) | S Dakota |
| University of Colorado School of Medicine | (1934) | (1934) | Colorado |
| Yale University School of Medicine | (1933) † | (1933) † | N B M Ex |
| Chicago College of Medicine and Surgery | (1913) | (1913) | Arkansas |
| Chicago Homeopathic Medical College | (1903) | (1903) | Illinois |
| Northwestern University Medical School | (1928) | (1928) | Illinois |
| Rush Medical College | (1929) * | (1929) * | Illinois |
| Kentucky University Medical Department | (1904) | (1904) | Kentucky |

| | | |
|--|--------|------------|
| Louisiana State University Medical Center | (1935) | Louisiana |
| University of Maryland School of Medicine | (1913) | N Carolina |
| University of Michigan Medical School | (1933) | California |
| St. Louis College of Physicians and Surgeons | (1920) | Colorado |
| University of Nebraska College of Medicine | (1932) | Nebraska |
| Univ. of the City of New York Medical Department | (1893) | New York |
| Eclectic Medical College Cincinnati | (1926) | Ohio |
| University of Pittsburgh School of Medicine | (1928) | Penna. |
| Memphis Hospital Medical College | (1899) | Texas |
| University of Tennessee College of Medicine | (1934) | Tennessee |
| Vanderbilt University School of Medicine | (1893) | Texas |
| Baylor University College of Medicine | (1933) | Texas |

* License has not been issued

Book Notices

Family Behavior A Study of Human Relations By Bess V Cunningham Ph D Cloth Price \$2.75 Pp 471 with 7 illustrations Philadelphia & London W B Saunders Company 1936

Intended primarily as a textbook for the student of college age who is interested in the problems of adjustments of modern families to life in a complex community such as exists at present, the Cunningham volume should prove of value to the practicing physician or pediatrician for several reasons First, to be professionally effective, physicians must be thoroughly familiar not only with the problem of family adjustment as such but with the psychologist's approach to it Second, this book is written readably for the student and not highly popularized for the apparently unlimited capacity of the lay mind in this field Third, it recognizes that there is something in the picture besides sex Fourth, the author is thoroughly qualified in terms of background and experience to present sound and practical material on a conservative basis Fifth, there is an ample bibliography for further study, if desired Accordingly the book is recommended

The progress of the book is about as follows Why study family behavior? Definition of family and behavior How to study the family Neighbors and neighborhoods, with consideration of national and racial origins, variations in belief, socioeconomic status, intelligence, and educational and amusement facilities Working and sharing income Using leisure Adjusting to community life, including to neighbors and to newer influences The nurture of personalities Maintaining healthy minds Careers for parents Children and their parents Growing up Families of tomorrow In a sense the book represents an attempt to analyze the possibilities of mental hygiene in family and community life Matters physical are almost entirely omitted Accordingly the reader would obtain from it suggestions as to the philosophy of life and relationships which would be successful in the present social revolution, with, however, scrupulous omission of political philosophies For the student there are continually presented problems for further consideration This with the text and generous bibliographies assures an adequate textbook However, he who seeks methodology as such will be disappointed The book, almost in toto, is theory rather than "how to do it" Yet the book is so written that the reader should have no great difficulty in making practical application of the material presented

With family adjustments internal and external, one of the major social problems confronting the physician (who must heal or prevent social as well as physical and mental ills today), this book deserves a place in medical libraries built for professional improvement.

Précis de biologie animale à l'usage des candidats au certificat d'études physiques chimiques et biologiques et à la licence ès sciences Par M Aron professeur à la Faculté de médecine de Strasbourg et P Grassé professeur à la Faculté des sciences de Clermont Ferrand. Cloth Price 80 francs. Pp 1016 with 642 illustrations Paris Masson & Cie 1935

This textbook is intended primarily for the use of students who are candidates for the "P. C. B." certificate (physical, chemical, biological). The authors have attempted to orient the student in the field by presenting general biological principles rather than descriptive and systematic biology In pursuit of this plan they have given over the first 400 pages to discussion of such subjects as cell organization, division and general physiology sexuality, heredity regeneration, nutrition of organisms the relation of organisms to their environment, and

growth. The animal groups are presented briefly and concisely and the final chapters contain discussions of problems of speciation and evolution. The numerous illustrations increase the usefulness of the book. The type, while small, is clear and legible. The authors have produced an interesting and stimulating book which is more comprehensive than many textbooks in general biology. The emphasis placed on research and the importance of experimental method is especially commendable.

Memorandum Book of a Tenth Century Oculist for the Use of Modern Ophthalmologists. A Translation of the *Tadhkirat of Ali Ibn Isa of Baghdad* (cir 940 1010 A. D.) the Most Complete Practical and Original of All the Early Textbooks on the Eye and Its Diseases. The first edition in English by Casey A. Wood. Boards. Price \$8. Pp 232 with 21 illustrations. Chicago: Northwestern University 1936.

Tadhkirat al-kahhalin, or the Memoranda for Oculists, was written by Ali ibn Isa, a Nestorian Christian oculist practicing in Baghdad around the year 1000 A. D. Although not one of the earliest of the Arabian books on ophthalmology, it is probably the most complete of that era and one of the few in which acknowledgment is made to earlier Greek and Arabian ophthalmologists. In his well known history of ophthalmology, Hirschberg listed ten known copies of the work. Dr Wood was fortunate enough to obtain the eleventh copy, which is complete and modern, as well as the twelfth copy, which is older and somewhat fragmentary. With the assistance of Dr Max Meyerhof and others, Casey Wood has again produced an enduring piece of work in the translation of this early textbook. It is dedicated to his lifelong friend Dr Harold Gifford and forms a monument of which any man may well be proud. The book making was done by the Lakeside Press under the supervision of Northwestern University and particularly Dr Sanford Gifford and is a creditable piece of work.

Two hundred and twenty eight pages of translation of medieval medicine sounds like difficult reading, but to one interested in the subject it is fascinating. The ophthalmology of Ali ibn Isa was only what could be seen with the naked eye. He had no ophthalmoscope or slit lamp and as a result his major observations were confined to diseases of the surface of the eye. But he had a good classification of such diseases, even though his knowledge of the etiology was weak. However, to make up for that he was strong on therapeutics and he gave some thirty-one pages of description of medicinal agents and how they were prepared and used. The surgery was of course rudimentary and primitive, but it is interesting to hear him talk as glibly of anesthetics as we do today.

There is much food for thought in this book. In the first place, it fills a definite gap in our historical knowledge and it will stimulate a desire for further reading in the history of ophthalmology, particularly among the younger men. In the second place it is a translation written in the flowing easy style of a finished literateur and consequently is delightful reading. And in the third place, it is a piece of fine book making of which we may all well be proud. Casey Wood has again distinguished himself.

Les parasites érythrocytaires révévés par la splénectomie. *Bartonella et éperythrozoon.* Par le Docteur David Weinman. Travail du Laboratoire de Parasitologie de la Faculté de médecine de Paris. Paper. Pp 103. Paris: Amédée Legrand 1935.

This memoir gives a comprehensive review of the intracellular parasites of red blood cells which appear after splenectomy. The first and much the largest section comprises an extended and excellent literature review in three chapters dealing respectively with the genus *Bartonella*, *Bartonella muris*, and other bartonellas. As would be expected *Bartonella muris* is given much the most extensive treatment. It includes a complete review from the standpoint of history, epidemiology, course of infection, histopathology, symptomatology, immunology and morphology of the parasite. In the second section there are three chapters dealing with *Eperythrozoon coccoides* of the white mouse, other *eperythrozoa*, and certain doubtful forms. The third section deals with the author's original observations on *Eperythrozoon coccoides* and contains data on the morphology of the parasite, transmission and virulence. There is a full bibliography of eleven pages. Investigators interested in this group of organisms will find this a useful review of the subject.

The Life and Works of Charles Barrett Lockwood (1856 1914). By Eric C. O. Jewesbury. M.A. B.M. B.Ch. (The Wix Prize Essay). Bartholomew's Hospital 1934. Cloth. Price 3s. 6d. Pp 103 with 12 illustrations. London: H. K. Lewis & Co., Ltd. 1936.

This is a short biography of a surgeon who lived through the interesting transition period of surgery from antiseptic to asepsis and who was a pioneer of aseptic principles at St. Bartholomew's, the hospital in which he worked. A biography written more than twenty years after one's demise is likely to magnify the good qualities and accomplishments and minimize the faults and peculiarities of the individual concerning whom it is written. It does not appear so in this case. Based on personal interviews with many people who knew him, the author portrays the life and work of this man clearly and yet briefly, leaving out all the minute details. Lockwood is presented as a man of courage and determination, an indefatigable, thorough worker who accomplished much. He was an expert anatomist, a practical bacteriologist as well as an excellent and conscientious surgeon, a pioneer in spirit. As a teacher he was inspiring, forceful and entertaining in the informal demonstrations in the wards. Formal lectures he found most trying, yet no member of the staff attracted so large an audience. His rather numerous published lectures and essays, on the other hand, have been described as "some of the finest that have appeared in the world of medical literature." The record of the man, as portrayed by the author, is an inspiration and should be read by all young and aspiring surgeons.

Urological Nursing. By David M. Davis. M.D. Professor of Genito-Urinary Surgery, Jefferson Medical College. Second edition. Cloth. Price \$2.25. Pp 195 with 87 illustrations. Philadelphia & London: W. B. Saunders Company 1936.

This small volume should prove valuable to nurses in charge of urologic cases, and an absolute necessity to nurses in charge of urologic wards or operating rooms. The chapters concerned with the anatomic and clinical aspects are sufficiently complete to serve as a good background for efficient nursing, but Dr. Davis has successfully checked any tendency he might have had to enlarge on these subjects from the strictly medical point of view. The illustrations are to be commended, particularly those depicting various types of apparatus used in carrying out drainage of the bladder, both through the natural channel and through suprapubic and perineal incisions. The urologic armamentarium, always a most complicated one, has become even more so with the great popularity of transurethral operative procedures, and Dr. Davis deserves great credit for discrimination in selecting instruments for illustration and detailed description. The question of sterilization of instruments is discussed adequately.

L'action des rayons ultra violets et des rayons X sur les nerfs périphériques. Par Jacques Audiat, docteur ès sciences. Préface de Pr. A. Strohl. Paper. Price 25 francs. Pp 88 with 23 illustrations. Paris: Masson & Cie 1935.

For many years nerve tissue in general has been held to be comparatively resistant to roentgen and ultraviolet rays. The careful experiments of the author, by electrophysiologic methods on isolated nerves, indicate that, under certain conditions of technic (doses of rays), the function of peripheral nerves may be influenced by irradiation. The experiments appear to have been carried out with care and skill, and the manner in which the author attempts to interpret his results shows a high degree of scientific reserve. In connection with roentgen rays, unfortunately, the technical details given are not sufficiently clear. Audiat seems to regard rays generated at 110 kilovolts as penetrating. Medical radiologists would probably find it difficult to accept this view except from the limited point of view of the experimental physiologist. Moreover, doses of the order of 300,000 roentgens might be expected to influence a nerve or any other kind of living tissue; the therapeutic doses used in medicine are so much smaller that the experimental results obtained by the author can hardly be translated into medical terms. It would be interesting to know how 300,000 roentgens could be obtained in ten minutes with the voltage and filtration given. Nevertheless, physiologists interested in physiology will find this title interesting.

Prof Dr G Grijns' Researches on Vitamins 1800 1911 and His Thesis on the Physiology of the N. opticus, Translated and Reedited by a Committee of Honour on Occasion of His 70th Birthday Paper Pp 254 Gorinchem J Noorduyt en Zoon N V 1935

This is a memorial volume commemorating the seventieth birthday and academic retirement of Dr Gerrit Grijns. The book contains his comprehensive and classic treatise on polyneuritis gallinarum with his original protocols translated into English and his first scientific paper, 'The Physiology of the Optic Nerve,' translated into German. The latter paper is unusual in that while it was published before finishing his studies at the University of Utrecht the data remain valid to this day. At the end of the book is a bibliography of the ninety three publications of Professor Grijns. As one of the fundamental investigators in the field of vitamins and as a scholar and physician, Dr Grijns is deserving of the homage and appreciation of his scientific colleagues all over the world.

Theoretische und experimentelle Studien zur Methylenblaufärbung des Nervengewebes. Von Prof Dr Arnold Schabadach. Heft 1 Acta morphologica. Arbeiten aus dem morphologischen Laboratorium der Filiale des Institutes für experimentelle Medizin (Wien) und dem Staatlichen Anatomischen Institut in Gorkij (UdSSR). Vorstand Prof Dr Arnold Schabadach. Cloth Pp 244 with 24 illustrations. Gorky State Publishing House 1935.

This first volume of the Acta Morphologica presents a survey of the work of the last fifty years on the staining of the nervous system with methylene blue. It includes not only an account of the technic but also a consideration of the chemical factors involved. Excellent photomicrographs show the structure of the sympathetic plexuses in the walls of the viscera.

Bibliography in Health Education for Schools and Colleges. Selected and Annotated by Mary Ella Chayer R N A M Instructor in Nursing Education Teachers College Columbia University. Cloth Price \$1.50. Pp 100. New York G P Putnam's Sons 1936.

Today the practicing physician is being called on more and more to furnish information on health and hygiene. It is difficult if not impossible for him to keep himself informed on all the phases of the subject, to read and know the best books and the latest and most authoritative pamphlets as well as periodicals. The author presents in this volume a guide for the physician that is decidedly worth while. The manner of classifying the material is well done and labor saving to the reader. At a glance he can choose his subject and then determine easily whether he wants a book, a pamphlet or an article from a periodical, since all the subjects are divided in this manner. As with all bibliographies on health, frequent revision will be needed.

Handbook of Surgery. By Eric C Mekie M.D. Ch.B. F.R.C.S. Medical Officer, Malayan Medical Service. With a foreword by John Fraser M.C. M.D. Ch.M. Regius Professor of Clinical Surgery University of Edinburgh. Fabrikoid. Price \$4.50. Pp 699 with 24 illustrations. Baltimore: William Wood & Company 1936.

The author of this little volume says in his preface "It has been my aim to set down only what are the salient features of the subject which must be known ere the student presents himself for examination." The surgeon actively engaged in practice tends to forget the beginner's point of view and what a tremendous volume of information he is expected to acquire and master in a few short years. Volumes such as this concisely and clearly written, though necessarily dogmatic, are helpful guides to what is important and essential. To indicate this clearly and in an interesting and logical fashion is a praiseworthy achievement, and the author has accomplished it admirably.

Detachment of the Retina. Operative Technique in Treatment. By J Cole Marshall M.D. F.R.C.S. Senior Surgeon Western Ophthalmic Hospital London. Cloth Price \$2.75. Pp 80 with 44 illustrations. New York & London Oxford University Press 1936.

This is a brief outline of most of the operative methods for detachment of the retina. The author observed most of the various methods that are described practiced by those who devised them. The others are briefly reviewed from the original articles. The book is a fair rehash of all that has preceded in this field. No new ideas are advanced, no original procedures are described and the author's personal opinions are conspicuous by their absence. The descriptions are sometimes difficult to follow and the arrangement of the text could be improved. The book contains little to recommend it.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts. Sequelae of Herniotomy Compensable.—The claimant developed a right inguinal hernia as a result of lifting a heavy keg of nails in the course of his employment, and submitted to an operation. For a number of years prior to the operation he had a chronic inflammation of the spine and hypertrophic spondylitis that being a growth of bone and cartilage from the spine causing pain. The long confinement in bed incident to the herniotomy aggravated these conditions and also caused spastic colitis. As a result of these sequelae, he was unable to do any manual work. The industrial accident board awarded him compensation in accordance with a special provision of the Texas workmen's compensation act pertaining to hernia, which authorizes, in the event of a successful operation, compensation for a limited period in addition to expenses for necessary medical and surgical care. The claimant then sued his employer's insurer the Zurich General Accident and Liability Insurance Company, in the United States district court for the eastern district of Texas, to set aside the board's award and to recover instead compensation for total permanent disability under the general provisions of the act. From a judgment in favor of the claimant, the insurer appealed to the United States circuit court of appeals, fifth circuit.

The Texas workmen's compensation act, said the circuit court of appeals authorizes compensation for certain specific injuries, including hernia, and also for injuries in general resulting in partial or total incapacity for work. An employee who suffers a specific injury is not confined to the compensation allowed for that specific injury if that injury, or the proper or necessary treatment therefor, causes other injuries which render him unable to work. The court was of the opinion that the aggravation of his preexisting ailments and his consequent total incapacity for work were traceable to his injury, received in the course of his employment, and to the treatment called for by that injury. The court held therefore that the claimant was entitled not only to compensation for the hernia directly caused by the accident but also for the total and permanent disability resulting from the aggravation of his preexisting ailments, which prior to the operation had no disabling effects. The judgment of the trial court was therefore affirmed.—*Zurich General Accident & Liability Ins Co v Daffern, 81 F (2d) 179*

Charitable Hospitals. Charitable Status Need Not Be Negatived in Complaint Alleging Injury.—An appendectomy was performed at the defendant hospital on the plaintiff's six year old boy, a pay patient. Some time subsequent to the operation, the attending physician ordered the injection of one-fourth grain of codeine. A nurse employee of the hospital injected instead one-fourth grain of morphine. The patient died soon thereafter from the effects of the injection. The plaintiff then brought suit against the hospital. The defendant hospital demurred to the complaint and, when the trial court sustained that demurrer, the plaintiff appealed to the Supreme Court of Utah.

In support of the ruling of the trial court on the demurrer, the hospital contended that as a charitable institution it was not liable for the negligence of its nurses, and that it was incumbent on the plaintiff, in his complaint to plead that the hospital was not a charitable or eleemosynary institution. With this contention, the Supreme Court disagreed. For a complaint to be good against a general demurrer, the court said, the plaintiff is not required to plead so far as corporate existence is concerned, the nature or purposes of the corporate defendant. Furthermore when one is charged with responsibility for wrongful or tortious behavior and exemption therefor is claimed it is essentially defensive matter. The Supreme Court after reviewing at some length the differing rules in the various jurisdictions relating to the liability of charitable institutions for injuries occasioned by the negligence of their servants,

and after discussing the factors that may enter into a determination of the charitable status of a hospital, held that the trial court should have overruled the demurrer to the complaint and permitted the defendant hospital to introduce evidence, if it so desired, to establish the charitable status of the hospital. The judgment of the trial court was therefore reversed and the cause remanded, with directions to overrule the defendant's demurrer, and permit the parties to proceed further.—*Sessions v. Thomas Dec Memorial Hospital Assn (Utah) 51 P (2d) 229*

Alcoholism "Intoxication" defined—Whether or not a person is intoxicated, said the Supreme Court of Illinois, is a question of fact for the jury, but what constitutes intoxication is a question of law to be defined by the court. We have held, continued the court, that the terms "drunk" and "intoxicated" are synonymous (*People v Rowland*, 335 Ill 432, 167 N E 10). The term "intoxication" is of such elasticity as to require legal definition when applied to a criminal statute. The courts of different states have applied varying definitions to the term. In Kansas it has been held that a person is intoxicated within the meaning of an accident policy if his faculties are affected to such an extent as to impair his ability to care for himself (*Richardson v Business Men's Protective Association* 129 Kan 700, 284 P 599). In Oregon it has been defined as drunkenness evidenced by abnormal excitations of passions or feelings and impairment of mental and physical faculties (*Brady v Schmitzer*, 135 Ore. 250 295 P 961). In Louisiana it is held to mean the condition of being under the influence of intoxicating liquor to such an extent as to have lost normal control of the faculties (*Valeri v Mutual Life Ins Co of New York*, 151 La 405, 91 So 818). All the definitions, observed the court, differ in wording but each of them includes the central idea of an impairment of the faculties of care and caution. The trial court in the present case, said the Supreme Court, erred in refusing to instruct the jury, as requested by the accused that such intoxication as would make the driving of a car unlawful was that degree of intoxication which would render the driver incapable of giving that attention and care to driving that a man of prudent and reasonable intelligence would give. For this and other errors committed by the trial court, the judgment of conviction of manslaughter was reversed and the case remanded.—*People v Schneider (Ill)*, 200 N E 321

Life Insurance Death from Pneumonia Following Heat Prostration a "Death by Accidental Means"—The defendant insurance company issued a policy of insurance on the life of one Thomas O'Connell which provided for the payment of double indemnity on proof "that the death of the insured resulted directly and independently of all other causes from bodily injury effected solely through external violent and accidental cause." The insured, a plumber, after working in a ditch for some hours laying sewer pipe, collapsed from the heat and fell, striking his head at the base of the skull. Within twenty-four hours he developed pneumonia, from which he died. The beneficiary sued on the policy to recover double indemnity. The defendant contended that it was not liable for double indemnity because the insured's death was not caused by accidental means. The jury returned a verdict for the defendant. The trial court, however, gave judgment in favor of the plaintiff notwithstanding the verdict. The defendant thereupon appealed to the Supreme Court of Wisconsin.

It was conceded that the blow on the head neither caused nor materially contributed to the insured's death and that the pneumonia was induced by heat prostration. The sole question, the Supreme Court said, was whether heat prostration satisfies the policy requirement that death or bodily injury be "effected solely through external violent and accidental cause." There is no legal distinction, said the court, between sunstroke and heat prostration however different their medical effects may be. Injuries resulting from heat prostration or sunstroke are not only accidentally effected but produced by accidental means. The insured's death was therefore, held to have been "effected solely through external, violent and accidental cause."

The judgment in favor of the beneficiary was affirmed.—*O'Connell v New York Life Ins Co (Wis) 264 N W 253*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology New York
Sept 26-Oct 3 Dr William P Wherry 107 South 17th St. Omaha
Executive Secretary
American Association of Obstetricians Gynecologists and Abdominal
Surgeons Bretton Woods N H Sept 14-16 Dr James R. Bloy
418 Eleventh St. Huntington W Va. Secretary
American Congress of Physical Therapy New York, Sept. 8-11 D
Nathan H. Palmer 921 Canal Street New Orleans, Secretary
Colorado State Medical Society Glenwood Springs Sept. 9-17 M
Harvey T. Sethman 1612 Tremont Place Denver Executive Secretary
Idaho State Medical Association Boise Aug 31 Sept 4 Dr Harold W
Stone, 105 North Eighth St. Boise, Secretary
Michigan State Medical Society Detroit, Sept. 21-24 Dr C T Ekdahl
35 West Huron St. Pontiac Secretary
National Medical Association, Philadelphia Aug 16-22 Dr W Harry
Barnes 1315 North 15th St. Philadelphia Acting Secretary
Nevada State Medical Association Reno Sept 25-26 Dr Horace J
Brown 20 North Virginia St. Reno Secretary
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Dr Oscar O. Larsen Detroit Lakes Secretary
Southern Minnesota Medical Association Albert Lea Aug 30-31 Dr
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AMERICAN ASSOCIATION FOR THE STUDY AND CONTROL OF RHEUMATIC DISEASES

Third Annual Meeting and Fifth Conference on Rheumatic Disturbances
held in Kansas City, Mo. May 11 1936

LORING S. SWAIN, M.D., Secretary

The Clinical Approach to the Rheumatic Patient

DR. RUSSELL L. HADEN, Cleveland When confronted with a "rheumatic" patient, the clinician should have a definite plan of approach. The just differentiation is between articular and nonarticular skeletal disease. If the patient has a true arthritis there must be some clinical classification such as the following:

1 Arthritis due to a known cause, such as traumatism, a specific infection, a metabolic disturbance, a constitutional abnormality, some neuropathic disorder or serum disease.

2 Arthritis due to an unknown cause, including rheumatic fever, rheumatoid arthritis and osteo-arthritis.

The management of arthritis due to a known cause is usually clearly indicated. Since by definition the causes of the second group are unknown, these should be thought of in terms of unknown specific etiologic factors, most probably an infection in rheumatoid arthritis and an aging or disturbance in nutrition of the cartilage in osteo-arthritis and of influencing factors which may often be found and treated. The influencing factors in rheumatoid arthritis may be designated precipitating factors such as exposure, exhaustion, specific infections, focal infections, undernutrition, anemia, toxemia or diminished blood flow. The influencing factors in osteo-arthritis may be designated accelerating factors. These are abnormal metabolism, trauma, disturbed circulation, toxemia, nutritional deficiency, gastro intestinal disturbances and exhaustion. To uncover the precipitating and accelerating factors, a careful clinical and laboratory survey is necessary in each patient. Treatment should be planned for a patient individually on the basis of the conditions found in such a survey.

Differential Diagnosis of Arthritis from Standpoint of Pathology

DR. EDWIN P. JORDAN, Chicago Gout has long been presumed a disorder of metabolism. Although the alleged factors are not understood those believed to play a part are hereditary predisposition, lead and alcohol. The newer chemical methods have demonstrated an increase in uric acid content of the blood. The significance of this change is uncertain as some normal individuals show a uric acid in excess in gout as in cases of uremia and leukemia. The second major tissue change in gout is the deposit of the urates with an elective affinity for fibrous tissues around joints and in the lobes of the ear, and in the

Rheumatoid and atrophic arthritis are the same. Osteoarthritis is a hypertrophic arthritis are the same

later stages in the bone around joints. If this precipitation is slow there are few secondary changes but if rapid there are marked inflammatory redness and swelling and pain. Little is known of the microscopic picture at this stage, or of the inflammatory exudate in the joint during the acute attack.

Gonococcal infection may produce definitely an arthritis. There may be two or more types, but certainly one type invades the joint. In one stage it involves the synovial membrane, producing inflammatory reaction with infiltration with leukocytes, lymphocytes and macrophages. An inflammatory exudate follows from which gonococci can be isolated. A second type, a true sensitization of the joint to products of metabolism of the organism, is believed to occur in which the organism cannot be isolated and little is known of the pathology. Probably the finding of large numbers of eosinophil cells either in the joint fluid or in the synovial membrane would help to corroborate the conception of the existence of the disorder as a pathologic entity.

In degenerative arthritis no consistent lesions have been described outside the joints other than degenerative changes, but the end results of this arthritis are characteristic. Nichols and Richardson say "The joint cartilage is irregular in thickness, and markedly so in structure. It is fibrillated and calcified. Its cells are swollen. Parts of the cartilage may be ossified. The underlying bone is thickened and dense. The marrow is fatty and fibrous. The synovial membrane is thickened, fibrous, and is thrown into villi. Several observers have noted cyst formation in the bone in the region of the joint." The primary lesion is in the articular cartilage which cannot repair, erosion and fragmentation of the cartilage follow, subchondral bone becomes dense and proliferates. Loose bodies occur. Most of the changes can be ascribed to the increasing trauma to the joint. A vicious cycle results.

In rheumatoid arthritis, constant deviations of the sedimentation rate suggest blood changes. The primary tissue affected is the synovial membrane. Diffuse proliferation of the membrane occurs, with increase in plasma cells, lymphocytes and eosinophils. Depending on the speed of the progress, lymphocytes and plasma cells increase. Polymorphonuclear leukocytes may appear either in the synovial tissue or in the lumen of the blood vessels. Perivascular infiltration may occur. There is constant increase in the fibroblasts. The pathologic changes suggest but do not prove the specific nature of rheumatoid arthritis. The experiments in rabbits by nonspecific allergic inflammation produce a picture similar to that in man. Key has produced the same picture by weak acids and alkalis and Jordan by acetone and turpentine. On the whole, it seems that the major forms of arthritis can usually be clearly differentiated on the basis of the characteristic pathologic picture which they produce.

DISCUSSION

DR. M. HENRY DAWSON, New York. The pathology of gonococcal arthritis is reasonably well known. The pathologic changes in rheumatoid and osteo-arthritis are not quite so clear. However, many detailed and excellent investigations have been made on the pathology of these two forms of arthritis. One of the best descriptions was that of Hoffa and Wollenberg in 1908. A year later Nichols and Richardson published their classic monograph. In 1926 Heine published his monumental study on the relationship between age period changes and degenerative arthritis. Among other contributions have been the studies of Allison and Ghormley, Timbrell Fisher and Klinge and his associates. The one inescapable conclusion from all these studies is that rheumatoid arthritis and osteo-arthritis represent two totally different pathologic processes. Rheumatoid arthritis is an inflammatory process related in some very intimate way with infection. Osteo-arthritis is an age period, degenerative disease not associated with infection in any direct manner. Pathologically the distinction between rheumatoid arthritis and osteo arthritis is quite as sharp and well defined as that which exists between syphilitic aortitis and arteriosclerosis. Knaggs expressed a contrary opinion. Originally Knaggs believed that the two diseases under discussion were distinct entities but after studying the Strangeways collection of joints he arrived at a different conclusion. I believe that this contrary point of view can be explained by the fact that the material studied consisted largely of old and 'burned-out' specimens of the two diseases. Secondary degenerative

changes are frequently superimposed on rheumatoid arthritis, also degenerative arthritis is an extremely common event, especially in the later decades of life. It is not surprising that in certain cases the changes of the two diseases should coexist in the same patient and even in the same joint. Concerning the pathology of rheumatoid arthritis, the subcutaneous nodule, to my mind, constitutes the most characteristic lesion. It is frequently possible to make a positive diagnosis from the histologic appearance of the nodule alone. It is true that only 15 to 20 per cent of patients with rheumatoid arthritis show these nodules, but when found they are pathognomonic. They are never seen in osteo arthritis.

DR. PHILIP S. HENCH, Rochester, Minn. Since there is no one clinical or laboratory feature pathognomonic of atrophic arthritis, it would be helpful in diagnosis if there were at least a specific pathologic lesion. Allison and Ghormley believed that the nodular collections of round cells which they described, seen in synovia and epiphyseal bone, are specific for atrophic arthritis. Somewhat similar collections were described by Timbrell Fisher, who recently spoke of them, however, as being "perivascular." Allison and Ghormley did not consider them perivascular. May I ask Dr. Jordan how he would describe them? I cannot agree with Dr. Dawson that subcutaneous fibrous nodules are seen only in atrophic arthritis. Dr. Slocumb and I have seen numerous subcutaneous nodules in many cases of fibrositis in which even after years of the disease arthritis has never developed.

DR. J. ALBERT KEY, St. Louis. The synovial lining cells are connective tissue cells. Twenty-four hours after the joint is irritated these cells are changed and an osteo-arthritis joint is often irritated. As regards a clear-cut distinction between osteo-arthritis and rheumatoid arthritis, the more one studies the synovial membrane of osteo-arthritis the less will one believe that such a distinction exists. It has been the custom since osteo-arthritis was first found to begin in the cartilage—and that was a long time ago—to concentrate on the cartilage and bone, and almost nothing has been done on the changes in the synovial membrane of osteo-arthritis. The orthopedic men have recognized a villous arthritis. The men interested in arthritis have said that such a condition does not exist.

In following cases of osteo-arthritis I am impressed with the fact that an individual may have marked degenerative changes in the joint for many years and have no clinical symptoms. Then something may happen and the joint gets hot, is filled with exudate and becomes an acute joint. That joint is bound to have inflammatory changes in the synovial membrane. According to Dr. Dawson, that is a burned out rheumatoid arthritis which has developed compensatory changes as a result of degeneration of the cartilage. On the other hand, I am perfectly sure that it is chronic inflammation in an osteo-arthritis joint. And I have seen numerous specimens on which I have operated in which there were marked inflammatory changes in the synovial membrane. I do not know the origin of rheumatic nodules but I have never seen the pathologic picture such as Dr. Dawson described in rheumatoid arthritis presented by any other condition. I have excised these nodules and I was unable to explain how they came about. I have felt that the nodules of small round cells described by Ghormley and Allison are by no means constant in the synovial membrane of rheumatoid arthritis. It is only in old cases that they may be found and it is my experience that they are not perivascular.

DR. EDWIN P. JORDAN, Chicago. I do not know whether the aggregations of cells are perivascular or not, but I think that most of them are not. I have been able to find blood vessels going through them in only a relatively small percentage of the total number. With regard to the pathologic differentiation between degenerative arthritis and rheumatoid arthritis every one who has any opinion on that subject at all feels very strongly about it. There seems to be no middle point of view. Actually I think that the end result of the two processes in their pure form if there is a pure form and there seems to be, is decidedly distinct pathologically. On the other hand, I do not see as sharp a distinction between the processes when applied clinically. In other words in many instances the two seem to be intertwined in the one patient to such an extent that it is difficult to draw any hard and fast line between them.

The amount of synovial membrane involvement in what is supposed to be degenerative arthritis is sometimes almost as much as in rheumatoid arthritis. The inflammatory reaction may be fairly acute. It may be due in this instance to trauma from the bone rather than from infection. It may not be infection in rheumatoid arthritis, and hence it is exceedingly difficult to say in all instances during life, at least pathologically, that the process is one or the other. In some instances it is possible to differentiate with some certainty.

The British Activities for the Control of Rheumatism

LORD HORDER, London. I was under the impression before I came over that among the activities at Kansas City there would be a group meeting to discuss the control of rheumatism in the largest sense of that word. I find myself with some alarm and trepidation faced with a program that makes it appear to me that you are engaged in the study of rheumatic diseases from the clinical and pathologic side. I got a little comfort from hearing Dr. Boots say that some of the etiologic factors in rheumatoid arthritis are not yet certain but he took that comfort away from me by saying that we all know about osteo-arthritis. My critical faculty came to my aid, things might happen in the calf that do not happen in the human being. I am chairman of the National Society for the Control of Arthritis in Great Britain. We have in Great Britain a great deal of rheumatism of a disabling type. We have a great deal of disabling rheumatism to which we cannot as yet give any names. It has been definitely established through the ministry of health that there are more working hours wasted in Great Britain through conditions that are labeled chronic rheumatism, fibrositis, arthritis of indefinite origin, and so on, than in any other disease. So that nine years ago there was an effort to form a committee which would consist of doctors, industrialists, men of intelligence and foresight and the minister of health. That committee was aborted because it began at a time when we were faced with domestic economic problems of such dimension that we could not see our way to get the funds to run this committee. We have done up to the present very little work. We have succeeded up to the date of my leaving London in collecting about one third of the quarter million dollars that we aimed at getting to give this thing a proper trial. Our central committee at present is entirely medical. We hold that if one really wants an organization of this type to succeed to do good work and to keep straight it must be essentially medical. I notice that we have as you have all sorts of groups which are not controlled by medical men and women. They are both free countries and if a few people get together and want to do something there is nothing in our law to prevent them from doing it. We really have got an extremely good organization with the triad that I spoke of, medicine, the government in the person of the minister of health and the industrial magnates. What we propose is that as soon as we are not likely to be aborted a second time, because we have not yet gone publicly for appeals, our committee will become an advisory scientific committee to organizations. We hold that it is better to get a decently large fund and then to go to the public for smaller donations. We then can incorporate as a national campaign against rheumatism. Our activities will be first a study of the various aspects of the rheumatic problem including what we still call rheumatic fever. We shall have a research committee because we shall have money with which to subsidize research, just as our cancer campaign subsidizes both full and part time men, with researches of six months, twelve months and up to five years. With regard to treatment, we are still affiliated with the Red Cross rheumatism clinic, which is doing very good work in London and has two branches in the province. Here all the physical therapeutic measures which are so important in these chronic cases are available for the use of any patient sent in by members of the advisory committee or any one who is entrusted to him by a medical man. We expect naturally to increase the number of these rheumatism clinics and we also have a scheme for studying more intensively some of the cases of the rheumatoid group particularly. So we shall have a service for special research work and outpatient clinics for the more routine therapy. We have spas, so-called sanatoriums and watering places for the treatment of chronic rheumatic conditions. We have them repre-

sented on our medical committee and they sent us fourteen representatives. That is roughly what we are doing. We have apparently preceded us by about three years.

Differential Diagnosis of Rheumatoid (Atrophic) and Osteo-Arthritis (Hypertrophic, Degenerative)

DR. RALPH H. BOOTS, New York. These two groups account for about two thirds of all arthritis patients and there is a great difference in their prognosis and treatment. Rheumatoid arthritis is a multiple arthritis which seems to be part of a response to a generalized infectious process. Osteo-

Rheumatoid Arthritis and Osteo Arthritis

| | Rheumatoid Arthritis Atrophic arthritis Proliferative arthritis Chronic infectious arthritis | Osteo Arthritis Hypertrophic arthritis Degenerative arthritis Menopausal arthritis Senile arthritis |
|---|--|--|
| <i>Clinical Differentiation</i> | | |
| Geographic distribution | Most common in temperate climates; rare in the tropics | Climate not much of a factor |
| Family history | Usually a history of rheumatic fever or rheumatoid arthritis in an immediate member of family | Frequently a history of a similar form of arthritis in one or both parents |
| Past history | Occasionally a history of rheumatic fever, frequently of tonsillitis or sinusitis | Not characteristic; sometimes a history of trauma or faulty body mechanics |
| Age at onset | Any age; over 80 per cent between 20 and 50 | Rare before 40; in women most common at menopause (menopausal arthritis) |
| Mode of onset | Rarely acute; usually subacute or insidious; often accompanied by migratory pains | Insidious; not accompanied by migratory pains |
| Patient's general condition | Usually undernourished; anemic and chronically ill; frequently slight leukocytosis and slight fever (99°) | Well nourished; frequently obese; not anemic; no fever; no leukocytosis |
| Joint involvement | Symmetrical and generalized; proximal interphalangeal joints especially involved | Usually weight bearing joints; spine, hips, knees; exception: distal joints of fingers; Heberden's nodes |
| Appearance of joints | Early: periarticular swelling; fusiform fingers; Late: ankylosis; extreme deformity; ulnar deviation | Early: slight articular enlargement; Late: more pronounced articular enlargement; ankylosis; slight and never complete; Heberden's nodes |
| Muscular atrophy | Often marked; particularly in later stages | Not characteristic |
| Cutaneous changes | (1) Extremities frequently cold and clammy; skin atrophic and glossy; redness of thenar and hypothenar eminences; (2) Psoriasis occasionally present | No characteristic features |
| Subcutaneous nodules | Present in 15-20 per cent of cases | Not present |
| <i>Laboratory Differentiation</i> | | |
| Agglutination reaction with hemolytic streptococcus | Positive in the majority of typical cases | Never definitely positive |
| Sedimentation rate | Usually greatly increased; tends to return to normal as patient improves | Normal or only slightly increased |
| Roentgenologic appearance | Early: osteoporosis; periarticular swelling and joint effusion; Late: narrowing of joint space; bone destruction; ankylosis and deformities | Early: no osteoporosis; slight lipping at joint margins; Late: marked lipping; osteophytes |

arthritis is essentially a degenerative process involving joint structures at a time of life when other degenerative changes occur. This type does not present the picture of infection as does the first. The patient is nearly always middle aged or elderly and the joint lesions are probably as much a phase of senescence as the graying of the hair.

The accompanying tabulation is a review of one published by Dawson Sia and Boots in 1930.

With typical examples of these two conditions, the differential diagnosis is simple. However at times the distinction may be difficult, especially is this true when osteo-arthritis is superimposed later in life on an already existing rheumatoid arthritis or vice versa. Occasionally this is also true of early cases of rheumatoid arthritis before the agglutination test becomes positive and before roentgenographic changes occur.

Differential Diagnosis Between Strümpell-Marie's Disease and Hypertrophic Arthritis (Osteo-Arthritis) of the Spine

DR JOSEPH L MILLER, Chicago Although the anatomic changes of Strümpell-Marie arthritis were described 100 years ago, accurate descriptions have been given only in the last thirty years. The disease may develop as a complication to a number of infective diseases as atrophic (rheumatoid) arthritis, gonorrhea, typhoid, bacillary dysentery, and influenza. "Like rheumatoid arthritis it is thought to begin in the only synovial membrane in the spine, the small lateral articulations of the transverse processes and the ribs."

The disease shows a marked tendency to ankylosis and osteoporosis in the adjacent vertebrae and it is clinically progressive. Late changes are (1) ossification of the intervertebral ligaments, especially the anterior longitudinal ligament, (2) ossification of the periphery of the intervertebral disk, (3) extension of the spongiosa of the vertebra through the center of the disk, (4) it results in bamboo spine. These changes are irrespective of the infective cause. The cause resembles rheumatoid arthritis. It was frequent in Germany after the war and in veterans' hospitals. Marie believed that trauma played a part. Heredity plays no part.

With regard to hypertrophic arthritis (osteo-arthritis), since man has not become accustomed to the erect attitude the pressure on the disks of the spine causes deterioration and becomes thin and causes mobility and consequent strain to the ligamentous attachments in the periosteum at the vertebral rim. Osteophytes result.

Nerve root pain is the outstanding symptom of ankylosing spondylitis. The disease in the cervical spine causes nerve symptoms in the arms, in the lumbar spine it causes numbness and in the legs loss of power. The dorsal spine involved causes rib ankylosis and loss of chest breathing. The degree of pain depends on the distribution of the inflammation. If gradual, there may be only stiffness with gradual rigidity resulting in a poker back and kyphosis. The muscles are spastic, any jar or strain causes pain. Finally the chest is flattened, the anterior and posterior diameter lessened. A characteristic slow, shuffling, bent-over gait results. The hips show true fusion, sometimes the shoulders are involved but they are rarely ankylosed. The figures of Geilinger indicate that the leg is affected in 61 per cent, the shoulder in 58 per cent, the knee in 44 per cent, the foot in 41 per cent, the finger in 19 per cent, the hand in 18 per cent, the elbow in 17 per cent, the jaw in 17 per cent. The shoulder is held by spasm of the abductors, owing to involvement of the brachial plexus. Fraenkel reports that the ankylosis is bony in the hips. X-rays aid in the diagnosis of ankylosing spondylitis because of the early recognized osteoporosis, the narrowed intervertebral disks and the ossification of the ligaments, quite different from the osteophytes, which are not found in this type of arthritis except in old age.

Osteo arthritis differs in that Schomolard finds osteophytes in 93 per cent of people in the sixth decade. There is rarely pain, if pains are present they are neuralgic root pains but not persistent as in ankylosing spondylitis. The pain is rarely disabling. X-ray examination shows osteophytes. Differential diagnosis is easy because in ankylosing spondylitis 60 per cent of the cases occur before 40. The condition is rare in women. The sedimentation rate is high. Ankylosis of the ribs occurs and a rigid spine is the rule. X-ray examination reveals a bamboo spine with osteophytes absent.

DISCUSSION ON PAPERS OF DR. BOOTS AND DR. MILLER

DR. RUSSELL L. CECIL, New York I believe that it helps to think of the rheumatic type of chronic arthritis as an inflammatory disease and of the other type as a degenerative disease the former associated with inflammation soft tissue swelling exudate and fluid and the latter with bony change no soft tissue swelling and absence of active inflammatory changes—a dry, creaking joint. One thing that is confusing us is the fact that some of these patients with hypertrophic arthritis can go on so long without any pain and then suddenly develop pain. I believe Osgood is right when he says that in hypertrophic arthritis the pain is due in many cases to trauma that is the effect which these bony spurs have on the synovial membrane. If this mechanical irritation is sufficient there can develop a

hydrops in the joint or a villous arthritis, and still it is a long way from the typical picture seen in the infectious joint. Of course, there is no reason why the middle aged patient should not get infectious or rheumatoid arthritis, and he does get it. I recently saw a man, aged 77, who was having his first typical attack of rheumatoid arthritis, with the characteristic fusiform fingers. Theoretically there is nothing to prevent an elderly woman from getting gonorrheal arthritis. She may already have marked hypertrophic arthritis. Heberden's nodes may be seen on the distal phalangeal joints of the fingers, and fusiform swellings on the proximal phalangeal joints. Let us not forget that any irritant if it is sustained will produce hypertrophic changes in the bone. That does not have to be trauma, though trauma is a common cause of it. It appears after fracture. It occurs in joints containing foreign bodies, after infection, in the Charcot joint and in gout. In a patient particularly in beginning middle age, who develops rheumatoid arthritis, it is natural, with the tendency toward osteal changes and cartilaginous degeneration, that with the development of rheumatoid arthritis there will be certain secondary changes in the bone as well. Let us not forget the tendency in certain families toward these bony changes. When I suspect hypertrophic changes in middle aged patients, I first look at the fingers and if I see a Heberden's node I am pretty sure of osteo-arthritis. If I do not see Heberden's nodes, I hesitate to make a diagnosis of osteo arthritis. The agglutination reaction must have some significance. A positive agglutination reaction of hemolytic streptococcus furnishes an important lead in the diagnosis of the disease. It is present in a high percentage of the cases, particularly if the statistics are limited to those patients who have had the disease for some little time. In the early stages it is absent. But with a technician who is used to reading the agglutination test, a very high percentage of rheumatoid arthritis patients will give a positive reaction. Its practical value is in differential diagnosis.

DR. ERNEST E. IRONS, Chicago I suppose we would all agree that one of the characteristic features of atrophic arthritis, including the ankylosing type Dr. Miller described, is infection and that one of the most characteristic factors in the hypertrophic type of osteo arthritis is the group of changes that come with advancing age. There are a number of other factors that are perhaps not quite so clearly associated with one or the other type of arthritis. I think that we ought to develop the idea that was referred to briefly by Dr. Cecil, namely, the tissue peculiarities of the patient himself. This difference in tissue reaction to trauma is characteristic of races, of families, and sometimes of individuals. A surgical operation may in one person heal in a few weeks leaving a line scar with but little redness. In another patient operated on by the same surgeon at the same time a marked keloid may develop. Applying this to arthritis, undoubtedly there are different degrees of resistance to infection in different people. Certainly, different families differ in the incidence of chronic atrophic arthritis. The changes of senescence appear much earlier in one patient than in another. So resistance to infection and the quality of tissue reaction in patients must play a large part in determining whether the patient will have arthritis, and if so, the type.

DR. EDWIN W. RYERSON, Chicago Dr. Miller has shown in his lantern slides the characteristic changes of the various types of arthritis. One significant point is the number who develop arthritis that we have missed in the past. The other point is the chronic ankylosing arthritis, of which in Chicago we have seen a number of examples. I wish to emphasize the importance of applying apparatus to the individual who is beginning to get ankylosis of the spine. If he is not treated by a Taylor brace or plaster jacket or a bivalve stirrup jacket, he is certain to become very kyphotic and a long curve in the spine will occur. For years I have seen an old dentist walking along with his back bent to a right angle simply because no one when he was seen at the early stage of this disease had thought of putting on any apparatus. So the value of orthopedic common sense in some of these cases cannot be emphasized too much. It is worthy of remark that some of the painful arthritic spines can be greatly relieved first by traction in bed if the condition is very acute and secondly by suitable apparatus to hold them upright so as to prevent lateral and anteroposterior

motion of the spine. If these measures are carried out, these patients will be greatly relieved and in the end be definitely benefited by orthopedic procedures.

DR. RUSSELL L. CECIL, New York. I should like to ask Dr. Ryerson how soon braces should be put on those backs. Is there danger of putting them on too soon and losing motion in the back?

DR. RYERSON. If motion is the cause of pain and if it is a spine that is going to ankylose anyway, what difference is it if you put on a brace and do obtain a painless ankylosis of the spine? On the other hand, a rested joint is more likely to recover motion than if allowed to go on without a brace.

DR. LORING T. SWAIM, Boston. I agree with Dr. Ryerson. I believe that early fixation of the spine prevents the process from going too far and producing the bony changes that are seen in the spine. I have one patient in a jacket who was stiff, at the end of five years he is beginning to get back some lumbar motion. Bony ankylosis has not taken place, I believe, because constant trauma was prevented. All the protective muscle spasm goes with support. The tense neck and adductor spasm of the legs disappear at once with adequate support in a jacket.

DR. JACOB S. KOMINZ, Rochester, N. Y. I wonder whether infection plays the same part in causing the ankylosing type of spondylitis that it does in arthritis of other joints. I ran across a couple of cases that have been under observation for several years. One patient was a carpenter who specialized in laying floors. Following a throat infection, though the tonsils were removed, he developed an ankylosing spondylitis which has progressed to marked degree. The other was a service man in a gasoline service station who took a particular interest to see that the cars in his station for greasing were carefully done and worked in the greasing pit himself. This necessitated much stooping on his part. He developed one of the types of ankylosing spondylitis. I wonder whether those who have used the back more actively and persistently than other individuals are predisposed to that type of spondylitis? In doing compensation work one frequently runs across individuals who evidently had slight hypertrophic arthritis of the back, and suddenly, when some injury draws attention to it, have a chronic back disorder that causes a lot of trouble. Secondly, people are going about who have marked evidence of hypertrophic changes in the spine and yet have no symptoms, and only incidentally, when roentgenograms are taken for some other purpose, these marked bony changes in the spine are discovered. I should like to ask how to interpret these cases.

DR. JOSEPH L. MILLER, Chicago. Regarding ankylosis spondylitis, I can easily see how infection can play a role. In most of these cases we have no idea as to where the infection originated. I think from my own experience in the Cook County Hospital, where we have a great many colored people, that by far the most common cause is gonorrhea. This condition may appear in the spine without any involvement of the joints of the extremities. Now, why some patients have pain in osteoarthritis and others do not, we do not know. Anton Fischer says very positively that it is not due to pressure on the nerve roots. It is true that in England workers who handle heavy steel get lumbago. These people may rest up for a week, then return to work and then find that the pain recurs. Osteoarthritis which is usually not a disabling disease, can cause disability in people following certain occupations. One frequently sees osteoarthritis of the knee in women who have become obese after the menopause. The pathologic condition in the knee of late cases of rheumatoid arthritis and advanced cases of osteoarthritis may be almost identical. Nichols and Richardson called attention to this point. In their work the specimens from these two types of cases were so similar that they thought the two diseases were related. These polypoid changes come from the synovia. If there is no synovia left, no polypoid changes take place.

DR. R. GARFIELD SYDER, New York. The classification proposed by Dr. Boots and Dr. Miller seems to be the most satisfactory method outlined to date. However they fail to emphasize the importance of the large group of cases that can be accurately classified only as mixed arthritis. Statistics differ of course, according to location but it has been my experience that at least 50 per cent of the total number of cases treated belong to the mixed group. The importance of properly

classifying these cases lies in the fact that the term "mixed" serves as a reminder in outlining treatment that there is an infection as well as a metabolic element to deal with. Dr. Boots and Dr. Miller state that although the majority of cases of rheumatoid arthritis occur between the ages of 20 and 40 there are cases which occur up to 80 years of age. I would emphasize that whereas in the patients under 30 the tonsils are the most likely source of infection, in the patients between 40 and 70 the foci are usually chronic and not infrequently are silent in character. The sinuses, gallbladder, prostate and genito-urinary tract are the sources most often suspected. It has been my experience, and I am sure the experience of all of us, that the efficient removal of these foci, regardless of the age of the patient, causes an excellent therapeutic result.

DR. M. HENRY DAWSON, New York. I should like to say a word concerning a series of cases of Marie-Strümpell arthritis that I have studied in the past six years. In all there were sixty examples and in general the statistics agree with those of Anton Fischer, which Dr. Miller has quoted. Forty-eight of the cases occurred in males and twelve in females, a ratio of 4 to 1. This curious sex distribution is quite different from that which occurs in rheumatoid arthritis. Nevertheless I believe that the two diseases are essentially the same except for their anatomic localization. In relation to the sex distribution of the two conditions there is one important fact. Just as Marie-Strümpell or rheumatoid spondylitis is more common in the male, so also it is a "purer" disease in this sex. By this I mean that it is more strictly confined to the spine. In the female, on the other hand, there is a definite tendency for the disease to assume a "mixed" form with simultaneous involvement of both the spine and the peripheral joints. I have studied carefully the relationship between gonococcal infection and the development of rheumatoid spondylitis. I have been able to obtain but little evidence to support this concept. One occasionally sees patients with rheumatoid spondylitis who have had gonococcal infection but to prove a relationship between the two conditions is almost impossible. Only two of the sixty patients gave a positive gonococcal complement fixation and in my experience gonococcal infection has not been any more frequent in rheumatoid spondylitis than in many other diseases. Dr. Miller stated that the involvement of the hips and shoulders in Marie-Strümpell arthritis was frequently osteoarthritic in nature. This has not been my experience. In nearly one fourth of the cases there has been involvement of the hips or shoulder joints and roentgenograms have invariably shown that the changes were rheumatoid in nature.

DR. JOSEPH L. MILLER, Chicago. The only description of the hips I found was in Buckley's article in which he described simply the type of picture of osteoarthritis. I found one other reference to osteoarthritis. I am glad to hear Dr. Dawson say that the majority of his cases were really rheumatoid arthritis.

DR. M. HENRY DAWSON, New York. Gilbert Scott of London has shown and it has been my experience, that 90 per cent of all cases of Marie-Strümpell spondylitis show involvement of the sacro-iliac joints.

DR. PHILIP LEWIN, Chicago. I think that Dr. Dawson's statement can be compared with what is seen in spurs of the os calcis. The presence of gonorrhea does not prove that the spur on the os calcis is due to the gonococcus any more than Marie-Strümpell's disease in the spine is due to the same organism.

DR. RALPH H. BOOTS, New York. Realizing that Lord Horder is an honored guest it seems in poor taste to engage in controversy with him concerning my ideas of the etiology of these two types of arthritis. However, I cannot leave you with the impression that their causes are definite in my mind. My statement with regard to osteoarthritis was that "it might be possible that it is due to the summation of joint insults during the entire time of one's life. With regard to rheumatoid arthritis it was stated that the true etiology is not definitely known. However, demonstration of the presence of hemolytic streptococcus agglutinins in the blood of these patients seems to me the most important advance made recently in this disease. This work has been confirmed by a number of investigations and by blindfold tests by Cecil Dawson and others.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below

Am J Roentgenol & Rad Therapy, Springfield, Ill 38 577 720 (May) 1936

- *Bone Changes in Chronic Fluorine Intoxication. Roentgenographic Study. P. A. Bishop. Philadelphia—p. 577
- Roentgenologic and Anatomic Study of Maxillary Sinus. O. V. Batson and L. M. Ennis. Philadelphia—p. 586
- Differential Diagnosis Between Infection and Malignancy in Cases of Dorsal Paravertebral Mass. W. W. Fray. Rochester, N. Y.—p. 591
- Congenital Cystic Disease of Lungs. Clinicopathologic Study. S. G. Schenck. Brooklyn—p. 604
- Accessory Pulmonary Lobe of Azygos Vein. Anatomic Report of Three Cases. B. J. Anson and H. V. Smith. Chicago—p. 630
- Atypical Roentgen Appearance of Pulmonary Infarction in Patients with Heart Failure. H. Levy. New York—p. 635
- Roentgen Kymography of the Heart and Great Vessels. C. L. Gillies and H. D. Kerr. Iowa City—p. 640
- Roentgenologic Changes in Chronic Arthritis. Correlation with Clinical Observations for Long Periods of Time. S. L. Morrison and J. G. Kuhns. Boston—p. 645
- *Visualization of Minute Gallstones (Layer Formation of Bile). Alice Ettinger. Boston—p. 656
- Roentgen Stereoscopes. J. W. Ferguson. Pittsburgh—p. 662
- Irradiation of Entire Body by Roentgen Ray. Preliminary Report of Twenty Two Cases. S. S. Sanderson. Detroit—p. 670
- *Liver Extract as Remedy for Roentgen Sickness. B. R. Young. Philadelphia—p. 681

Bone Changes in Chronic Fluorine Intoxication.—Bishop adds a case of fluorine intoxication to the four cases reported by Flemming Möller and Gudjonsson. The case was similar in history in that fluorine salts were ingested, the bone changes were identical and the fluorine content of various bones was estimated. The essential roentgen changes are an increase in bone density without alteration of normal bone structure, lack of normal sharpness of the bone outlines, and extension of calcification into ligamentous attachments. These features combine to give one the impression that the roentgenograms have been made with a broad focus tube operating at too low a voltage. The increase of bone density varies from slight blurring and accentuation of the trabeculations, "fleece thickening of the bone laminae," in areas of early involvement, to marked homogeneous opacity, "milk white opacity," with obliteration of bone detail in the most advanced areas. The earliest changes appear in the trunk. As the condition progresses these changes become more marked and the process extends toward the periphery, until in advanced stages the bones of the hands, feet and skull are involved. The characteristic of this increase in density is the preservation of the normal osseous architecture. The appearance is one of normal bone structure but of too much of it. The indistinct margins are the result of extension of calcification into the soft tissues at the attachments of ligaments and muscles. Osteophyte formation with calcification of the ligaments between vertebral bodies is marked. Complete bridging between vertebral bodies is frequent in advanced cases which accounts for the stiffness of the back that is often present. In the pelvis the anterior iliac margins and the pubic and ischial borders show roughening with extension of spicules into the soft tissues. Differential diagnosis is of importance because of the difference in prognosis between this condition and the one with which it is most likely to be confused—osteoplastic metastasis from carcinoma of the prostate. They are similar in that both produce sclerotic bone changes with the spine and pelvis most frequently and extensively involved. In fluorosis the normal bone architecture in spite of the increase in density, the uniformity of distribution of the density, the calcification of ligaments and the absence of a corresponding failure of general health should indicate the benign nature of the condition. A history of long continued exposure to fluorine

ingestion may be difficult to obtain but will establish the diagnosis. In carcinoma of the prostate there is disturbance of bone structure, no matter how dense the sclerosis, areas of destruction can be identified. There is also less tendency to regularity of distribution of the lesions.

Visualization of Minute Gallstones.—Ettinger states that several cases with a history of gallbladder disease have been observed in which roentgenograms taken in the prone position showed apparently normal cholecystograms. Further investigation of these cases by taking roentgenograms of the gallbladder in the upright position with compression technic and aimed exposures showed clearly numerous small filling defects lying close to one another at the fundic end of the gallbladder shadow. The explanation for this advantage of the upright position is that tiny negative shadows caused by the presence of small stones in the dye-filled gallbladder may become easily blurred or erased by the slightest motion, particularly because the stones in the prone position are scattered diffusely throughout the gallbladder. In the upright position, however, the small stones sink by force of gravity to the lower pole of the gallbladder and consequently their aggregation forms a rather large area of increased radiance, which is not easily overlooked, even with slight motion on the part of the patient. As a rule stones of all sizes, whether of opaque or nonopaque quality collect at the lower pole of the gallbladder in the upright position but occasionally small nonopaque stones are found floating freely at a certain level in the bile. The author observed three such cases. In all of them roentgenograms in the prone position yielded no definite information but in the upright position showed clearly a horizontal row of small radiant defects suspended within the contrast bile. The clinical feature of two of these cases was the presence of typical severe gallbladder colic. The third case presented less characteristic complaints. The peculiar phenomenon of stones floating at a certain level makes it evident that the gallbladder may contain bile of different specific gravities at the same time. While layer formation in bile is present in normal cholecystograms, it remains to be determined whether or not it represents a physiologic state of normal bile or occurs only under the unphysiologic conditions imposed by the presence of the heavy iodine atom of the Graham test. The increase of density of the gallbladder shadow after a fatty meal is explained by removal of non-contrast bile from the gallbladder. A faint shadow due to the presence of much noncontrast bile may result in the usual roentgenogram, while a roentgenogram in the upright position reveals a normal, well functioning gallbladder. There are, of course, quite a number of faint shadows that do not change their appearance whether taken in the upright or the horizontal position. They represent the real pathologic group. Thus the upright position permits a helpful differentiation of various types of faint gallbladder shadows. The method should be added to the routine examination in cases in which clinical and roentgenologic observations do not agree.

Liver Extract as Remedy for Roentgen Sickness.—Young gave liver extract to thirty patients suffering from roentgen sickness. For the purpose of drawing valid conclusions, care was taken to avoid psychic factors and changes of technic or dosage. Intravenous injections of 2 cc of the drug were withheld until the patient was definitely suffering from roentgen sickness. Once the liver therapy was started, the dose or volume of radiation was not reduced. The criteria for roentgen sickness were vomiting, which ensued during the treatment or more commonly at a definite time interval after it, and marked nausea between the episodes of vomiting. Every effort was made to eliminate systemic disease or gastro intestinal derangements as causes for vomiting before instituting liver therapy. In most cases it is necessary to give 2 cc daily (provided the roentgen treatments are given daily) if the patient is to be kept symptom free but in certain cases the beneficial effect will last two days. The author does not believe that it makes any difference when the liver extract is given. Most of the patients received it before the roentgen treatment and others from a few minutes to an hour or two after the treatment. Of the sixteen patients who obtained complete relief only three needed more than two injections. Seven patients were relieved of all vomiting, but they complained of nausea at some time during the treatment series. Seven were classified

as failures Twenty-three of the thirty patients, or 77 per cent, were either completely or partially relieved by the drug Liver extract produces an additional beneficial effect in that roentgen intoxication is partially or wholly relieved by its use Listlessness depression, loss of energy and appetite are the principal features of this malady

American Journal of Tropical Medicine, Baltimore

18 245-382 (May) 1936

Transmission of Yaws from Man to Rabbits by an Insect Vector Hippelates Pallipes Loew H W Kumm and T B Turner New York.—p 245

Undergraduate Curriculum in Tropical Medicine A C Reed and C E Forster San Francisco.—p 273

*Transmission of Virus of Equine Encephalomyelitis Through Aedes Albopictus Skuze J S Simmons F H K Reynolds and V H Cornell Washington D C.—p 289

Studies on the Problem of Races of Anopheles Quadrimaculatus Say in the United States E H Hinman New Orleans.—p 303

Duration of Acquired Homologous Immunity to Plasmodium Vivax M F Boyd W K Stratman Thomas and S F Kitchen Tallahassee Fla.—p 311

Is Acquired Homologous Immunity to Plasmodium Vivax Equally Effective Against Sporozoites and Trophozoites? M F Boyd and S F Kitchen Tallahassee Fla.—p 317

Modifications in Technic for Employment of Naturally Induced Malaria in Therapy of Paresis M F Boyd W K Stratman Thomas and S F Kitchen Tallahassee Fla.—p 323

Production of Encephalitis in Macacus Rhesus with Viscerotropic Yellow Fever Virus H A Penna Bahia Brazil South America.—p 331

Biologic Factors in Malaria Control L W Hackett New York.—p 341

Leprosy in Panama First Thirty Years of Segregation E Hurwitz Balboa Canal Zone and H H Anderson San Francisco.—p 353

Some Observations on Dengue H Hanson Guayaquil Ecuador South America.—p 371

Transmission of Virus of Equine Encephalomyelitis—In the experiments with *Aedes albopictus* Skuze (a common, semidomestic, oriental mosquito), which Simmons and his associates review, it seems likely that all animals bitten by the test mosquitoes contracted encephalomyelitis. However, one cannot consider this as proved in all instances, since tests for the specific reidentification of the virus were carried out only with tissues from certain animals which had been bitten by mosquitoes of certain lots. If one could be sure that the remaining animals died of encephalomyelitis, it would appear that after inoculation into the four guinea-pigs virus was present in the blood of one or more animals on each of the following six days and that it was ingested by the normal mosquitoes that fed during those days and that, when the six lots of mosquitoes were tested from seven to thirty-eight days later by allowing them to feed on normal guinea-pigs, these animals became infected and died after periods of from four to twenty-nine days. Considering all the evidence, it appears that in each of these animals infection and death were produced by encephalomyelitis virus which had been transmitted by the mosquitoes. However, specific neutralization and pathogenicity tests in normal and immune animals were carried out only with tissues from animals bitten by mosquitoes from three of the test lots. Therefore, the results can be considered only as definite proof that the virus was transmitted by one or more of the three lots of mosquitoes, and additional observations will be required to determine the detailed mechanism of transmission through *Aedes albopictus*.

American Review of Tuberculosis, New York

33 733-836 (June) 1936

Effect of Irradiated Milk on Experimental Inhalation Tuberculosis in Guinea Pig D F Loewen and W H Oatway Jr Saranac Lake N Y.—p 733

*Experimental Tuberculous Allergic Serositis and Its Relationship to Human Polyserositis T Howard and J A deVeer Brooklyn.—p 755

Studies on Dislocation of Tubercle Bacilli with Especial Reference to Avian and Human Types Eleanor Alexander Jackson.—p 767

Tentative Comprehensive Diagnostic Standards for Tuberculosis C A Stewart Minneapolis.—p 800

Study of Incidence of Tuberculosis in State Institutions in Minnesota H A Burn Ab gwah-ching Minn.—p 813

Experimental Tuberculous Allergic Serositis—Howard and deVeer confirm the observations of others that serous effusions may be elicited in several serous cavities of tuberculous guinea pigs by the introduction of tuberculin into one

of the cavities. The regularity with which allergic sensitization recurred after eliciting gross allergic reactions in these chronically infected animals contrasts strikingly with the difficulty of maintaining such a state in experimental animals sensitized artificially by the injection of various antigens. Well developed fibrous pericarditis can be produced in mildly infected tuberculous guinea-pigs by the repeated injection of tuberculin into the peritoneal cavity. Milder degrees of fibrous change in the peritoneal cavity can be developed under the same circumstances. Chronic fibroid pleuritis can be developed in mildly infected tuberculous guinea-pigs by the repeated injection of tuberculin into the pleural cavity. These are obvious examples of scar formation resulting from allergic reactions, the possibility of which has been questioned. The more heavily infected the tuberculous guinea-pigs, the more extensive and severe was the allergic serositis produced. The reaction, when severe, often proved fatal in from twelve to twenty four hours and under such circumstances the tuberculous lesions were found to be the seat of great congestion and acute cellular infiltration (focal reaction). The sites of recent and subsiding skin tests became inflamed again and sometimes necrotic, as would be expected. In man, adhesions between the serous surfaces are often found. In fact, death is frequently caused by the hampering effect on the heart's movements of these adhesions or by cicatricial tamponade of the heart. Few adhesions developed in the guinea-pigs. They did develop or start to in the animals into which Paterson injected living cultures of tubercle bacilli, representing, in these cases, the organization of surface exudates and the development of tubercles. The degree of inflammatory reaction and the presence or absence of actual infection in serous cavities apparently condition this phenomenon.

Annals of Internal Medicine, Lancaster, Pa.

9: 1453-1618 (May) 1936

The Role of Emotion in Disease W B Cannon Boston.—p 1451

*Viruses and the Diseases Caused by Them T M Rivers New York.—p 1466

Thrombopenic Purpura Analysis of 160 Cases W M Fowler Iowa City.—p 1475

*Therapeutic Effect of Solution of Potassium Arsenite in Chronic Myelogenous Leukemia D J Stephens and J S Lawrence Rochester N Y.—p 1488

Adolescent Disturbances of Endocrine Function Importance of Their Recognition and Treatment C H Lawrence Boston.—p 1503

*Oxygen Treatment and Thyroid Ablation in Treatment of Heart Disease A L Barach D W Richards and W B Parsons New York.—p 1513

Therapeutic Action of Nucleotides Treatment of Whole Blood Pictures with Ferrous Adenylate S L Ruskin and E Katz New York.—p 1549

Hepatic Complications in Treatment of Syphilis 11 Incidence of Hepatic Disease in Patients with Untreated Syphilis and During Their Subsequent Treatment F Kellogg N N Epstein and W J Kerr San Francisco.—p 1561

Neurologic Symptoms in Posthemorrhagic Secondary Anemia S F Hadden Philadelphia.—p 1572

Virus Diseases—Rivers sets forth the three possibilities of the nature of viruses. 1 The smallest viruses, e. g., the viruses of foot-and-mouth disease and poliomyelitis, may be inanimate incitants of disease transmissible in series. Stanley believes that the virus of tobacco mosaic is an autocatalytic substance and recently reported that he is able to obtain it regularly in crystalline form. His work is significant, and if his interpretations of it are accepted, progress has been made with regard to the nature of certain viruses. 2 The medium sized viruses, as exemplified by the etiologic agents of yellow fever and fever blisters, may represent forms of life unfamiliar to us. 3 The virus of vaccinia might well be a minute living autonomous organism or a midget in the microbial world, provided the elementary bodies that are infectious and are composed of protein, fats, carbohydrates and ash represent nothing but individual units of the virus. It is generally agreed that viruses regardless of their nature, are intimately associated with the cells injured by them. As certain viruses induce a marked hyperplasia of tissues it is easy to understand why such agents are considered in discussions of the cause of cancer. In spite of the great amount of work that has been carried on in this field the relation of virus tumors to cancer has not been determined. Viruses as a rule compose such a minute portion of the tissue emulsions containing them that it is impractical at present to obtain large amounts of them for administration.

tration as vaccines There is no reason to suppose that the general principles of immunity are not operative in virus diseases

Effect of Potassium Arsenite in Leukemia—Stephens and Lawrence found potassium arsenite an effective palliative agent in the treatment of seven cases of chronic myelogenous leukemia Symptomatic improvement was reported by the majority of patients soon after the administration of the drug was begun In several instances, symptoms referable to the leukemia temporarily disappeared Symptomatic improvement was accompanied by gain in weight, reduction in the size of the spleen and improvement in the blood picture Soon after the toxic dose of arsenic was reached, the total leukocyte count began to fall sharply and in many instances approached the normal value Decrease in the total white blood cell count was accompanied by a diminution in the percentage of immature cells, so that the white blood cell picture as a whole approached normal The degree of hematologic improvement varied from patient to patient, and in the same patient with successive courses of the drug Anemia which was present to some degree in all cases, was favorably affected As a rule, increase in the red blood cell count and hemoglobin did not occur until a significant reduction in the total white blood cell count had taken place Although there was originally no significant decrease in platelets in any of the patients studied, a favorable response to the arsenic therapy was usually accompanied by an increase in the platelets, easily detected in the smears Omission of the drug resulted, in a few weeks in a return of the symptoms, increase in the size of the spleen and increase in both the total leukocyte count and the percentage of immature cells Although there is apparently no danger of inducing bone marrow aplasia, the danger of other serious manifestations of arsenic poisoning must be kept continually in mind in giving over long periods the large doses of solution of potassium arsenite necessary to induce symptomatic and hematologic remissions in leukemia Unless frequent and careful observations can be made this form of therapy should not be used The beneficial results observed in leukemia are apparently due in large measure to an inhibitory effect on the abnormal process of granulopoietic activity resulting temporarily in a tendency for the involved structures to return to normal This inhibitory effect is apparently incomplete and temporary symptomatic and hematologic relapse occurs after prolonged administration of the drug in adequate dosage The response in individual patients treated with solution of potassium arsenite compares favorably with the reported symptomatic and hematologic response of patients adequately treated with roentgen therapy In considering the relative merits of the two therapeutic procedures, several points should be borne in mind Solution of potassium arsenite is relatively cheap is readily available and does not require complicated and expensive equipment or special technical experience Frequent clinical and hematologic observations are essential regardless of the method of therapy employed Arsenic is merely a palliative measure with temporary effect as is the case with roentgen therapy It is probable that arsenic may be used most advantageously in conjunction with or alternating with irradiation

Oxygen and Thyroid Ablation in Heart Disease—Barach and his co workers employed preoperative operative and postoperative oxygen treatment as an adjuvant to ablation of the thyroid in twelve cases of heart disease In patients with congestive failure, their circulation efficiency was improved by the preoperative period of residence in an oxygen chamber During the operation itself and for a time following it oxygen therapy tended to prevent the development of oxygen debt and anoxic shock There were no operative deaths The authors reviewed the physiologic effects of oxygen therapy in cardiac decompensation Its helpfulness in this condition has added further evidence in support of the authors' belief in the value of this form of therapy Their interest has been aroused chiefly in severe cases of congestive heart failure of rheumatic etiology in the absence of an active rheumatic process In two cases of this type followed for more than two years the gain in cardiac efficiency has been striking Perhaps the treatment of angina pectoris by thyroidectomy should be restricted to patients who have troublesome anginal pain in the absence of clinical and electrocardiographic evidence of an advancing sclerosis of

the coronary artery In two cases of this type the clinical improvement that ensued completely justified the operation Three patients, two with cardiac pain and one with congestive failure and cardiac pain, were not benefited One patient having congestive heart failure was not improved and died six months later The remaining four were improved, the time elapsing since operation being insufficient to permit giving a reliable estimate of the degree of benefit

Archives of Surgery, Chicago

32 915 1086 (June) 1936

- Experiments on Theory of Osteogenesis Influence of Local Calcium Deposits on Ossification Osteogenic Stimulus of Epithelium C B Huggins H R McCarroll and B H Blockson Jr Chicago—p 915
*Relation of Pathologic Changes of Intervertebral Disks to Pain in Lower Part of Back D Sashin New York—p 932
Alterations in Visual Fields Following Craniocerebral Injuries C W Rand Los Angeles—p 945
Interaction of Bone and Various Metals Vanadium Steel and Rustless Steels L Jones and B A Lieberman Jr Kansas City Mo—p 990
True Hour Glass Bladder Consideration of Its Etiology and Treatment J S Eisenstaedt and T G McDougall Chicago—p 1007
Relationship of Gastric Acidity to Peptic Ulceration I Effect of Hydrochloric Acid of Histamine and of Deviation of Bile M Gage A Oebaner and K Hosoi New Orleans—p 1019
Acetabular Index in Infants in Relation to Congenital Dislocation of Hip S Kleinberg and H S Lieberman New York—p 1049
Pathogenesis of White Bile H G Aronson Chicago—p 1055
The So-Called Liver Death Experimental Study of Changes in Biliary Ducts Following Decompression of Obstructed Biliary Tree F F Boyce and Elizabeth M McFetridge New Orleans—p 1080

Intervertebral Disks and Pain in Back—Sashin declares that the pathologic changes of the intervertebral disks observed at necropsy vary from small herniations of the disk through vascular infiltration of the disk substance, fibrous replacement of the elastic tissue, brown degeneration, and finally shrinkage, narrowing and calcification of the entire disk As a result the disks lose their flexibility and resilience They become firm immobile and less resistant to the stress and shock of functional activity When a disk is narrowed anteriorly, the normal lumbar lordosis is diminished and the articular facets are slightly separated When the lumbosacral disk is narrowed, the lumbosacral angle is increased and there results a considerable separation of the articular facets As a result of the malalignment of the facets arthritic changes take place, with consequent muscle spasm pain and often impingement of the fifth lumbar nerve root resulting in sciatic pain down the leg Clinically, the diagnosis of a narrowed intervertebral space is made from the roentgenograms, especially the lateral and oblique views Seven cases in which there was roentgenographic evidence of a narrowed intervertebral space are reported Pain in the lower part of the back was a constant complaint In some cases there was associated sciatic pain down the leg The treatment consisted in reestablishing the normal lumbar lordosis under general anesthesia and supporting the spine by means of a plaster-of-paris jacket

Journal of Immunology, Baltimore

30 345 402 (May) 1936

- Precipitation with Antiserum as Means of Estimating Immunizing Value of Solutions of Pneumococcus Oral Vaccines V Ro s and Lenore R Peizer New York—p 345
Flocculation Reaction with Purified Diphtheria Toxin M D Eaton New Haven Conn—p 361

Journal Industrial Hygiene and Toxicology, Baltimore

18 277 340 (May) 1936

- Chronic Toxicity of Carbon Tetrachloride Animal Exposures and Field Studies H F Smyth H F Smyth Jr and C P Carpenter Philadelphia—p 277
Solubility of Quartz in Hydrofluosilicic Acid C B Moke Cambridge-Mas—p 299
Toxicology and Potential Dangers of Phenylhydrazine Zinc Chloride W F von Oettingen W Deichmann Gruebler and W C Hueper Wilmington Del—p 301
Pharmacologic Action and Pathologic Effects of Alkyl Rhodanates in Relation to Their Chemical Constitution and Physical Chemical Properties W F von Oettingen W C Hueper and W Deichmann Gruebler Wilmington Del—p 310

Chronic Toxicity of Carbon Tetrachloride—Through the exposures of white rats monkeys and guinea pigs to controlled concentrations of carbon tetrachloride for eight hours

a day, five days a week, for a period of ten and one-half months the Smyths and Carpenter observed that 100 parts per million carbon tetrachloride vapor is a safe concentration for continuous exposure of workmen throughout the day, and day after day. It is believed that 1,000 parts per million is safe for periods up to half an hour a day with lower concentrations the rest of the day, provided the day's average does not exceed 100 parts per million. This concentration agrees with the conclusions of Davis. An animal continuously exposed to amounts of carbon tetrachloride of from 50 to 400 parts per million soon regenerates originally damaged liver cells and somewhat later regenerates damaged kidney cells while the exposure continues, the regenerated cells being more resistant than the original cells. It is believed that the same is true of human beings. It is argued from this that in most cases men working with carbon tetrachloride under reasonable conditions of ventilation and care increase their resistance rather than their susceptibility. Of ninety-six men exposed to carbon tetrachloride in industry, tests showed none who could be considered seriously or even unmistakably injured by the solvent vapors. Nineteen of these men had worked more than ten years with the solvent, one of them twenty-five years. No worker need be injured by exposure to carbon tetrachloride if intelligent planning and supervision are available and if physical examinations are made. Standard dry cleaning machinery now available will keep the concentration below 100 parts per million, and by provision of adequate exhaust ventilation other processes can be similarly guarded, usually without undue expense and perhaps with a saving of solvent.

Journal of Infectious Diseases, Chicago

58 225 350 (May-June) 1936

Fermentative Varieties of *Salmonella Aertrycke*. P. R. Edwards Lexington Ky.—p. 225

Relationship of Strains of Green Streptococci to Clinical Character of Subacute Bacterial Endocarditis. H. Fox Philadelphia.—p. 230

Quantitative Determinations of Carbohydrate Utilization by Bacteria: Comparison with Acid-Indicator Methods. A. G. Wedum Chicago.—p. 234

*Dissociation of Two Unusual Acidfast Organisms Isolated from Human Sources. W. Steenken Jr. and A. Landau Trudeau N. Y.—p. 247

Oxidation-Reduction Potentials in *Salmonella* Cultures. II. Characteristic Potentials Produced by Members of *Suipustifer* and *Enteritidis* Groups. W. Burrows and E. O. Jordan Chicago.—p. 259

Experimental Meningococcal Infection in the Mouse. C. P. Miller and Ruth Castles Chicago.—p. 263

Serologic Classification of the *Brucella* Group. L. Veasey and K. F. Meyer San Francisco.—p. 280

Weil-Felix Reaction of Rabbit in Diagnosis of Rocky Mountain Spotted Fever (Eastern Type). K. F. Maxcy Charlottesville Va.—p. 288

Differential Study of Forty *Brucella* Strains Isolated in Minnesota. P. Kabler and Margaret MacLanahan Minneapolis.—p. 293

Obligate Anaerobic Streptococci. Study of Two Strains with Especial Reference to Their Resistance to Heat and Disinfectants. H. J. Sears and Dorothy Vinton Portland, Ore.—p. 299

Trends in Prevalence of Diphtheria. Eschscholtz L. Lucia and Hilda F. Welke San Francisco.—p. 306

Staphylococcal Food Poisoning. Report of Small Milk Borne Epidemic. H. J. Shangbinessy and T. C. Grubb Springfield Ill.—p. 318

Fate of Phagocytized Acidfast Bacteria as Determined by Single Cell Method. I. Polymorphonuclear Leukocytes. M. Hotopp and M. C. Kahn New York.—p. 324

Racial Incidence of Poliomyelitis in the United States, with Especial Reference to the Negro. P. H. Harmon Chicago.—p. 331

Psittacosis Disease in Turkey. E. P. Johnson and G. W. Anderson Blacksburg Va.—p. 337

The Blood Hydrogen Ion Concentration of Leukotic Fowls and Filtrability of Leukosis Agent. E. P. Johnson and W. B. Bell, Blacksburg Va.—p. 342

Dissociation of Acidfast Organisms—Steenken and Landau describe an organism similar to the one (M strain) isolated by Lyle Cummins and Williams from the sputum of a girl suffering from a chronic pulmonary illness. The present organism (I P strain) was isolated from the sputum of a patient presenting an almost identical clinical picture to that of Cummins case. The object of the authors' studies was to determine whether they could dissociate the I P and M strains and to compare the behavior of the variants on artificial mediums and whether they possessed any pathogenicity for laboratory animals. They have included in this study a third strain of nonpathogenic acidfast organism isolated by one of them from a BCG culture brought to them by Drs. Frappier

from Birkhaug's laboratory, University of Rochester. The strain was dissociated into at least two variants possessing distinct topographic and other biologic characteristics. One of the variants in the early stages of colony development appeared to be white but as they aged, when left at room temperature and exposed to light, invariably developed chromogenicity. All the variants propagated at 37.5 C. as well as at 20 C., however, at the former temperature their growth was more profuse. Non-acidfast forms could be demonstrated in very young and again in older cultures. They were all pleomorphic. These studies definitely show that environmental conditions play no small part in morphologic variation. They were nonpathogenic for laboratory animals except in the case of the M strain which displayed some pathogenicity for mice and rabbits. It may be that larger doses are required or it is possible that their virulence will be enhanced after several animal passages. They were weak antigens producing complement fixing antibodies with some degree of specificity. Specific tuberculin could be prepared from each strain and animals inoculated with the strain reacted more strongly to the homologous than to the heterologous tuberculin. The significance of the so-called nonpathogenic acidfast organisms isolated from human sources is still a speculative one. It seems that they cannot be regarded merely as saprophytes, although there are certain similarities, viz., their behavior on artificial mediums, the production of chromogenicity, the pH curves and the pleomorphic morphology in different environments. It seems highly probable however that under certain circumstances, these organisms may be responsible for the production of disease man.

Journal of Nutrition, Philadelphia

11 391-494 (May 10) 1936

Influence of Dextrin and Sucrose on Growth and Dermatitis. R. Bender, S. Ansbacher, G. E. Flanagan and G. C. Supplee Bainbridge N. Y.—p. 391

Lactoflavin: Necessary Growth Promoting Dietary Factor. S. Ansbacher, G. C. Supplee and R. C. Bender Bainbridge N. Y.—p. 401

Lesions of Nervous System in Vitamin Deficiency. IV. Effect of Carotene in Treatment of Nervous Disorder in Rats Fed Diet Low in Vitamin A. H. M. Zimmerman and G. R. Cowgill New Haven, Conn.—p. 411

Effects of Breed Characteristics and Stages of Lactation on Vitamin (Ascorbic Acid) Content of Cow's Milk. R. Rasmussen, A. Guerrant, A. O. Shaw, R. C. Welch and S. I. Bechdel State College Pa.—p. 425

Effect of Cellulose, Hemicellulose and Lignin on Weight of Stool Contribution to Study of Laxation in Man. R. D. Williams and W. Olmsted with assistance of C. H. Hamann, J. A. Fiorito and Dorel Duckles St. Louis.—p. 433

The Vitamin G Complex. I. Nonidentity of Rat Dermatitis Due to Vitamin B₆ Deficiency and Dermatitis of Human Pellagra. W. Daon Durham N. C.—p. 451

Effect of Feeding Egg Yolk on Liver Lipids of Young Rats. R. Okey and Edith Yokela Berkeley Calif.—p. 463

Comparative Effects of Cod Liver Oil, Cod Liver Oil Concentrate and Cottonseed Oil in Synthetic Diet on Development of Nutritional Muscular Dystrophy. L. L. Madsen New York.—p. 471

Maine Medical Journal, Portland

27 83 106 (May) 1936

Chronic Head Injuries. Mild Type. H. E. MacDonald, Portland p. 97

Supposed Analogy Between Hyperthyroidism and Peptic Ulcer. E. Trice Richmond, Va.—p. 99

Spastic Constipation in Young Children. A. W. Fellows Bangor p. 105

Missouri State Medical Assn Journal, St. Louis

33 165 208 (May) 1936

Role of Medicine in Progress of Mankind. President's Address. E. Miller Kansas City.—p. 165

Our Coming Year. Address of President Elect. R. A. Woolsey St. Louis.—p. 170

Essential Hypertension. W. Baumgarten St. Louis.—p. 171

Roentgen Ray in Acute Intestinal Obstruction. Study of Obstruction of the Small Intestine by Bands and Adhesions. P. C. Schnoeller and H. M. Meyer St. Louis.—p. 174

Myasthenia Gravis. J. S. Summers Jefferson City.—p. 179

Leukopenic Index. Technique and Interpretation. H. J. Rinkel Kansas City and L. P. Gay St. Louis.—p. 182

Overgrowth in Infants from Superalimentation. J. Zbarsky St. Louis.—p. 186

Treatment of Peptic Ulcer with Vegetable Mucin. Preliminary Report. F. R. Finnigan St. Louis.—p. 190

New England Journal of Medicine, Boston

214:1019 1078 (May 21) 1936

Clinical Considerations in Regard to Etiology Characteristics and Prognosis of Essential Hypertension at Different Ages. Review of 224 Cases. R S Palmer and E G Thorp. Boston.—p 1019

Asthenia Hypophosphorica Neuromuscular Symptoms Due to Alterations in the Pituitary. B A Houssay. Buenos Aires. Argentina. South America.—p 1023

214:1079 1122 (May 28) 1936

Protamine Insulin. E P Joslin H F Root A Marble Priscilla White, A P Joslin and G W Lynch. Boston.—p 1079

Hypophysis and Blood Pressure. B A Houssay. Buenos Aires. Argentina. South America.—p 1086

Mercurin Suppositories as Diuretic in Treatment of Edema. M N Fulton. Boston.—p 1092

Biopsychic Approach to Diseases of the Mind. Its Dependence on Neurology and General Medicine. F Kenoedy. New York.—p 1095

Public Health Reports, Washington, D C

51:611 642 (May 15) 1936

Relationship of the Public Health Service to the Program for Control of Syphilis and Gonorrhea in Greater New York. R A Vonderlehr.—p 611

Studies of Sewage Purification. IV. Use of Chlorine for Correction of Sludge Bulking in Activated Sludge Process. R S Smith and W C Parry.—p 617

Acute Response of Guinea Pigs to Vapors of Some New Commercial Organic Compounds. X. Hexanone (Methyl Butyl Ketone). H H Schrenk, W P Yaot and F A Patty.—p 624

Foot Defectiveness in School Children. Results of Examination of 282 School Children. Mostly Colored in New York City. M J Lewis.—p 631

Surgery, Gynecology and Obstetrics, Chicago

62:909 1040 (June) 1936

*Experimental Study of Uretero-Intestinal Implantation. I. Cause of Peritonitis. F Hioman assisted by W K Morphy T B Wayman H J McCorkle and F H Benteen. San Francisco.—p 909

The Course of Single Myeloma of Bone. Report of Twenty Cases. M Cutler F Buschke and S T Crotti. Chicago.—p 918

Studies of Gallbladder Function. XIII. Composition of Gallbladder Bile and Calculi in Gallbladder Disease. Cecilia Riegel I S Ravdin C G Johnston and P J Morris. Philadelphia.—p 933

*Unrecognized Postoperative Infection. Cause of Syndrome of So-Called Liver Shock. A S W Touroff. New York.—p 941

Accidents of Local Anesthesia. Experimental Study of Toxicity of Various Anesthetics. G Gomöri. Budapest, Hungary.—p 951

Jejunostomy as Palliative Procedure in Inoperable Obstructive Carcinoma of Stomach. U Maes, New Orleans.—p 960

Repair of Ligaments of the Knee. Report of New Operation for Repair of Anterior Crucial Ligament. W C Campbell. Memphis. Tenn.—p 964

Ewing's Sarcoma (Endothelial Myeloma). Case Report with Necropsy. J L Porter R C Loneragan and F D Gunn. Evanston. Ill.—p 969

*Regional Enteritis (Nonspecific). K A Meyer and P A Rosi. Chicago.—p 977

Treatment of Abortion. J L Reycraft and S F Moore Jr. Cleveland.—p 989

Hyperthyroidism Associated with Malignant Tumors of Thyroid Gland. G Crile Jr. Cleveland.—p 995

Skeletal Traction and Countertraction Methods. Used in Ordinary Extension Splints to Treatment of Fractures of Long Bones. R L Waugh. New Orleans.—p 1000

Method for Reexpansion of Collapsed Lung in Early or Late Empyema. G L Weinstein. Philadelphia.—p 1003

Aseptic Method of Temporary Valvular Enterostomy. S Nixon. Indianapolis.—p 1006

Clinical Aspects of Fibrosarcoma of Soft Tissues of Extremities. H W Meyerding A C Broders and R L Hargrave. Rochester. Minn.—p 1010

Experimental Study of Uretero-Intestinal Implantation.—Hinman performed ureteral implantation, simultaneously bilateral except in two instances, on fifty-three dogs by ten different methods. The intestine was opened at the time of the operation in all but the five dogs on which the method of Higgins was used. In forty dogs, variation of technic was slight. Thirteen dogs died of peritonitis. The experiments were not planned solely for the study of peritonitis. The poor results obtained were fully anticipated in most cases. The significance of suturing and overlapping of the intestine to necrosis and leakage, fully demonstrated by Halsted and others, needs no confirmatory study. The results indicate that the risk of peritonitis is much greater by some methods than by others. Peritonitis rarely occurs as a result of contamination with the contents of the intestine or with urine at the time of operation when the obvious precautions are followed. Leakage from the intestine or the ureters after operation is the common cause. Leakage occurs when the anastomosis is faulty and the

ureter has not been sutured securely into the opening of the intestine. An oblique submucous insertion of the ureter is much safer than direct insertion. Leakage occurs when anchoring sutures tear or slough out. The only safe layer for suturing is the submucosa, the use of which carries the greater risk of penetration of the lumen. Leakage occurs when a suture punctures the intestine (fecal fistula) or the ureter (urinary fistula). It occurs with necrosis of a portion of the intestine or of the transmurular portion of the ureter. The blood supply of the intestine or ureter must not be tied off by sutures or impaired by too great constriction. Infection of the abdominal wound from contamination at the time of the operation is more imminent than peritonitis. Abscesses in the abdominal wall may rupture to the inside and produce peritonitis. The incision should be walled off more securely than the intestine is packed off, and gloves, drapes and instruments should be changed before closure is carried out. Implantation by any method which requires that the intestine be opened at the time carries the considerable risk of localized inflammation both of the intestine and of the ureter. A localized peritonitis may clear up or become general. A local abscess may be absorbed or it may rupture into the cavity and then produce peritonitis. A periureteritis may produce urinary obstruction or the infection may ascend to the kidney. Localized inflammation may lead to anemic necrosis of the intestine or ureter, which will permit leakage, and peritonitis will be the result. Inflammation at the site of implantation may result from temporary leakage after operation, and probably this is the most frequent cause. The operative technic must prevent local contamination and secure a watertight anastomosis.

Unrecognized Postoperative Infection.—Touroff recommends that the abdomen of patients suffering from early postcholecystectomy hyperpyrexia associated with shock of unexplained origin should be examined repeatedly and carefully for evidence of peritoneal irritation. Examination should include firm percussion and palpation over the lateral portions of the lower chest and costal margin. Local tenderness thus elicited is a most valuable presumptive sign of infection of the subphrenic space, such infection together with infection of the subhepatic space constituting the most common suppurative intra-abdominal complications of cholecystectomy. Spontaneous pain in the shoulder or tenderness on palpation in the general region of the trapezius ridge, if present, is likewise of great confirmatory significance. If no evidence of the existence of intraperitoneal suppuration can thus be found, roentgen examination should be performed. Anteroposterior and lateral roentgenograms of the chest are taken at the bedside, with the patient supported in the sitting position. These must include not only the pulmonary fields but the diaphragms and the subphrenic regions as well. Roentgenograms taken in full inspiration and expiration should be compared for evidence of diaphragmatic immobility and elevation. Such roentgenographic studies will also definitely establish or exclude the presence of pneumonic consolidation of sufficient extent to account for the clinical course. In the absence of adequate pulmonary or subphrenic alterations on roentgen and physical examination exploratory peritoneal puncture is indicated in an attempt to demonstrate the presence of a suppurative intraperitoneal lesion. In the event of negative results on aspiration, one should promptly aspirate the subphrenic space in the usual manner. If the patient has been operated on under spinal anesthesia if the diagnostic procedures mentioned fail to reveal the presence of intraperitoneal or pulmonary infection, suppurative meningitis without characteristic manifestations may be present and lumbar puncture should be performed. Gastric aspiration is recommended in all obese individuals, since unrecognized gastric dilatation may obscure the evidence of a suppurative lesion within the upper part of the abdomen. Supportive therapy is of added significance, in that the longer the patient survives the greater is the probability of arriving at a diagnosis and perhaps of saving life. The actual treatment of any infective lesion which may be discovered constitutes a general surgical or medical problem, depending on its nature. Treatment should be prompt and vigorous in the hope of occasionally saving the life of a patient whose prognosis otherwise is hopeless. The general attitude in regard to such cases should be modified as clinical manifestations may not be due to "liver shock" but

may be produced by unrecognized fulminating infection. Adequate postmortem examination constitutes the only means of corroborating the diagnosis of "liver shock."

Regional Enteritis (Nonspecific)—Meyer and Rosi report one case of regional enteritis of the jejunum and seven of the ileum. Four of the patients had acute regional enteritis. In three the process resolved spontaneously and in one it progressed to the chronic stenotic phase. There were four patients with the chronic stenotic type of regional enteritis. Two had lesions of the terminal ileum. One patient, who had a lesion of the terminal ileum complicated by a large abscess, developed following drainage of the abscess a persistent external intestinal fistula which required resection. The fourth patient had a regional jejunitis. The pathologic anatomy is that of a nonspecific inflammation. The acute regional enteritis consists of an infiltration of the intestinal wall by acute inflammatory granulation tissue with extensive ulceration of the mucosa. This process may resolve spontaneously or progress to the chronic phase. The chronic forms of regional enteritis are usually associated with a hyperplasia of the intestinal wall by a nonspecific inflammatory granulation tissue which contains granulomas, foreign body giant cells and an excessive amount of connective tissue. Linear ulcers of the mucosa are present along the mesenteric border of the intestine. In the terminal ileum these ulcers penetrate through the intestinal wall and form sinuses that lead into the mesentery, which is frequently the site of an abscess. Internal and external intestinal fistulas may develop and lead from the involved intestine to an adherent loop of intestine or the abdominal wall. The pathogenesis of this regional inflammation of the intestine is not known. Clinical and pathologic studies have failed to demonstrate any evidence of tuberculosis, actinomycosis, syphilis or Hodgkin's disease. The symptomatology of regional enteritis varies with the different phases of the pathologic process and with the location of the lesion. The treatment varies with the phase of the pathologic process. Acute regional enteritis limited to the intestine and not associated with thickening of the mesentery may resolve spontaneously. If, however, the mesentery is thickened and indurated, it is probable that ulceration of the mucosa has extended into the mesentery, spontaneous resolution then is less likely to occur, and a short-circuiting operation or a resection is indicated. Chronic regional enteritis with stenosis is best treated by resection or a short-circuiting operation. When complicated by an external intestinal fistula resection of the involved intestine with the fistulous tract is necessary to close the fistula.

West Virginia Medical Journal, Charleston

32 245 292 (June) 1936

- *Transillumination of the Breast. A. K. Wilson. Elkins—p. 245
- Treatment of Intestinal Tuberculosis. R. H. Walker. Charleston—p. 250
- Mental Hygiene Movement. E. F. Reaser. Huntington—p. 251
- Painful Feet. Differential Diagnosis and Treatment. A. R. Lutz, Huntington—p. 255
- Treatment of Pneumococcal Pneumonia. V. E. Mace. Charleston—p. 258
- Vincent's Infection. J. E. Nelson. Bluefield—p. 263
- Medicine and Industry. R. Hogshead. Montgomery—p. 266
- Fatal Case of Infantile Pfeiffer's Bacillus (Haemophilus Influenzae). Meningitis. W. M. Warman and R. S. Spray. Morgantown—p. 269
- Atelectasis. Its Rapid Development and Clearing in Case of Vegetal Foreign Body (Seed from Citrus Family) in Left Main Bronchus. Sobieska S. Hall and H. V. Thomas. Fairmont—p. 272

Transillumination of the Breast—Wilson asserts that transillumination of the breast provides an additional method for differentiation between various lesions. The procedure is so simple and frequently yields information of such great value in diagnosis, prognosis and treatment that no breast examination may now be considered complete without it. Early difficulties which were encountered have been solved by the development of a water-cooled lamp which throws a strong light without heating the skin applicator so that one may carry out an extensive examination without causing the slightest discomfort to the patient. The appearance of the normal breast and of breasts harboring hematomas, solid or cystic tumors, duct papillomas and duct carcinomas, the traumatic breast and the breast with the bleeding nipple are discussed and also pictured graphically.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

2: 287 350 (May) 1936

- *Radiosensitivity in Relation to Time Intensity Factor. R. McWhirter—p. 287
- Structure of Tooth Enamel. J. Thewlis—p. 300
- Effect of Temperature, Pressure and Humidity of Air on Ionization Measurements Using Small Air Wall Chambers. A. Quinlan—p. 311
- High Voltage X-Ray Tubes in the U. S. A. Part I. J. Read—p. 311
- X-Ray Kymographs of Normal and Pathologic Hearts. B. F. F. H. Kjergaard—p. 335
- Treatment and Cure of Uterine Myomas. L. Fraenkel—p. 345

Radiosensitivity in Relation to Time Intensity Factor—McWhirter uses the term intensity to mean the number of roentgens per minute. In the study of different intensities other variables, such as the total period over which the treatment is given and the total dosage, must be kept constant. The system of dosage used was that recently described by Paterson and Parker, and practical homogeneity over the treated area was obtained by selecting distributions giving a variation not exceeding plus/minus 5 per cent. In carrying out 140 separate experiments between 500 and 600 actual applications of radium or x-rays were necessary. The response of normal tissues was determined by irradiating healthy skin, and then later the effect on superficial tumors was studied. Twenty-four cases were studied. Twelve of these were rodent ulcers, and from the point of view of response to 4,500 roentgens there are four other cases available—one wart, one tuberculous lesion and two slowly growing carcinomas. Eight cases of carcinoma were treated with 5,000 roentgens. Continuous irradiation would appear to be ideal, and a theory has been advanced in which it is stated that radium may owe its superiority over x-rays to the fact that its application is generally more continuous. The following evidence is put forward in attempting to assess the value of the hypothesis. The rate of mitosis in the tumors studied must be very slow, for their rate of growth was slow. In the case of epitheliomas the mitotic cycle will be shorter but even in the more rapidly growing ones it is uncommon for the tumor to double its size in one week. Assuming however that an epithelioma did double itself in one week, the average interval for mitosis to occur in any one cell would be one week, for the daughter cells will grow to the size of the parent before dividing. If such an epithelioma is irradiated continuously, the dosage delivered during the sensitive phase might be sufficient to kill it, and the premitotic sensitive period might appear to be very important. If, on the other hand, high intensity is used and the tumor is irradiated for only thirty minutes or less each day, it follows that many cells would not be irradiated during the sensitive phase, which is probably comparatively short. Yet it has been shown that a tumor can be destroyed by the latter method. But it is clear that in these experiments the cells did not all divide in one week, and if the treatment time had been prolonged in order to catch each cell during its sensitive phase a stage might have been reached at which sufficient dosage could not have been delivered during the period of sensitivity. In another group of experiments, tumors were made to disappear with a continuous irradiation of only two hours. It would follow therefore that the important difference between tumor cells and normal tissue cells is one of variation of sensitivity of the adult cell and that this variation is independent of the premitotic sensitive phase.

British Medical Journal, London

1: 925 978 (May 9) 1936

- Adhesions of Joints and Injury. R. W. Jones—p. 925
- Treatment of Paralytic Ileus. R. L. Holt—p. 929
- Chronic Meningococcal Septicemia. A. M. Stewart Wallace—p. 931
- *Viruses in Etiology of Skin Diseases. R. T. Brain—p. 934
- Further Investigation of New Anticholera Serum. H. Ghosh—p. 934
- Pentothal Sodium in Mental Hospital Practice. J. S. Horsley—p. 934
- Viruses in Etiology of Skin Diseases—During the last five years Brain has carried out investigations on four skin diseases of virus origin: herpes zoster, varicella and molluscum contagiosum. The infectivity of human warts and molluscum

contagiosum is in accord with clinical observations. Attempts were therefore made to demonstrate the presence of antibodies in the serums of patients with multiple lesions. With an antigen prepared by grinding up curetted wart material with sodium chloride solution, serums from five cases of multiple warts were examined by the complement fixation reaction. No specific fixation was obtained, and precipitin tests with both heated and unheated antigens were negative. Serums from six patients with multiple mollusca and from one individual who had been given a series of inoculations with formaldehyde molluscum material were tested, in only two cases were positive results obtained. Precipitin and agglutination tests were also made, and here again the results were negative. Transmission experiments have also been performed with material from cases of dermatitis herpetiformis. Of ten cases examined, fresh bullous fluid was obtained in only four. The undiluted fluid was inoculated intradermally in the shaven skin of the flanks and the plantar skin of the hind feet of guinea-pigs. Two of these specimens were bacteriologically sterile, and the animals inoculated with these developed no lesions. The other two fluids contained staphylococci and streptococci and, with these herpetiform lesions were produced in the plantar skin of the inoculated animals; no lesions appeared in the hairy skin. The presence of a streptococcus in the material used may be of significance. In only one instance was a bacteriologically sterile filtrate found to be infective, although attempts to produce lesions in the skin of the guinea-pig with the streptococci obtained from the human lesions were unsuccessful. Sterile bullous fluid from a case of pemphigus vegetans was inoculated into a guinea pig, a rabbit and mice without result. Inoculations of guinea-pigs with material from five other cases of bullous eruption urticarial or erythema multiforme, were unsuccessful. One of these bullous fluids contained staphylococci and streptococci; the other four were sterile. The serums from eight cases of psoriasis have been tested with various antigens prepared from psoriatic scales but complement fixation and precipitation reactions were entirely negative. It was thought that artefact bullae superimposed on recent lesions of psoriasis or lichen planus might contain the hypothetical virus but no specific antigenic reactions were obtained with such material.

East African Medical Journal, Nairobi

13: 132 (April) 1936

- Treatment of Strangulated Inguinal Hernia. A. H. Mowat—p. 2
Pyrethrum Dermatitis in Kenya. H. D. Tomking—p. 7
Streptococcal Septicemia. Case. J. C. Carothers—p. 14
Obscure and Unusual Case. Calc of Renal Calculus. C. V. Brambridge—p. 17
Line Drawings for Illustration Purposes. W. C. S. Hopkirk—p. 18
Intussusception in Adult. Case. Operation. Recovery. R. A. Stones—p. 18

Journal of Tropical Medicine and Hygiene, London

39: 101-112 (May 1) 1936

- Helminthologie Survey of 1315 Dogs from New Orleans with Especial Reference to Age Resistance. E. H. Hinman and D. D. Baker—p. 101
Blood Grouping of Aborigines of the Diamantina District in the North east of South Australia 1934 Series. J. B. Cleland and T. H. Johnston—p. 104

Lancet, London

1: 1047-1100 (May 9) 1936

- Extirpation of Lung. G. A. Mason—p. 1047
Effect of Estrin on Pituitary Gland. W. Cramer and E. S. Hornung—p. 1056
Congenital Dislocation of Hip. Its Prevention and Treatment with Abduction Braces. F. Bauer—p. 1057
Cause of Hypertension in Preeclamptic Toxemia. Study of Blood Pressure in Mother and Infant. F. J. Browne and Gladys H. Dodds—p. 1059
Brain and Lung Abscesses and Benign Spontaneous Pneumothorax as Complications of Otitis Media. P. R. Allison, F. F. Hefner and G. S. Seed—p. 1060
The Dental Prop. W. W. Muir—p. 1062

Cause of Hypertension in Preeclamptic Toxemia.—Browne and Dodds studied the blood pressure of several infants of hypertensive mothers. Most of the infants were born by cesarean section and in every case the blood pressure of the mother was at a very high level just before the section was

performed. The pressure was measured in both mother and child by the same instrument. In the infants a specially small armlet had to be employed. A rise of blood pressure was not observed in any of the cases. It might be supposed that, if the cause of the hypertension in preeclamptic toxemia and other hypertensive conditions in pregnancy were a substance, hormone or otherwise, circulating in the mother's blood, this substance would diffuse through the placenta to the fetal circulation and that the infant would then have a raised blood pressure at birth. The authors conclude that, whatever causes hypertension in preeclamptic toxemia, it is not a substance that is capable of passing across the placenta into the fetal circulation.

Brain and Lung Abscess and Benign Spontaneous Pneumothorax Complicating Otitis Media.—Allison and his collaborators cite the case of a person who had both brain and lung abscesses and lateral sinus thrombosis as complications of otitis media and who regained normal health. Following lung abscesses and empyema on the right side there occurred on the left side a complete spontaneous pneumothorax. Although this was not associated with any infection of the pleural sac or effusion into it, the evidence points to its having arisen as a result of an infective process in the lung. Since the pneumothorax occurred six weeks after the internal jugular vein had been tied, it is possible that it was caused by a lesion in the lung which had been in existence at least six weeks. Whether this etiology is of wider application in benign spontaneous pneumothorax is uncertain, but it is sufficient to suggest that the commonly accepted cause should be subjected to careful scrutiny and inquiry made for any hint of a recent infection of the lung. By the time the lung had reexpanded there was no roentgen evidence of the original causative factor.

Medical Journal of Australia, Sydney

1: 593-630 (May 2) 1936

- Influence of Malarial Therapy on Serologic Reactions of Cases of Neurosyphilis with Especial Reference to the Venereal Test. C. R. D. Brothers, C. Farran Ridge and Sara Gundersen—p. 591
Histidine in Urine as Indication of Pregnancy. Vera I. Krieger—p. 599
Clinical Nature of Radiology. Some Theoretical Considerations. E. W. Frecker—p. 602
Dislocation of Lunate Bone. G. A. C. Douglas—p. 609
Silver Impregnation of Leptospira Icterohaemorrhagiae. Notes. R. E. Murray and J. W. Fielding—p. 610

Practitioner, London

138: 541-668 (May) 1936

- Principles of Diagnosis in Skin Disease. H. MacCormac—p. 541
General Principles of Treatment of Some Common Skin Diseases. J. E. M. Wigley—p. 555
Eczema and Its Treatment. A. C. Roxburgh—p. 569
Treatment of Acne. E. Graham Little—p. 579
Barber's Rash. H. Haldin Davis—p. 586
Psoriasis and Its Treatment. J. A. Drake—p. 595
Pediculosis. J. T. Ingram—p. 603
Bullous Eruptions. J. G. Tomkinson—p. 612
Fever of Obscure Origin. J. M. O'Donovan—p. 623
Disorders of Lactation. W. Hunter—p. 632
Some Observations on Indwelling Catheter. J. C. Ross—p. 638
*Ionization Treatment of Hay Fever. C. Shields—p. 645
Favorite Prescriptions. XVII. The Pharmacopoeia of St. Mary's Hospital. C. M. Wilson—p. 649

Ionization Treatment of Hay Fever.—Shields shares the general prejudice against the introduction of drugs through the skin by ionization, first because their action in the quantities in which they are applied must be very slight, owing to the flushing action of the blood and lymph streams; secondly because they are more efficiently administered in properly controlled dosage by other routes. The problem of intranasal ionization is however different for here the effect is entirely local and the nasal mucosa can be impregnated with an insoluble substance which remains local for several hours. On theoretical and practical grounds intranasal ionization of zinc sulfate is a justifiable and valuable method of treating hay fever and vasomotor rhinorrhea. It has been suggested that the beneficial effects of intranasal zinc sulfate ionization may be due to the sedative action of anodal galvanism and not to the impregnation of the mucous membrane with zinc in ionic form. Therefore the author has given four applications to

patients with hay fever, using gauze soaked in sodium chloride solution and employing the same amount of current for the same time without the patient being aware of any alteration in the technic. The characteristic symptoms of increased salivation and conjunctival injection were not seen, and there was no delayed reaction and no improvement in the original condition following this treatment

Journal de Chirurgie, Paris

47 897 1068 (June) 1936

Value of Ureteral Implantation According to Coffey Method in Light of Intravenous Urography T Ostrowski and W Dohrzaniecki—p 897

*Technic of Repair of Diastasis of Abdominal Rectus Muscles F D'Allaines and A J Contiades—p 922

Thrombosis of Inferior Vena Cava Case. R Fontaine L Israel and S Pereira—p 928

Repair of Diastasis of Abdominal Muscles—D'Allaines and Contiades believe that repair of diastasis of the rectus muscles should be undertaken only when symptoms are produced which cannot be controlled by support. Usually the surgical technic used in the treatment is similar to that employed for postoperative herniation. In the technic which the authors employed, however, it was unnecessary to expose the body of the muscles, and only the internal border of the aponeurosis was sutured. In performing this suture they press back the median intermuscular portion gradually by means of the aponeurosis, which produces progressive invagination. This progressive invagination behind the aponeurosis avoids the peritoneum and the muscular tissue. In cases of marked diastasis, however, the bringing together of the two sheaths is often difficult. Under such circumstances, as Pozzi has shown, the advantage of two or three liberating incisions at the external edge of the sheaths often allows the usual plan to be followed. The authors, however, have never had to use this device. In the eight patients observed for from one to four years after the operation, the results were satisfactory and the tissues solid enough to allow a normal life without functional disorders.

Presse Médicale, Paris

44 873-888 (May 30) 1936

Visceral Embolism and Infarction Especially Pulmonary Embolism. M Villaret, L Justin Besancon and P Bardin—p 783

*Blood Serum in Internal Leishmaniasis P Giraud Claude and R Bernard—p 876

Anal Fistulas and Their Excision G Cabanée—p 878

Blood Serum in Internal Leishmaniasis—The diagnosis of internal leishmaniasis, according to Giraud and his collaborators, can only be suggested by the clinical examination. On the other hand, search for the specific parasite is often difficult and necessitates maneuvers such as splenic puncture, which are accompanied with certain danger. In an attempt to determine whether the blood serum in any of its aspects might aid in diagnosis, the authors examined the serum from fifty-three patients with human kala-azar and a number of dogs with internal leishmaniasis, and experimentally inoculated dogs. Of thirteen cases of human kala-azar, the total protein was found to be above normal in nine instances and was found in all the dogs affected with natural leishmaniasis. In three dogs inoculated peritoneally the proteins were slightly lowered immediately after the inoculation, returned to normal in from three to six months, and were raised within a year after the inoculation. It can be concluded they believe, that the blood proteins are lower at the onset of the disease but are raised after the disease has become established. The proteins remaining soluble in a solution of anhydrous sodium sulfate are normal or diminished in internal leishmaniasis. The albumin-globulin ratio was often low and sometimes inverted. The authors also investigated a number of flocculation reactions with different substances. The specificity of the flocculation reaction with ureastibamine is great. It produced a positive result in dilutions of 1 to 1,000 but is not absolutely constant and gives little help in following the evolution of the disease. The formol-gel reaction is, because of technical simplicity, ease of interpretation, constancy and specificity, the most important of the serologic reactions for the diagnosis of internal leishmaniasis.

Revue de Chirurgie, Paris

55: 331-402 (May) 1936

*Boring Cancers of Face. R Imbert—p 331

Urethroplasty for Congenital Strictures H Godard—p 374

Technical Varieties of Gastrectomy and Their Indications C Clart—p 387

Boring Cancers of the Face—Imbert discusses, in numerous case reports, the cutaneous epitheliomas of the face which are often called boring cancers. He concludes that mistakes of treatment of cutaneous epitheliomas do not constitute the essential cause of their evolution toward erosion. There is a strong clinical presumption, in the absence of histologic certainty, that there is an individuality to epitheliomas, which, because of general or local peculiarities, especially in the nature of nutrition, regulates the reciprocal relations between epithelial and conjunctival tissues and therefore determines the degree of erosion. Such tumors represent from 5 to 10 per cent of all the cutaneous epitheliomas. In the author's statistics the spinocellular group was in the majority. He believes that in the treatment of these conditions physical therapy should be abandoned and wide surgical excision adopted as the treatment of choice.

Schweizerische medizinische Wochenschrift, Basel

68: 541 564 (June 6) 1936 Partial Index

*Aspects of Benign Aseptic Suppurating Meningitis During Childhood E Glanzmann and D Heller—p 541

*Role of Hypophysis in Genesis of Diabetes Mellitus F Mamzer—p 546

Thrombosis of Veins of Fingers Case W Jadassohn—p 549

New Calibration of Hemometer A Alder—p 549

Benign Aseptic Suppurating Meningitis—Glanzmann and Heller call attention to the fact that there are entirely benign serous and even suppurating meningitides, and that for this reason it is advisable to be cautious in rendering an unfavorable prognosis in cases presenting meningitic symptoms. There is an acute onset with meningitic symptoms. The spinal fluid shows meningitic changes, that is, there may be a slight increase in the mononuclear cell elements, while the fluid remains clear (serous meningitis), or there may be a noticeable suppurating turbidity. Direct examination as well as the culture method reveal that the cerebrospinal fluid is sterile (aseptic meningitis). The course is relatively short, benign and without secondary complications. Etiologic factors in the form of local disorders (otitis, sinusitis, pneumonia, intoxication) or in the form of systemic diseases (acute or chronic infectious diseases) are absent. After reporting the clinical histories of five cases of their own observation, the authors point out that aseptic meningitis develops chiefly in children and occasionally even in nurslings. They discuss in detail the symptomatology, the hematologic aspects, the clinical course, the differential diagnosis and the therapy. With regard to the latter factor they say that for diagnostic as well as for therapeutic reasons repeated spinal punctures are advisable, for these often effect a reduction in fever and rapid cure. They also prescribe methenamine and aminopyrine. In the most refractory case they resorted to the intravenous injection of a bacterial protein preparation. In order to avoid collapse, it is advisable to administer caffeine or other cardiac stimulants.

Hypophysis and Diabetes Mellitus—Mamzer points out that the so-called sthenic diabetes of older persons, which is usually accompanied by obesity and arterial hypertension should be differentiated from the so-called asthenic type of younger persons, which is accompanied by emaciation. He maintains that the sthenic type of diabetes mellitus is of hypophyseal origin and cites the following factors in support of the hypophyseal genesis: (1) the great similarity of the symptomatology of this form of diabetes with the glycosuria that occurs in Cushing's disease (hypophyseal basophilism), (2) the great clinical differences between this type of diabetes and the types that are caused by hypofunction of the islands of Langerhans, namely the experimental pancreatic diabetes and the diabetes of young persons, which results in emaciation, (3) the disappearance of experimental pancreatic diabetes following removal of the anterior lobe of the hypophysis and the production of a diabetes by the continuous administration of extract of the anterior hypophysis. Clinical observations (in Cushing's dis-

case) and the fact that the injection of extract of the anterior hypophysis results in hypertrophy of the adrenals indicate that the hypophysis exerts its action at least partly by way of the adrenals. The author shows further that the arguments which are advanced in favor of a unitarian, insular genesis of diabetes mellitus and which stress the transitional forms between the asthenic and sthenic forms of diabetes, as well as the histologic aspects of the latter form, do not take sufficient account of the complex nature of the diabetic disturbance of the metabolism. Experiments with continuous insulin medication show that the primary disturbance in the hormone equilibrium involves all the secretory glands that regulate the carbohydrate metabolism. The author suggests that, if the thyrogenic and nervous forms of glycosuria are disregarded, diabetes mellitus can be pathogenically differentiated in the following forms: 1 Primary pancreatic diabetes, which includes experimental pancreatic diabetes, asthenic diabetes of young persons and diabetes that develops in pancreatitis, in destruction of the pancreas by tumors and in brown diabetes. 2 Primary hypophyseal diabetes, which includes (a) eosinophilic diabetes (in acromegaly) and (b) basophilogenic diabetes, namely, the diabetes in Cushing's disease and the sthenic form, which is accompanied by hypertension and obesity and occurs in older persons.

Annali di Ostetricia e Ginecologia, Milan

58: 595 722 (May 31) 1936

- Genital Polyhormonic Syndromes from Persistence of Follicle and Cystic Corpus Luteum. Cases. G. Motta—p. 595
Treatment of Suffering of Fetus During Labor. M. Floris—p. 619
Action of Prehypophyseal Hormones and Blood of Pregnant Women on Vital Capacity and Development of Premature Infants. S. Giuffrida—p. 635
Protracted Pregnancy. Retention and Intra Uterine Death of Fetus and Other Complications. Cesarean Section. Case. A. Pistuddi—p. 647
Colloidal Thorium Dioxide Used as Contrast Medium in Hysterosalpingography. E. Benassi—p. 681

Development of Premature Infants—Giuffrida says that premature infants will develop normally, without receiving any especial treatment if they have no congenital diseases, weigh more than 2,000 Gm at birth and are given the same care and feeding accorded normal infants born at full term. The author made studies on the action of extracts of the anterior lobe of the hypophysis and of the blood from pregnant women in forty premature infants who weighed less than 2,000 Gm at birth. Twenty infants were given intragluteal injections of citrated blood from women in the seventh and eighth months of pregnancy and with a negative Wassermann reaction. The injections were given every other day in doses of 5 cc, which contain about 50 units of prehypophyseal hormones and $2\frac{1}{2}$ units of ovarian hormones. The other twenty infants received daily intragluteal injections of the content of an ampule of prehypophyseal extract (an arbitrary dose of the commercial preparation used). All the infants were born spontaneously or by cesarean section. They were kept under identical conditions, that is, in incubators at 28 C. (82.4 F), breast fed or, when unable to nurse, fed mother's milk with a teaspoon or a sterile rubber catheter. The treatment was established a few hours after birth and the infants were kept under observation for at least two weeks. The author concludes that the most important factors in the care of premature infants are the maintenance of the infants in the incubators at an even temperature, because they are extremely sensitive to temperature changes, and feeding them with sufficient amounts of mother's milk. The injections of blood of pregnant women are harmless but apparently give no useful results. Prehypophyseal extracts not only are useless to the infants but seem to be harmful.

Contrast Medium in Hysterosalpingography—Benassi states that the use of thorium dioxide colloids in hysterosalpingography is of advantage when the injection of iodized oil is difficult because of the presence of uterine anfractuositities or of retained fluids in the uterine cavity as well as in cases in which a detailed study of the uterine mucosa is indicated. Thorium dioxide colloids give also satisfactory results in hysterosalpingography of the pregnant uterus. The danger of the production of fatty emboli does not follow the use of thorium dioxide colloids in hysterosalpingography. However it is important

to have in mind that in the presence of ulceration of the uterine mucosa or in cases of loss of tissue of the mucosa the injection of thorium dioxide is followed by rapid absorption and entrance of thorium into the circulation and frequently selective accumulation of it in the liver and spleen.

Diagnostica e Tecnica di Laboratorio, Naples

7 81 160 (Feb. 25) 1936

- *Weltmann Seroreaction in Clinical Diagnosis. V. di Benedetto and Maria Stornello—p. 81
Apparatus for Regulation and Stabilization of Depression by Suction Pumps. M. Calabresi—p. 92
Thermo-Isolated Graduate for Centrifugation of Fluids. V. Nicoletti—p. 96
Rapid Method of Flocculation for Diagnosis of Syphilis. F. Ritz—p. 99

Weltmann Seroreaction in Clinical Diagnosis—Di Benedetto and Stornello made determinations, by means of the Weltmann serum coagulation test, of the electrolyte threshold of the blood serum of persons suffering from leishmaniasis, malaria and several other diseases, as well as in pregnancy. They used three additional test tubes, one of which contained distilled water and the other two 0.05 and 0.02 per thousand calcium chloride solutions (solutions at a lower concentration than those used in the original technique). The authors conclude that the normal electrolyte threshold stands at 0.4 and 0.5 per thousand calcium chloride solutions. The threshold increases in the blood serum of persons suffering from exudative inflammatory conditions and diminishes in that of persons suffering from fibrosis and disturbances of the liver and the reticulo-endothelial system. There is no electrolyte threshold in the blood serum of persons suffering from leishmaniasis, in which flocculation takes place even in distilled water. Probably there is a relation between Weltmann's test and the reticulo-endothelial system. The latter is concerned with the maintenance of the physicochemical equilibrium of the blood serum and the changes of the electrolyte threshold point to rupture of the equilibrium which in different degrees of intensity, may be common to several diseases.

Revista Brasileira de Cirurgia, Rio de Janeiro

5 95 134 (March) 1936

- *Partial Sphincterectomy in Megacolon. E. Etzel—p. 95
Cystic Dilatation of Appendix. Appendicular Mucocele. Case. O. V. Ribeiro—p. 113
Tuberculosis of Breast. Case. Sylvio Heilborn and B. Benchimol—p. 121

Partial Sphincterectomy in Megacolon—Etzel says that the pathogenesis of sphincter achalasia (failure of one or several of the sphincters of the large intestine to relax) due to disturbances of the Auerbach plexus in megacolon is proved. The treatment by partial resection of the involved sphincter or sphincters (Correia Netto's technique) gives satisfactory results. The operation consists in resecting a third of the circumference of the involved sphincter in all its extent including a segment of 2 cm of the muscular layers above the sphincter in order that all the circular fibers of the given sphincter are divided by resection and none of them are left forming an unbroken ring. Resection of the internal sphincter of the anus is performed with the patient under epidural anesthesia by the following technique: curved incision of the skin at 1.5 millimeters on left side of the anus beginning and ending at the perineal raphe, dissection of the internal and external sphincter of the anus, exteriorization of the internal sphincter through the operative wound and resection of the sphincter in a third of its circumference up to the muscular layers, reconstruction of the operative wound and drainage. Resection of the pelvic rectal sphincter is performed with spinal anesthesia by infra-umbilical median laparotomy with the following steps: traction of the pelvic colon (having the third sacral vertebra as point of reference for localization of the pelvic rectal sphincter), performance of a 10 cm. longitudinal incision on the sphincter and resection of the latter in a third of its circumference. It is advisable to take care during this step not to injure the mucosa. The gap in the colon left by resection is covered with a flap from the omentum which is sutured to the border of the gap for peritonization. The wound is closed without drainage. Recovery was obtained in two patients by partial resection of the

internal sphincter of the anus in one case and of the pelvic rectal sphincter in the other case. Recovery of the patient was obtained in a third case by partial resection of both the pelvic rectal and the internal anal sphincters.

Revista Brasileira de Tuberculose, Rio de Janeiro

5 315 376 (April) 1936

Chronic Miliary Tuberculosis A Ipiapina—p 319

*Grave Hemoptysis Due to Sequestrums of Ribs Migrated to Lung Case A Amorim—p 339

Complementary Thoracoplasty A Farnesi—p 347

Grave Hemoptysis Due to Sequestrums of Ribs—Amorim reports a case of grave hemoptysis in a 7 year old child in whom auscultation and all tests for tuberculosis were negative. The Wassermann test was positive. A diagnosis of syphilitic osteitis of the rib was made with the hypothetical diagnosis of wound of the lung due to sequestrums from the osteitic rib. The osteitic segment of the rib was resected and, during the operation, it was discovered that two sharp fragments from the rib had migrated to the lung and were injuring the organ. The wound from the sequestrums was the cause of hemoptysis. The pieces of rib that were recovered from the lung were 3 and 7 cm. long and 3 mm wide. They were sharp and corresponded to the space found in the piece of resected rib. The operative wound was closed with drainage and the child placed under antisyphilitic treatment. The patient recovered.

Revista Españ. de las Enferm. del Ap Digest, Madrid

2 323 400 (May) 1936

*Basal Metabolism and Specific Dynamic Action of Proteins in Liver Diseases J Andréu Urrea and J Lozano—p 323

Difficulties in Experimental Studies of Ulcerous Colitis F Gallart Monés and P Domingo Sanjuán.—p 331

Action of Proteins in Liver Diseases—Andreu Urrea and Lozano determined the basal metabolism in patients suffering from diseases of the liver parenchyma before and one, two, three and six hours after administration of 200 Gm of roasted meat and 25 Gm of bread. The authors conclude that the consumption of oxygen is increased and the specific dynamic action is diminished in most patients suffering from diffuse diseases of the liver parenchyma. The results confirm those of experiments on the same subject, previously reported in the literature, and point out the important part that the liver, in association with other endocrine, metabolic, sympathetic and electrolytic factors, plays in the regulation of the specific dynamic action of proteins; they support the theory of deamination as the cause of the specific dynamic action of proteins.

Deutsche medizinische Wochenschrift, Leipzig

62: 797 836 (May 15) 1936 Partial Index

Problems of Reticulo-Endothelial System in Clinical Observation Naegeli—p 797

*Advantages of Dry Treatment Compared to Treatment with Fatty Ointments in Skin Diseases. P Mulzer—p 805

New Opinions and Experiences on Development and Treatment of Urinary Calculi E. Brack—p 807

Mistakes in Treatment of Bone Fractures M. Kaspar—p 813

Dry Treatment or Fatty Ointments in Skin Diseases—Mulzer stresses that the general condition of the skin, particularly its secretory action, must be given consideration when it is to be decided whether an eczema should be treated by means of an ointment or by a dry method. In seborrheal patients, that is, in those in whom the skin, especially of the face, is oily and shiny, has comedones and a tendency to acne, and in whom the hair is oily so that it requires frequent washings, the use of ointments, oils and soft pastes is not advisable because it is not well tolerated. The application of fatty ointments or pastes apparently results in secretory stasis and irritations. In such patients a dry treatment is advisable. The author uses chiefly a zinc mixture which contains zinc oxide, talcum, glycerin and water, but he also approves of a ready prepared so-called dry salve which, in addition to zinc oxide and talcum, contains also siliceous earth which increases the drying effect. The colloidal form of the constituents insures a uniform and nonirritant consistency. However in the patients in whom skin and hair are especially dry, ointments and soft

pastes are the best remedies for eczemas. In this connection the author calls attention to the fact that patients with neurodermatitis, in whom the skin is usually extremely dry, tolerate ointments well. He concedes that, in addition to observing the type of skin, it is also necessary to adhere to the general rules regarding the use of dry preparations. They are indicated in inflammatory nonweeping but strongly scaling skin diseases but are contraindicated in weeping skin disorders, in which moist applications are advisable. In acne and rosacea, dry treatment should always be tried first.

Medizinische Klinik, Berlin

32 653 688 (May 15) 1936 Partial Index

Use of Butter Flour Feedings in Nutrition of Nourishings A. Czerny—p 660

*Treatment of Acute Mercury Intoxication W. Fulde—p 664

Spondylarthritides Ankylopoietica and Iridocyclitis K. Ascher—p 666

Acute Cerebral Edema in Internal Medicine L. Kubnel—p 669

Idiopathic Psoas Abscess Case O. Wichtl—p 671

Treatment of Acute Mercury Intoxication—Fulde emphasizes that in mercury poisoning the first aim should be to remove the part of mercury that has not yet been resorbed by means of gastric irrigation, by a suspension of animal charcoal and subsequent administration of 20 per cent solution of magnesium sulfate. After that, diuresis should be stimulated, the organism should be freed as much as possible from the decomposition products of protein, circulatory weakness should be guarded against, and the organism should be supplied with the necessary quantities of water and calories. In order to realize these aims, venesections are done every second or third day, infusions of hypertonic (20 per cent) solutions of dextrose and of physiologic solution of sodium chloride are given and cardiac stimulants are added according to need. The dextrose exerts a favorable effect on the heart, vessels and hepatic parenchyma, it increases the defense mechanisms of the organism and also has a reducing action on the mercury compounds. The author describes the histories of three cases which prove that the aforementioned measures produce favorable results even in severe cases of mercury nephrosis and renal insufficiency.

Medizinische Welt, Berlin

10 661 696 (May 9) 1936 Partial Index

Vitamins in Their Significance for Problem of Regeneration. H. J. Lauber—p 661

Significance of Blood Picture in Pulmonary Gangrene. W. Dieter—p 664

Surgical Treatment of Pulmonary Tuberculosis F. Krampf—p 667

Meningeal Syndrome J. Klemp—p 671

*Diphtheria Danger in Delayed Administration of Serum H. Klemschmidt—p 673

Delay in Administration of Diphtheria Serum—Klemschmidt cites cases and statistical data which indicate that a delay in the administration of diphtheria serum involves great danger in that the mortality rate is high in cases in which the serum is not given early enough. He emphasizes that every child who has a tonsillitis should be examined soon again even if at first there is no suspicion of diphtheria, for a malignant diphtheria may at first present only swelling and redness of the tonsils and a slight coating. He thinks that at a second visit the diagnosis will usually become clear or, if it is not definite, even a suspected diphtheria justifies a serum injection.

Monatsschrift für Kinderheilkunde, Berlin

65: 385-475 (May 16) 1936

*Autohemotherapy in Diseases of Childhood G. Kellhammer—p 385

Hyperinsulinism G. O. Harnapp—p 407

Clinical and Pathologic Significance of Allergometry According to von Groer in Tuberculosis of Children G. Petrányi and J. Motika—p 426

Measles and Keratomalacia Y. Hiro and M. Yamada—p 438

*Pharyngitis of Measles with Protective Extract from Placentas of Normal Mothers H. G. Huber—p 446

Autohemotherapy in Diseases of Childhood—Kellhammer investigated the efficacy of autohemotherapy in seven children thirty with infectious diseases of the urogenital tract (acute and chronic pyurias, cystitis, cystopyelitis), twenty-four with infectious diseases of the respiratory tract nine with suppurating skin diseases (pyoderma, cutaneous abscesses, phlegmons, erysipelas, furunculosis) and twelve with other

disorders (osteomyelitis, recurrent infections in dystrophy, disorders of the middle ear with septic temperatures, meningococcic meningitis and so on). The author analyzes these groups and reaches the conclusion that autohemotherapy is not as effective as has been stated by some. However, particularly in chronic pyurias, which are not caused by deformities, autohemotherapy is effective in a large percentage of cases. Many other infectious diseases are likewise favorably influenced. Moreover, the treatment has the advantage that it is simple and without danger. The results of autohemotherapy are by many ascribed to the fact that protein bodies of all types increase the antibodies and that by the disintegration of the homogeneous protein which has been changed into a foreign one, the globulins are increased. The author thinks that, even if it has not been definitely proved that globulins are antitoxins, they are at least vehicles of immune bodies. He assumes that the process is not a specific immunizing action but only a form of nonspecific therapy. At any rate to explain the action of autohemotherapy it must be assumed that the blood undergoes some change. It is noteworthy that this form of "protein" therapy never results in sensitization or anaphylactic manifestations.

Prophylaxis of Measles with Placenta Extract—Huber reports that extract from the placenta of normal mothers was used during an epidemic of measles for the protection of thirty-seven children who had other disorders most of them having diphtheria. Administered in quantities of 10, 15 and 20 cc it always proved harmless and produced an effective protection against measles. Its prophylactic value was equal to that of convalescent serum. Since the placental extract is always available, it is especially suited for medical practice and in this respect it has the advantage over the convalescent serum.

Wiener klinische Wochenschrift, Vienna

40: 641-672 (May 22) 1936 Partial Index

Carbon Monoxide Poisoning and Resuscitation L. Teieky —p. 641
Combination and Correlation of Anatomic Variations G. Sauer —p. 645

*Cobra Toxin and Its Therapeutic Use M. Kirschen —p. 648

*Viale's Reaction for Presence in Blood of Substances Related to Epinephrine. Katharina Loeb —p. 651

Attempt at Treating Patient with Pemphigus by Means of Active Immunization A. Binger —p. 653

Therapeutic Use of Cobra Toxin—Favorable results reported by other investigators induced Kirschen to try cobra toxin on patients with inoperable or relapsing cancer who had severe pains, and also on patients with neuralgia and neuritis. The technic of the treatment is somewhat difficult because the optimal dosage must be determined in each individual case. Subthreshold doses have either no effect or only a slight one, whereas excessive doses increase the pains and produce severe general reactions. To be sure, the severe pains that frequently appear at the beginning of the treatment are often the first sign of an improvement. The author usually begins the treatment with 0.5 cc of the cobra toxin. He recommends subcutaneous injection in the region of the supraspinous fossa or in the upper gluteal region. At first the injections are given at three day intervals. Later the intervals can often be prolonged to eight days or even two weeks. The author employed the cobra toxin in fifteen patients with gastric cancer with pulmonary, three with rectal and two with mammary cancer. He gained the impression that the roborating action of the cobra toxin is chiefly due to its analgesic effect. It is of great importance for the usually cachectic and undernourished patients that it is possible to counteract the pains with a remedy which does not like morphine, reduce the appetite and the normal defense powers of the organism. The author would not like to dispense with cobra toxin in inoperable or relapsing cases of carcinoma.

Viale's Reaction—Loeb points out that Viale regards his reaction as suitable for the demonstration of epinephrine in the blood. However, there is a considerable difference in the epinephrine concentration of the blood detected with Viale's method and the concentration that is detected with other methods. Viale's values being abnormally high. In view of this fact the author suspected that Viale's reaction indicates not only epinephrine but also a number of substances that are chemically related to it and therefore she decided to search for such sub-

stances, particularly for the derivatives of pyrocatechic acid. On the basis of her investigations she reaches the conclusion that Viale's reaction cannot be regarded as specific for epinephrine, but that it indicates also a number of substances that are related to epinephrine, namely, derivatives of pyrocatechic acid. She also found that the quantitative outcome of Viale's reaction is the same in healthy persons and in hypertensive and diabetic patients. The author observed an increase in Viale's reaction in two out of four schizophrenic patients with severe insulin shock, in whom the insulin had been given for therapeutic purposes. She detected the highest values in a typical case of Cushing's syndrome but in another case there was no such increase.

Wiener medizinische Wochenschrift, Vienna

86: 621-648 (June 6) 1936 Partial Index

*Conservative Treatment of Varicose Syndrome G. Nobl —p. 621

Newer Hormone Preparations in Treatment of Menstrual Disturbances E. Klasten —p. 626

Case of Sexual Pseudo-Infantilism. A. Moessner —p. 634

Treatment of Varicose Syndrome—Nobl discusses the varicose complex particularly with regard to treatment and prevention of serious complications. His observations were made in a department in which from 1500 to 2,000 patients with varicose veins were treated every year. He pays attention chiefly to the obliteration treatment by means of solutions of dextrose or of sodium chloride. He emphasizes that this treatment should be strictly ambulatory. Patients who are accustomed to standing should in the course of the obliteration treatment, never rest longer than the time required for the night rest. During the day, wearing elastic bandages is advisable. He observed cases in which obliteration treatment could be given several weeks or months after the last thromboembolic relapse. But although a wider field has been found for the obliteration treatment of varicose veins there are also conditions in which it is contraindicated such as in patients with decompensated cardiac defects, in severe renal disturbances and in advanced metabolic disorders. Moreover, in deep thrombosis the obliteration treatment is likewise contraindicated. The author shows that vasography and palpation are the only reliable methods for the diagnosis of a deep thrombosis. He discusses Neuda's studies on the problem of embolism, which indicated that constitutional factors play a part and that the administration of liver extract acts as a prophylactic against thrombosis.

Vrachebnoe Delo, Kharkov

19: 345-432 (No. 5) 1936 Partial Index

*Pathologic Morphology of Malaria in the Light of Allergic Reactions T. T. Shirokogorov —p. 345

Clinical Pathology of Malaria T. P. Braude —p. 355

*The Problem of Chronic Malaria L. K. Korovitskiy —p. 359

So-Called Latent or Concealed Malaria M. L. Mgebrov —p. 365
Role of Melanoflucculation in Malaria V. D. Moldavskaya-Krichinskaya —p. 367

*Subcutaneous Oxygen Therapy in Pneumonia E. Ya. Fishenzon —p. 391

Malaria and Allergic Reactions—Shirokogorov believes that in the evaluation of the pathologic alterations in malaria one should take into consideration, in addition to the constitution of the patient and the virulence of the parasite, the strikingly altered reactions of the organism under the influence of the malarial virus. These allergic reactions manifest themselves morphologically by a hyperplasia of the reticulo-endothelial system, accumulation of lymphocytes in the liver, petechial hemorrhages and microscopic areas of necrosis in the brain in cases of malarial coma. The author describes what he terms the hepatolienal medullary syndrome which manifests itself by a hyperplasia of the liver, spleen and the bone marrow. He has observed it in 8 per cent of his postmortem material (1100 necropsies). He has studied the question of allergic alteration on the part of the malarial patient to other diseases, in particular to tuberculosis and pneumonia. He has encountered pneumonia in 117 out of 800 necropsies performed on patients dying of acute or chronic malaria (15 per cent). In the same material there were only thirty-nine instances of tuberculosis (less than 5 per cent). Thirty-four of these were cases of acute malaria, which means that thirty-four individuals suffering from chronic pulmonary tuberculosis had contracted malaria. Here tuberculosis was the primary and malaria the

secondary disease. This leaves five cases (0.5 per cent) in which tuberculosis developed in a malarial patient. The author concludes that active pulmonary tuberculosis is seldom encountered in chronic malarial patients and that malaria does not activate old tuberculous foci. The coexistence of the two diseases was observed in only 5 per cent.

Chronic Malaria—On the basis of 10,000 malarial patients observed in the course of thirteen years in the dispensaries of Odessa, Korovitskiy maintains that chronic malaria does exist in a moderate climate where reinfection is not possible. He disagrees with the optimistic views of Rieu, Marchout and Muehlens, who state that malaria in a moderate climate is always curable in from one to two years. In his material not more than 40 per cent were cured at the end of four years. It was his experience that the tropical form was more likely to end in a cure at the end of that period than the milder and more common tertian form. The chronically ill did not present the grave picture seen in the tropical regions. The spleen rarely attained great size and cachexia was not present. He takes exception to the view that diagnosis of malaria is permissible only when the plasmodia can be demonstrated in the peripheral blood. He has observed many cases in which in the course of eight or nine years from forty to sixty examinations of the blood for parasites were negative. The same patients in the course of an acute exacerbation exhibited a few parasites in the blood or, in the absence of parasites, gave a positive melanoflocculation test. Among frequent manifestations of chronic malaria in the Ukraine are the disorders of the nervous system, particularly of the peripheral and the vegetative divisions. The possibility of occurrence of eye disease, particularly neuroretinitis, in the late, chronic stages of malaria was established by the observation of Goldfeder and Moldavskaya. Among the not infrequent disturbances of the endocrine system the author observed symptoms of Addisonism, hypothyroidism, hyposexualism and dysfunctions of the pancreas and the hypophysis. The author speculates on the problem of why a certain number of malarial patients are not cured. He advances the theory that there are two types of malarial infection: the reactive and the nonreactive. The manifestations in the first are sharper, the paroxysms are more pronounced and the spleen is much enlarged. Such cases frequently terminate in a permanent cure. In the second group the phagocytic reaction on the part of the reticulo-endothelial system is less pronounced, the paroxysmal attacks are less frequent and less severe, and the spleen is very little enlarged. These cases, as a rule, go on to the chronic stage.

Subcutaneous Oxygen Therapy in Pneumonia—Fishenson believes that the amount of oxygen absorbed into the pulmonary alveoli when administered by the inhalation method is insignificant. This must be particularly true in croupous pneumonia because of the occlusion of pulmonary alveoli. In the past ten years he has treated 200 cases of croupous pneumonia by the method of subcutaneous injection of oxygen. The dose injected varied from 200 to 800 cc. This may be given twice daily in the severe cases and daily or once in two days in milder cases. In children the initial dose was 50 cc., while the maximum dose did not exceed 200 cc. Danger of embolism is minimized by the fact that oxygen is readily soluble in the blood. He concludes on the basis of clinical observations and animal experiments that oxygen introduced subcutaneously is absorbed and gives rise to oxidizing processes, much the same as it does in the lung, serving in fact as a sort of complementary vicarious 'subcutaneous respiration'. The oxygen thus absorbed enters the circulation and is partly absorbed by plasma, while the rest combines with the hemoglobin. Subcutaneous oxygen therapy appears to be particularly effective in the grave cases of pulmonitis accompanied by cyanosis, cardiac weakness and pronounced intoxication. The favorable effect of this therapy is exerted on the respiration and the function of the cardiovascular system. Dyspnea and cyanosis tend to disappear, the blood pressure rises and the cardiovascular system functions more vigorously. The effect of oxygen is strikingly reflected in the lowering of the viscosity of the blood. The author considers subcutaneous oxygen therapy an effective method of combating the toxic-infectious state but not a specific therapy in pneumonia. The technic of administration is simple, safe and harmless.

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97: 449-560 (May) 1936

- *Investigations on Fibrinolytic Ability of Hemolytic Streptococci and Presence of Antifibrinolysin in Blood. E. Waaler.—p. 449
- Clinical Investigations on Nycturia. O. Jervell.—p. 465
- Resection of Cardia and Lower Portion of Esophagus (in Cancer). R. Ingebrigtsen.—p. 479
- *Paget's Disease. E. Hval.—p. 486
- *Bowen's Disease. E. Hval.—p. 494
- Pick's Atrophy. Case. T. Østrem.—p. 504
- Colloid Cyst in Third Ventricle of Brain Removed on Operation. A. Torkildsen.—p. 512
- Mimic Ectropion of Upper Eyelids. S. Holth.—p. 520

Fibrinolytic Ability of Hemolytic Streptococci—Waaler's tests of throat cultures from patients with angina and scarlet fever in the acute stage, by Tillet and Garner's method showed fibrinolytic strains in all cases, and fibrinolytic streptococci were often isolated from throat cultures of scarlet fever patients on discharge. Fibrinolytic strains were derived from cases of empyema, pneumonia and septicemia. From throat cultures of twenty-one persons without throat infections eight hemolytic strains were isolated, one of which was fibrinolytic. Study of the antifibrinolytic substances in plasma from well and sick persons rarely revealed antifibrinolysins in well persons. In cases of positive antifibrinolysin reaction in which no definite infection is established, it is suggested that the reaction may depend on a more chronic infection which has not manifested itself clinically. The author says that to determine whether the scarlet fever patients who during the course of the disease for a longer or shorter time present positive antifibrinolysins are more gravely affected by the disease than those with negative reaction calls for a closer investigation, in which the fibrinolytic ability of the strains as well as the antifibrinolytic ability of the serum must be titrated. A positive antifibrinolytic reaction will in most cases point to a streptococcal infection, but the reaction is not certain in this regard. A particular interest is attached to the relation of the antifibrinolysin reaction in infectious arthritis if the reaction, though nonspecific, will allow differentiation of pathogenically different types.

Paget's Disease—Three cases agreeing with the original description of this disease are reported, two in women with the characteristic changes in the nipple and carcinoma in the deep tissue and one in a man with changes in the axilla and carcinoma in the deeper tissue. In the fourth case described, however, originally considered Paget's disease because of localization and certain superficial resemblances in microscopic structure, there were changes particularly in the middle layer with comparatively well preserved basal layer and formations resembling clumped cells, with no tumor, and it is regarded as identical with or closely related to Bowen's disease. In Hval's opinion the designation Paget's disease should be reserved to cases in which there is carcinoma in the deeper tissue.

Bowen's Disease—After presenting two typical cases of Bowen's disease in men aged 63 and 73, Hval discusses three additional cases. The first of these was in a man with disease of the nipple first diagnosed as Paget's disease but believed to be Bowen's disease because of the characteristic picture and absence of a tumor in the deep tissue. The second patient, a woman, aged 65, operated on for cancer of the uterus sixteen years earlier, with a history of Bowen's disease for twenty years, died from primary cancer of the lung. She had used arsenic for years. The third patient, a man, aged 49, with a history of Boeck's sarcoid for thirty-two years and of Bowen's disease for fifteen years, had for years been treated with arsenic for long periods. Two years before death a tumor developed in a plaque on the thigh. After radium treatment a new tumor appeared in the same place, with gradual signs of metastases to the spine. Postmortem examination revealed a tumor of walnut size and metastases to the spine, pleura, ribs and lymphatic glands. Microscopic examination revealed that the tumor was a round cell sarcoma. The regional lymph nodes showed carcinoma metastases and signs of metastasis from the sarcoma. The last two cases are believed to point to a special predisposition for malignant tumors.

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RESISTANCE IN TUBERCULOSIS

CHAIRMAN'S ADDRESS

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The diminution in the death and morbidity rate from tuberculosis is a very remarkable epidemiologic fact. With it has been associated also a marked decrease in the percentage of the population which responds to the tuberculin test and a definite change in the character of the disease. These changes have been noted not only in this country but in the greater part of the civilized world, and while they have been most rapid in recent years they have been gradually going on through several generations.

The underlying causes of this situation have been the subject of considerable speculation. While it cannot be denied that the protection from infection afforded by the better segregation of open cases is a definite factor and that also the improvement in the economic and social status of the people should be considered, still it would appear that a changed resistance to tuberculous infection is a very important factor.

The subject of resistance to tuberculosis has been the object of extended animal research as well as other studies. It is our purpose to attempt to interpret existing knowledge of the subject, looking toward its better understanding. This would appear to be needed, because many current ideas on this subject are very hazy and in general fail to express a clear conception of the role which this factor may play in the epidemiology of the disease.

According to our conception four main factors may be distinguished in the resistance to tuberculosis as manifested both in the individual and in the group as represented by the family and the race.

These factors may be divided into the specific and the nonspecific. Under the specific factors we would list acquired resistance, inherited resistance and accumulated resistance, which is really the combination of the other two. The nonspecific factors may be designated as constitutional fitness, by which is simply expressed the well known fact that some individuals do not become sick as easily as others and applies to many other conditions as well as to tuberculosis.

ACQUIRED RESISTANCE

On first infection with tuberculosis the immediate reaction of the body is nonspecific but sets going a specific immunobiologic process by which resistance to

the disease is eventually acquired. As this resistance succeeds in overcoming infection it becomes increasingly more efficient through an ability to destroy the bacilli and thus to halt the progression of the infection. This acquired resistance manifests itself in tuberculosis by what is termed allergy, which is clinically recognized by characteristic tissue reactions to tuberculin.

It is important to emphasize that the method of action of this type of resistance is by the destruction of the tubercle bacilli or by eliminating them from the body by the process of softening. This destruction of tubercle bacilli, though protective in purpose, unfortunately involves an inflammatory reaction with the liberation of toxins and consequent disease-producing complications, which may be very severe or even fatal.

The milder forms of this reaction, however, tend not only to destroy the bacilli but at the same time to build up a resistance to subsequent infection, and when these infections are periodically repeated a very real degree of resistance to each new infection is thereby developed.

INHERITED RESISTANCE

In our effort to understand the remarkable changes which have occurred in the epidemiologic evolution of tuberculosis we are unable to escape the conclusion that succeeding generations which have been exposed to tuberculosis do not react in the same way as those not so exposed. This would appear to imply that some inherited change in the reaction of the individuals of later generations has occurred because of the experience of the preceding ones, and that consequently something in the nature of increased capacity to acquire resistance has been passed on through inheritance.

We do not pretend to know just how this occurs. We are aware of the prejudice against the idea of the inheritance of acquired characteristics. We may also speculate as to whether the changed resistance of the child of the new generation may be a characteristic acquired *intra utero* from the mother.

Our own hypothesis is that, since recent evidence suggests that resistance depends largely on the reaction of the tissues to the various chemical components of the body of the tubercle bacillus, the quality that is transmitted is a chemical one or at least one of increased potentiality to a certain chemical adaptation.

But in any event we believe that there is a very definite factor of inherited resistance which may explain many of the problems in tuberculosis as it is seen in individuals and as it is exemplified in families or in races.

We would conceive of this type of resistance as being a specific power to inhibit the growth of bacilli at the very outset of infection, and to those who possess it the need of acquiring resistance to destroy multiplying

bacilli in the body does not exist or at least is less urgent. Possessed of this type of resistance, the individual does not need to go through the slow process of acquiring specific resistance with its implications of a disease-producing degree of allergization. The infection or lesion in such an individual will remain slight or ephemeral according to the degree of specific resistance that has been inherited. We would suggest that in countries where tuberculosis has existed for many generations this factor alone is sufficient in many individuals to prevent the occurrence of disease from the minimal dose which goes with the usual inhalation infection.

The amount of specific resistance which can be transmitted by any individual to his progeny can only be that degree which is possessed by the individual himself. But it is our conception that here too each new infection

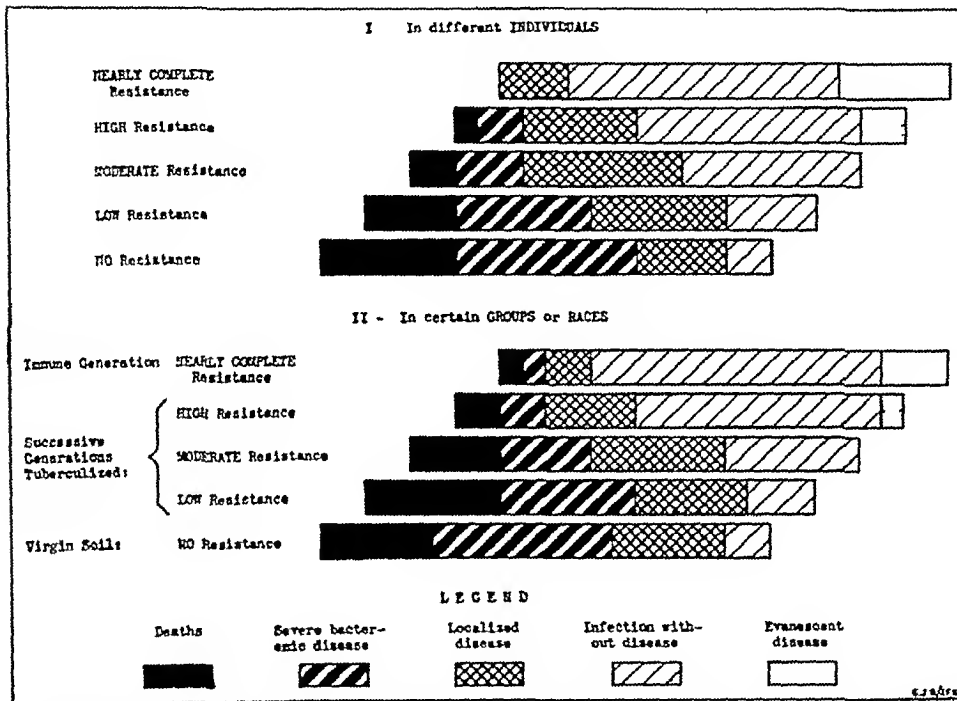
NONSPECIFIC CONSTITUTIONAL FACTORS IN RESISTANCE

In addition to the specific factors in resistance already discussed, there are also variations due to fundamental constitutional differences between individuals.

It is well known that some individuals do not become sick as easily as others. This difference is perhaps best described as the natural constitutional fitness of the individual. It applies to every vital function and to many diseases and includes as far as tuberculosis is concerned a particularly important function, that of the power of serogenesis, which may be defined as constitutional fitness in relation to immunobiologic reactions.

That this constitutional factor comes largely through inheritance there can be no doubt, but it has no direct relation to previous infection either in the individuals

or in their progenitors. Recent evidence indicates that one is dealing here with a potentiality for resistance and, as far as the serogenic fitness is concerned, that this develops in the individual by a process of maturation with increasing age. This factor operates in the individual or group which comes in first contact with tuberculosis and affects the ability to acquire resistance, that is, it determines his self-allergizing power. By the same token it also affects the store of inherited resistance of the individual, which is subject to lapses with the fluctuations of the general vitality of the individual under the effect of various untoward influences of a lifetime, such as age periods (infancy, puberty) and the effect of intercurrent disease or pregnancy, of impaired nutrition, of severe or prolonged



Schema of levels of resistance. I illustrates how the character of infection and disease is modified by individual differences in resistance. II illustrates how the mortality and morbidity are modified in the group as the resistance rises with successive generations.

will still further develop his acquired resistance and that this additional resistance may be added to the store of specific resistance which this individual will possess and which may be passed on in this enhanced degree to the next generation. The combination of the inherited specific resistance and the acquired specific resistance would give the completed resistance which we would term our third factor, namely, accumulated specific resistance.

ACCUMULATED SPECIFIC RESISTANCE

The first factor, namely, the inherited resistance, which we have defined as the power to inhibit the growth of tubercle bacilli in the body, has thus become progressively increased by the addition of acquired resistance through successive generations, so that it is theoretically possible that a state of comparative immunity to ordinary doses of infection may ultimately be obtained. But, as far as is known, no human individual ever becomes absolutely and completely immune.

economic or emotional stress. Thus it is noted that great variations in the potentiality to develop specific resistance occur dependent on a general nonspecific characteristic which is called constitutional fitness.

APPLICATION OF THESE PRINCIPLES TO THE GROUP

The same general principles hold for the group and for the individual. Differences in the racial and individual evolution of tuberculosis are based on the same factors, namely, differences in accumulated specific resistance. The resistance of the race depends on the level in the immunity scale on which the majority of the individuals rest, and races will rise in this scale according to past tuberculization. In races which have been tuberculized through succeeding generations the inheritance factor is probably the most important one so that, in some members of such a race, resistance is perhaps nearly absolutely complete and in the vast majority it prevents more than a slight and ephemeral reaction to the infection. In those who develop disease

the character of the tuberculosis is of a much milder type than would otherwise be the case

On the other hand, in races which have only recently come in contact with tuberculosis or races which show a genotypic inferiority as regards immunizability to tuberculosis, it is increased susceptibility that is inherited. This is responsible for the increase of mortality in the generation following the first contact with the disease. It is only when the inheritance factor reaches an immunizing degree on its upward scale that mortality and morbidity turn downward. The remarkable phenomenon of persistently high morbidity with conspicuously low mortality in some very long and thoroughly tuberculized races such as the Jews is an indication of the effect of unfavorable social and economic conditions which act through the nonspecific factors in diminishing the effect of the specific factors.

APPLICATION OF THESE PRINCIPLES TO THE INDIVIDUAL

The accumulated specific resistance, as represented first by the inherited factor which prevents the multiplication of the bacilli in the body and secondly by the acquired factor which through allergy protects against reinfection by the power to destroy the bacilli, will determine in the individual the character of his response to the infection.

In what we call virgin soil, characterized by lack of both inherited and acquired resistance, an immediate critical situation is produced, so that, if overwhelming disease is to be prevented, allergic resistance must be acquired with extraordinary rapidity. The slower this process takes place, the more likely is the development of severe or directly fatal disease. This accounts for the acute types of tuberculosis in virgin soil.

If, however, a considerable amount of inherited resistance exists, this prevents the multiplication of the bacilli at the site of infection and allows time for the development of acquired resistance, which may be able to take care of the comparatively small number of bacilli which develop in the body under such circumstances. As exogenous inhalation infection is always in a minimal dose, the presence of this type of resistance will often tend to localize the lesion and prevent the development of disease. If, however, bacilli multiply in the body either because of the large dosage of infection or the lack of specific inherited resistance to prevent their multiplication, endogenous reinfections occur in the body, often in very large doses, and the power to overcome this type of infection depends on the response of the specific allergic resistance which the individual may develop.

Consequently, depending on the level in the scale of inherited resistance at which they are born and depending on their particular ability to acquire allergic resistance at the time of infection, different individuals evolve different tuberculous processes. The less inherited resistance the individual may have, the more he must require if he is to overcome disease while those born with a high inherited resistance sufficient to prevent multiplication of bacilli immediately on first invasion will develop an infection of a very ephemeral character. Thus is explained the wide range of transitions between the rapidly progressing fatal disease which develops in virgin soil, on the one hand and the evanescent type of infection which is so mild that it may be entirely unnoticed, on the other. Between these two extremes are all the kaleidoscopic variations in the clinical manifestations of tuberculosis.

How they may be analyzed according to the interplay of the various possible combinations of inherited and acquired resistance is indicated in table 1. And how these levels of resistance may affect the character of the disease both in individuals and in races is schematically illustrated in the accompanying chart.

THE INTERPRETATION OF ALLERGY

In addition to our application of these principles to the behavior of tuberculosis in individuals and in groups it seems desirable to discuss certain other interesting phases of the general subject of resistance and first the interpretation of allergy.

We as clinicians are particularly familiar with allergy as applied to tuberculosis in connection with the clinical response of individuals to the tuberculin test. That this is a specific allergic response is now well known, but what its presence or absence may imply or what the variations in degree of its reaction signify is still a matter of serious difference of opinion.

An individual who has never been infected will not respond to tuberculin, allergy is absent. On the other hand, there is increasing evidence that many individuals

TABLE 1—Interplay in Tuberculosis of Inherited Resistance and Acquired (Allergic) Resistance

| Inherited Resistance | Acquired (Allergic) Resistance | Resulting Process |
|----------------------|--------------------------------|------------------------------|
| High | Good | Evanescent infection |
| Fair | Good | Infection without disease |
| Low | Good | Localized disease (phthisis) |
| None | Medium | Generalized disease |
| Low | Medium | Localized disease |
| Fair | Medium | Infection without disease |
| High | Poor | Localized disease |
| Fair | Poor | Generalized disease |
| Low | Poor | Severe generalized disease |
| None | Poor | Fatal generalized disease |

This table indicates that the disease is generalized and severe when both inherited and acquired resistance are low or when either one of them is very low while the other is only fair, that the disease is mild and localized when either the inherited or acquired resistance is high while the other is at least fair, that no disease follows infection when both inherited and acquired resistance are fairly high, that the infection is of the evanescent type when both inherited and acquired resistance are the highest possible.

who have been infected may lose their response to tuberculin. This type of tuberculin-negative individuals behaves very differently from the type characterized by virgin soil. It is probable that these individuals have undergone an infection so ephemeral that their allergy is very evanescent and may at times remain altogether undetected.

According to our concept, this, for example, would be the case with individuals who have a very high inherited resistance with good constitutional fitness. On the other hand, we see instances of negative tuberculin reaction which definitely show an absolute lack of resistance, such as are seen in the end stages of progressive disease or in connection with certain other acute conditions such as measles. These cases are on the other end of the scale, their failure to develop allergy is not because it is not needed but because there is an absolute inability in the individual to develop it. Or if in other individuals, the constitutional fitness is very poor and the inherited resistance is very low, there may be also a lack of self-immunizing power to develop allergy, which may exhibit a negative tuberculin reaction in the presence of extensive disease with a very poor prognosis.

On the other end of the scale may be cases showing a very prompt and severe inflammatory tuberculin reaction. Thus by no means should be interpreted as necessarily indicating a very severe and progressive disease, it is much more apt to indicate a very prompt and perhaps quite efficient allergic response which is called for because in that individual the inherited resistance may have been quite low. Between these two extremes appear all the variations of degree of allergic response as shown by the tuberculin test, which may be interpreted in connection with our conception of constitutional fitness and inherited resistance, as indicated in table 2.

It is necessary to keep clearly in mind the fact that allergy and immunity are two altogether different properties, although they are each a part of the same process by which resistance to tuberculosis is produced in the group as well as in the individual. If it is understood that allergy as a manifestation of acquired resistance develops not only according to need but also with the self-immunizing power of the individual, it becomes clear why in practice allergy often appears entirely dissociated from immunity. In fact, a high degree of resistance, as already shown, may be present in asso-

this disease occurs the infection must be opposed by acquired allergic resistance, which at best can only destroy or eliminate the bacilli that are already in the body. If this is successful, it amounts to arrest or healing of the lesions. But opportunities for reinfection are numerous and subsequent relapse frequently occurs. As acquired resistance increasingly develops, successful resistance and healing occurs and the bacilli become walled off in lesions in which they may remain viable for long periods of time, so that liability to relapse must persist until the individual brings up his resistance to such a degree that he can entirely and persistently inhibit the multiplication of bacilli in the body. Not infrequently we see cases of simultaneous healing or even complete absorption of numerous lesions in various portions of the body, which appears to depend on some change in that individual which specifically enables him to get rid of his disease and to heal the process. We would suggest that the explanation of this phenomenon may be that it occurs just when the accumulated resistance of the individual reaches the immunizing level of specific resistance.

THE RELATION OF RESISTANCE TO SPECIFIC THERAPY

Ever since the tubercle bacillus was discovered, the goal of all research has been to develop a specific cure which will successfully and completely combat the effect of this infection. Although this goal is still far distant, we believe that the most likely path leading to it is in this field of specific resistance. Much experimental work in animals has aroused hopes in this direction. That resistance to new infections can be modified by previous inoculations of mild or nonvirulent tubercle bacilli has been demonstrated. But their failure to attain more definite results may be due to the fact that in animals the inherited factor, which we conceive to be predominantly operative in man, is absent, and that further progress in specific treatment along the lines of artificially modifying resistance may depend on a better understanding of this phase of the problem.

CONCLUSIONS

We are offering our concept of resistance in tuberculosis in the hope that it may assist in explaining some of the puzzling epidemiologic and clinical questions that exist in tuberculosis. Part of this concept, particularly that of the role of inherited resistance, may appear to be hypothetical. But since this theory has helped us to correlate a great many heretofore incomprehensible facts of our experience, we hope that possibly it may point the way to future research and finally to a better understanding of this complicated and difficult subject.

133 East Sixty-Fourth Street

TABLE 2—*Interpretation of Allergy*

| Allergy | Constitutional Fitness (Self Immunizing Power) | Inherited Resistance |
|---------|---|-------------------------|
| 0 — + | good | ++ + |
| + + | | ++ |
| + + + | | + |
| + | fair | ++ + |
| + + | | ++ |
| + + + | | + |
| + | poor | ++ + |
| + | | ++ |
| + — 0 | | + |

This table indicates that a low level of allergy may be associated with both high and low inherited resistance; that a very high level of allergy is mostly associated with low inherited resistance; that the level of allergy depends just as much on the need dictated by the resistance inherited as it does on the constitutionally conditioned power of the individual to immunize himself.

ciation with a low degree of allergy, and in the same individual there may be a low degree of allergy at one time and a high degree at another. In practice the amount of what we have termed accumulated resistance can be estimated only by its effect. There exist no means of distinguishing or separating the two components of accumulated resistance, for while the tuberculin reaction directly indicates only the allergic response, this in turn is indirectly affected by the inherited factor. Thus one cannot be sure whether the level of allergy, as revealed by the response to the tuberculin test, is the measure of the one or the other factor. In general therefore, conclusions based on the response to the tuberculin test may be very misleading.

THE EFFECT OF RESISTANCE ON HEALING PROCESSES

It is not our object to discuss the effect of resistance on healing processes in any great detail, but it must be obvious that, if the principles which explain the development of various types of disease are sound the same principles must be at work also in the various types of healing that are seen in tuberculosis. Disease as we understand it depends to a great extent on the multiplication of the bacilli in the body, which takes place because of inadequate inherited resistance, and when

Oxygen Want in the Stratosphere—At about 12 000 feet altitude, there are usually objective signs of oxygen want which become progressively worse as altitude increases such that at from 15 000 to 25 000 feet unconsciousness occurs and at 20 000 to 30 000 feet the organism dies. Through the use of pure oxygen oxygen want can be prevented up to an altitude of about 37 500 feet. At that altitude pure oxygen gives a partial pressure of oxygen in the lungs equivalent to that of the normal atmosphere at sea level. Above that altitude oxygen want again develops and unconsciousness will occur at about 4 000 to 50 000 feet. It was thus evident that other means of supplying available oxygen would be required.—Armstrong H G. The Medical Aspects of the National Geographic Society U S Army Air Corps Stratosphere Expedition of Nov 11 1935. *J Aeronaut Med* 7 55 (June) 1936.

PATHOGENESIS OF TUBERCULOSIS

MAX PINNER, MD

ONEONTA, N. Y.

The characteristics inherent in bacillus and host which in their interaction determine the development of the disease are far too numerous to be discussed in the limited space at my disposal. As far as the bacillus is concerned, the pathogenically most important ones are its high resistance, its singularly complete adaptation to parasitic life, its relative virulence, the dosage of infection, and its chemical constituents which stimulate or alter more or less specifically different tissue elements. In the human host there are to be considered constitution with all its variables, such as intercurrent disease, age and state of nutrition, specific immunity, allergy environmental conditions and what has been called the accidents of localization. This quite incomplete enumeration of pathogenically important factors is made only to emphasize their great multiplicity. Each one of these factors has been made the subject of elaborate study, often, unfortunately, with the result that a major or even exclusive importance has been attached to the particular subject under scrutiny. It is, however, quite obvious that no one single factor, with all allowance made for its quantitative variations, can possibly explain the protean forms of the disease tuberculosis. It is in the interaction of all factors that a valid explanation must be sought.

The first infection is in the vast majority by inhalation and the first focalization is in the pulmonary parenchyma. This first infection is with the extremely rare exceptions of transplacental inoculations acquired through outside sources, but the frequency of tuberculous disease throughout the population is still great enough that not by far all primary infections can be accounted for by a known source. The first infection causes two potentially permanent alterations in the host: it produces allergy and it establishes within the body a deposit of tubercle bacilli. In other words, from this event on the body is—probably for rest of its life—potentially exposed to two different sources of further infection: one within the body, making endogenous reinfection possible, the other the environment, which may cause an exogenous reinfection. That both mechanisms may occur is certain. Which mode of reinfection is predominant is one of the most vexing questions; it is the central problem in the pathogenesis of pulmonary tuberculosis in the adult and it is the all important question for the epidemiology of the disease. Since lately much emphasis has been laid on exogenous reinfection, it might not be amiss to stress here the endogenous mechanism, without the intention of belittling the potentialities of the former. The opinion that favors the more or less exclusive importance of exogenous reinfection is based essentially on statistical work, comparing contact and noncontact groups. However, the groups examined are usually slum populations. One may well question whether the insanitary living conditions per se are not a most significant condition to make reinfection, be it endogenous or exogenous possible. In other words, many persons may not and do not develop clinical disease though they are exposed to open tuberculosis, but, if the strain of slum conditions or intercurrent disease is brought to bear on the

individual, he may succumb to his endogenous or exogenous sources of infection. For all practical purposes the problem resolves itself into the question whether living conditions in the widest sense of the word or whether exposure to an exogenous source of infection is the dominant factor in producing postprimary disease. The mere fact that painstaking epidemiologic studies are necessary to prove the greater frequency of clinical disease in contact than in noncontact groups is a strong argument against the sovereign importance of exogenous reinfection. No such studies were necessary to establish the contagiousness in many diseases even before their etiologic agents were known. On the other hand, the reality of endogenous reinfection is proved beyond doubt by the frequent occurrence of foci in localizations that could not possibly be reached by direct exogenous reinfection, such as the skeletal system, the urogenital tract or the brain. It seems important to arrive at a proper balance between the two opinions, because it will determine the most successful method of case finding and appropriate measure in the prevention of the disease and it will guard against an alarmistic attitude that threatens to bring back the time when tuberculosis was treated in the pesthouse.

Most case finding work is now based on contact examinations, but nobody knows whether more clinical cases would be found among ten thousand contacts or among ten thousand persons living below a minimum subsistence level. The same may be said with regard to population groups according to age, race or occupation, although the enormous differences that exist in tuberculosis morbidity between the white and the Negro races, between adolescent girls and mature men, between low and high income groups, are roughly known. These differences become obscured by the emphasis on exogenous reinfection without being explained by it. Overemphasis on exogenous reinfection is apt to cause an underestimation of the constitutional and socio-economic factors that play an important role in endogenous infections and that are sometimes more easily remedied than exogenous sources of reinfection.

The school of thought that denies the possibility of exogenous reinfection leans heavily on the results of animal experiments. With an extremely careful—and one might say lucky—balance between dosage of first and secondary infection, and with optimal timing between the two infections, it can be shown that a practically complete immunity against exogenous reinfection may be developed in infected animals. But this is possible only in the exceptional experiment. In the natural course of events such optimal conditions do not occur in human life. The immunologic change that is brought about in man by a first infection is, as a rule, not manifested by a complete resistance to exogenous reinfection but by the much greater tendency in infected beings to a stricter localization of the lesion and by a greater tendency toward productive and fibrotic lesions.

Whether a lesion is productive or exudative depends, according to some authors, entirely on allergy. While the immediate allergic reaction is well known in its histologic manifestations, the fact that, more often than not, exudative and productive lesions are found in the same lung in close proximity shows at once that one single factor, such as allergy, is totally inadequate to explain the two essentially different tissue reactions. Again the many different factors that determine the

relation between parasite and host must be thought of. Exudative and proliferative tissue reactions are determined not by one condition, such as allergy or immunity, but by these conditions plus dosage of infection, plus constitutional characteristics, plus specific localization and so on ad infinitum. The essentials of practical importance that are known of allergy in tuberculosis can probably be expressed in two brief statements: 1 Allergy can be produced only by infection with (living or dead) tubercle bacilli. 2 Allergy accentuates and hastens the native tissue reactions against tubercle bacilli.

In corollary it should be said that neither exudative nor proliferative changes are in themselves malignant or benign. Either may heal or progress.

In the progression of tuberculous lesions is found probably the clearest expression of the differences between primary and secondary infections. The functional difference between the two is allergy, whether or not these differences indicate immunity in the reinfected person is not so much a matter of factual divergence of opinions as of arbitrary terminology. Pathogenically the differences are that in the progression of a primary lesion all available routes of propagation of bacilli come into play: lymphatics, blood stream, preformed channels, such as the bronchial tree, the intestinal canal, and the excretory ducts of the urogenital system. In secondary infections, dissemination through lymph and blood stream is quite infrequent, increasingly so with the increase of time elapsed between primary and secondary infection. Progression by continuity and through preformed channels continues unhindered in secondary infection. Thus as a characteristic example of progressive disease following more or less immediately primary infection is seen generalized miliary tuberculosis, frequent in childhood, rare in later life, and the characteristic progressive disease of adult life—tuberculosis limited to one organ system, such as pulmonary phthisis, rare in childhood, frequent afterward.

It remains now to describe briefly the most significant milestones of the morphologic aspects of pathogenesis. Be it said at the outset that an infinite variety of lesions occur, that only few can here be mentioned. But the few are chosen in such a way as to illustrate characteristic developments, so that practically all other lesions can be fitted somewhere in this general scheme, which in itself should provide a reasonably safe guide through the apparent maze of the disease tuberculosis.

The first focalization of bacilli occurs as a rule in the parenchyma of the subpleural layers of the lung, relatively rarely in the apex. The earliest lesion is a tuberculous pneumonia, which soon becomes surrounded by proliferative tissue changes from which a dense fibrotic capsule develops around the center, which in turn undergoes caseation and calcification. Simultaneously or somewhat later the mediastinal lymph nodes become involved through lymphatic transport of bacilli, they undergo rapid caseation and then show more or less completely the same retrogressive changes as does the parenchymal lesion. The most frequent development of this primary complex, consisting of parenchymal and lymphoglandular focus, is retrogression without clinical disease leaving the unmistakable pathologic marks of a well demarcated parenchymal calcified focus and frequently multiple, calcifications in the mediastinal lymph nodes. In this stage the tuberculous infection may remain and does remain in the majority

of all infected persons a scar, as it were, which with allergy caused by the infection is then the only mark left. In some cases the parenchymal focus may progress by contiguous spread, causing extensive caseous pneumonias and excavations.

More frequently the parenchymal focus heals while the lymphoglandular focus smolders on for greatly varying periods, discharging at intervals bacilli into the lymph and blood stream, they may focalize anywhere in the body, causing bone lesions, urogenital disease, scattered lobular pneumonic foci usually in the upper portions of the lungs, or, if a massive discharge of bacilli from a liquefied caseous lymph node occurs the result may be a generalized miliary tuberculosis. The borderline between the period of primary infection and that of those not infrequent early disseminations is too blurred to permit, as has been suggested, a strict differentiation into a primary and secondary stage, as in syphilis. Unlike untreated syphilis, the so-called secondary stage may never occur, or, again, it may manifest itself at any later stage of the disease. The foci created by early dissemination are, like any tuberculous lesion subject to the potential developments—progression or retrogression, and, histologically seen, they may caseate, liquefy and excavate or fibrose and not infrequently calcify or apparently completely resorb.

Pulmonary lesions similar to those seen during childhood in the phase of early dissemination are sometimes seen in adults. It is likely that the majority result from lymphohematogenous spread from primary lymph node foci. The pulmonary foci—true hematogenous tuberculosis—are symmetrically seeded throughout both lungs. Not infrequently they heal clinically by resorption, fibrosis or calcification, others excavate and then continue the usual course of bronchogenic phthisis.

Following the more or less complete healing of the primary complex or subsequent to major or lesser manifestations of early dissemination, a latent period usually intervenes before tuberculosis in the adult develops. In many cases of early dissemination, no further clinical manifestations occur.

The typical pulmonary tuberculosis of adult life begins in most cases with a single, initially exudative, focus. There are essentially three mechanisms by which this clinically primary focus may develop: 1 A bronchogenic spread occurs from incompletely healed apical lesions, the remnants of foci produced by early dissemination. 2 Bacilli from a still active primary lymph node focus are discharged into the lymph stream, are carried into the blood stream and are filtered out in the lung. 3 Bacilli are inhaled from the outside. Regardless of the mechanism by which the new focalization takes place, the early lesion is a tuberculous lobular pneumonia, which is seen most frequently in the subapical region. This lesion is always unstable, it soon progresses or retrogresses. Demonstrable involvement of the regional lymph nodes practically never occurs. This exudative focus, the so-called Assman focus, or early infiltrate, or infraclavicular infiltrate, again is subject to all the potential developments: resorption, fibrosis, caseation, liquefaction, excavation. If a cavity develops, a frank and perilous source of bacillary dissemination is established, from which at any time new bronchogenic spread may occur. From this point on, bacillary propagation through preformed channels and localized destructive lesions constitute the main character of the disease. Within the lung this means bronchogenic spread, and beyond its boundary it means ulcerative tuberculosis of larynx

and intestine. Every new focus is likely to start with a pneumonic lesion which is in no way different from the first early infiltrate, except that, owing to the potential massiveness of the bacterial invasion, it may be quite large and rapidly destructive. Progression and repair occur in succession or simultaneously, and the picture may further be complicated by hematogenous disseminations. The natural course of progressive pulmonary tuberculosis is, then, a series of bronchogenic tuberculous lobular pneumonias, which may heal or progress, fibrose or excavate, it is a series of pathologically acute phases of new focalizations and excavations, interrupted by periods of relative quiescence and partial repair. A patient with progressive pulmonary tuberculosis may finally die from progressive destruction of his pulmonary parenchyma, or, since repair is achieved principally by fibrosis, it becomes understandable that he may die eventually from the crippling tissue alterations that healing brings about.

Pathogenic considerations are incomplete without a discussion of the potentialities of healing. Part of this has already been mentioned. In brief summary, tuberculosis may heal spontaneously at almost any phase of its development, the exceptions are (1) massive blood stream infections, (2) focalization in vital regions (e.g., the fourth ventricle) and (3) large excavations with hard, fibrosed walls. In order of frequency, spontaneous healing takes place (1) in the primary complex, (2) in mild early dissemination, (3) in the early infiltrate. Once a cavity has developed, with its imminent danger of bronchogenic dissemination and hemoptysis, the chances of spontaneous healing are much lessened and they decrease progressively with the hardening of the cavity walls and with the involvement of more tissue. Since all therapeutic measures in pulmonary tuberculosis, including collapse therapy, are directed toward establishing conditions more favorable to natural healing mechanisms, the foregoing remarks on spontaneous healing apply equally to healing under any form of rational therapy.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MILLER AND RAFFAPORT
AND DR. PINNER

DR. HENRY C. SWEANY, Chicago. This complex subject has been covered by Dr. Pinner in the fewest possible words. The first infection usually begins in the lung as a rather sluggish or subacute pneumonic process and is made up of a definite cytologic picture of monocytes, lymphocytes entwined in fibrin, with a few polymorphonuclears scattered about and an occasional Langhans giant cell. The area may be from a secondary lobule to a whole lung in size or there may be multiple foci. From this onset there is a gradual change throughout life, consisting of fibrous encapsulation, central caseation, calcification, resorption and ossification. Subsequent to the local lung lesion, there is that characteristic, inherent in all infections to progress by the lymphatics. This progression goes toward the blood stream and affects the lymph nodes in a similar manner to the lung lesion, but it may vary quantitatively. It usually progresses onward spilling over into the blood stream, causing a variable degree of dissemination into the lesser circulation and even on through the lungs again into the general circulation, localizing in distant organs. This lung and lymph node phase described first by Parrot was crystallized by Ranke into what he chose to call the first stage of the primary complex. The spilling into the blood stream was the second stage and the organ localization the third. Rightly or wrongly he had a stage of allergy for each. The problem of allergy however is surely not so simple, as there is the complex problem of immunity involved. As the lesion ages it may either heal or spread and in either case there result varying degrees of cal-

cification, which were well described twenty years ago by Ghon and have since been known as Ghon foci. These primary lesions may vary with the type, dosage and virulence of the bacilli and with the constitution, race and especially the age of the host. A small pocket of bacilli may gain a special virulence in one lesion and not in another. A small or moderate sized dose with allergy may be overcome as a result of the allergy, but a large dose usually results in violently exudative lesions. Adult primary lesions tend to be more localized in the lung and are not so prone to calcify as those of children. Aboriginal races usually react more like children to primary tuberculosis. The sequela of healed phthisis is frequently an emphysema that varies in extent and degree as the original area of disease. Sometimes this emphysema incapacitates so much lung that the right side of the heart is embarrassed beyond recovery. Other late sequelae are bronchiectasis, abscess, atelectasis and distortion of bronchi and blood vessels, which cause variable degrees of distress.

DR. F. M. POTTENGER SR., Monrovia, Calif. When the tubercle bacillus was accepted as the cause of tuberculosis the previously held idea of heredity was thrown away and it was thrown too far away. At the present there exists a leaning again toward the importance of heredity. Variations are seen in the reaction of individuals toward tubercle bacilli that can best be accounted for by differences in the patient's tissues. I like to think of the whole question of tuberculosis—infection, diagnosis and therapy—as being related to the body's physiologic reaction. When the numbers of bacilli are too small to produce infection, the normal physiologic response is able to destroy them. When the numbers are greater or more virulent, the reaction is still physiologic, but it is a quickened and heightened response. There is an attempt on the part of certain individuals to separate allergy from other phases of immunologic response. This, to my mind, proves to be confusing. Allergy is an intracellular reaction, physiologic in nature, by which the body acts quickly and energetically in destroying bacillary protein. It is only one part of the general physiologic response of the body toward infection, but it cannot be separated from the inhibiting influence on the growth and development of bacilli, the increased phagocytosis that is shown by the mononuclears, the development of the tubercle, or the increased permeability of the vascular bed surrounding the tubercle. They are all a part of the defensive mechanism. Certain research work of F. M. Pottenger Jr. bears on the body's physiologic response to tubercle bacilli. In the past three years he has been able to protect 30 per cent of three different groups of guinea pigs from infection from virulent bacilli by treating them with adrenal cortex extract, and in the treatment of asthmatic children he had found seven to react at the beginning of treatment to No. 1 purified protein derivative tuberculin but who after from six to twelve months treatment, have lost their cellular reaction and fail to respond to No. 2 purified protein derivative tuberculin. I do not know just what this means, but it is in line with known knowledge that the medullary substance of the adrenal gland has an important factor in preventing anaphylactic and allergic reaction. The cortical portion acts synergistically with the medullary portion, and so by its use he has been able to protect against infection and also to change the cells of the body so that they no longer react with inflammation when tuberculin is brought in contact with them. I look on this as a method of increasing the patient's normal physiologic reaction and making it possible for him to care for more bacillary protein without inflammatory response.

DR. JAMES ALEXANDER MILLER, New York. We have listened today, in Dr. Pinner's very brief and concise exposition of the pathogenesis of tuberculosis and in Dr. Sweany's discussion to a very illuminating discussion of the basis on which we as clinicians must erect our structure of the understanding of and the treatment of this disease. I know that in my own particular case it has been true that my whole interpretation of the disease rests on the pathogenesis.

DR. MAX PINNER, Oneonta, N. Y. I was pleased that Dr. Sweany emphasized progressive types of first infections, particularly since in recent years the so-called childhood type of infection has been frequently considered to be invariably benign. I do not know how this concept has originated but it certainly is not borne out by facts.

INTRAVENOUS TREATMENT OF MENINGOCOCCIC MENINGITIS WITH MENINGOCOCCUS ANTITOXIN

ARCHIBALD L. HOYNE, MD

CHICAGO

It is necessary to scan the official statistics of a city or state in order to realize fully the high fatality rates that have usually prevailed for meningococcic meningitis. In Chicago, from 1916 to 1933, the fatality rate for this disease has exceeded 40 per cent in every year but one. This was in 1921, when the rate was 39.2 per cent. In 1925 and 1926 the fatality rates were 72 per cent and 65.9 per cent respectively. From 1916 to 1935 inclusive the total number of reported cases in Chicago was 4,028 and the average yearly fatality rate was 47.7 per cent. During the Detroit¹ epidemic of 1928 to 1931 there were 1,686 cases, with a fatality rate of 50.5 per cent. Tripoli² reported a rate of 65.15 per cent for patients treated in New Orleans in the years 1925-1934. In chart 2 is illustrated the expected and actual fatality rate per hundred cases for the years 1926-1935 in Chicago.

At the Cook County Hospital in Chicago, during a period of nineteen years prior to 1934, the fatality rate for meningococcic meningitis has varied from 35 to 90 per cent.³ In those years all patients received serum intraspinally. At times, intracisternal, intraventricular, intravenous, intramuscular and intraperitoneal injections were resorted to, but only as auxiliary

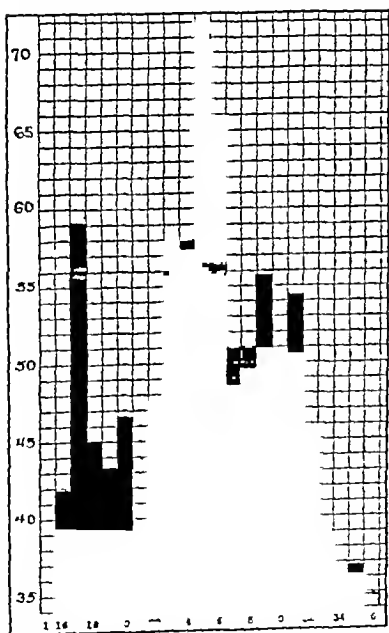


Chart 1—Fatality rate per hundred cases of epidemic meningitis in Chicago from 1916 to 1935

measures. Failures in treatment were frequently attributed to lack of agglutinins in the serum or to unusual virulence of the infecting organism. Although intraspinal therapy has been regarded as a necessity from the time the serum was introduced, response to this mode of treatment often has been most disappointing. The fatality rates mentioned are in accord with this feeling.

When evaluating fatality figures for meningococcic meningitis, certain factors should be given careful consideration. Age has quite as distinct a bearing on prognosis as the virulence of the infecting organism. This fact is disclosed in table 1.

All the patients represented in table 1 received Ferry's antitoxin⁴ both intraspinally and intravenously. The fatality rate of 27.3 per cent for these 201 patients was regarded as very satisfactory. But it may be noted that for sixty-two patients who were 10 years of age or less the fatality rate was but 12.9 per cent. On the other hand, for eighty-three patients above the age of 20 the fatality rate was 45.7 per cent.

Is it proper to refer to the disease called meningococcic meningitis as an acute infectious disease of the central nervous system? Is there not justification in regarding the meningitis as a complication of an acute systemic infection? Such an interpretation is not far different from that which is now commonly placed on

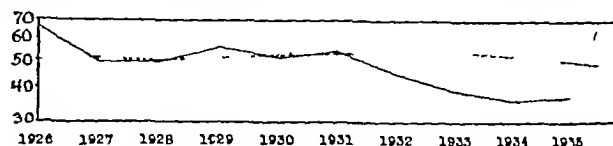


Chart 2—Expected and actual fatality rate per hundred cases of epidemic meningitis in Chicago based on ten year moving average (1926-1935). Solid line, actual fatality; broken line, expected fatality.

poliomyelitis—a disease in which “paralysis may occur, but not usually.” As an inclusive term for all classes of meningococcic infection, the word “meningococcia”⁵ has been suggested. Meningococcic nasopharyngitis, meningococcemia without evidence of meningitis, meningococcemia with meningitis, and meningococcus carriers would all be embraced by the one name indicative of meningococcic infection. This classification assumes that when meningitis develops it is secondary to a blood stream infection. Herrick⁶ expressed such an opinion nearly twenty years ago in regard to the mode of travel of the meningococcus in the body. It is largely on the same theory that my associates and I have abandoned intrathecal therapy and concentrated our attention on the toxicity of the disease.

Our present procedure of treating patients for meningococcic infections is as follows. Immediately on admission to the hospital a sample of blood is obtained for culture. If the patient has petechiae, the blood culture is nearly always positive. Should there be little or no rigidity of the neck, a lumbar puncture need not be done at this time. Preparations are then made for intravenous therapy. Later, if the blood culture is negative, at least one spinal puncture is performed for the purpose of confirming clinical diagnosis.

It should be stated at this point that antimeningococcus serum or meningococcus antitoxin has been given to alternate patients in order to compare therapeutic effects. This was done irrespective of the age, day of disease, or condition of the patient. Whether meningococcus antitoxin or antimeningococcus serum is to be injected, it is given diluted in 10 per cent dextrose in physiologic solution of sodium chloride of at least twice the volume of the therapeutic agent. From 5 to 15 minims (0.3 to 0.9 cc) of epinephrine is added to the mixture. It is then administered by the gravity method at body temperature. The flow should approximate about 60 drops per minute. If difficulty is encountered in inserting the needle, venesection is always justifiable. Any suitable vein in an extremity

From the Municipal Contagious Disease Hospital, Board of Health and the Cook County Hospital, Department of Contagious Diseases. Read before the Section on Pediatrics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

¹ Gordon, J. E. Medical Report of the Herman Kiefer Hospital, Detroit for the Five Years 1927-1931, section XXII.

² Tripoli, C. J. Bacterial Meningitis. A Comparative Study of Various Therapeutic Measures. J. A. M. A. 106: 175 (Jan. 18) 1936.

³ Hoyne, A. L. Meningococcic Meningitis. A New Form of Therapy. J. A. M. A. 104: 90-93 (March 23) 1935.

⁴ Ferry, A. S. Meningococcus Antitoxin. I. Prophylactic and Therapeutic Tests on Guinea Pigs. J. Immunol. 23: 315 (Oct.) 1932.

⁵ Hoyne, A. L. Meningococcia (Meningococcal Infection). Arch. Pediat. 52: 418-421 (June) 1935.

⁶ Herrick, W. W. Early Diagnosis and Intravenous Serum Treatment of Epidemic Cerebrospinal Meningitis. J. A. M. A. 71: 612-616 (Aug. 24) 1918.

may be selected. Whether the arm or leg is chosen, the part should be immobilized on a splint. It is unnecessary to state that aseptic methods should be adhered to.

When meningococcus antitoxin is used the initial dose is usually from 50,000 to 100,000 units. The smaller dose may suffice for a child, the larger one for an adult. Thirty cubic centimeters of the unconcentrated antitoxin contains 10,000 units, therefore, by volume the quantity will be 150 cc for 50,000 units, or 300 cc for 100,000 units. If one of the standard antimeningococcus serums is selected, the dose is generally from 150 cc for a child to 200 or 300 cc for an adult. In either instance antitoxin or serum may be repeated at twenty-four hour intervals if it seems indicated. Frequently only one large dose of antitoxin or serum will be required. However, very recently we administered 100,000 units of antitoxin intravenously on four consecutive days. The patient was a woman who had been ill for six days prior to admission to the hospital. She entered in coma and continued in this state for three days after admission. She made a complete recovery without complications and was discharged after being in the hospital for twelve days.

Nearly all patients receiving intravenous therapy develop urticaria from five to seven days later. Seldom, however, are there any serious reactions. When the therapeutic agent is diluted as described, reactions are no more severe than when undiluted serum is injected intraspinally.

In table 2 are shown the results secured in the treatment of sixty-six meningococcic patients without resort to intrathecal therapy. In these cases the clinical diagnosis was confirmed by blood culture or spinal fluid examination in all but four instances. The patients were treated during the years 1934, 1935 and 1936 and constitute all patients so treated in the contagious disease department of the Cook County Hospital during those years up to April 11, 1936. Since January 1 of this year, no meningococcic patient admitted to either the Cook County Hospital or the Municipal Contagious Disease Hospital has received any intraspinal therapy. At the Municipal Contagious Disease Hospital, thirty patients have been treated in this man-

patients was 14.2 per cent. This wide difference in apparent therapeutic efficiency between the antitoxin and serum groups is not usually so marked.

Additional figures illustrative of our results in the treatment of meningococcic meningitis without intraspinal therapy at the Cook County Hospital during the present year are as follows:

From Jan. 1 to April 11, 1936, fifty-two patients were admitted. Among these the fatality rate was 19.2 per cent. The average number of days of illness

TABLE 2—*Meningococcic Meningitis Treated Without Intraspinal Therapy at the Cook County Hospital Contagious Disease Department*

| Age | Sex | | Total | Anti-toxin | Serum | Recovered | Died | Fatality per Cent |
|---------|------|--------|-------|------------|-------|-----------|------|-------------------|
| | Male | Female | | | | | | |
| Under 1 | 2 | 0 | 2 | 1 | 1 | 2 | 0 | 0 |
| 1-5 | 7 | 8 | 15 | 12 | 3 | 15 | 0 | 0 |
| 6-10 | 6 | 1 | 7 | 5 | 2 | 7 | 0 | 0 |
| 11-15 | 6 | 7 | 13 | 5 | 8 | 12 | 1* | 7.6 |
| 16-20 | 4 | 2 | 6 | 3 | 3 | 6 | 0 | 0 |
| 21-30 | 12 | 2 | 14 | 3 | 11 | 12 | 2† | 14.2 |
| 31-40 | 4 | 1 | 5 | 2 | 3 | 3 | 2† | 40.0 |
| 41-50 | 0 | 3 | 3 | 0 | 3 | 2 | 1* | 33.3 |
| 51-65 | 0 | 1 | 1 | 0 | 1 | 0 | 1* | 100.0 |
| Total | 41 | 21 | 66 | 31 | 35 | 69 | 7 | 11.8 |

For forty-three patients 20 years of age and less the fatality rate was 2.3 per cent.

For thirty-one antitoxin-treated patients the fatality rate was 6.4 per cent.

For thirty-five serum-treated patients the fatality rate was 14.2 per cent.

* Serum-treated patient.

† One patient was treated with antitoxin and one was treated with serum.

on admission for this group was 3.8. The average number of lumbar punctures for forty-two recovered patients was 2.1. The average dose of antitoxin per patient was 221,000 units, and the average dose of antimeningococcus serum was 363 cc. The number of hospital days averaged 14.5 for the antitoxin group and 15.3 for serum-treated patients.

The number of meningococcic patients treated exclusively by the intravenous route at the hospitals named was ninety-six. The fatality rate for the combined groups was 15.9 per cent.

When serum or antitoxin is administered in adequate dosage intravenously there is usually a marked decline in temperature, which may reach normal within twelve hours. If satisfactory response to the initial dose of antitoxin or serum is not apparent within twenty-four hours, the dose is repeated. Frequently in severe cases a second dose of antitoxin or serum is administered twelve hours following the first. If there are evidences of intracranial pressure two or three days after the beginning of treatment, a second lumbar puncture may be made. When this is done a pronounced decline in the cell count of the spinal fluid is usually noted. Often, too, a smear and culture of the spinal fluid will show the absence of organisms. This seems surprising when one considers the long accepted opinion⁷ in regard to the necessity for bringing the specific serum into direct contact with the meningococci. During the past year we have frequently observed that patients with high spinal fluid cell counts and positive cultures for meningococci at the time of first antitoxin or serum administration intravenously will have low cell counts and sterile spinal fluids two or three days later. In some

TABLE 1—*Antitoxin Treated Cases According to Ten Year Age Groups*

| Age | Cases | Deaths | Fatality per Cent | Age | Cases | Deaths | Fatality per Cent |
|--------------|-------|--------|-------------------|---------|--------|-------------------|-------------------|
| Under 1 | 4 | 0 | 0 | 41-50 | 17 | 12 | 70.6 |
| 1-10 | 58 | 6 | 10.3 | 51-60 | 2 | 2 | 100.0 |
| 11-20 | 46 | 10 | 21.7 | 61-70 | 1 | 1 | 100.0 |
| 21-30 | 43 | 10 | 23.2 | 71-80 | 1 | 1 | 100.0 |
| 31-40 | 18 | 11 | 61.1 | Unknown | 1 | 0 | 0.0 |
| Totals | 179 | 39 | 21.7 | Totals | 22 | 16 | 72.7 |
| | | | | Cases | Deaths | Fatality per Cent | |
| Grand totals | | | | 201 | 33 | 27.2 | |

ner between January 1 and April 11, 1936. For the latter group the fatality rate was 20 per cent.

In table 2 it will be noted that the fatality rate for all cases was only 11.8 per cent. What is still more significant is the fact that for the forty-three patients who were 20 years old or less, the fatality rate was only 2.3 per cent. For the thirty-one antitoxin-treated patients irrespective of age the fatality rate was 6.4 per cent. The fatality rate for all serum-treated

⁷ Zinsser, Hans. *Resistance to Infection*. Little, Brown, New York, Macmillan Company, 1931, p. 19.

instances only a single lumbar puncture has been made, and even though meningococci were found on smear and culture no subsequent puncture was done. Such patients have made excellent recoveries without complications. The period of their hospitalization has been brief. In many cases it has been extended beyond the requirements of the patient merely for the purpose of complying with quarantine regulations. In Illinois the minimum quarantine is fourteen days from the onset.

As further evidence that intrathecal administration of an antiserum is not necessary in the treatment of meningococcic meningitis, attention is directed to table 3. Here nine patients are represented. No puncture was made on any one of these patients. The ages varied from 8 months to 6 years. All had petechiae. In each instance the blood culture was positive for meningococci. There was very little rigidity of the neck in most of the members of this group. In some cases the temperature was between 105 and 106 F when intravenous treatment was started. One child was in coma and cyanotic when admitted to the hospital, he stopped breathing in the receiving room and was given artificial

TABLE 3—*Meningococcic Meningitis. Intravenous Therapy Without Lumbar Puncture (1934-1936) at the Municipal Contagious Disease Hospital and the Cook County Hospital, Contagious Disease Department*

| Patient | Age | Sex | Pete- chiae | Blood Culture | Units of Anti- toxin | Serum Cc | Recov- ered | Died | Hos- pital Days |
|---------|--------|-----|----------------|------------------|----------------------------|-------------|----------------|------|-----------------------|
| I R | 5 yrs | ♂ | ++ | + | 80 M | | + | | 11 |
| E Mc | 4 yrs | ♀ | + | + | | 240 | + | | 12 |
| R Mc | 4 yrs | ♀ | ++ | + | 110 M | | + | | 14 |
| J Mc | 8 mos | ♂ | ++ | + | 100 M | | + | | 13 |
| L L | 6 yrs | ♀ | + | + | 160 M | | + | | 13 |
| W W | 3 yrs | ♂ | +++ | + | 120 M | | + | | 13 |
| H B | 1½ yrs | ♂ | +++ | + | | 300 | + | | 21 |
| F S | 4 yrs | ♀ | ++++ | + | 180 M | | | + | 3 |
| A M | 5 yrs | ♂ | ++ | + | | 270 | + | | 11 |

Recovered Cases

| | |
|---------------------------------|---------------|
| Average dose antitoxin | 120,000 units |
| Average number of hospital days | 12.8 |
| Average dose serum | 271 cc. |
| Average hospital days | 14.0 |

respiration. During the administration of 100,000 units of meningococcus antitoxin intravenously, his color returned to normal. Twelve hours later his temperature was approximately normal and he was mentally alert. His recovery was complete five days after admission, except for a serum rash that developed on his seventh hospital day.

Most of the fatal cases at the Cook County Hospital among those treated by the intravenous method exclusively occurred among patients who were extremely bad risks. For example an alcoholic patient, aged 39, a woman, aged 64, a patient with aortitis, and one with multiple fibroids and other pathologic conditions of the abdomen.

On several occasions, patients with meningococcic meningitis who appeared to be suffering from an overwhelming toxemia responded slowly to intravenous treatment. Usually these were patients who had been ill for a number of days before hospitalization. They assumed the picture of an encephalitis as the spinal fluid approached normal. Several patients of this character eventually made complete recoveries and have remained well after discharge from the hospital. In a few instances death occurred after the spinal fluid had been found negative for organisms by culture. Autopsies in these cases showed no evidence of meningitis but did disclose the presence of encephalitis which we

ascribed to the toxic action of the meningococcus. There was no pus in the ventricles, though in one case the ventricles appeared dilated, an internal hydrocephalus had probably developed. These changes seem to uphold still further the important part played by the toxic action of the meningococci.

When meningococcic meningitis patients are treated by the intraspinal route, opisthotonos is common. Increased irritation of the meninges is undoubtedly caused by the introduction of a foreign substance into the intrathecal sac. If this form of treatment is adopted early in the septicemic stage, meningitic signs almost invariably become more pronounced. As a matter of fact, it seems to me that meningitis may be induced when there was formerly no evidence of its presence. On more occasions than one, we have found that examination of spinal fluid withdrawn early in an attack of a meningococcic infection did not reveal the presence of meningococci, nor did a high cell count exist. In view of these facts, should we not devote more attention to the systemic infection and think less of the organisms? Too often the toxic action of the meningococci is ignored while intraspinal therapy is being carried out. Moreover, with intraspinal therapy, problems relating to blockage are sometimes encountered. Secondary infections are also a possibility which cannot be totally overlooked. The frequent subjection of the patient to discomfort, pain and perhaps permanent injury of the vertebral column as the result of numerous spinal taps is a further objection to frequent lumbar punctures.

Suppurative processes are seldom encountered when the patient is treated by the intravenous method exclusively. Panophthalmitis is one of the most serious complications of epidemic meningitis. This complication has not occurred in any patient receiving exclusively intravenous therapy. Endophthalmitis, iridocyclitis and optic atrophy have occurred, but neither eye nor ear complications have developed in any antitoxin-treated patient after this form of therapy has been instituted. The few eye and ear complications that developed in serum-treated patients we attributed to toxic rather than to suppurative influences.

Strabismus is not an uncommon complication early in the attack of meningococcic meningitis, although the condition usually improves during the course of treatment. Facial paralysis and even complete hemiplegia at the time of hospitalization have recently been noted among our patients. These cases happened to be antitoxin treated and recovered completely. Hydrocephalus is very common among infants when treated by intrathecal injections of serum. With exclusive intravenous therapy it is encountered much less often. The old theory that frequent lumbar punctures are necessary to prevent hydrocephalus seems doomed to the discard on the basis of our recent experiences. In fact, it seems to me that numerous punctures serve to induce a greater secretion of spinal fluid. Hypertonic solutions such as sucrose intravenously are often of value.

Thus far we have had no discharged patients who were treated exclusively by the intravenous method reenter the hospital because of recurrences. In the past, when patients were treated intraspinally, this was not an extremely rare happening.

COMMENT

1 The fatality rate for meningococcic meningitis at the Cook County Hospital during nineteen years prior to 1934 varied from 35 to 90.4 per cent. The average was 50.6 per cent.

2 Meningococcic meningitis is interpreted as a blood stream infection with accompanying toxemia. Meningitis is regarded as a complication.

3 The intrathecal method of therapy prolongs recovery of the patient.

4 Massive doses of the therapeutic agent intravenously are advised.

5 For sixty-six patients who received only intravenous treatment the fatality rate was 11.8 per cent. For forty-three of these patients who were 20 years of age and less the fatality rate was 2.3 per cent.

6 A total of ninety-six patients were treated exclusively by the intravenous route, with a fatality of 15.9 per cent.

7 Of nine meningococcic patients treated intravenously without any lumbar puncture, only one died.

8 Supportive complications were not encountered with intravenous therapy. Fewer complications occurred with Ferry's meningococcus antitoxin than with antimeningococcus serum.

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ABSTRACT OF DISCUSSION

DR ALBERT G BOWER, Hollywood, Calif. Dr Hoyne reports forty-three cases under the age of 20 years treated entirely by massive intravenous doses of antitoxin. His fatality rate was only 2.3 per cent. It has long been noted that the younger age groups show the greatest response to therapy, with the lowest death rate, but a rate as low as this is almost unbelievable in the light of past experience. The reason for a lower death rate in younger children is difficult to explain in view of the work of Silverthorne and Fraser on the action of human blood on the meningococcus. They showed that the blood of most adults is bactericidal to a high degree, whereas children and infants possess little or no bactericidal property in their blood. Does this mean that those adults who acquire epidemic meningitis represent a particularly susceptible, nonreacting class with regard to therapy? The data regarding the shortening of the duration of the disease, the stay in the hospital and the lessening of complications are likewise most significant. It must be remembered, however, that when meningitis and its treatment are discussed the disease as it is known in one's own particular geographic location is being discussed. Nearly all investigators have long held that the meningococcus and its products exercise a selective affinity for the cerebrospinal system and that with the exception of the hematogenous type its appearance in the blood stream has been quite transient. If this is so a humoral immunity must develop quite rapidly and be reflected in the circulating blood stream. Yet it does not get through the choroid plexus to reflect its antimeningococcic effect in the spinal fluid, for these patients do not get well until additional serum treatment is instituted. I am convinced that in at least some cases this must be true. For since January I have successfully treated four cases with the patient's own serum administered intrathecally, after the intraspinal administration of commercial antimeningococcus serum failed to effect a cure. All patients lived when their own blood serum was given by spinal puncture. Mehrrens work showing that in 20 per cent substances introduced into the blood stream do not get over into the spinal fluid tends to afford strong support to this view. When antimeningococcus serum is to be used instead of antitoxin, the best clinical results will be obtained by selecting that serum which agglutinates most rapidly and in the highest titers the organism cultured from the individual patient.

DR GERALD F KEMPF, Indianapolis. Dr Hoyne is to be commended for his courage in introducing the use of intravenous therapy alone. However, most of us would agree that in those cases which do not exhibit marked evidence of toxemia and bacteremia one probably should adhere, at least in some measure to intraspinal therapy. His results both with the antitoxin and with the antiserum appear to speak for them-

selves. However, since the question of antiserum against antitoxin has been raised I should like to say that last year my associates and I treated seven cases of meningococcic meningitis with antitoxin intrathecally and intravenously and lost the seven cases. At the same time we treated ten cases with antiserum and lost four. Conclusions cannot be drawn from such a small group because I have seen as many as seven patients with meningococcic meningitis come into the hospital on the same day and all die within forty-eight hours. I should like to ask Dr Hoyne whether, in his comparison, the 120,000 units of antitoxin in one group as against 271 cc. of unconcentrated antiserum in the other group is not actually 360 cc. of horse serum, in other words, the antitoxin treated group was getting 25 per cent more serum than the antiserum treated group. This may account for the small differences in mortality and morbidity.

DR GILBERT J LEVI, Memphis, Tenn. It has occurred to me that in two diseases strikingly different methods of treatment have recently been employed. (1) In tetanus the recent teaching is that treatment by the intravenous and intramuscular routes is to be preferred to the time honored treatment, that of spinal puncture and spinal therapeutics, (2) now the pendulum has swung in the case of meningococcic meningitis. It was formerly taught by Dr Flexner that serum therapy by the spinal route was the ideal method and his results were strikingly good. Later, during the World War, Dr Herrick urged large intravenous doses of the serum. This, too, combined with intraspinal therapy, proved effective. However, Dr Hoyne's results are the best to the present time. Dr Hoyne advocates the treatment by vein alone. My associates and I have attempted the use of the antitoxin during the past three years. In a series of over 200 cases our mortality was about 35 per cent. I must admit, however, that our intravenous medication has not been in the amounts advocated by Dr Hoyne. This we intend to do. The death rate in our community has been parallel with that in Chicago. Our mortality average for a period of sixteen years has been about 50 per cent. However, during the past two and one-half years, with the use of the new antitoxin given both intrathecally and intravenously, the mortality has been reduced to 35 per cent. I should like to ask Dr Hoyne whether it would be possible in the interest of economy to concentrate the antitoxin so as to make a smaller but a more highly concentrated dose.

DR ARCHIBALD L HOYNE, Chicago. There are great variations in the fatality rates of meningococcic meningitis in different sections of the country, and also in different years. We are comparing our present rates at the County Hospital with the years gone by, and while it is true that the fatality rate may rise again, the point is that at present it has never been so low, and therefore we think the treatment has a great deal to do with it. We have considered convalescent serum but have not administered it in the manner suggested by Dr Bower. The idea of adding complement may be of great assistance, and perhaps in the future it will improve matters still more. The question of the permeability of the meninges is one that is often discussed. Exactly what happens may not be known but it is a fact that introduction of the serum in large quantities into the blood stream results in organisms disappearing from the spinal fluid. It is possible that, in the future, intraspinal therapy may be resumed. Our present results make it appear doubtful. In answer to Dr Levi's question I think that if the serum should be concentrated it would be of great help. With Ferry's antitoxin we have not been concerned so much with the types of organisms as with the toxemia. Little attention has been paid to the power of the various standard serums to agglutinate. A few years ago in Chicago, I followed cases in which serum was used and found that in many instances the best results were obtained with serums that did not agglutinate very well. It would be a great help to have the antitoxin concentrated. At present 100,000 units of antitoxin means 300 cc. of serum. In other words in 30 cc. of unconcentrated antitoxin there is only 10,000 units. A small amount of the concentrated antitoxin was made up in which 10 cc. contained 20,000 units. We have lost far fewer eyes and had very much less deafness with the use of the Ferry preparation than we have had with any of the standard serums.

OSTEOMYELITIS OF THE INFERIOR SURFACE OF THE PETROUS PYRAMID

WELLS P. EAGLETON, MD
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Our knowledge of infections of the petrous apex is still very primitive, it is in the same condition that mastoid infection was forty years, and Bright's disease one hundred years, ago for, like mastoiditis and Bright's disease apicitis is a generic term, covering a large number of different pathologic states, the symptoms of which are modified by the surrounding parts.

Because of the peculiar nature of the bone, the pathologic process in the vast majority of cases has a tendency to (a) spontaneous cure—while about 15 per cent end in (b) abscess formation, many of which today are saved by well directed treatment, while a very few, I think about 5 per cent, continue throughout as (c) invasive forms of thrombophlebitis and are uniformly fatal.

The differentiation of the exact pathologic lesion present is of the highest surgical importance, as any ill directed surgery on the delicate endothelial blood vessels making up the sinusoidal spaces of the apex, which are the site of suppuration, only too frequently precipitates the very lesion that one is attempting to prevent, converting a local sinusoidal osteomyelitis into an invasive infection of the blood vessels, which rapidly spreads into the vessels of the meninges and cerebral tissues, causing either a fulminating meningitis or an infective meningo-encephalitis.

Thus each variety of petro-apicitis requires clinical differentiation because the specific line of treatment to be adopted depends not only on the nature of this lesion but on its anatomic position in the bone, if one is to prevent the development of a complicating, generalized septic meningitis, which is the cause of practically all fatalities from apical infections. For surgery in apical infections must have for its immediate and ultimate aim the prevention of a meningitis, or its cure if present at the time.

The petrous apex, from a pathologic and surgical standpoint, is divisible into three domains.

First the marrow-filled osseous matrix itself, with its dural coverings on its anterior and posterior surfaces. The red bone marrow after the completion of bony growth may become converted into pneumatized cells, which pneumatized bone, if infected, becomes the seat of (1) a sclerosing or a suppurative type of osteitis. If, however, an apex continues to contain acellular fat marrow, which is potentially capable of becoming cellular red bone marrow, possessing active immunizing properties against infection, the lesion in the apex brings (2) a reparative type of osteomyelitis—a plasma cell formation which also usually ends in a secondary osseous sclerosis. However, when the protective reaction in the marrow is overpowered by bacterial invasion it becomes the seat of one of the numerous types of infective osteomyelitis (a) phlegmonous, (b) suppurative with the formation of pus (abscess of the apex), or (c) chronic cariogranulomatous osteomyelitis.

Second the domain of the carotid canal which, passing through the petrous apex, contains the carotid artery surrounded by its carotid venous plexus. Thrombo-

phlebitis of the carotid plexus may give rise to (1) a local extradural abscess on the superior surface of the apex over the carotid artery, as the vessels here lose the bony covering. But phlebitis of the carotid plexus much more frequently causes (2) cavernous sinus thrombophlebitis or (3) an invasive form of thrombophlebitis of the small vein, the latter only too often giving rise to (4) a pial vein meningitis.

Third, the inferior "cribriform" perforated plate on the pharyngeal surface of the apex. Infection here causes (1) a localized abscess of the lateral pharyngeal roof. The suppuration in its effort to discharge externally may invade the soft parts of the lateral wall of the nasopharynx. Some cases of low grade infection take on (2) an invasive osteomyelitic caries of the base of the skull, which, extending great distances, forms multiple fistulas in the throat and neck. The infective process in the bone has a tendency to occasion a retrograde thrombophlebitis in any vessel that it encounters generally terminating in death from meningitis and venous sepsis.

THE TWO SURGICAL LESIONS OF APICAL INFECTION ABSCESS AND SMALL VEIN PHLEBITIS

Thus it may be stated that surgery of the apex resolves itself into two distinct lesions, namely, abscess formation, which requires evacuation, and infective thrombophlebitis of small vessels, which requires rest and patient watching until it in time either undergoes resolution or breaks down into pus, when that pus must be evacuated, but it must be evacuated at the point farthest away from any inflamed vessels that enter the dura. If quiescent infected vessels that pass through the dura into the meninges are surgically injured, meningitis is apt to result.

FISTULOUS TRACTS INTO THE APEX

It is now well recognized that if a fistula can be found anywhere in the domain of the tympanomastoid, whether it is in (a) the retrofacial area, (b) the peritubal area or (c) the angle of the petrosal, it leads into the part of the apex that is diseased, and the enlargement of the fistula furnishes adequate drainage.

FISTULAS POINTING TOWARD THE LATERO- PHARYNGEAL ROOF

My experience teaches that such a fistula should uniformly be sought in the lateral pharyngeal roof, as the pus from an osteomyelitic area of the apex situated below the transverse portion of the carotid artery and in the bend that it makes before entering the cranial cavity has a tendency to point downward into the latero-pharyngeal roof. And in such a case the base of the apex and the domain of its adjacent sphenoid occipital articulation should be surgically exposed and explored.

THE CRIBRIFORM PLATE ON THE PHARYNGEAL SURFACE OF THE APEX

An examination of the inferior basilar surface of the bony petrous apex reveals an area mesial to the fossa cochlearis and carotid orifice and below the transverse portion of the carotid canal, which is studded by many small openings. This plate I would designate the "petrous cribriform," because of its resemblance to the cribriform plate of the infant's mastoid, which during growth develops into the surgically important landmark Macewen's triangle.

Through the openings of the petrous cribriform plate pass numerous vessels from and into the tissues of the lateral pharyngeal and prevertebral spaces. These

small vessels are numerous during infancy and early childhood, that is, while the cranial basis is growing, becoming obliterated after maturity, although throughout life they remain potential pathways by which infection that originates within the apex may escape into the throat or from the throat may pass into the bone.

The petrous cribriform plate varies greatly in size in different bones, depending on the size of the foramen lacerum, it is set deep in the base of the skull, looking downward and slightly backward.

An abscess originating in the medullary substance of the cribriform plate generally points into the vaults of the pharynx behind and slightly mesial to the eustachian tube and may extend above and posterior to the tonsillar fossa, sometimes causing the supratonsillar region to project slightly forward.

A TRUE OSTEOMYELITIC MASTOIDITIS COMMON IN INFANTS AND CHILDREN BEFORE THE THIRD YEAR

Mastoiditis of infants runs a course which is characteristic of true suppurative osteomyelitis, for it is a blood space pathologic process that is, suppuration within bone marrow spaces. This is why the mastoiditis of infants may give rise to toxic symptoms, diarrhea, and the like, which do not occur in infection which is confined to suppuration of pneumatic bone.¹ However, after the third year of life no trace of fat marrow is to be found within the domain of the mastoid apophysis² as mastoiditis after the second year is generally a local osteitis.

In infants and young children an infection from an apex is carried by lymph vessels, which causes the glandular enlargements and the lateral pharyngeal abscess, so frequently complications of otitis media of infants.

Later in life abscess of the lateral pharyngeal wall is not accompanied by a swelling of the cervical lymph nodes, the latter having undergone atrophy, since the protective mechanism of the throat passes from the lymphatic system into the compact bone protecting barrier with its covering of ever moving ciliated and glandular mucosa.

OTORRHEA AND LATERAL PHARYNGEAL ABSCESS IN THE VERY YOUNG

In the lateral pharyngeal abscess for a suppurating otitis of infancy, an operation on the antromastoid reveals little or no pus in the bone, but the bone spaces are filled with granulations,³ which is the bone marrow's method of control of infection.

Osteomyelitis of the petrous apex with retropharyngeal abscess may be a Brodie abscess. The disease is directly below the periosteum, not involving the medulla extensively.

CAUSE OF FAILURE IN DIAGNOSIS OF APICAL SUPPURATION IN INFANTS

The presence of (a) enlarged lymphatic glands in the neck, with the absence of (b) obstructed breathing without any (c) mastoid redness or tenderness has

frequently caused the osteomyelitic nature of the aural suppuration to escape recognition. The lateral pharyngeal abscess may be overlooked for a considerable period.⁴

History—H. C., a boy, aged 14 months, seen with Drs. L. A. Peer and H. Jackson had had tonsillitis two and one-half months previously. Some weeks later he had a "cold," with an up and down septic temperature, associated with swelling of the glands of the neck. On the second day of the cold a paracentesis of the left ear was performed, the ear discharged freely. The following day the right ear was opened, but there was no discharge from it until several days later, when it discharged, spontaneously.

For three weeks prior to admission the child continued to have a septic temperature, ranging from 98.4 to 103 F, with a discharge from the ears.

Examination—On admission to the Newark Eye and Ear Infirmary there was no mastoid tenderness but a swelling was to be felt in the right lateropharyngeal region, which, however, apparently caused no difficulty in swallowing or breathing. The swelling of the glands in the neck extended to the mastoid tip. The right fundus showed a blurring of the disk. Blood culture showed streptococcus.

Roentgenograms furnished evidence of mastoiditis of both sides, for, although there were no definite areas of necrosis, the trabeculae were hazy in outline and there was a slight increase in density in the right mastoid near the tip.

Operation—Double simple mastoidectomy was performed. The right mastoid was filled with granulations. The left mastoid contained granulations and a little pus.

The lateral pharyngeal abscess was opened and a large quantity of pus was evacuated. Culture from the left mastoid showed *Streptococcus nonhaemolyticus*.

Prompt recovery followed.

The infrequent occurrence of petro-apical abscess is evidence of the active protective properties of its marrow against infection in contrast to the frequency of suppuration in the pneumatic bone of the mastoid process.

Suppuration of the mastoid very frequently follows otitis, on the other hand, a purulent collection of pus in the petrous apex occurs but rarely, although roentgenograms of the apex will demonstrate that it is very often the seat of an infection in cases of suppurative mastoiditis which present no apical symptoms.

Osteomyelitis of the apex with little or no otitis does occur especially while the apices are growing, post-mortem examinations of infants and children reveal changes in the medullary substance of the apex and of the adjacent sphenoid basis without any evidence of an associated or of a preceding otitis.⁵ One of my autopsies revealed little disease in the mastotympanic region, although there was extensive destruction of both apices.

FISTULAS THAT POINT AND DRAIN INTO THE LATEROPHARYNGEAL ROOF

My attention was called to the tendency of the pus from an osteomyelitic area to point into the throat by the discovery post mortem of an abscess of the apex which was extradural and confined entirely to the posterior fossa, with bony caries involving the posterior surface of the apex and extending into the outer half

1 Dean J. W. and Armstrong Margaret. Nasal Sinus Disease in Young Children. *Ann. Otol. Rhin. & Laryng.* 28: 453 (1919). Dean J. W. *ibid.* 35: 607 (Sept.) 1929. Daniels Amy L. and Armstrong Margaret. Nasal Sinusitis Produced by Diets Deficient in Fat Soluble A Vitamin. *J. A. M. A.* 81: 828 (Sept. 8) 1936 cited by Dean.

2 Hagen E. W. Acute Suppuration of the Temporal Bone. *Arch. Otolaryng.* 10: 21 (July) 1929. He recorded that he could find no microscopic evidence of marrow substances in the complete serial sections external to the labyrinth in a patient who had died of a complicating meningitis.

3 Robertson D. E. *J. Bone & Joint Surg.* 8: 8 (Jan.) 1927 cited by Beckman Fenwick. *Ann. Surg.* 55: 270 (Aug.) 1928.

4 Eagleton W. P. Retropharyngeal Abscess of Petrous Origin. Unlocking of the Petrous Pyramid for Localized Bulbar (Pontile) Meningitis Secondary to Suppuration of the Petrous Apex. *Arch. Otolaryng.* 15: 386-422 (March) 1931.

5 This personal observation has been confirmed by Dr. J. Gordon Wilson of Chicago (personal communication) in discussion on Hallenger Howard. *Petrotic Arch. Otolaryng.* 17: 725 (May) 1933. (See H. N. Microscopic Observations of the Petrous Apex. *Ann. Otol. Rhin. & Laryng.* 42: 175 (March) 1933. The author says: "The laboratory possesses one specimen (four years of age) in which no mastoid infection may be observed but a severe osteomyelitis is present in the apex with dehiscence of the cortex."

of the clavus of the sphenoidal base. In the center of the carious area there was a hole which passed through the petro-occipital articulation and entered the pharynx mesial to the transverse part of the carotid artery.

During life the patient had not complained of his throat, and careful inspection showed only "thickening of the lateral pharyngeal wall" on the side of the osteomyelitis. Apparently a pinhole perforation, so small that it was undemonstrable even at autopsy, had allowed air to enter the extradural abscess, as the roentgenogram showed the large defect in the bone filled with air.

Out of about fifty verified cases of suppuration within the petrous apex, I have had six cases of osteomyelitis below the carotid, so the condition is far from infrequent. Of the six, only three caused a demonstrable fluctuating swelling in the pharynx. The other three cases presented large collections of pus below the carotid artery inaccessible to any operative approach from the aural region but probably curable by boldly perforating the bone of the petrous apex in the lateral pharyngeal roof mesial and slightly posterior to the eustachian tube.

SYMPTOMS

Osteomyelitis of the Petrous Base—This is characterized by a disappearance of all apex meningeal symptoms with a continuation of the signs of bone sepsis, because the suppuration is under the carotid artery and away from the dura.

As in all osteomyelitic cases of the apex, there are signs of venous sepsis—a chill or a chilly sensation followed by an up and down temperature at the time of invasion, leading to a diagnosis of lateral sinus thrombophlebitis, and the jugular has been ligated by the attending otologist in more than one instance.

Exploration of the sinus fails to reveal any clot.

If an osteomyelitic focus suppurates and extends to the surface, the resulting abscess is in the vault of the pharynx behind and mesial to the eustachian tube.

Pharyngeal Symptoms—In one of my cases slight difficulty in breathing on one side, disregarded by the patient himself, was the only throat symptom. And in a boy the pharyngeal swelling was discovered because he volunteered the information that a drop of water came out of his nose when he swallowed in a sitting position.

There is no difficulty in opening the mouth, as is characteristic of pharyngomaxillary abscess, the abscess forming posterior to the internal pterygoid muscle.

CONCLUSIONS

1 In every case of apical suppuration the lateral pharyngeal wall should be inspected frequently, as a perforating abscess from caries of the base gives few or no symptoms.

2 Osteomyelitis from aural suppuration limited to the petrous base below the carotid and the region of the petro-occipital articulation is a distinct entity. It can be diagnosed before the advent of meningitis, which is inevitable unless the suppuration "eats" through the thick bone of the base and discharges into the lateropharyngeal roof or unless the bone is surgically perforated.

3 A technic has been anatomically evolved for the surgical perforation of the petrous base, through the mouth under the sense of sight for drainage of suppuration below the carotid artery.

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ABSTRACT OF DISCUSSION

DR. GEORGE M. COATES, Philadelphia: The subject of petrositis is a comparatively new one, and great credit for its present prominence must be given to the pioneers Profant, Eagleton, Kopetzky and Almour, and others. Many divergent opinions regarding the anatomy, etiology and pathology of this condition were discussed, but in the last few years the whole subject has become much more clarified.

Gordon Wilson believes that pneumatization proceeds only from the already developed mastoid cells, that it cannot, in most cases, proceed actually into the apex during the growing period of the pyramid—that is, up to 15 years of age—that the majority of the pyramids, at least in his series of more than fifty cases, contain mostly marrow-containing or diploetic bone, and that the resulting lesion was therefore osteomyelitis. Cavities may be found at operation or autopsy, but these may be destructive bone lesions, abnormally large and infected marrow spaces as well as empyemas in pneumatic cells. Infection of the diploetic bone could have taken place by continuity but would be more likely the result of infection along the blood and lymph channels. The latter route has not been thoroughly studied. Symptomatology will vary according to the route of extension as well as the type of development, not only of the pyramid but of the mastoid process and the tympanic cells. Surgical approach must vary with the type and location of the disease, as must the entire management of the case. Many petrosal infections clear up without radical surgery, but we must prepare ourselves to recognize these cases for otherwise we shall lose patients because of waiting until the operative time has passed. Dr. Eagleton is chiefly concerned with osteomyelitis and calls attention to infections in the floor of the pyramid, in relation to the sphenoid and often associated with pharyngeal manifestations. Such cases usually occur in infants and children before adult characteristics of the bone have developed. The importance of this work, another phase of petrositis, cannot be overstated, because these cases are very apt to be overlooked until intracranial signs have appeared, or even after they have appeared, because of the obscurity of the lesion in the light of our present knowledge and because of its inaccessibility. As Dr. Eagleton has pointed out in a previous paper, osteomyelitis has a tendency to self cure through the protective mechanism of the red bone marrow, a reticulo-endothelial structure. Pneumococci and hemolytic streptococci are the dangerous infective organisms, but a latent osteomyelitic process may be converted into a fulminating one by injudicious surgery.

DR. HAROLD I. LILLIE, Rochester, Minn.: That great good has come from the pioneer work of Profant, Eagleton, Kopetzky and Almour in calling attention to the clinical significance of petrositis must be readily admitted. Baldenwack in 1908 described the surgical approach that I suggested in 1932. The work of Baldenwack was unknown to me then, and so that I may not be accused of plagiarism I hereby gladly make acknowledgment of his priority. "Petrositis" is a good term. It is descriptive, inclusive, and covers both osteitis and osteomyelitis. The sources of development of the cells that extend into the pyramid should be fundamental knowledge. It is well to emphasize the importance of any pain, headache in any situation and continuous discharge. If the clinical symptoms and signs give preoperative suggestive evidence of the tract involved the surgical approach should be considered to be indicated. Rather than depend on repeated myringotomy for adequate drainage it would seem safer to perform a radical type of operation on the mastoid in order to be sure that drainage would be continuous. I am not certain that extensive involvement on the under surface of the pyramid can adequately be exposed except by intracapsular destruction of the pyramid, a formidable procedure. A few years ago I suggested that the term "simple mastoid operation" was poorly chosen because of its implications. I suggested that the term "complete mastoid operation" more nearly met the requirements of good surgical principles suggested long ago by Küster. That is still my idea even more strongly fixed than previously. How ridiculous it sounds to suggest that an operation seeking out the cellular extensions into the pyramid is a simple operation. I reserve the term "simple mastoid operation" for the procedure in which the tympanic antrum of children is opened. The mastoid operation

that was done generally some years ago probably could be called simple, for instance, when a subperiosteal abscess was opened and the defect through the cortex was simply enlarged for drainage. The correct interpretation of surgical pathologic change found at operation is important. In the type of case under discussion, if the surgeon expects to find fistulous tracts in the sense that pus will be found escaping from the situations suggested, his disappointment will be great. He more likely will find red, granular areas in the cancellous bone, which, when followed to white, nonbleeding bone, may lead to an abscess or to a region of osteitis. If a definite tract is encountered without purposeful search, adequate operation should be easily accomplished. In the past, meningitis from petrositis has been the cause of death in many cases in which the mastoid wounds apparently had healed and in which the untoward signs and symptoms may not have been recognized.

DR MERVIN C MYERSON, New York. I am in favor of scrapping such terms as "hypotympanic" and "epitympanic" and "supralabyrinth" and "infralabyrinth" for localized areas in the middle ear and mastoid. There are cellular tracts in the middle ear, there are prefacial and retrofacial cells, the retrofacial cells being inferior to the posterior canal, occasionally we find cells posterior to the posterior canal. A review of the literature has shown that a majority of the demonstrated fistulous tracts that have been found at operation and at autopsy were in relation to the superior canal. Twenty-nine of fifty-three fistulas which I collected from the literature were either anterior to the superior canal or posterior to it. Therefore it would seem that the first place to look for a fistula would be in that area. There seems to be a misconception as to what constitutes a fistula. The average man feels that there is an outpouring of pus through one of the cellular tracts. This is not the case. The reason these patients have pain behind the eye, or frontal headache is that the cellular tract through which the infection traveled into the petrous apex is blocked by granulations. Therefore one can't expect much, if any, discharge. A good deal of the profuse discharge from the middle ear in many of these cases is not necessarily from the petrous bone or the apex. Because there is infection in the petrous pyramid collateral vascular changes occur in the middle ear which are conducive to increased exudate. I have found that there are two types of infections of the petrous apex. The one is the trapped empyema, a trapped collection of pus in which the patient invariably gets well if the pus is evacuated, the other is the type Dr Eagleton has spoken of. I mean the granuloma forming type of infection. Two weeks ago a young girl had pain behind the eye and a little elevation of temperature and trouble in the petrous apex. I found no pus there. Instead I found the petrous apex area entirely replaced by granulation tissue and there was no longer any bone present. The inferior aspect of the petrous bone which Dr Eagleton speaks of would seem to become infected more frequently by a fistula that travels into the apex area from the area below the level of the horizontal canal that is, in the so-called jugular bulb area, when the jugular bulb is much below the level of the round window, or the suboclear area anteriorly. In 1924 Friedenwald of Baltimore reported a case that has not been cited in the literature until recently in which a man had a ninth, tenth and eleventh nerve involvement and severe headache for several weeks. He had a laryngeal paralysis on the same side. The symptoms did not subside until the abscess ruptured spontaneously. Several months later he still had his laryngeal paralysis.

DR H J PROFANT, Santa Barbara, Calif. It seems to me that if we have a word that is somewhat dramatic for the medical profession as a whole it attracts their attention and as Dr Lillie mentioned it focuses one's attention. It is at the same time an inclusive term.

With regard to the tracts, I had the same difficulty. One mentions suboclear and the various types and the audience gets dizzy. One tells them about the epitympanic space and they respond. Tell them about the antrum and they are with you. Of course in our own group we can go into these fine terms but when one wants to describe it to others one has to make it as simple as possible.

DR WELLS P EAGLETON, Newark, N. J. I am pleading for a complete unlocking of the petrous pyramid. Thus one sees

every tract that may lead into the apex. The cases discussed today do not go on to recovery unless something is done that is not in the books. They generally begin with an osteomyelitis of the apex situated in the superior portion where an abscess generally occurs, but the medullary substance of the bone accomplishes the cure of the infection in the superior area leaving however an area below the carotid canal that forms an abscess. I had a patient who had been to three eye doctors because of ocular pain with an abscess of the throat from an osteomyelitis of the apex. No one asked him about his ear. His ear did not bother him. Three days after he visited the last doctor, he died from fulminating meningitis.

There is something to be said in favor of all operative procedures in different cases, but osteomyelitis confined to the inferior surface cannot be reached by any aural approach.

In all operations around the petrous apex, one may tear the dura. If the dura is torn in one particular place it may cost the life of the patient. The dangerous place for a tear is just where the middle and the posterior fossae unite. The smallest pin-hole opening in that point lets out a little cerebrospinal fluid. Nothing is thought of it because one wants the cerebrospinal fluid out, but, if the opening is watched, one will see it go back and forth. There is a little pulsation, and this pulsation sucks infection into the subdural space. If it is a pneumococcus type III case, the next day the patient has a fulminating meningitis. To correct this defect I wanted a tissue that possesses local immunity. I argued that the submucosa beneath the mucous membrane of the mouth on the inner side of the cheek must possess such properties. I remove a piece with forceps from the inside of the mouth, cut it off freely and place it against the dural defect while still in the forceps. It unites immediately. This repair should be done uniformly. I have stopped two cases of discharging cerebrospinal fluid immediately by this method and I recommend it. It is simple and takes only a minute to do.

THE PHYSICIAN'S PLACE IN THE HEALTH PROGRAM

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The place of the physician in a community health program must be a central one. Public health relies in the last analysis on medical science. It is true other sciences are called on and that nurses, statisticians, educators, administrators and engineers make their contributions to a program of public health, but without the correlation furnished by medicine, progress toward better health would not ensue. There are nine reasons why the physician must be a central figure in any successful public health program.

The objective toward which physicians, health officials and voluntary health workers are attempting to lead the people is essentially an idealistic one. The conception of better health for all with consequent economic, social and spiritual advantages to the healthy individual or group, is an ideal which was held by the medical profession as long ago as Hippocrates, whose aphorisms deal not only with the recognition and treatment of disease but with a philosophy of better health. Physicians have always exemplified this constructive idealism sometimes to the extent of martyrdom. Michael Servetus was burned at the stake for religious and scientific heresy, Edward Jenner was reviled and ridiculed, Oliver Wendell Holmes and Ignaz Semmelweis were ignored, William Harvey was branded a quack, Ronald Ross struggled alone toward the conquest of malaria and the modern physician sets his

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face with idealistic determination against a wave of socialistic collectivism which threatens to engulf him along with the community.

A successful program toward better health demands idealism, but it must also be a practical movement. The feet of the workers must be firmly planted on solid ground. The experience of the physician with the complexities of the human organism and the endless complications involved in its relationship to the environment cause him to develop a spirit of conservatism and caution. He is not always ready to concede that a single influence in the community will bring about revolutionary changes in disease conditions. He demands proof. Sometimes this makes him seem reactionary, but numerous instances might be cited in which a little more conservatism might have prevented ridiculous errors or even serious mistakes. Witness the enthusiasm with which toothbrush drills were promoted in the schools, observe the persistence of baby contests promulgated in the name of health, consider the widespread introduction of dinitrophenol for reducing purposes and its aftermath of cataract and other catastrophes. A little more conservatism, a little more critical scrutiny, a little less haste would have saved us from the ridiculous fiasco of toothbrush drills, the commercial racket of baby contests and the ghastly menace of dinitrophenol. The conservatism of the profession makes it an easy mark for lampoons by the thoughtless or the unscrupulous, but this very conservatism can be a valuable balance wheel which will help to keep the practices of public health within the bounds of scientific accuracy.

Idealism and practical experience require opportunity for expression. No one in the community has a greater opportunity than has the physician. One of the greatest problems of the health administrator is how he may reach the groups to whom he knows preventive measures must be applied, if they are to be effective. The well trained public health official knows that his tuberculosis work must be done among those exposed to tuberculosis, he realizes that diphtheria and smallpox immunizations must be carried out in the preschool group and preferably during infancy, he is quite aware that his educational efforts for better maternal hygiene must reach the expectant mother, he knows that control of venereal diseases depends on a knowledge of when, where and under what circumstances they occur. There is no group in the community which can more effectively bring together the public health worker and his desirable clients than can the physician. It is he who knows where preventive measures among his patients are most needed. It is he who can bring them most effectively to his patients. He needs the public health official, and the public health official needs him. There is no success for the public health official who ignores the medical profession in his community. Neither is the fullest measure of service possible to the physician who ignores his obligations toward preventive medicine. The public health official and the physician are natural cooperators, more and more the best trained health officials and the more progressive physicians are realizing this and are sitting down in conference to make their ideals bear practical fruit.

The medical profession as a whole has always accepted its obligations toward the public in a spirit of idealism tempered by experience. Among the earliest records of interest in the public health in the United States by organized groups of physicians are the reports

of the yellow fever outbreaks which attacked New York and Philadelphia in 1793. In the *Transactions of the American Medical Association* for 1849 is an extensive report by the Committee on Public Hygiene¹ in which are discussed such questions as drainage, street cleansing, water, housing and ventilation, nuisances, disinfectants, and other matters relating to public health and hygiene. It is not generally known that the American Medical Association had a large part in the early development of the highly significant movement toward appraisal of public health work. The forerunner of modern appraisal methods was a report on state public health work carried out under the direction of the Council on Health and Public Instruction by Dr. Charles V. Chapin,² commissioner of health of Providence, R. I. Dr. Chapin's report was published in *THE JOURNAL* and reprinted in a valuable reference book which is much in demand, though now out of print except for a few precious copies. It is significant that this reference to the beginnings of public health work in the several states credits the beginning in many instances to the medical profession or to individual physicians. In many states, especially in the South, public health work is virtually directed by the medical profession. It is not intended, of course, to convey the impression that all physicians have met their obligations for community service, nevertheless the profession, as a whole, has been responsible for the initiation and continuance of much valuable work in public health and is now cooperative in many phases of it. This cooperation is illustrated by relationships which have been established by the American Medical Association through its Bureau of Health and Public Instruction with the National Education Association, the General Federation of Women's Clubs, the National Congress of Parents and Teachers, the National Committee for Boys and Girls 4-H Club Work, the State and Territorial Health Officers, the United States Public Health Service, the United States Children's Bureau. State and local medical societies are now working with local units of the National Tuberculosis Association, the American Society for the Hard of Hearing, the American Society for the Control of Cancer, with state and city health departments, schools, civic organizations, women's clubs, parent teacher associations, and other local groups too numerous to mention.

Public health, in common with all other branches of medicine, rests on research. Without research there is no progress. The medical profession, individually and collectively, has always been in the forefront of research. The existence of the Scientific Assembly and the Scientific Exhibit of the American Medical Association are in themselves powerful stimuli to research. *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* and the eight special journals offer opportunity for the publication of significant contributions. The Association itself makes grants in support of research. Significant contributions to research are made by representative members and Fellows of the Association and their allied workers through research laboratories in medical schools, governmental establishments and other institutions. Organized medicine has not only encouraged and participated in research but has defended it against the villainous attacks of the antivivisectionists who deck themselves in furs and

1. First Report of the Committee on Public Hygiene of the American Medical Association. *Tr. A. M. A.* 2: 431, 1849.
2. Chapin, C. V. State Public Health Work. (Chicago: American Medical Association.)

feathers while they shudder at the thought of stimulating the muscle of a dead frog with an electric current. Legislation intended to cripple medical research has been fought in the Congress of the United States and in the several state legislatures by research workers and medical societies. The influence of organized medicine has consistently been exerted in defense of an apathetic public which has not yet realized how its security is threatened by a small noisy group of fanatics.

The physician knows community health needs in a peculiarly intimate manner possible only to physicians and the clergy. The statistics of public health are built up from observations and reports originated by physicians. The United State Public Health Service carries in *Public Health Reports* the standing heading "No health department, state or local, can effectively prevent or control disease without knowledge of when, where and under what circumstances cases are occurring."³ This is as true of other health problems as it is of communicable diseases. The intimate relationship of the physician with the patient, which itching reformers would like to destroy and replace with a bureaucracy, renders the physician better able to understand the real health problems of the community than any one else. Some of the problems that have failed of solution by existing methods are being attacked by new methods in which the physician is the central figure. A case in point is syphilis, which has been characterized as the next point of attack in public health. Reporting of syphilis has not been successful, quarantine of syphilis has found few with the courage to attempt it, treatment of syphilis in public clinics has been only partially successful in controlling the scourge. Now the attack is being concentrated through the channels of medical practice. In this plan, the privacy of the patient is respected and he need confide only in his doctor. If he is unable to bear the expense of treatment, community help in the form of laboratory service and free materials is available through the family doctor. Where this plan has been given a genuine trial, there is evidence that a reduction in syphilis has actually begun and may be expected to continue.⁴

The physician must have a central place in the public health program because he commands public confidence. The ancient ideals of the medical profession have been made the butt of gibes by irresponsible magazine writers, who cannot or will not understand that a profession may actually be motivated by a genuine and unselfish regard for the public interest. Despite these superficial evidences, there is plenty of indication that the fundamental confidence of the people in their doctors remains unshaken. Every health officer knows that his recommendations for immunization and other preventive procedures are regularly checked by mothers against the opinion of the family doctor. This is as it should be. It must be encouraged and extended.

Another field in which the physician can make great contributions, has made them and continues to make them, is health education. Since the very beginning of medical practice, it has been the habit of physicians to advise their patients not only about treatment but about prevention. This has been a person to person relationship, and this relationship will continue to be necessary in our attacks on the great health problems

of today, namely, cancer, apoplexy, kidney disease, syphilis, diabetes, heart disease and the evils of self diagnosis, self medication and the nostrum racket. The fight against quackery has been prosecuted with more vigor and success by the medical profession than any other agency. The only authentic health magazine for lay readers, with nation-wide circulation, is published by the medical profession. The only nation-wide dramatized radio health program of noncommercial character is a joint contribution to health education by the American Medical Association and the National Broadcasting Company.

The picture I have tried to paint is not a completed canvas. Not every physician measures up to the ideals that have here been pictured, but the profession, as a whole, may fairly be said to have done so. It is not a finished picture, neither is it merely a dream toward which nothing has been done in the way of fulfillment. It is a sketch of which the larger outlines are definitely visible but in which many details need to be filled in. The challenge to the practicing physician of today is to take that central place in the public health program in his community which belongs to him by right of tradition, training, qualifications, and public interest and necessity.

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ABSTRACT OF DISCUSSION

DR. GEORGE M. LYON, Huntington, W. Va. That the physician should occupy a central place in the community health program is appreciated more clearly today than ever before. Attempts to promote medical participation in community health matters as an organized program are being initiated with increasing frequency. Such attempts indicate the desire of the medical profession to go along in the promotion of improved community health programs. It is not always easy for the individual physician to see just where his particular responsibility lies. Much of the time it is because in his medical training he was not encouraged to develop that philosophy which would enable him to understand just what his specific responsibility might be. At other times it is because the local health officer fails to understand the importance of bringing the individual physician actively and sympathetically into the program. There is no more effective way of blocking progress in a health program than by antagonizing the local medical profession or relegating the individual physician to the background. Health officials who will provide the leadership and the opportunities for the local physicians to participate in the public health program in an organized way will do much to promote health protection. When such organized participation occurs, the physicians are generally quick to sense and in a constructive manner to accept their individual responsibility. Where health officers provide leadership in such programs, much will be accomplished in promoting that team work which is so essential between the medical profession and the official health program. It is essential that every effort be made to clarify in the minds of the physicians and official health workers just what the functions of the public health program, the school health program and the medical relief program are. I believe that this differentiation must be made in order to clear up the confusion generally encountered not only in the minds of laymen, but likewise in the minds of the physicians and health workers. Public health leaders are particularly aware of the misunderstanding that the average physician has about what is the function of the public health program, of the school health program and of the medical relief program. The confusion resulting from having the medical relief added to the public health program has been very detrimental to the development of proper public health programs. We have attempted in our own local county society to administer the school health program. In it a clear distinction is made between the essential objectives of the three programs.

³ *Pub. Health Rep.* 51: 340 (March 27) 1936.

⁴ *Social Hygiene in England and Wales*. *Health News* 2: 202 (Dec. 17) 1934.

DR. STANLEY H. OSBORN, Hartford, Conn. I was hoping that Dr. Bauer's paper might tell us how to do the things he is talking about. All of us want to do what Dr. Bauer has outlined, namely, to bring about a closer cooperation between the physician and the health officer. That is what we are really trying to aim at, to get our city and state societies associated with committees of state health officers, or the city health officers. Such a state of affairs would make it possible to tackle a new problem like, say, immunization against undulant fever. We as health officials are trying to think of the medical men and the medical societies as our right hand or part of us in carrying out this public health work. By doing that we shall automatically accomplish the right thing the way we see it not only as health officers but also as physicians, and the result will be not only a program but a program of physicians and of health officers.

DR. W. W. BAUER, Chicago. I was careful not to get down to particulars, as Dr. Osborn remarked, because I was conscious of the fact that particulars are one thing in Connecticut and another in New Mexico. In the last few weeks I have visited New Mexico, Arkansas, Alabama and Washington, D. C., besides being in Chicago, and the tremendous range of different conditions that one encounters in such a series of trips convinces one that there is absolutely no way of arranging cooperation in accordance with any one plan. Dr. Lyon has pointed out a way in which they have done it in West Virginia. If you write to different places, of which a few come to mind now, one being Nassau County, N. Y., the Medical Society of New York and the Medical Society of Wayne County, Mich., and the Detroit Health Department, you will find different ways of doing things, and yet they are all based on the same fundamental principle. Here and there county societies and health commissioners are taking steps to get closer together. In many places it seems to be desirable to have a community health council. There is an excellent report on community health councils by Professor Hiscock of Yale, which deals with the Allegheny County situation in Pittsburgh (Appraisal of Public Health Activities in Pittsburgh, Pennsylvania, 1930-1933, Pittsburgh, Federation of Social Agencies of Pittsburgh and Allegheny County, 1935, \$1). It shows how a community of people have sat around a conference table and studied their situation and evolved ways to meet their needs. There was an exhibit in the Scientific Exhibit at which it was possible to get diagrams of a health conservation set-up here in Kansas City. I want to emphasize that in mentioning these particular instances I have no intention of creating the impression that these are the only ones. There are many others that are accomplishing the same quietly and unostentatiously, and perhaps without any conscious plan the health department and the medical society are getting closer together for mutual cooperation. It used to be taken for granted that there was cooperation. There was a time when we were far apart, and yet today we find a gratifying number of health officers who are members of this section of the American Medical Association, as well as a gratifying number of American Medical Association members who belong to public health organizations. I hope that that will continue and that every possible means will be employed to avoid misunderstandings and that we foster and create cooperation and good will in the interest of public health.

Syphilis Almost Rare in Sweden.—The commission was convinced that syphilis has decreased in prevalence in Sweden to the point where one may refer to it as almost a rare disease, there having been reported in 1934 only 1 new case in 14,000 population, a case rate of 7 per 100,000 population as compared with a case rate of 20 per 100,000 in Denmark. Lacking a basis for comparison with case rates in this country this would indicate that syphilis is as rare in Sweden as typhoid fever now is in New York City.—Report of the New York City Commission to Investigate the Prevention and Control of Syphilis and Gonorrhea in Scandinavian Countries and in Great Britain, *Am. J. Syph. Genor. & Ven. Dis.* 20:37 (July part 2) 1936.

ATHLETIC INJURIES

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EVANSTON, ILL.

Owing to the present widespread interest in athletic the study and care of athletic injuries is forcing itself more and more on the attention of the medical profession. We as physicians cannot hastily brush them aside, treating them like any ordinary injuries, but must appreciate that they are in a class by themselves and demand special attention.

The athlete, whether college or professional, has a relatively short life in this capacity. A college athlete's span of activity is limited, as a rule, to three years, or at most four, with a few notable exceptions. While a professional athlete's tenure of office may extend through three or four presidential terms, most of them end before the year that national presidents are eligible to hold office. While their life may begin at 40, their athletic prowess or usefulness ends by then.

This short span of athletic usefulness demands, therefore, that the acme of fitness during its existence. The treatment of athletic injuries is therefore essentially the treatment of traumatic conditions with the added necessity of getting the athlete back into shape as quickly as possible. It is important from the athlete's standpoint to return him to his team quickly and 100 per cent recovered, but the most important requirement is to return him safely. The latter from a purely medical standpoint is the real requisite, i. e., to have the athlete return to practice and play only when it will do him no damage. The situation can be compared to the medical one in France during the World War. The medical officers were required to return the wounded soldier in condition for the front line trenches as quickly as possible, apparently with the fear that the war might end too soon! The doughboy must not only be repaired but repaired without delay, so that he could stop a few more bullets before he escaped. The athlete, however, is most anxious to get back, as actually his athletic life depends on it.

In the prevention of injuries there are many important points to consider.

In the first place the physician should be in full control of the physical side of the team, as the head coach is in charge of the athletic side. They should work together. Under the doctor and the coach there should be trainers, masseurs and physical therapists whose duty it is to keep the men in condition, but any special treatment should be prescribed by the doctor and supervised by him. Complete harmony should exist between all those in charge.

All athletes should have a physical examination at least each season. The heart, pulse and lungs should be checked over, examination made for hernias, and any other abnormalities noted. There should have been a recent successful vaccination against smallpox. These things are done each fall at Northwestern.

All injuries should be reported immediately to the team physician. Players, trainers and coaches should get it into their heads that they will save time and benefit the team by getting help from the doctor. It

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From the Surgical Department of Northwestern University Medical School, Chicago.

is thus possible to save many days of disability and actually get and keep men in play, or for important games, who never could have played had they delayed reporting

After reporting, a player should take only such treatment as the doctor prescribes. As Dr Marvin Stevens¹ says, "many a player has been severely injured by having ignorant trainers, players or coaches try to 'jerk something back' in place about which they knew nothing, when a skilled physician could have fixed the player without damage."

It is not necessary to enter on a diatribe against the various cults, but it might be said that there have been numerous illustrations of the harm done to athletes by those all too willing gentry

The coach's particular job is in preventing injuries, first, by getting the men into good physical condition before contact work is assumed and, secondly, by teaching his men how to take care of themselves on the field, especially in football. They should be taught the proper methods of tackling, blocking and falling. Stevens's book takes these up in great detail. It is true that many injuries, if not most, occur in an awkward, green player, or one who is off his guard, or loafing. Of course there are notable exceptions. Thirdly, proper protective equipment should be worn by players at all times.

Now for the actual care of injuries. A good athletic doctor, like all physicians, has the patient's interest at heart. In treating athletes he may allow a little more latitude in his care, but he should always see to it that no permanent or serious injury is the result of returning too soon to active play.

With this in mind, serious injuries are treated as such. A fracture practically always keeps the player out. Like any other fracture, it requires emergency splinting and treatment. Reduction should be done at a hospital with x-ray equipment, and fixation should be maintained long enough. Practically always a cast should be used rather than a splint, as the cast cannot be so easily removed. The general rule is to use a cast for children, athletes and idiots—and recently there has been added to this list a fourth—doctors.

Another very important part of fracture treatment in athletes is the subsequent care. Mobilization is

TABLE 1—Conditions Treated

| Year | Totals | Injuries | Inflammations |
|--------|--------|----------|---------------|
| 1930 | 133 | 99 | 36 |
| 1931 | 134 | 100 | 34 |
| 1932 | 183 | 101 | 37 |
| 1933 | 143 | 133 | 12 |
| 1934 | 135 | 123 | 10 |
| Totals | 657 | 558 | 129 |

important. In ten days after reduction and at least biweekly thereafter, the limb should be removed from the cast, manipulated, active and passive motion used, and physical therapy soon instituted. Massage and diathermy are used in every case. This gets the muscles toned up, so that when the bone is healed function will be present without delay.

Skull fractures and neck fractures should keep the athlete out of play at least for the season, usually for a year. In many minor fractures, with adequate protection the players may be allowed to carry on sometimes

These may include fractures of the phalanges, hand, wrist, forearm, fibula, and even ribs and clavicle on occasion. Once a player with a fracture of three transverse vertebral processes was allowed to return after three weeks' rest in a cast. This is rather too risky.

Sprains, although not so serious as fractures, give much trouble. The usual offending joints are the ankle, knee, shoulder and phalangeal. Prophylaxis demands protection. The ankle is strapped by means of the basket-weave with adhesive tape.² This has been done

TABLE 2—Types of Injuries

| Year | Fractures | Sprains | Contusions Concussions | Dislocations | Lacerations | Inflammations | Cartilage | Operations | (Majors) |
|--------|-----------|---------|---------------------------|--------------|-------------|---------------|-----------|------------|----------|
| 1930 | 19 | 83 | 15 | 1 | 11 | 36 | 16 | 50 | (8) |
| 1931 | 23 | 23 | 20 | 8 | 11 | 34 | 11 | 49 | (10) |
| 1932 | 16 | 28 | 34 | 1 | 8 | 37 | 10 | 32 | (6) |
| 1933 | 212 | 47 | 27 | 8 | 13 | 12 | 13 | 21 | (9) |
| 1934 | 29 | 31 | 6 | 11 | 10 | 21 | 25 | (11) | |
| Totals | 100 | 167 | 127 | 24 | 56 | 129 | 71 | 177 | (44) |
| | (3) | (1) | (2) | | (5) | | (4) | | |

The figures in parentheses show the relative frequency

for every game and scrimmage very effectively at Northwestern. The shoulder is protected by a leather shoulder pad, worn under the sweater. Knees may be strapped with adhesive tape but are almost impossible to protect adequately. Hinged braces help somewhat but for the most part are too cumbersome and are not adequate. Adhesive tape about the wrist will give some protection.

When a sprain has occurred in any joint, I have it packed first in ice whenever possible. It is then fixed snugly with adhesive tape or a bandage. Procaine hydrochloride has not been used, but it may be justified in view of Leriche's³ recent work. The ankle is strapped with pressure on the tender sprained spot. For the knee the adhesive strapping lengthwise, criss-crossed with a pad on the tender spot and a half inch thick cotton bandage over all, is useful. The shoulder is sometimes strapped, with the arm to the side, or the arm carried in a sling, neither of which is very satisfactory. If these joints do not respond to this treatment, they are put at rest in a cast for six weeks. Mobilizing and after-treating is done as in a fracture. Players with these sprains are sometimes allowed to carry on through the season and casts not used until afterward. There have been very few severe sprains that would not respond to this treatment.

Contusions and bumps are usually treated first with ice and later with heat. Sometimes a "hot pack" is applied over night. This consists of glycerin or analgesic balm and tends to keep the swelling down. Later contrast baths, diathermy and massage are used. Most contusions respond to this treatment quickly.

Dislocations occur chiefly in the shoulder, elbow and phalanges. These should be reduced immediately, theoretically after an x-ray examination shows no fracture. It is poor treatment to leave a joint dislocated any length of time when it can be reduced easily. After reduction the joint should be held at rest for two or three weeks, with some motion after ten days. This rest is important to obviate a myositis ossificans, especially in the elbow joint.

¹ Stevens M. A. and Phelps W. M. The Control of Football Injuries. New York, A. S. Barnes & Co. 1933.

² Lewis Dean. Practice of Surgery, vol. 2, chapter 5, pp. 43-44.

³ Leriche Rene and Aenulf G. The Treatment of Sprains by Interligamentary Injection of Novocaine. Am. J. Surg. 32: 45-47 (April) 1936.

Myositis ossificans is one of the arguments in favor of rest after injury, not only in dislocations but in sprains about the joint and in contusions. A "charley-horse" in the thigh is a potential myositis. These are treated first with ice and then with diathermy and rest, if need be in a cast. Operative removal of the newly formed bone is advised only after the condition is quiescent, if bone is formed in the quadriceps muscle and if pain or loss of function persists. A cast and diathermy will take care of most of these, without massage.

In recurrent shoulder dislocations the combination operation is used—a Clairmont combined with a

TABLE 3—Anatomic Location of Injuries

| Year | Abdomen | Ankle | Arm | Back | Bowel | Clavicle | Coccyx | Digits | Ear | Elbow | Eye |
|--------|---------|-----------|-----|-----------|-------|----------|--------|-----------|-----|-----------|-----|
| 1930 | | 6 | 3 | 3 | 1 | 1 | 1 | 16 | 5 | 1 | 1 |
| 1931 | 4 | 8 | 3 | 3 | 2 | 2 | | 13 | | 10 | 1 |
| 1932 | 1 | 12 | 5 | 3 | 2 | 1 | | 11 | 2 | 5 | 1 |
| 1933 | 2 | 17 | 5 | 8 | 9 | 1 | | 19 | 2 | 5 | 3 |
| 1934 | 3 | 10 | 1 | 6 | 2 | | | 7 | 2 | 3 | 2 |
| Totals | 11 | 53 (3) | 16 | 22 (9) | 14 | 5 | 1 | 66 (2) | 13 | 24 (8) | 7 |

TABLE 3—Anatomic Location of Injuries—Continued

| Year | Face | Foot | General | Genitals | Hand | Head | Hip | Iliopsoas* | Inguinal | Knee | Leg |
|--------|-----------|------------|---------|----------|-----------|------|-----|------------|----------|------------|-----------|
| 1930 | 4 | 7 | 7 | 2 | 11 | | 1 | 1 | 4 | 2 | 5 |
| 1931 | 5 | 3 | 1 | | 6 | | 1 | | 1 | 2 | 5 |
| 1932 | 4 | 1 | 1 | | 4 | | | | 1 | 3 | 4 |
| 1933 | 5 | 4 | 15 | 1 | 3 | | | | 1 | 17 | 4 |
| 1934 | 5 | 6 | 20 | | 6 | 4 | | | | 23 | 7 |
| Totals | 23 (7) | 21 (10) | 50 | 3 | 30 (3) | 13 | 2 | 1 | 7 | 110 (1) | 28 (9) |

TABLE 3—Anatomic Location of Injuries—Continued

| Year | Lip | Mouth Throat | Neck | Nerve | Nose | Perineum | Shoulder | Sinus | Thigh | Thorax | Wrist |
|--------|-----|-----------------|------|-------|-----------|----------|-----------|-------|-------|--------|-----------|
| 1930 | 3 | 7 | 3 | 12 | 7 | | 1 | 1 | 1 | 5 | 6 |
| 1931 | | 4 | 4 | 12 | 7 | | 5 | 3 | 3 | 5 | 4 |
| 1932 | 1 | | 5 | 2 | 5 | | 9 | | 1 | 3 | 10 |
| 1933 | 1 | 2 | 4 | 4 | 12 | | 14 | 1 | 3 | 5 | 2 |
| 1934 | 12 | | 1 | 1 | 14 | 1 | 16 | | 5 | 4 | 4 |
| Totals | 7 | 13 | 17 | 11 | 45 (4) | 1 | 43 (4) | 5 | 13 | 14 | 26 (6) |

Nicola.⁴ This has given success in two cases and must be tried more to be proved. It does seem to be the most physiologic and at the same time most complete of any operation so far devised.

Lacerations and cuts are cleaned out thoroughly and closed loosely with a drain inserted and a wet boric acid dressing applied for twenty-four hours. The question of antitetanic and antigas serum is always to be considered. Sutures about the face are removed in from three to five days to prevent stitch scars, unless the player is to scrimmage or be in a game, when the sutures are left in longer. Bandages on the face only excite opponent players of certain types to tear them off. Consequently during the game a collodion dressing is used which is removed immediately after.

All scratches and cuts are dressed as soon as possible with an antiseptic dressing, after cleansing. Inflammations require hot boric acid dressings or hospitalization, if continued.

A word about the knee is indicated, as there are more injuries to the knee than to any other part. Because of the careful protection given ankles, the knee perhaps suffers as a consequence. With the ankle strapped properly it is protected, and this puts more strain on the knee. It is important to diagnose a knee injury correctly and differentiate a contusion, a sprain, semilunar cartilage injury and a fracture. This can be done if one does not omit the x-ray examination. Of the 110 knee injuries in the five year period investigated, seventy were diagnosed cartilage injuries and twenty were operated on. All recurrent semilunar cartilage injuries require removal of the meniscus. This should give a knee functioning 100 per cent. Athletes can be named as postoperative illustrations, playing football, basketball, handball and tennis or engaging in track athletics without handicap. This operation, while delicate, is safe when done by some one experienced. One would not choose to have the knee operated on by an inexperienced general practitioner or by most surgeons, as considerable damage can be done. A special knife and scissors are used and many of these cartilages come out through a small incision.⁵ If the cartilage has been dislocated only once, reduction and fixation in a cast for six weeks may be tried, if twice or more, operation is indicated.

Besides these usual injuries, there have been many unusual conditions: nerve injuries with paralysis of the brachial plexus and of the peroneal nerve, the latter requiring operation, a halfback with a gunshot injury of the left hand, resulting in a compound comminuted fracture, treated by debridement and diluted solution of sodium hypochlorite (modified Dakin's solution), with complete recovery, a cheer leader with a sprained wrist from yelling, a golf player with tuberculous pleurisy, several college athletes with concussion of the brain, a football captain with smallpox, a football player acting as a life guard when a moth flew into his ear and, being dart shaped, could not back out. This probably would not have occurred had both the athlete and the moth stuck to their proper elements.

A complete detailed statistical report is not included, but a five year period from 1930 to 1934 may be selected arbitrarily from twelve years' experience in treating athletes at Northwestern University. During this five year period 687 cases were treated, of which 558 were injuries and 129 inflammations (table 1). The inflammations or infection cases include anything from furuncles and boils to a case of osteomyelitis of the femur. This last was a flare-up in an old quiescent osteomyelitis. A debridement was done, packing with petrolatum being employed according to Orr's method.⁶ Good recovery ensued. It is noteworthy that the number of infections treated has fallen off from thirty-six in 1930 to ten in 1934. This may be attributed to the fact that the trainers have been taught to dress the minor conditions properly and to send the more severe cases in immediately for proper surgical care.

Of the types of injury (table 2), sprains lead with 167, followed by contusions and concussions 127, fractures 109, cartilage injuries 71, lacerations 56, disloca-

⁴ Hobart, M. H. The Hobart Operation. A New Combination Operation for Recurrent Dislocations of the Shoulder. J. Bone & Joint Surg. 17: 16-116 (Oct.) 1935.

⁵ Hobart, M. H. Injuries of the Semilunar Cartilages of the Femur. Intern. J. Med. & Surg. February 1933.
⁶ Orr, H. W. Osteomyelitis. Cyclopaedia of Medicine Philadelphia F. A. Davis Company.

tions 24 One hundred and seventy-seven required operative or surgical procedure, including suture of lacerations and plaster casts, and forty-four major operations, which include herniotomies, appendectomies, knee cases, recurrent dislocation of the shoulder, osteomyelitis, and nerve and tendon surgery

As to the anatomic location of the injuries, the knee leads by a remarkable majority of 110 (table 3) This is partly due to the exposed position and the inability to protect the knee, to the fact that both direct and indirect force can affect the knee and perhaps to the fact, as has been said, that the ankles are well protected and do not give way, resulting in the force being trans-

TABLE 4—Number of Casualties

| Year | Football | Basketball | Baseball | Wrestling | Track | Tennis | Swimming | Miscellaneous | Yell | Water Polo | Boxing | Golf | Tumbling |
|--------|----------|------------|----------|-----------|-------|--------|----------|---------------|------|------------|--------|------|----------|
| 1930 | 60 | 8 | 11 | 14 | 9 | 1 | 2 | 2 | | | | | |
| 1931 | 61 | 9 | 9 | 12 | 7 | | 3 | 3 | | | | | |
| 1932 | 70 | 8 | 6 | 10 | 5 | | 2 | 1 | 1 | | | | |
| 1933 | 60 | 10 | 5 | 16 | 7 | | 3 | 12 | | 6 | 3 | | |
| 1934 | 97 | 15 | 4 | 16 | 2 | | 6 | 1 | | 3 | 4 | 1 | 1 |
| Totals | 368 | 50 | 35 | 70 | 30 | 1 | 16 | 9 | 1 | 9 | 7 | 1 | 1 |
| | (1) | (3) | (4) | (2) | (5) | | (6) | (7) | | (7) | (8) | | |

mitted to the knee It might be better not to strap the ankles so tightly Next in frequency to the knee injuries come those to the digits, fingers and toes, sixty-six in all, then ankles fifty-three, shoulder and nose with forty-five each, hand thirty, wrist twenty-six, face twenty-five, elbow twenty-four, back and leg twenty-two each, and foot twenty-one The other regions had less than twenty, dwindling down to one each of the coccyx and perineum

The last table of especial interest to coaches, perhaps, is that of the number of casualties in each sport (table 4) As is to be expected, football leads with 368 If it is realized that probably five or six times as many play football as any other sport, this will not sound so bad Next to football comes wrestling with seventy, basketball fifty, baseball thirty-five, track thirty, swimming sixteen, water polo nine, boxing eight, tennis, golf and tumbling one each

Further analysis might be made to determine which sport or anatomic locations sustained the most severe injuries

SUMMARY

1 Athletic injuries demand special consideration by the medical profession as they are in a class by themselves

2 It is necessary for an athlete to obtain a quick but none the less complete cure

3 Certain advances have been made in the treatment of specific athletic injuries

4 This review includes twelve years' surgical experience in handling athletic injuries at Northwestern University

5 Detailed statistics cover a five year period (1930-1934) during this time

6 In treating or coaching athletes it should always be borne in mind that all serious or permanent disabilities should be prevented and that the individual should come first and athletics is purely secondary

636 Church Street

Clinical Notes, Suggestions and New Instruments

A NEW SYRINGE FOR THE MULTIPLE SYRINGE METHOD (LINDEMAN)

JAMES SHERMAN HOUCK M D ROCHESTER N Y

Within the last few years many new appliances for blood transfusion have been devised to make the direct transfusion of whole blood safer, simpler and more convenient It seems however that, in spite of these, more physicians and hospitals prefer and employ the Lindeman multiple syringe method I feel that with properly trained assistants this method is the safest for both donor and recipient

How shall the transfusion of whole unmodified blood be done when a patient has an infected blood stream? The possibility of contaminating the donor with the instruments ordinarily used has often been the stumbling block to the use of unmodified blood Realizing that the multiple syringe method removed this hazard, provided each syringe was used but once during the procedure, I developed the syringe as shown in figure 1 It has greatly simplified this method of transfusion because it eliminates the two most important shortcomings of the Lindeman method

1 Difficulties in holding the needle and syringe while withdrawing blood from the donor and injecting it into the recipient

2 Accidental withdrawal of the needle from the vein

The capacity of the syringe is 20 cc The barrel has fastened to it a special thumb rest for comfortably holding the needle and the syringe, also an extra large, solid glass end with metal Luer tip

The bearing surface of the plunger has been shortened to about 1½ inches The other part of the plunger is ground fifteen-thousandths inch smaller This construction hinders any blood that may coagulate on the exposed part of the plunger from interfering with the smooth working of the syringe A description of the technic (patient with infected blood stream) now used entirely at the Genesee Hospital will best illustrate the advantages of the syringe

The recipient's and donor's arms are prepared in the usual manner and their stretchers are arranged with a work stand between them mutually convenient to the operator and his assistant Twelve or more 20 cc. syringes are placed on the work table, the number of syringes to be governed by the amount of blood to be given The operator inserts as large a caliber Unger needle as the recipient's vein will accommodate, either 15 or 16 gage, for children 18 gage, 1 inch of the needle to be within the lumen of the vein, if possible. The index finger should be back of the needle shield, across the needle hub One should press firmly down against the recipient's arm The middle finger is in front of the needle shield opposite the

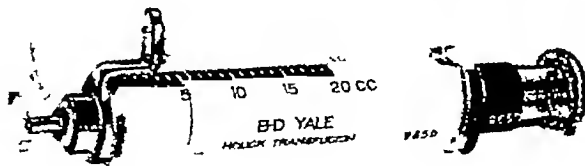


Fig 1—Improved syringe with special thumb rest.

index finger, resting on the needle cannula, as shown in figure 2 Maintenance of this position throughout the transfusion will actually lock the transfusion needle in position and makes accidental withdrawal of the needle from the vein very difficult. This position further leaves the thumb free either to close the open needle hub when the syringe is removed or to lock the needle and syringe firmly together when administering the blood as illustrated in figures 2 and 3 The needle now being properly fixed in the recipient's vein saline solution is slowly administered while the assistant places a large caliber Unger needle 13 or 15 gage in the donor's vein using the same steps as described for the recipient The blood is drawn into the syringe from the donor and here it will be observed that the thumb rest acts as a counterforce to the pull of the syringe plunger It is this pull that so frequently runs the transfusion by with-

drawing the needle from the vein. As each syringe is filled by the assistant, it is unlocked from the needle by lifting the thumb from the thumb rest and rotating the syringe gently to loosen it from the needle hub. As soon as the syringe is removed, the thumb quickly closes the open end of the needle hub and the filled syringe is laid on the table ready for injection.

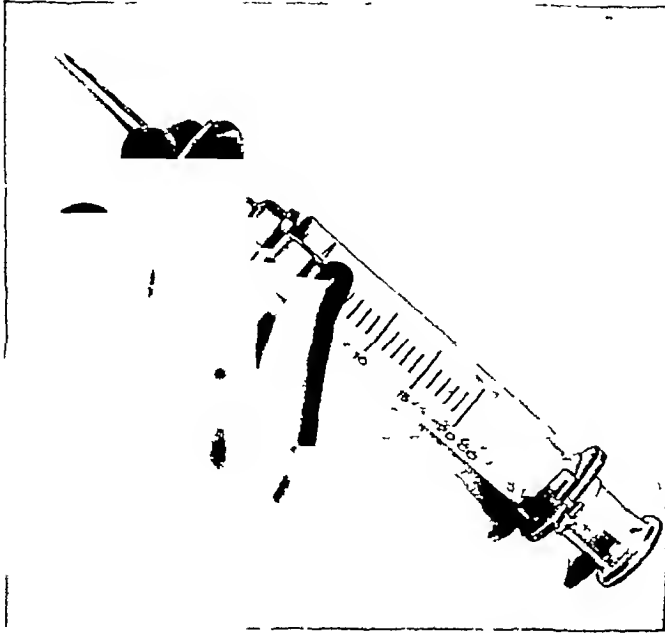


Fig. 2—The syringe and needle comfortably held and locked together between the middle finger and the thumb. The thumb rest serves as a counterforce to the pull of the syringe plunger when blood is being withdrawn.

into the recipient by the operator. He administers the blood to the recipient and hands the syringe to the nurse, who immediately takes it apart and washes it. The syringe is not again used during the transfusion and so it is impossible to infect the donor.

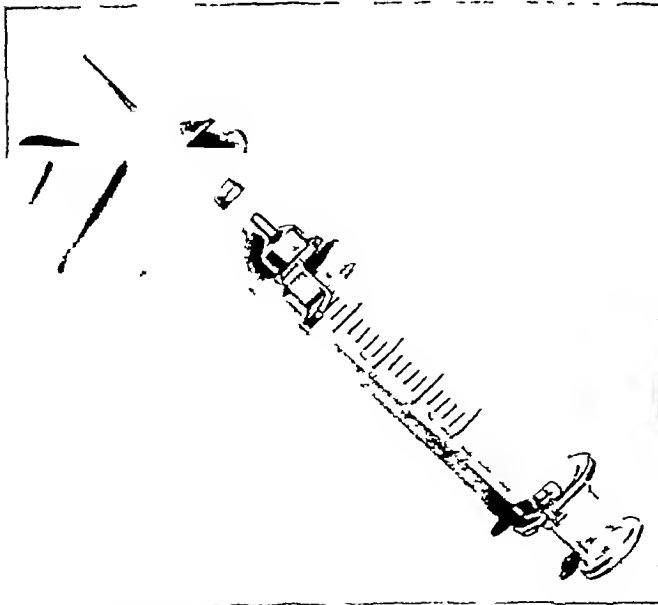


Fig. 3—Syringe unlocked from needle operator's thumb about to be placed over hub of needle.

We use this method whenever giving unmodified blood. If the recipient is not infected we use the syringe again and again, ordinarily having six syringes on the work table. The operator administers the blood to the recipient and gives the used syringe to the nurse. She flushes each syringe thoroughly through three basins of physiologic solution of sodium chloride and places

the syringe on the work table convenient to the assistant. We prefer this method as it is adaptable to use in the crowded rooms, where it would be impossible to have the stretchers placed head to head as is necessary with some of the instruments now being used, and further because it means no complicated apparatus. We ordinarily keep our syringes autoclaved in a canvas roll so that we have them ready for use at any time.

I feel that the new syringe construction has greatly simplified the multiple syringe method and hope that it will be the means of making this method still more popular.

311 Winton Road, North

THE USE OF LIVING FASCIA TRANSPLANT TO REPAIR A HERNIA OF THE TIBIALIS ANTICUS MUSCLE

JOHN B. HARTZELL, M.D., DETROIT

It was over thirty years ago that McArthur¹ first brought out the use of fascia as a suture in the repair of hernia. After incising the external oblique aponeurosis he cut a small strip off the free border of the medial and lateral flaps. He left these attached at their inferior ends. After ligating the sac he used the strip from the medial border to suture the internal oblique muscle to Poupart's ligament under the cord. He then used the strip from the lateral border to suture together over the cord the flaps of the aponeurosis of the external oblique. Three years later he reported ninety-three consecutive cases in which fascia had been used as a suture without recurrence of the hernia. One of his patients died a year after the operation had been performed and he secured the scar. Microscopic sections showed the graft passing through the scar as living fibrous tissue. Although this work was well received it was to be twenty years before the use of fascia as a suture material was to be brought into more general use.

This came about largely through the experiments of Gallie and LeMesurier.² Working on rabbits and dogs, they found that fascia readily united with fascia, that the strength of the union depended on the area of the surface in contact. They further found that the surfaces placed in contact must be deprived of their sheet of areolar tissue and fat, otherwise the strength of their union is slight. Such surfaces should be thoroughly scraped and scarified in order that when healing does occur the new connective tissue may have a deep grip among the fibers. Three years later these same authors reported 100 abdominal and inguinal hernias repaired by means of fascia lata living suture without a recurrence.

Since that time Koontz,³ Rosenblatt and Cooksey,⁴ Meyers,⁵ Haas,⁶ and Hodgkins⁷ have reported excellent results with living fascia lata as a suture material. Patterson⁸ and Allen⁹ working independently have used living grafts of fascia as a method of internal fixation in fractures and dislocations. Grace,¹⁰ Fuld,¹¹ Masson¹² and Bate¹³ have each devised strippers that simplify the removal of strips of fascia lata.

1 McArthur, L. L. Autoplastic Suture in Hernia, and Other Diastases. Preliminary Report J. A. M. A. 37:1162 (Nov. 2) 1901. Autoplastic Sutures in Hernia and Other Diastases. *ibid.* 43:1039 1045 (Oct. 8) 1904.

2 Gallie, W. E. and LeMesurier, A. B. The Use of Living Suture in Operative Surgery. *Canad. M. A. J.* 11:504 513 (July) 1911. The Use of Free Transplants of Fascia as Living Sutures in the Treatment of Hernia. *Tr. Am. S. A.* 41:331 353, 1923.

3 Koontz, A. R. Experimental Results in the Use of Dead Fascia Grafts for Hernia Repair. *Ann. Surg.* 83:523 (April) 1926.

4 Rosenblatt, M. S. and Cooksey, W. B. Muscle Fascia Suture in Hernia. *Ann. Surg.* 86:7177 (July) 1927.

5 Rosenblatt, M. S. and Meyers, Manrice. Muscle Fascia Suture with Preserved Fascia and Tendon. *Surg., Gynec. & Obst.* 47:836-441 (Dec.) 1928.

6 Haas, S. L. The Union of Grafts of Live and Preserved Fascia with Muscle. *Arch. Surg.* 23:571 580 (Oct.) 1931.

7 Hodgkins, E. M. A New Method of Surgical Herniorrhaphy by Surg. Gynec. & Obst. 47:831 835 (Dec.) 1928.

8 Patterson, R. H. The Internal Fixation of Fractures and Dislocations by Use of the Human Fascial Suture. *Ann. Surg.* 88:879-944 (Nov.) 1928.

9 Allen, A. W. Living Suture Grafts in the Repair of Fractures and Dislocations. *Arch. Surg.* 16:1007 1020 (May) 1928.

10 Grace, R. V. A Subcutaneous Fascial Stripper. *Ann. Surg.* 90:1109 1110 (Dec.) 1929.

11 Fuld, J. E. Difficult Hernias. *Am. J. Surg.* 18:514 520 (Dec.) 1932.

12 Masson, J. C. A New Instrument for Removing Fascia Lata for the Repair of Hernia. *Proc. Staff Meet. Mayo Clin.* 8:527 530 (Apr. 30) 1913.

13 Bate, J. T. Instrument for Subcutaneous Removal of Fascia Lata Strips for Suture Purposes. *Ann. Surg.* 95:313 314 (Feb.) 1932.

The use of fascia lata as a transplant in the repair of herma is now a well established surgical procedure. The fact that the use of it is attended by nearly universal success would indicate that this tissue possesses a remarkable vitality. It has been shown that both living and preserved fascia, when used as suture material in suturing fascia to fascia or fascia to muscle, will remain in the tissues and eventually become a part of a dense fibrous union.

REPORT OF CASE

A man, aged 42, while climbing out of a stream four years before fell shin first on top of a sharp stump, receiving a painful bruise. He had paid little attention to his injury after the bruise disappeared. Slowly a large lump developed at the site of the old injury and during the last ten months this lump had become painful, precluding his favorite forms of exercise. The last two months it ached constantly and was made much worse by even a short walk.

Examination revealed a lump about 2 cm in diameter and 1 cm in height. It was situated on the anterior surface of the right leg just proximal to the junction of the middle and lower thirds of the right tibia, over the lower portion of the belly of the tibialis anticus muscle. This lump would appear and disappear with dorsal and plantar flexion of the foot. With each appearance the patient experienced a dull ache. It could not be reduced by pressure and was tender on palpation. The diagnosis was a muscle hernia of the belly of the tibialis anticus. It was thought that the rent in the fascia of the tibialis anticus might be repaired.

Under local anesthesia an incision was made over this swelling. There was a definite fault in the fascia covering the tibialis anticus muscle. This appeared as a definite ring with a diameter of about 2 cm. The muscle bulged through this opening. The fascia was so taut that it was impossible to approximate it. An incision was made lateral to this opening. An attempt was made to slide the fascia medially in order to obliterate this space. The fascia was so taut that this could not be done. Even under marked tension it could be moved barely half a centimeter. It was decided that the only means of obliterating this opening was by the use of a fascia transplant. A strip of fascia lata about 10 cm long and 1 cm wide was then removed from the left thigh. This incision was closed with interrupted chromic sutures. This piece of fascia was split into three strips each about one-third centimeter in diameter. These strips were then woven in basket pattern into the opening. The ends were carried well into the fascia bordering the opening and anchored firmly in place. The skin was closed with interrupted dermal sutures. The foot and leg were placed in a posterior plaster splint. The skin was under so much tension, owing to the increased thickness of the tissues resulting from this woven fascia graft, that the skin stitches cut through and were removed on the fifth day. The skin margins separated and the fascia graft was plainly visible. As in any open wound a small amount of purulent secretion accumulated on it daily. Moist boric acid dressings were applied. By the tenth day definite granulations appeared to be budding up between the strips of fascia. It is a well recognized fact that the wounds in this area are frequently very slow in healing owing to the poor blood supply. This case was no exception. The granulation tissue filled in slowly until it covered the fascial graft. The wound then gradually epithelized. At present it is over a year since the operation. There is a dense scar with no protrusion of the muscle.

COMMENT

Here is an example of a good result in a transplant of fascia lata into an area in which the blood supply is notoriously poor. The wound could not heal by first intention owing to the fact that a skin separation occurred because of tension. The wound then healed by granulation. The granulation tissue grew up between the grafts and then over them. Definite buds of granulation tissue became firmly attached to the fascial grafts until finally the grafts were completely covered. At no time did any of the fascial sutures show any disposition to slough.

We have been unable to find any reference to another case of hernia of the tibialis anticus muscle. We believe that this is the first time that such a hernia has been repaired by a living fascial graft and that the healing process has been observed grossly from day to day during the period of repair.

7815 Jefferson Avenue, East.

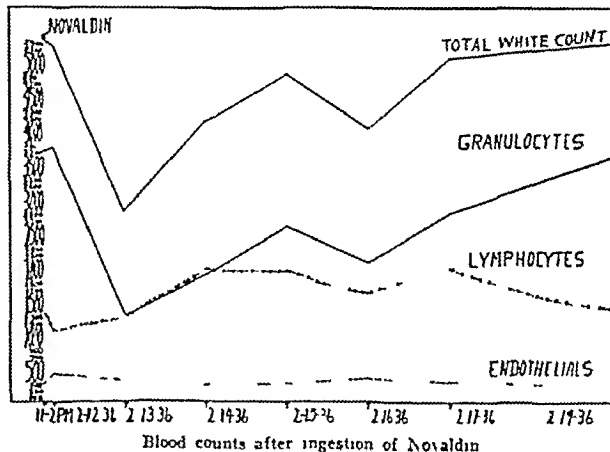
AGRANULOCYTIC LEUKOPENIA INDUCED BY A
DRUG RELATED TO AMINOPYRINE

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CINCINNATI

In a previous communication we¹ reported a clinical study of a patient who developed agranulocytic leukopenia after ingestion of aminopyrine but who was able to take other related drugs with no deleterious effect. The patient has been well since the latter part of April 1934.

Recently there has been brought to our attention a drug chemically related to aminopyrine and supposedly less toxic, known as "Novaldin,"² which is sodium phenyldimethylpyrazolon methylaminomethane sulfonate. The following procedure was carried out in an effort to appraise the virtue of this drug.

The same martyr who volunteered herself for previous experimentation is a nurse, aged 50. She had had several attacks of agranulocytic leukopenia due as we have proved, to the ingestion of aminopyrine. Since discontinuing its use, she has had no recurrence. Her white blood count Feb 12, 1936, was 5,300. The differential count was polymorphonuclears 69 per cent, lymphocytes 25 per cent, transitionals 4 per cent, large mononuclears 1 per cent, eosinophils 1 per cent. Immediately after the blood count was taken she was given 10 grains (0.65 Gm.) of Novaldin. At 3 p.m., exactly three hours after ingestion, another blood count revealed white blood cells 5,200, polymorphonuclears 72 per cent, lymphocytes 20 per cent, large mononuclears 6 per cent, transitionals 2 per cent, as



shown in the chart. At 8 p.m. the patient felt chilly and tired. She went to bed with a slight headache. This pain increased to such an extent that at 3 a.m. it was severe enough to awaken her. At that time her feeling of fatigue was greatly increased. At 5:30 a.m. she felt hot, took her temperature, and found it to be 99.4 F. At that time her headache was severe and backache developed. The symptoms persisted for twenty-four hours after ingestion of Novaldin. Blood examination revealed the following: The white blood count was 2,800, polymorphonuclears 46 per cent, lymphocytes 43 per cent, large mononuclears 6 per cent, transitionals 5 per cent. Her physical examination at this time revealed nothing abnormal.

February 14, forty-eight hours after taking the drug, she felt much better, but a slight headache still persisted. The blood examination revealed a tendency to return to the normal. The total white count was 4,100, polymorphonuclears 46 per cent, lymphocytes 48 per cent, large mononuclears 2 per cent, transitionals 4 per cent.

Seventy-two hours after the initial dose of Novaldin she had recovered. The white blood count was 4,800, polymorphonuclears 54 per cent, lymphocytes 40 per cent, large mononuclears 4 per cent, eosinophils 2 per cent.

February 16, four days after she took the drug, she complained of a headache. Her white blood count was 4,000, polymorphonuclears 51 per cent, lymphocytes 40 per cent, large mononuclears 6 per cent, transitionals 3 per cent.

1 Benjamin J. E. and Biederman J. B. Agranulocytic Leukopenia J. A. M. A. 103: 161-163 (July 21) 1934.
2 Winthrop Chemical Company

February 17, five days after ingestion of Novaldin, she felt perfectly normal. Her white blood count was 5,000, polymorphonuclears 55 per cent, lymphocytes 39 per cent, large mononuclears 3 per cent, transitionals 2 per cent, eosinophils 1 per cent.

February 19, one week later, she felt fine. The white count was again 5,200, polymorphonuclears 69 per cent, lymphocytes 26 per cent, large mononuclears 2 per cent, transitionals 2 per cent, eosinophils 1 per cent.

ALLERGY TESTS

An intracutaneous skin test with Novaldin was negative. A patch test with the drug also was negative. A passive transfer test was then performed, 0.1 cc. of the patient's serum being injected into the skin of a normal person. This was followed forty-eight hours later by the injection into this site on the normal subject of a test solution of Novaldin. No reaction resulted, indicating the absence of reagins for Novaldin in the blood of the patient.

SUMMARY

1 A case of granulopenia resulted from the ingestion of Novaldin.

2 During a period of good health the patient was given 10 grains (0.65 Gm.) of Novaldin under control. This produced symptomatic signs of agranulopenia within eight hours and objective signs (blood examination) within twenty-four hours.

3 Intracutaneous, patch and passive transfer tests gave negative reactions.

4 In this patient the effect of Novaldin was one of hypersensitivity to the drug with the hematopoietic system acting as the shock organ.

5 Seventy-two hours after the drug had been taken, a normal state of health was restored.

CONCLUSION

"Novaldin," a drug related to aminopyrine, is capable of exercising the same deleterious effects as aminopyrine on the hematopoietic system.

19 West Eighth Street.

INFANTILE ECZEMA FROM COD LIVER OIL

REPORT OF TWO CASES

SAMUEL J. HOFFMAN, M.D. AND HERBERT RATTNER, M.D.
CHICAGO

Cod liver oil is not usually considered a possible cause of eczema in infants. For that reason two such cases are herewith reported.

The first baby, a boy aged 22 months had eczema rather generalized, the patches being more acute in the cubital and popliteal spaces and on the face and neck. The eczema first appeared on the day the baby came home from the hospital, after birth, and had persisted with remissions and exacerbations since then. The child's birth was normal and the period in the nursery was uneventful. On his first day at home he was given cod liver oil with viosterol in addition to the breast feeding. The eczema then appeared and became gradually more severe. The diet was changed from time to time and the usual topical remedies were employed, but it was never considered that the cod liver oil might be the source of the eczema. In general the child was in good health, of normal weight and with a general healthy appearance despite the fact that he presented a feeding problem and vomited regularly. At nine months of age when he was given solid foods fish was one day included in the diet and produced in the child severe urticaria and vomiting. The attack was transitory, the fact that he was getting cod liver oil escaped attention, and the eczema persisted in a chronic state. He was never entirely free from it. One day recently the child walked into the kitchen where fish was being fried. He immediately developed severe giant hives, conjunctivitis and exacerbation of the eczema apparently from inhalation for the child had not been fed any of the fish. Then and not until then did he awake to the fact that cod liver oil might be the source of the child's eczema. It was omitted and within forty-eight hours the skin showed a very decided improvement, gradually to clear up entirely. The vomiting has

stopped, he is no longer a finicky eater, he has gained in weight and the general state is excellent. Viosterol in oil was substituted and he seems to tolerate it well. On one occasion later, when he was accidentally exposed to fish odors, there was an immediate recurrence of urticaria and conjunctivitis.

The second baby, a girl aged 18 months, presented an acute eczema of the face, scalp and trunk and the cubital and popliteal spaces, of four months' duration. It was learned that at about that time cod liver oil had been fed to the child for the first time. It was discontinued, with skepticism on the part of the parents, and the eczema disappeared completely, to recur after a trial feeding with cod liver oil. This child, too, had a recurrence from inhalation when fish was being cooked in the home.

In both cases the fathers of the children were sufferers from seasonal hay fever.

It has long been recognized that there are individuals who are sensitive to fish, and there have been numerous cases in which untoward reactions have occurred, usually in the skin as urticaria, in the gastro-intestinal tract, and in the respiratory tract. Unusual cases are frequently encountered. Rowe¹ cites instances from the literature in which alarming reactions followed the licking of a postage stamp, and in one patient after wearing shoes in which inner soles were glued, the glue in each case being made from fish. Glue is used frequently on toys, especially on dolls with hair. It may be that cases are not infrequently missed because these unusual sources are not thought of or because, as was the case with one mother, she just hadn't thought of cod liver oil as fish.

University of Illinois College of Medicine

Special Clinical Article

PRESENT STATUS OF TRANSURETHRAL RESECTION OF PROSTATE

CLINICAL LECTURE AT KANSAS CITY SESSION

H. C. BUMPUS, JR., M.D.
PASADENA, CALIF.

The relief of urinary obstruction resulting from prostatic enlargement by transurethral resection has freed the mind of the aging man of one of his chief worries, seeming to assure many of the possibility of a happier senescence than could have been expected formerly. In fact, during the past few years, wherever a group of elderly men has gathered, it has not been unusual to hear expounded the advantages of the new so-called electric operation over the former cutting operation for the relief of prostatic obstruction. While the minds of the laity have become filled with a feeling of confidence, those of the profession have become more and more confused by the diversity of reports concerning the results of transurethral resection appearing in medical literature. For many years the general practitioner has listened to his urologic brethren extol the merits of the suprapubic or perineal operation, always interested in their discussions, he has invariably based his opinion regarding the relative merits of the two operations on the clinical results that have come under his observation. In the past few years he has found his medical literature and scientific programs again filled with conflicting reports concerning the efficacy of still another form of treatment for the relief of prostatic obstruction. He reads that at the Mayo Clinic in 1935, 695 patients with prostatic obstruction were treated by transurethral resection with but seven

¹ Rowe, A. H. *Ford Allergy*, Philadelphia, Lea & Febiger, p. 33.
Read in the General Scientific Meetings at the Fishy Seventh Annual Session of the American Medical Association, Kansas City, Mo., July 11, 1936.

deaths, a mortality rate of approximately 1 per cent. In less than a week 58 per cent of those patients had left the hospital, while at the end of two weeks 28.7 per cent more had been discharged, making a total of 86.7 per cent who had two weeks or less of hospital expense associated with their operation. He contrasts these results with those occurring at the same institution following suprapubic prostatectomy. After the latter operation the mortality rate in any single year was seldom below 6 per cent and not infrequently rose to over twice that figure, while the majority of patients were compelled to remain over a month in the hospital. The superior results following resection he might attribute to the advantages of cooperative endeavor in an institution such as the Mayo Clinic had he not learned that T. M. Davis,¹ who first popularized the method, had performed resection on 966 patients with a loss of but seven. Dr. Davis also reports an average postoperative hospitalization of but eleven days for his patients.

Such results naturally arouse not only admiration but a sincere effort at imitation. It is this effort to emulate the success of the pioneers that I believe is responsible in a large measure for the confusion that now exists in the minds of the profession regarding the relative merits of the procedure, for all too frequently surgeons with insufficient experience undertake the procedure, not appreciating what potential danger lurks in the few centimeters comprising the prostatic urethra. It has a rich blood supply, so that any trauma not only is likely to be followed by brisk bleeding but will afford a direct entrance into the blood stream for whatever organisms may be present in the prostatic ducts and gland acini. Those who have never witnessed a so-called urethral chill with its profound prostration, elevated temperature and general collapse little appreciate how serious can be the consequences of any surgical procedure in this location.

Owing to the extreme technical skill required in its performance, the opportunity to learn the technic of transurethral resection in any series of cases sufficiently large to insure an adequate degree of skill is exceedingly limited. Because the entire operation is performed through a channel as limited as the urethra, the instruction of others in the intricate steps of the procedure is difficult. In fact, it is a procedure the technic of which can be satisfactorily mastered only by actual performance, since reading and personal instruction give but little help.

The few institutions where opportunity for developing such technic is available are large county hospitals, so it is not surprising that the inquisitive physician finds that in one of the country's largest hospitals, namely, the Los Angeles County General, following 154 transurethral resections there were nineteen deaths, a mortality of 11.2 per cent, and in an equal number of cases a second resection was required. In fifteen of these cases the bleeding following resection was so excessive as to demand operative intervention. If results of this kind are to be expected in large, well organized urologic services, how much more deplorable must they be in small hospitals where only occasional cases are available for treatment and where the general practitioner in observing the functional results of prostatic resection is likely to see not the result of a trained operator's skill but the unforeseen complications of a novice's work and

so look on the operation unfavorably. In other words, he will condemn the operation when in truth he should censure the operator, consequently, in any community where the profession is acquiring this experience, the procedure is more likely to be regarded unfavorably than favorably. This is exemplified by a questionnaire recently completed by Orr. He found that five urologists, all of whom had operated in more than 500 cases, reported a mortality rate of 1.9 per cent for the 4,767 cases in which they had operated, while twenty-five others who had done between 100 and 200 reported a mortality rate of 4.1 per cent for their 3,530 cases. Alcock,² who had performed over 1,500 resections, lost fifteen of his first 100 patients, while in his last 500 the mortality rate was 1.4 per cent, although the average age of these 500 patients was over 70 years. My own experience is similar. Eight deaths occurred during my first 250 cases, followed by over 300 cases before the next mortality occurred. Davis reports having lost but two patients in his last 500 cases. It is evident that in the hands of the experienced the mortality rate should be less than 2 per cent. In fact, it must be considerably lower than that associated with other forms of treatment if it is to replace them.

PREOPERATIVE PREPARATION

Its lower mortality by no means constitutes the only advantage of the procedure. Formerly the emphasis in these cases of prostatism was placed so strongly on the preoperative preparation that many urologists considered it far more important than the operation itself, and the preparation of patients for prostatectomy frequently required an extended period of time in order to render them in sufficiently good physical condition to undergo the ordeal. Much of this preparation consisted in the removal of the residual urine either by intermittent catheterization or by continuous catheter drainage. Prostatic resection being a much less drastic procedure, patients in much poorer physical condition can successfully undertake it, for once the obstructing portion of the prostate is completely removed, the menace of residual urine is abolished, consequently, in the comparatively short time consumed in the operation there is accomplished what formerly required the use of a catheter for many days and sometimes many weeks.

Now the emphasis is entirely shifted. Thompson³ at the Mayo Clinic reports that 65.7 per cent of the 695 patients who had resection there during 1935 received no preliminary treatment whatever. This in itself is a tremendous saving to the patient when one recalls the weeks of hospital care not infrequently deemed necessary prior to prostatectomy.

It is not to be wondered at, therefore, that laymen are expressing a decided preference for this newer procedure with its lessened expense as a result of shorter hospitalization, to say nothing of its negligible mortality rate. That the profession is not equally enthusiastic demands explanation, for in many communities the procedure was at first accepted without question as a decided advance, while now it is referred to with the utmost skepticism. In examining figures such as those compiled by Dr. Negley,⁴ the reason for this becomes apparent. From Jan. 1, 1934, to Jan. 1, 1935, 251 patients were operated on in five different hospitals in the Los Angeles district with a mortality

² Alcock, N. G. Prostatic Hypertrophy. *J. A. M. A.* 104: 734-738 (March 2) 1935.

³ Thompson, G. J. Personal communication to the author.

⁴ Negley, J. C. Personal communication to the author.

¹ Davis, T. M. Personal communication to the author.

rate of 87 per cent and an average hospital stay of thirty-four days. Obviously the results in the resection cases were not a great enough improvement to call forth much enthusiasm for the method. Indeed, such statistics, when compared with those of more experienced operators referred to earlier in the paper, demonstrate that the surgeon lacking such training will do better to perform a prostatectomy.

POSTOPERATIVE TREATMENT

While formerly the preoperative preparation of patients contemplating prostatectomy was generally accepted as the most important and usually the most tedious portion of their treatment in the case of resection, it is now the postoperative management, and the most meticulous observation of the minutest detail becomes imperative.

After most operative procedures the surgeon leaves the hospital with the knowledge that the house staff and the nurses will adequately take care of the usual complications occurring during convalescence and that the satisfactory progress of his case depends largely on the patient's general resistance. Such is not the case with the patient who has just undergone resection. His general condition may be of the best, but let the drainage tube become occluded for only a short period of time and the complications that may occur are legion. And it is easy for the drainage tube to become occluded: it may become kinked, a small clot may obstruct it, the catheter may have been badly adjusted following operation, the patient may roll over on the tubing for a short time, a nurse may forget to fill the irrigating reservoir and as a result air bubbles obstruct the system, or, having clamped off the tubing while she empties the receptacle, she may forget to unclamp it after returning the urinal. Such obstruction may result in so great an overdistention of the bladder that the operative field is stretched and torn and serious bleeding develops, but more often it initiates a febrile attack. To prevent such reactions, not only must the outflow of urine be continuous and unobstructed but the greatest care is necessary to see that no organisms foreign to the host are introduced into the urinary tract. This cannot be accomplished if the nursing force permits the drainage tubes to lie on linen soiled by anal contamination or tucks them between mattress and sheet while emptying the receptacles. Strange as it may seem, the amount of indifference to aseptic technic following operation usually exceeds the amount of care given to the punctilious performance of its smallest detail in the operating room. To insert a sterile catheter in the bladder and then order that it be irrigated by the floor nursing staff every ten minutes for the first two or three hours after operation is to believe that the boundaries of aseptic technic are as far flung as those of the stratosphere while to permit the catheter to drain into an occasionally sterilized urinary receptacle is to insure the early contamination of the operative field and the unnecessary prolongation of convalescence.

Bacteria pass up tubing into the bladder from any point of contamination, so that if an aseptic technic is to be followed after the operation it is best to attach the catheter to a closed system and if possible never open it except with the most rigid aseptic precautions. This can be done by attaching a reservoir to the tubing that leads from catheter to urinary receptacle. If need be, the bladder can be irrigated by allowing the fluid (which

may be germicidal if desired) to flow in through a T tube. The receptacle that collects the urine should be sterile and instead of being emptied when filled should be replaced by a similar sterile receptacle. Otherwise it is impossible to keep the urinary tract free from secondary infection and the receptacle clean.

When enough resections are being done in a hospital to insure a nursing staff being specially trained and always available for their care, attention to these details is easily accomplished and the advantages of the newer method of treatment speak for themselves and need no press agent. But in hospitals where only an occasional case is handled and where surgery of the urinary tract represents but a small minority of the surgical work, this attention to detail seems impossible, and without it postoperative complications will be so frequent and annoying that this method of treatment comes rapidly into disfavor, not alone among those who attempt its performance but among the other members of the staff who are eager to evaluate any new procedure. If to this is added the lack of technical skill of any one who has not done at least a hundred of these operations, the unpopularity of the procedure in certain localities is not hard to understand.

COMPLICATIONS

Discouraging as these occurrences can be, bleeding is undoubtedly the complication that has most frequently brought ill repute to the procedure. In fact, for over a hundred years this complication has kept the method from general adoption, for the attempts to remove the obstructing prostatic tissue transurethrally are not new, only their successful accomplishment is recent. In 1840 Mercier was removing tissue through an instrument not unlike many in use today, but he had no way of controlling bleeding, and when Dr. Young presented his punch instrument before the International Urological Congress in 1909 he advised that its use be confined to minor obstruction, for there was no way to control hemorrhage resulting from more extensive removal of tissue.

With the application of the various types of electric currents to medical use the control of bleeding becomes possible, so that today it occurs as a complication in the hands of the experienced in probably less than 5 per cent of the cases, and in these seldom in a serious form. If a patient bleeds after suprapubic prostatectomy there is always a suprapubic opening through which the clots may be exuded and pressure relieved, not so in the resection case. If the catheter or urethra becomes obstructed by even a small clot, when the bladder fills it will contract in an attempt to expel it, ineffectual spasms of the bladder musculature will develop, and the bleeding, which was insignificant to start with, becomes aggravated. More clots form, which the bladder tries vainly to expel, and so a vicious circle is established. There is nothing to be gained by watchful waiting in the hope that the bleeding will stop. Although many novices in the care of these patients have this hope or else attempt to remove the clots by dilution, forcing more fluid into an already distended viscus (a practice that can result in vesical rupture, and is to be condemned), bleeding will continue until the bladder has been cleared of clots. To the experienced the evacuation of clots from a distended bladder is not a serious or difficult procedure. It is seldom that the vessel which is bleeding is of sufficient size to result in a loss of blood dangerous to the patient's life, far more fre-

quently obstruction caused by the resulting clots, rather than hemorrhage, is the difficulty to be met. Clots in the bladder can be evacuated with proper instruments in a very few minutes, and the bleeding vessel, if still active, can be readily stopped by coagulation. Usually on evacuation of the clots the bleeding stops spontaneously. To the inexperienced, bleeding is a formidable and serious matter and is likely to occur rather frequently, necessitating transfusions and even cystotomy. The stopping of such bleeding by transurethral methods requires the maximum of technical skill, and those who have not attained such skill will choose the method of opening the bladder suprapubically for the evacuation of clots. To have informed a patient of the benign nature of transurethral resection and, having undertaken it, to be compelled after an ineffectual attempt to control an attack of postoperative bleeding to do a suprapubic cystotomy is likely to cool the ardor of the most enthusiastic resectionist who lacks training. Like the poor carpenter, such an unfortunate is inclined to blame his tools and decide that he has chosen the wrong instrument for his work.

INSTRUMENTS

That three different instruments and technics are usually employed for the transurethral removal of tissue and the control of bleeding has certainly added to the general confusion regarding the efficacy of the procedure. Where many remedies are recommended, the inexperienced are inclined to believe that not one is satisfactory. Some workers, preferring to use the original principle of Dr. Young, excise the tissue with a tubular knife as it is caught in the fenestrum of the hollow tube. To control the bleeding they depend on the local application of the coagulating current to the surface after the tissue is excised. The advantage of this method, they maintain, is that the coagulation and hence the destruction of tissue is kept at a minimum, insuring the more rapid healing that occurs in the case of an incised area as compared to a charred or coagulated one. Thus a more rapid and painless convalescence may be expected. The instrument seems to have the added advantage that it does not easily injure the external sphincter and is less likely to remove tissue beyond the borders of the gland, so that the possibilities of incontinence and extravasation of urine are lessened. In the hands of the inexperienced it seems the least dangerous of the three types of resectoscopes now in general use. However, its employment necessitates a familiarity with the direct cystoscope, an instrument with the use of which the majority of urologists are not familiar, most of them having confined their experience to the employment of lens instruments, a regrettable technical limitation but one that has prevented the general adoption of this method of transurethral resection.

Most urologists prefer to use a lens instrument with a reciprocating wire loop originated by Stern and perfected by McCarthy. This loop is activated by a high frequency current which excises the tissue and through which a coagulating current passes for the control of bleeding. Because the operation is observed through a lens system it is imperative that the field of vision be at all times as clear as possible, to insure which the coagulation of bleeding vessels must be carefully carried

out. Add to the coagulation necessary to excise the tissue that which is necessary to insure adequate vision, and the aggregate result is a rather extensive charred area the healing of which is bound to be prolonged. The loop electrode is also dangerous in that, being pulled toward the operator, it can very easily, in the hands of the inexperienced, injure the external sphincter and result in a urinary incontinence (a complication that should be charged against the operator and not against the operation). The same statement of course applies to the postoperative strictures that have been reported following resection. They are the natural result of unnecessary trauma to the urethra brought on by the passage of too large an instrument or a too prolonged operation at the hands of the inexperienced. Their occurrence cannot justly be attributed to the operative procedure.

The third most popular method of resection is that developed by John Caulk, who uses a combination of the two previous ones, excising the tissue with a tubular shaft the end of which has been transformed into an actual cautery. He believes that such cauterization is less penetrating than that produced by the high frequency current, and that tissue destruction is therefore less, and healing more rapid.

APPLICABILITY OF TRANSURETHRAL RESECTION

Because of the untoward results of too extensive cauterization, many urologists have advocated the limitation of the procedure to the smaller type of median lobe hypertrophy and contracted bladder necks. Until prostatic resection became popular, few had interested themselves in the amount of tissue that was usually removed at prostatectomy. It was known that the average normal gland weighed about 23 Gm and that hypertrophied ones had been removed weighing over 200 Gm, but what the average amount of tissue excised at an operation was had not been determined. I weighed the tissue removed in 575 consecutive suprapubic prostatectomies done at the Mayo Clinic and found only 32.1 per cent to weigh more than 50 Gm, while Alcock found the average weight of 433 he had removed to be 38.3 Gm. He tritely remarks, "If with the resectoscope one removes from 15 to 35 grams, one is removing a very large part of the average gland." As the removal of such an amount of tissue is readily accomplished in less than an hour's time, the new procedure seems well suited for the majority of men suffering from prostatism. The huge glands that are suitable for museum collections will of course require other procedures for their removal, unless the patient is willing to have or prefers multiple resections in place of prostatectomy.

The incidence of multiple resections is frequently inquired into by those interested in the method and not infrequently caustically referred to by its critics. Although it is usually possible to complete a resection at one time, it is not always desirable as postoperative reactions seem to bear a direct relationship to the time consumed in the operation. There are several reasons for this. The urethra always resents undue trauma, and the importance of gentleness in the passage of instruments through it remains unchanged. In transurethral work these instruments are of larger caliber and remain in the urethra for long periods of time, so

that injury to the mucosa by the continual pressure can readily occur. Because the instruments are of large caliber, care should be exercised to see that the urethra is adequately dilated by the passage of sounds before their insertion. Too often at the present time one may see the enthusiastic resectionist forcing an instrument several sizes too large for the caliber of the urethra. Such manipulation is likely to result in periurethral abscesses, fistulas or strictures. To relieve the patient of a urinary obstruction due to prostatic hypertrophy and as a result leave him with obstruction due to urethral stricture is inexcusable but can be avoided only by careful procedure. A multiple stage resection is far preferable to such an outcome, and when its necessity is explained to patients few offer objection, realizing that to repeat a procedure as little debilitating as a resection is preferable to spending the time in the hospital required by prostatectomy.

There is no question that the operation of resection is difficult and when undertaken in the case of large hypertrophies is tedious in the extreme to the operator, while a prostatectomy is an easy operation for the operator but carries a much greater risk for the patient. Surgeons are human, and, other things being equal, some are inclined not only to select the easiest procedure but sure to resent the popularity of any method the adoption of which is difficult or impossible for them to master individually. Such members of the profession are heard to say "Yes, it is an excellent procedure when properly applied. Its field, however, should be limited to the lesser types of obstruction and to the poor types of risk, such as patients of advanced age with marked physical impairment brought on by their failing cardiovascular renal systems." If a procedure is safer for the greatly debilitated, it must of necessity be safer for the normal, and it is difficult to understand how a procedure that is admittedly more dangerous can be recommended simply because it is easier for the operator. Twinem recently reported the total operative mortality since 1920 for the thirty-three patients over 80 treated by prostatectomy either suprapubically or perineally at James Buchanan Brady Foundation of the New York Hospital as 33½ per cent, while Alcock reports doing resections on 124 patients over 80 with an 11.3 per cent mortality, and Thompson at the Mayo Clinic performed resections on thirty-eight patients over 80 during 1935 without a death.

Every urologist who performs a large series of resection operations is sure to fall heir to a number of patients whose advanced age has made other members of the profession hesitate to operate by the older methods. In fact, the first cases that the pioneers in the procedure handled were those that they or their associates feared to risk submitting to a prostatectomy.

RECURRENTS

Will this newer operative procedure be as permanent as the older methods? is a question frequently confronting its advocates. More time must elapse before this can be answered with authority. It is going to be difficult to distinguish, in an acute survey, those cases that constitute a true recurrence from those in which a return of the obstructive symptoms occurs because of the initial incompleteness of the first resection. At the present time the number of patients returning for a

subsequent resection after a prolonged period of relief appears to be less than the number who succumbed following the older methods of removal. Those that are so unfortunate as to require such a subsequent resection have, in my experience, felt that a repetition of the procedure was preferable to the risk involved in the more drastic enucleation.

Hugh Cabot⁵ has recently written

"The real nub of the question turns upon the decision as to who is to treat by operation these people with obstructing prostates. If they are to be treated in the future as in the past, largely by the general and perhaps occasional surgeon, then the indications are for an operative method as nearly fool proof as may be. But this does not seem a high ideal for surgical practice. If it is the standard that we are to accept, then we must take it with the mortality, which in this country at least has rarely been below 15 per cent or even 20 per cent. That any elderly man is likely to shy at such a risk will be evident. If these men are to be treated by experts, then transurethral resection can already claim over 5,000 such cases carefully observed in which the mortality rate has been below 2 per cent and the hospital confinement has been less than a week, with functional results the equal if not superior to those obtained by the older methods."

What the profession chooses for itself is usually an excellent indication of what the public will ultimately demand. Ten per cent of my last hundred patients who had prostatic resection have been physicians.

112 North Madison Avenue.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
HOWARD A. CARTER Secretary

HEALTH RAY SUN LAMP NOT ACCEPTABLE

Manufacturer Health Ray Manufacturing Company, Inc., New York

The Health Ray Sun Lamp consists of an arc between carbon electrodes operated in a metal housing 8½ by 8½ by 4½ inches in outside dimensions.

The front side of this metal box is covered with a small mesh wire screen, through which the arc radiation emanates. The rear side of the box consists of a hinged door, on the inside of which is mounted a porcelain insulating base that supports the carbon arc electrodes and the ballast resistance. The housing is mounted on a yoke that permits adjustment in the vertical plane.

The carbon electrodes are held in a vertical position, side by side, but separated about one-half inch. The arc is formed by bringing the upper ends of the electrodes in contact, by rotating the support of one of the carbon electrodes, which support terminates in a hard-rubber knob, on the outside of the door. After the arc has been operated for several minutes this knob becomes uncomfortably hot, and hence it is difficult to adjust the arc.

The housing, being single walled and so small, becomes burning hot to the touch after the arc has been operated for from five to ten minutes. While the housing did not become sufficiently hot to burn bits of paper placed on it and hence is probably not a fire hazard, nevertheless it cannot be recommended for treating children unless guarded by an attendant.

Instead of supplying the purchaser with safety glasses (goggles) to shut out the ultraviolet and yet enable the user to move about in safety, opaque eye covers are provided. These covers of sponge rubber 8 mm in thickness, are cut to fit the

⁵ Cabot Hugh. *Modern Urology* ed 3 Philadelphia: Lea & Febiger vol 1 section 14 chapter 18.

eye socket, viz., 4.5 cm long and 2.5 cm in its widest dimension. This is to be tied over the eyes by means of rubber elastic string. This form of economy (sacrificing safety to cheapen a commodity) is not to be recommended.

ADVERTISING MATTER

In lay advertising, exaggerated or misleading statements have appeared, for example, "Build up your resistance and vitality so that your system will easily throw off germs and poisons," "The Cheapest Form of Health Insurance," and "Improves your appearance 100%." The promoters of the carbon arc Health Ray Sun Lamp place great emphasis on producing a tan. The carbon electrodes supplied with the Health Ray Sun Lamp are "Sun Tan," "Super Tan" carbons that are strong in ultraviolet radiation of wavelength shorter than 2,900 angstroms, not found in sunlight.

RADIOMETRIC TESTS

Following the recommended procedure, by means of a balanced thermopile and filter radiometer, measurements of the ultraviolet radiant flux, of wavelengths shorter than and including 3,132 angstroms, were made at a distance of 24 inches in front of the lamp, which, as already mentioned is covered with a wire mesh screen.

The arc of super tan (sun tan) carbons was operated on 115 volts alternating current, and it burned the quietest on 80 to 85 amperes, the total power input being from 850 to 900 watts.

At a distance of 24 inches the ultraviolet flux (intensity) of wavelengths shorter than and including 3,132 angstroms, with only the wire mesh in place, was 48 microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$), whereas for acceptance as a therapeutic lamp (using C carbons) the minimum is about 55 $\mu\text{W}/\text{cm}^2$.

However, to be acceptable as a sunlamp for home use without the supervision of a physician, the Council specifies that the source shall not emit an appreciable amount of ultraviolet radiation of wavelengths shorter than 2,800 angstroms. In the carbon arc lamps this is accomplished by using a window of Corex-D glass in front of the arc. On this basis the ultraviolet radiant flux of wavelengths 2,900 to 3,132 angstroms is reduced from 48 $\mu\text{W}/\text{cm}^2$ to 9.2 $\mu\text{W}/\text{cm}^2$. This is only about one tenth the intensity required for acceptance by the Council.

In view of the objectionable advertising matter and the weak intensity of the ultraviolet radiation of this generator, the Council voted not to include the Health Ray Sun Lamp in its list of accepted devices.

OTOFLEX NOT ACCEPTABLE

Manufacturer The Otofex Corporation, Milwaukee.

The Otofex is a device for generating tones which are audible within the ordinary sound range. These tones are generated by an electric oscillator making use of vacuum tubes. The frequency of the tones may be changed at will and the volume increased or decreased. An electric motor provides a method whereby the tone may be automatically varied from very low to very high pitch. The tone produced is not unlike that of a siren on a fire truck, but greatly reduced in intensity. The sound is applied to the ear by means of telephone receivers. Additional head-sets may be obtained and each is provided with its own rheostat to govern the intensity. The unit operates on 110 volts alternating current and weighs about 25 pounds.

The device was tested in a clinic acceptable to the Council. In this investigation thirty-one persons were treated: twenty-one women and ten men. Their ages ranged from 21 to 68 years. All had been hard of hearing for a long time and their deafness was truly "chronic." Those who presented themselves were given careful clinical diagnostic examination including tests with an audiometer in a sound proof room. The audiometric tests were repeated approximately every two weeks during the course of treatments. All hearing tests were made by the same person to insure uniformity of method. The sponsors of the instrument suggested that it would be at least a month before the treatments would produce any measurable change.

The users were instructed to sit quietly and listen to the tones for thirty minutes each day. Each one was instructed not to make the sounds extremely loud but to keep them distinctly audible. (It is well known that loud noises may damage the hearing mechanism but it has not been demonstrated that faint or distinctly audible sounds have any deleterious effect on hearing.) At the end of the first month, those who desired to continue were invited to do so. Twenty of the thirty-one used the instrument for twenty-five treatments or more, seven had fifty or more, and five had seventy or more. One used the instrument ninety-four times between Jan 17 and July 25, 1935. More than a thousand treatments were given.

The results of the investigation submitted were not convincing, since no significant changes in hearing were noted, either for the better or for the worse. In the opinion of the Council, the corresponding changes in hearing would have been noted if the patients had not used the instrument at all.

Unless the deafness treated should be of a different nature from that encountered by those who volunteered for study, the Council can see no reason to expect the use of the Otofex to result in any improvement in hearing. In the opinion of the Council, more critical evidence than that received to date would have to be presented.

In view of the negative results of the investigation, the Council on Physical Therapy voted not to include the Otofex in its list of accepted devices.

Council on Pharmacy and Chemistry

ANTIPNEUMOCOCCIC SERUM TYPES I AND II CONTAINING HETEROPHILE ANTIBODIES-LILLY NOT ACCEPTABLE FOR N N R

IN THE REPORT OF THE ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY FOR 1935 IT WAS NOTED THAT A PHARMACEUTICAL HOUSE IS MARKETING AN ANTIPNEUMOCOCCIC SERUM WITH THE CLAIM THAT THE PRODUCT CONTAINS CERTAIN HETEROPHILE UNITS AND NEUTRALIZING AGENTS WITH THE CLAIM THAT THESE REPRESENT ADVANTAGES OVER ORDINARY PRODUCTS OF THIS CLASS. THE FIRM HAS NOT PRESENTED THE PRODUCT FOR INCLUSION IN NEW AND NONOFFICIAL REMOIES. THE COUNCIL VOTED THAT THE FIRM IN QUESTION BE INVITED TO PRESENT THE AVAILABLE EVIDENCE IN ORDER THAT THE COUNCIL MAY CONSIDER IT AND REPORT TO THE PROFESSION OF THE STATUS OF SUCH A PRODUCT IN THE LIGHT OF THE EVIDENCE FOR THE CLAIMS MADE.

THIS ACTION WAS INSTITUTE AND THE FIRM ELI LILLY AND COMPANY SUBMITTED ITS EVIDENCE AND RATIONALE FOR PROMOTION OF THE PRODUCT. FOR THE PURPOSE OF DETERMINING THE PRESENT STATUS OF THIS PREPARATION THE COUNCIL REQUESTED DR. NORMAN PLUMMER (INSTRUCTOR IN CLINICAL MEDICINE CORNELL UNIVERSITY MEDICAL COLLEGE) TO MAKE A REPORT ON THE ACQUISITION OF THESE IMMUNE FACTORS TO ANTIPNEUMOCOCCIC SERUM.

THE COUNCIL HAS APPROVED AND ADOPTED THE FOLLOWING REPORT OF DR. NORMAN PLUMMER ON THE USE OF HETEROPHILE ANTIBODIES IN THE TREATMENT OF PNEUMONIA. THE COUNCIL HAS FURTHER DECLARED ANTIPNEUMOCOCCIC SERUM TYPES I AND II CONTAINING HETEROPHILE ANTIBODIES MARKETING BY ELI LILLY AND CO. UNACCEPTABLE FOR INCLUSION IN NEW AND NONOFFICIAL REMOIES BECAUSE OF LACK OF EVIDENCE OF ITS THERAPEUTIC VALUE. THE COUNCIL DESIRES TO EMPHASIZE THE CONCLUSION OF DR. PLUMMER THAT IN THE LIGHT OF PRESENT KNOWLEDGE RECOMMENDATION OF THE COMBINED HETEROPHILE SERUM FOR GENERAL DISTRIBUTION IS UNWISE AND UNWARRANTED.

PAUL NICHOLAS LEACH, Secretary

HETEROPHILE ANTIBODY IN THE TREATMENT OF PNEUMONIA

NORMAN PLUMMER, M.D.
NEW YORK

Forsman¹ in 1911 found that guinea pig tissues, when injected into the rabbit, produce a hemolytic immune serum not only for guinea-pig red blood cells but also for sheep red blood cells. The lack of biologic relationship between the

From the New York Hospital and the Department of Medicine, Cornell University Medical College.

¹ Forsman, J. and Widen. Die Herstellung hochwertiger spezifischer Sera ohne Verwendung von Schafblut. Ein Beitrag zur Lehre von heterologer Antikörperbildung. Biochem. Ztschr. 37: 97, 1911.

species producing the antigen and the species for which the antibody has an affinity suggested the term heterophile, in contradistinction to the term homologous for the usual type. One group of animals, the so-called guinea-pig type, contains heterophile antigen, and this antigen when injected into the body of another group of animals (so-called rabbit type) produces heterophile antibody. The human being does not have the heterophile antigen but does produce the antibody, the horse possesses the antigen and therefore cannot produce the antibody. The rabbit, again like the human being, produces heterophile antibody. Recently, Bailey and Shorb² showed that many different bacteria contain heterophile antigen. They have reported that all types of the pneumococcus in both rough and smooth forms contain heterophile antigen. This antigen, they find, is not type specific. It has been shown that an animal of the rabbit type, when immunized with pneumococci, develops a high titer of heterophile antibody, while an animal of the guinea-pig type, such as the horse, already shows the heterophile antigen and does not produce the antibody.

The proponents of heterophile serum reason "that ordinary antipneumococcus horse serum, because of its absence of heterophile antibody, is an incomplete immune serum." Furthermore they state that the antipneumococcus horse serum, because of its content of natural heterophile antigen in addition to the heterophile antigen of the pneumococci added in the process of immunization, when injected into the human being sick with pneumonia exerts a certain "antagonistic action" by neutralizing any natural heterophile antibody present in the human being.

The existence of heterophile bodies, the presence of heterophile antigen in the horse and heterophile antibody in the rabbit, in other words the Forssman phenomenon as a biologic condition, is accepted by most observers. This subject of heterophile phenomena in immunology has been reviewed and commented on by Leon Buchbinder.³ Buchbinder stresses the importance of this condition, he comments favorably on the use of heterophile antibody in passive immunization, and he predicts that the heterophile factor will have increasing importance in the production of immune serum.

The presence of heterophile antigen in the pneumococcus and other bacteria is based on the work of Bailey and Shorb⁴ at Johns Hopkins University. Since 1931 they have made several reports. They found that they could produce antiship hemolysis in the serum of rabbits, giving the characteristic reactions of heterophile antibody, by (1) injecting pneumococci subcutaneously and intravenously into the rabbits, (2) infecting rabbits with pneumococci, and (3) feeding killed cultures of pneumococci to rabbits. Further, they were able to remove the antipneumococcus hemolytic antibody from the serum by absorption either with homologous or heterologous boiled pneumococci or with boiled sheep corpuscles. The experiments of Bailey and Shorb were carried out further to show that 1 Rabbits immunized with heterophile antigens from animal sources particularly sheep corpuscles were relatively resistant to intravenous infection with type I pneumococci. 2 The protective property of antipneumococcus horse serum for mice was enhanced under certain conditions by the use of antiship hemolytic rabbit serum with it. 3 The opsonic power of whole and concentrated antipneumococcus horse serum for pneumococci can be greatly increased by combination with antiship or antipneumococcus rabbit serum.

The observations of Bailey and Shorb are excellently reported. However observations of such significance should be confirmed by an independent group of investigators before receiving final acceptance. The presence of heterophile antigen in the pneumo-

coccus and other bacteria and the production of heterophile antibody in the rabbit seem reasonable. Knowing the variability of results following the intravenous injection of pneumococci into the rabbit, and knowing the shortcomings of the mouse protection test, it is difficult to follow completely the conclusions that the resistance of rabbits can be increased and the protective power for mice enhanced by the use of heterophile bodies. As far as the increase in opsonic power is concerned, Goodner,⁵ who has been working along this line, feels that the cause of this increase is not yet known and that it may be a factor other than the heterophile antibody.

In order to show further evidence that heterophile antibody has biologic and therapeutic significance in pneumococcal infections, Powell, Jamieson, Bailey and Hyde⁶ at the Lilly Research Laboratories and at Johns Hopkins University repeated the Goodner experiment, producing type I, II and III pneumococcus dermal infections in rabbits and curing them with (1) antipneumococcus immune horse serum, (2) rabbit heterophile (anti-boiled sheep cell) serum, (3) rabbit antipneumococcus serum, and (4) mixtures of horse and rabbit antipneumococcus serum. They conclude that the usual pneumococcus mouse protective antibody is more effective therapeutically in rabbits when fortified with heterophile antibody.

This work of the Lilly investigators is excellently reported and if it can be repeated will throw new light on the entire subject of pneumococcus immunity. Since Goodner⁷ reported the pneumococcus dermal test in rabbits in 1928, it has been used quite extensively by various pneumonia investigators. Goodner, however, found the test applicable only to type I pneumococcus infections and his reports deal only with infections of this type. It has been found that only an occasional strain of type II or type III pneumococcus will produce the dermal infection. In my own experience certain virulent human strains of type II pneumococcus were pathogenic for rabbits only in extremely high dosage. This experience makes it difficult to follow the very consistent results procured by these experimenters. Their protocols do not indicate the difficulties reported by other investigators. Assuming that this work can be repeated, it still remains true that in this experiment the better results are reported when the infected rabbit is treated with rabbit serum and it still is a question whether it is better to go from the rabbit to the human being or from the horse to the human being.

The strongest argument in favor of heterophile serum given by its proponents is that convalescents from pneumococcal pneumonia show an increased titer of heterophile antibody in their serum. Bailey and Shorb⁴ report as follows: "A number of human sera were obtained from cases of lobar pneumonia near the beginning of the disease and soon after the temperature had returned to normal. These sera were titrated for antiship hemolysis. There was a definite increase in the hemolysis in the cases which recovered. For example, in one case infected with an organism reported as a type IV pneumococcus the titer of the serum on the fifth day of the disease was 16 units per cc, and at the end of the twelfth day (sixth afebrile) the serum contained 100 units of antiship hemolysis per cc. This represents the evidence in the literature showing that heterophile antibody is increased in the serum of convalescent pneumonia patients. On the other hand recently, Finland, Rueggesser and Felton⁸ have reported their finding of heterophile antibody (sheep cell hemolysis) in the serum of (1) convalescent pneumococcal pneumonia patients, (2) subjects immunized with potent pneumococcus antigenic fractions, and

² Shorb, Mary S., and Bailey, G. H. Heterophile Antigen in Various Bacterial Species. *Am. J. Hyg.* 10: 148-183 (Jan.) 1934.

³ Buchbinder, Leon. Heterophile Phenomena in Immunology. *Arch. Path.* 10: 841-859 (June) 1935.

⁴ Bailey, G. H., and Shorb, Mary S. Heterophile Antigen in Pneumococci. *Am. J. Hyg.* 13: 831-86 (May) 1931. Immunological Relationship of Pneumococci and Other Heterophile Antigens and Biological Significance in Pneumococcus Infections. *ibid.* 17: 358-411 (Oct.) 1935.

⁵ Goodner, Kenneth. Personal communication to the author.
⁶ Powell, H. M., Jamieson, W. A., Bailey, G. H., and Hyde, R. R. A Comparative Study of Antipneumococcus Serum Containing Heterophile Antibody. *Am. J. Hyg.* 17: 102-121 (Jan.) 1933.

⁷ Goodner, Kenneth. Further Experiments with the Intradermal Pneumococcus Infection in Rabbits. *J. Exper. Med.* 48: 413-429 (Sept.) 1928.

⁸ Finland, Maxwell, Rueggesser, J. M., and Felton, L. D. Heterophile Antibodies in Pneumonia. *J. Clin. Investigation* 14: 693 (Sept.) 1935. Should Heterophile Antibody Be Used in the Treatment of Pneumococcal Pneumonia? *J. A. M. A.* 105: 1180-1182 (Oct. 12) 1935.

(3) normal controls In all they tested 671 serums and included 120 pneumonia patients The titer of heterophile antibody was surprisingly the same in the three groups of cases, failing to show any increase in titer in the convalescent pneumonias and no decrease in the bacteremic or fatal cases In the pneumonia patients treated with antipneumococcus horse serum there was a decrease in hemolysin shortly after the injection of the serum and a definite rise a week or more later These changes in no way were found to correspond to the course of the disease. Finland, Ruegsegger and Felton felt that there was no justification for the contention that antipneumococcus horse serum in acting as a heterophile antigen is primarily toxic and has an antagonistic action They conclude that heterophile antibody has no bearing on the course or outcome of human cases of pneumococcic pneumonia

The manufacturers of the combined heterophile antibody serum admit that the clinical and statistical evidence is limited, however, they give the following "In a series of fifty cases treated, the mortality was 8 per cent, while in the control group it was 26 per cent The average number of days of hospitalization was twelve for the treated and sixteen and one half for the untreated Jameson and Powell reported on the use of the serum in five cases of pneumonia In four cases there was temporary marked drop in temperature and relief of toxemia One patient failed to respond When the triple combined serum was used in a small series of cases within seventy-two hours of onset of the disease, the mortality was 28.5 per cent as against 58.5 per cent when no serum was used No attempts were made to type the pneumococci."

Such a statistical report is not only limited in its scope but is extremely misleading Chance plays its part in the run of pneumonia cases in the same way that it plays its part in the run of cards I have seen as many as thirty consecutive deaths from pneumonia in the wards of Bellevue and a greater number of consecutive recoveries The practitioner who sees a number of pneumonia patients in his practice may go for several seasons without a single fatality and then may have several deaths in a row This shows the necessity of a large series and shows the importance of alternate controls In attempting to ascertain statistical evidence in pneumonia it has been found necessary to control a group of cases by having the following information (1) accurate type diagnosis, (2) blood culture determinations, (3) presence or absence of complications, (4) age of patient The mortality rate varies with each of these factors, and in addition it varies with each particular year and with the season of the year

The combined heterophile antipneumococcus serum has been marketed since September 1934 It is a mixture of the refined and concentrated serums of the horse and of the rabbit The horse immunization is carried out by the intravenous injections of virulent culture of types I, II, III and IV, and subcutaneous injections of whole culture toxic vaccines of the same types The rabbit immunization is produced by intravenous administration of virulent pneumococci high in heterophile antigen, and of the same four types The heterophile antigen in the horse serum is eliminated by adding the rabbit serum and removing the resulting precipitate An additional amount of rabbit serum is then used so that the final product will contain a certain amount of heterophile antibody in addition to the usual Felton units of protective substance The average horse fraction is estimated at from 80 to 90 per cent, and the rabbit fraction at from 10 to 20 per cent

The producers of this combined heterophile serum do not state why the Cooper type IV pneumococcus is used instead of one of the more important subtypes of group IV This will undoubtedly lead the average physician who is not familiar with the more recent classification of the pneumococci to believe that the immunization is complete for the usual types I, II and III and group IV pneumococcus, and therefore, that the serum gives passive immunization for all pneumococcic pneumonias Furthermore, it should be pointed out that several producers of antipneumococcus serum have found that

it is more difficult to immunize horses for several types than for one or two types I have noted that the Lederle bivalent type I and II serum requires almost double the amount of fluid that the monovalent type I serum of the same brand requires Were it not for this uneven immunization when several different types are used, it would be highly desirable to prepare type I, II, VII and VIII serum The producers of serum also have found it difficult to obtain horse serum in which type III and type IV antibodies have formed in any appreciable titer The manufacturers of the combined heterophile serum do not mention any of these difficulties, neither do they indicate the titer of type III or type IV protective substance in the serum

The fact that the heterophile serum contains the foreign proteins of both the horse and the rabbit theoretically doubles the chances for allergic reactions I have known of several instances of atopic rabbit sensitivity Acquired rabbit sensitivity is quite common among laboratory workers and probably occurs with some frequency in industries in which rabbit pelts are handled There are no statistics, but one is led to believe that rabbit sensitivity is almost as common as horse sensitivity

In their booklet the manufacturers state that patients receiving serum should be given a skin test using 0.1 cc of a 1:10 dilution of the serum, and an ophthalmic test with the same diluted serum Presumably, the serum referred to is the diluted therapeutic serum, which contains an indefinite amount of the horse and rabbit serum protein This certainly would give unreliable readings It would seem advisable, when the combined serum is used, to recommend two tests, one with the diluted whole horse serum and the other with the diluted whole rabbit serum In this way antipneumococcus horse serum, which has so much evidence for its value, could then be given to the type I patient sensitive to rabbit serum but not sensitive to horse serum

CONCLUSIONS

1 The presence of heterophile bodies in animal tissues, animal serums and bacteria is strongly suggestive that these bodies play a part in certain immune reactions

2 The animal experiments carried out by Bailey, Shorb, Powell, Jameson and Hyde do not prove that the heterophile bodies play a role in the pneumococcus immunity of the human being Some of the results reported are open to question The work should be repeated by an independent group of investigators before it is accepted

3 The study by Finland, Ruegsegger and Felton on the heterophile antibodies in the serum of patients convalescing from pneumonia and in controls leads one to believe that the heterophile bodies do not have any particular bearing on the course of pneumococcic infections in man

4 The clinical and statistical evidence cited by the manufacturers of the combined heterophile antibody serum is too limited and is strongly misleading

5 The presence of both rabbit and horse proteins in the serum will increase the incidence and the dangers of allergic reactions This is a definite disadvantage, because with newer methods of refining serum the allergic reaction is the principal source of danger in any type of serotherapy

6 There is only slight experimental evidence and no clinical evidence that the combined heterophile serum gives any immunity against type III and group IV pneumococcic infections There is the same lack of evidence that the combined serum produces a greater immunity for type I and type II infections than the ordinary antipneumococcus horse serum

7 The principal theoretical advantage of the combined heterophile serum is that it could be used for all pneumococcic pneumonias, regardless of type, and the corollary of this that pneumococcus typing would not be necessary Serum having this advantage would be highly desirable but because its superiority is unproved and because of the probable increase in allergic reactions it is unfair and unwise to recommend the combined heterophile serum for general distribution

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SATURDAY, AUGUST 15, 1936

RHEUMATIC INFECTION IN CHILDHOOD

The abdominal syndrome is one of the most frequently overlooked symptoms of childhood rheumatic disease. Wolfe and Brim,¹ writing in the current issue of the *American Journal of Diseases of Children*, call attention especially to a group of children in whom recurrent abdominal cramps lasting from six months to several years were apparently the only subjective manifestation of an active phase of rheumatic infection. The cramps lasted as a rule from a few minutes to a few hours and tended to recur frequently. At times the child complains of nausea and sometimes vomiting. The episode is usually closed before the next meal. Pain is felt frequently around the umbilicus for a short time but sometimes becomes generalized. Tenderness and rigidity are usually absent. Characteristic histories are difficult to obtain, and it is often not until evidence of organic cardiac disease is accidentally discovered that such experiences are related to a physician and then only after persistent and pointed questioning. Early recognition of this abdominal syndrome as a manifestation of rheumatic infection before the onset of organic heart disease becomes manifest may thus become in some instances of considerable importance. Except for dietary indiscretion, active childhood rheumatism is probably the most important cause for such abdominal symptoms, provided the attacks of cramps are transitory and apparently inconsequential. Other manifestations of the active phase may be associated with it, such as pallor, weight fixation in spite of a properly balanced diet, irritability without apparent cause, twitchings and tics, and enuresis after the control of the bladder has been established. The gastro-intestinal manifestations of rheumatic disease may be acute or chronic. The acute symptoms last for a short period, usually from one hour to three days. The attack commonly begins in the upper part of the abdomen, with a sharp nonradiating pain. It often occurs at night or in the morning after a hasty breakfast. The temperature is slightly elevated but rarely higher than

101 F. The pulse rate is not markedly increased. Diarrhea is the exception. The chronic form is characterized by mildness. After the subsidence of the acute attack, minor episodes of fleeting abdominal pain may recur from time to time without any other signs. Diarrhea alternating with periods of constipation is, however, a frequent phenomenon of the chronic form.

In the same issue of the *American Journal of Diseases of Children* Ash² discusses the prognosis in childhood rheumatic infections. Her information was based on 416 patients who had been under observation for two or more years. The average period of observation for the series was seven and one-half years. Of the total group traced, ninety-three, or 22.3 per cent, died as a result of rheumatic infection. Four children died of other causes. Valvular heart disease was present in 66.1 per cent. In 257 patients (57.7 per cent) the disease began with fever of varying degree associated with migratory articular pains of variable intensity. The average age at which these children came under observation was 7.6 years. The age at the last time of observation varied from 5 to 23 years, the average for the entire group being 14 years. From two to nineteen years had elapsed since the onset, the average duration being seven and one-half years. The differences in the death rate between this and other groups studied may be explained largely on the original criteria for selection perhaps more than by the intrinsic variation in the severity of the disease in different localities. In Ash's group there was a startling death rate in the children among whom the course of the disease was actually ten years or more. Of eighty-seven children traced after an average period of twelve years, 44.8 per cent were dead. Of 121 children with rheumatic infection, 40.5 per cent were dead ten years after the onset. Among the group of children whose infection had originated during the five years from 1922 to 1926, however, there were approximately twice as many deaths as among the group whose disease had started within the five years from 1927 to 1931. The meaning of this difference is not quite clear. It was evident, however, from her studies of the clinical nature of the infection and complications that the course of the disease is modified by such variables as sex, racial origin, age at the onset of the infection and calendar year of the origin. Among the clinical manifestations, pericarditis, rheumatic pneumonia, involvement of both aortic and mitral valves, the early appearance of a buttonhole stenosis and subcutaneous nodules bear the most ominous prognosis. Uncomplicated chorea is a mild manifestation. Epistaxis, abdominal pain, hematuria and multiform cutaneous eruptions may be placed in an intermediate group from the standpoint of their prognostic significance. There is some evidence that within recent years there has been a lowering in the mortality and in the incidence of cardiac involvement, though to what

1 Wolfe, J. B. and Brim, C. J. The Abdominal Syndrome of Rheumatism. *Dis. in Child. Am. J. Dis. Child.* 52:297 (Aug.) 1936.

2 Ash, Rachel. Prognosis of Rheumatic Infection in Childhood. *Am. J. Dis. Child.* 52:250 (Aug.) 1936.

factors this is due and whether the apparent improvement will persist remain uncertain

This highly fatal and crippling disease originating most frequently in childhood is worthy of the closest scrutiny. Since available methods of studying the disease in animals are essentially lacking, the careful observation of the individual manifestations of the disease and the lessons which statistical studies can supply furnish the most suitable angle for prophylactic and therapeutic attack. These two papers furnish creditable evidence of the value which such methods can supply

ANTIANEMIC SUBSTANCE IN NORMAL HUMAN URINE

Recent experimental work on the etiology of pernicious anemia has indicated that in normal persons, as contrasted with patients subject to pernicious anemia, an erythropoietic principle is formed by the interaction of gastric juice and some other material, perhaps of dietary origin, and that this substance is subsequently absorbed and stored in the liver. Apparently, in the normal person a sufficient concentration of the hematogenic principle is maintained in the blood stream to promote the normal maturation of the red blood cells in the bone marrow. It seems logical, therefore, to expect that a small amount of the "antianemic" substance might escape from the blood stream into the urine and that a careful examination of the latter fluid might reveal its presence.

A group of investigators¹ at the University of Louisville, in a study of this question have used the reticulocyte response of pigeons as an index of the erythropoietic potency of the test substances. Heated and unheated sterile morning specimens of human urine from six normal subjects were injected intramuscularly for five consecutive days into pigeons in amounts varying from 0.1 to 1.5 cc. per hundred grams of body weight. The proportion of reticulocytes in the blood of the test birds was determined daily for two weeks prior to injection, in order to determine the basal reticulocyte level, and then daily for six weeks after injection. Since nearly all pigeon erythrocytes contain at least one or more granules of a substance staining blue with the reticulocyte stain only those cells which showed a moderately heavy or heavy reticulation were counted as reticulocytes. The results obtained indicated that significant increases in the percentage of reticulocytes occurred in most instances following the injection of even the smaller doses of unheated urine, whereas the responses from injections of the heated samples were of less magnitude and indeed were frequently absent, particularly if the urine had been heated in free access to air. The peak of the reticulocyte rise occurred on an average of fifteen

days after the first injection, and the degree of the reticulosis obtained in many instances compared favorably with that obtained with a potent liver extract injected intramuscularly under comparable experimental conditions. These results, the authors believe, indicate the presence in normal human urine of some substance with a reticulocyte-stimulating activity. Furthermore, the data suggest that the concentration of the erythropoietic substance in urine is roughly one-tenth that in the liver extract employed. In further studies of a preliminary nature, some evidence was obtained which indicated a close similarity between the urinary hematogenic substance and the antianemic principle of liver. Both are partially at least thermostable, particularly in the presence of air, both are nonvolatile, and the solubilities of the two substances in different solvents appear to be similar.

Within the past few months, reports have appeared describing an erythropoietic activity of normal urine when administered to rats² or to guinea-pigs.³ Likewise another investigator⁴ has found that normal human urine administered rectally to patients with pernicious anemia produced a reticulocyte response. Suggestive as the results of the foregoing investigations may be, adequate confirmation of the work is still to be desired. According to some investigators the pigeon is an extremely variable, if not wholly unreliable, test animal for antianemic preparations, and similar criticisms have been made of the rat and the guinea-pig. Even patients with pernicious anemia are known to give reticulocyte responses to inert substances at some times. Nevertheless, reports of further work on the alleged erythropoietic principle of normal human urine, particularly studies of the effect of purified extracts in sufficient numbers of proved cases of pernicious anemia, will be awaited with interest.

OSMOTIC EFFECT OF CALCIUM IONS IN THE BLOOD

The biochemical relationships of calcium have received much attention and have become reasonably well defined. The recognition of the indispensability of this element in nutrition, the discovery of the calcium-mobilizing power of the hormone of the parathyroid glands and the demonstration of the influence of vitamin D on the utilization of calcium have added impetus to the already vigorous trend of investigation of the state in which this element exists in blood and other body fluids and the manifold functions it fulfils in the organism. The total calcium concentration in the serum remains rather constant—close to 10 mg. per hundred cubic centimeters. Physiologic studies involving the

² Leiner, G. Ueber antianemisch wirkende Substanzen im Harn. *Wien. klin. Wchnschr.* 48: 559 (May) 1935.

³ Walters, O. S. Reticulocytogenic Action of Pernicious Anemia Urine Extracts. *Proc. Am. Physiol. Soc.* March 1936, p. 159.

⁴ Decastello, A. Ueber antianemisch wirkende Substanzen im Harn. *Med. Klin.* 31: 377 (March) 1935.

¹ Wakerlin, G. E. and Bruner, H. D. Presence in Normal Human Urine of a Reticulocyte-Stimulating Principle for the Pigeon. *Arch. Int. Med.* 57: 1032 (May) 1936.

variation of this value have demonstrated that the level of blood calcium constitutes one of the equilibria on which life depends. Perhaps the clearest description of the probable physical state of this element in the serum has been given by McLean and Hastings¹. From data on the blood of several species of experimental animals and of man they have concluded that the concentration of calcium ions depends on the serum protein concentration, and a mass action formula has been devised involving serum protein, calcium proteinate and calcium ions which fits the experimental observations. According to them, about half the total calcium of the serum is ionized and corresponds to that previously known as the "diffusible" or "ultrafiltrable" fraction, as it was known to pass through artificial membranes, whereas the remainder is almost all in combination with protein in a physical form not passing through the membranes.

Using the laboratory models as a guide, the physiologist has employed the *in vitro* observations as a basis for explaining the situation in the living organism as regards the physical state of the serum calcium and the consequent behavior as an electrolyte. Thus, approximately half of the calcium is assumed to pass freely across the capillary wall and to behave from the physicochemical point of view much as do the other inorganic ions. This view has received support from the comparison of the concentration of calcium in the plasma with that in cerebrospinal fluid, protein-poor edema fluid, serous exudates and transudates and synovial fluid, under ordinary conditions, all these body fluids contain roughly an amount of calcium corresponding to the "diffusible" portion of the calcium of the plasma. However, recent studies of Keys and Adelson² have thrown doubt on the ready diffusibility of the ionized calcium of the blood. Healthy young men were subjected to brief bouts of severe exercise. It has previously been shown that under these conditions the oxygen capacity and the plasma protein concentration increase, whereas there is a marked loss of water from the blood. The recent experiments show that there also takes place a rise in concentration of blood calcium following vigorous exercise. Calculations showed that, were this increase due only to the non-diffusible colloidal calcium (a reasonable assumption according to the existing views), an impossible hemoconcentration must have occurred. The Harvard investigators are thus forced to the conclusion that the capillary membranes are by no means freely permeable to Ca^{++} though very slow equilibrium may take place.

The retention within the blood vessels of most or all of the ionized calcium during the period when water has been lost from the circulation would exert a significant effect on the osmotic pressure of the blood. Making certain reasonable assumptions Keys and

Adelson estimate that in their experiments when the blood was concentrated following severe exercise the effective osmotic pressure due to the ionized calcium was from 10 to 20 per cent of the total colloidal osmotic pressure. In the normal steady state the osmotic effect of Ca^{++} in the blood is balanced by that in the extra capillary tissue fluid, the greater the hemoconcentration, the more effective does the Ca^{++} of the plasma become in restoring the blood volume to normal. These newer observations add further to the significance of calcium in the organism, to its other virtues must be added that of promoting homeostasis through resistance of changes in blood volume, a property dependent on the difficult diffusibility of this element.

Current Comment

BLOOD VISCOSITY IN HEART FAILURE

In comparison with distilled water, the average normal viscosity of human blood has been found to be about 5.32, any viscosity above 6 or below 4 has been considered to be abnormal. Some blood viscosity values have been reported by Markson¹ in a clinical study of congestive heart failure. Among twenty six cases, twenty-two showed viscosity values that varied from 12.4 to 6.5, three viscosity readings between 4 and 5, and one a viscosity reading below 4. The high viscosity values found were generally associated with an increase in the red cell count and in the size of the individual cell, two cases of syphilitic aortic regurgitation, mitral regurgitation and congestive heart failure were exceptions to the increase in cell size and cell count. The case in which the viscosity was under 4 was one of infective endocarditis and the blood culture was positive for the streptococcus. When gross edema was present, the blood viscosity appeared lowered in association with a diminished red cell count, these values rose rapidly however when diuresis was established, and the edema subsided. Thus when the condition improved under treatment there was a definite fall in the blood viscosity to normal limits in most of the cases and also a reduction in the red cell count and in the diameter and volume of the red cells. The administration of oxygen to the point of relief of dyspnea and cyanosis caused a slight but consistent reduction in the blood viscosity and also in the size and number of the red cells. The same changes occurred when venesection was performed. It would therefore seem that the increase in blood viscosity in congestive heart failure is related to the size of the red blood cells as well as to their number. An increase in the viscosity of the plasma is probably an additional factor. Sahli² quotes Hamburger as having shown experimentally many years ago that carbon dioxide in the blood raises the viscosity by increasing the size of the cells. Now the clinical study by Markson also seems to indicate a relation between enlargement of the red

¹ McLean, F. C. and Hastings, A. B. *Am. J. M. Sc.* 189: 601 (May) 1935.
² Keys, A. and Adelson, L. *Am. J. Phys.* 115: 539 (May) 1936.

¹ Markson, Arthur. *Blood Viscosity in Congestive Heart Failure*. Glasgow: M. J. 7: 201 (May) 1936.
² Sahli, Hermann. *Diagnostic Methods of Examination*, ed. 2. Philadelphia and London: W. B. Saunders Company, 1918, p. 251.

cells and the increase in carbon dioxide in the blood in patients with congestive heart failure. The administration of oxygen to these patients reduced the blood viscosity less definitely than did general therapeutic measures and rest in bed. In the exceptions noted in the cases of infective endocarditis, the low viscosity was probably related to severe secondary anemia and to the bacterial toxins in the blood. This investigation confirms Allbutt's³ statement that in heart disease the excess of carbon dioxide raises the blood viscosity while access to oxygen lowers it and causes a reduction in the number of red cells. It also confirms the observation of others⁴ that in heart failure without edema blood viscosity tends to be increased, while in heart failure with edema blood viscosity is often decreased.

Medical Economics

VITAL STATISTICS IN SICKNESS INSURANCE

Vital statistics, however imperfect, are one of the chief means now available for measuring health longevity, and the progress of medical service in the battle against disease. Medical service is, to be sure, not the only element affecting morbidity and mortality statistics. Economic and social environment both past and present may have effects which cannot be accurately isolated by any present-day statistical technique. When all these modifying elements are taken into consideration, however, we are still faced with the fact that the rate of decline in disease, the length of life, and morbidity and mortality in general have declined in a ratio that more closely follows the progress of medical service than any of the other elements.

The health organization of the League of Nations compiles vital statistics for most of the world.¹ The most improved statistical technique is used to make these figures comparable. If it is possible to provide better medical service to the mass of the people by means of compulsory sickness insurance than through the private independent practice of medicine, that fact should in some way be reflected in these statistics.

The latest compilation of the Health Section of the League of Nations of the general death rate for all the reporting countries covers the period from 1911 to 1934. The statistics are standardized so as to allow for differences in ages in the different countries, but not of course for general social conditions. The countries that in 1934 had a death rate of less than 10 per thousand are the Union of South Africa, Australia, Canada, New Zealand, Norway and the Netherlands. Only Norway among these has a system of compulsory health insurance that has lasted for a considerable time, that of the Netherlands was introduced about five years ago.

The United States death rate is calculated at 11 per thousand. This includes the Southern states with a colored population not found in any European country. If this section were excluded and only the states having a population and a geographic location comparable to that of the European nations with compulsory insurance systems were considered this country would show a lower death rate than that of any of the insured countries.

Only one South American country, Chile, has a system of compulsory sickness insurance. This country had a death rate of 26.8 in 1934 as compared with 11.8 in Argentina and of 10 in Uruguay, in neither of which countries is there an insurance system.

A better test of the efficiency of medical service is found by a study of the death rates from certain diseases that are

peculiarly susceptible to medical treatment. Diphtheria is one of the best of such tests. A comparison of the insurance and noninsurance countries with regard to diphtheria morbidity and mortality has previously been made.²

According to the Annual Epidemiological Report of the League of Nations, previously quoted, there was no city in the United States or Canada that had a diphtheria mortality rate of more than 6 per hundred thousand in 1934, with the exception of New Orleans, with 6.2 and of Quebec with 12.4. On the other hand, the total mortality rate for diphtheria in fifty-two German cities was 11 per hundred thousand. In 121 English cities this rate was 11.6 per hundred thousand, and in fifty Spanish cities without health insurance, the rate was 5.2. In Australia (without health insurance) the rate varied from 14 in Auckland to 8.5 in Perth, while Christchurch in New Zealand (without compulsory health insurance) had no deaths from diphtheria.

Tuberculosis is another disease in which the morbidity and mortality rates are affected by the character of medical service. A detailed comparison of the tuberculosis sickness mortality rates in insurance and noninsurance countries was published in *THE JOURNAL* of April 20, 1935.³ The recent report of the League of Nations confirms the conclusions there made that the rate of decline in deaths from tuberculosis is more rapid in noninsurance than in insurance countries. The effect of the colored population makes the comparison of tuberculosis mortality rates highly disadvantageous to the United States, but, if the white population alone is considered, the death rate from tuberculosis is lower in nearly every section of the United States than in the European countries having elaborate systems of sickness insurance.

Infant mortality is also considered a general test of the quality of medical service. In 1934 the deaths of children under 1 year, per thousand live births, in the Union of South Africa was 61, Canada, 72, United States, 60, Australia, 44 and New Zealand, 32. These are all countries which do not have sickness insurance. The rate in some of the leading countries having highly developed systems of sickness insurance was as follows: Germany, 66, England and Wales, 59, Denmark, 64, Scotland, 78. Only three European countries had rates much below these. These were the Netherlands, 43, Sweden, 47, and Switzerland, 46.

Perhaps a fairer comparison is found when the statistics of infant mortality in the larger cities are compared. In the United States the mortality per thousand births of infants under 1 year of age was, in 1934, as follows:

| | | | |
|-----------|----|--------------|----|
| Boston | 57 | Los Angeles | 53 |
| Chicago | 48 | New York | 52 |
| Cleveland | 44 | Philadelphia | 54 |
| Detroit | 50 | Toronto | 48 |

In Australia and New Zealand the mortality in the same year was as follows:

| | | | |
|--------------|----|------------|----|
| Adelaide | 40 | Melbourne | 48 |
| Auckland | 38 | Perth | 41 |
| Brisbane | 43 | Sydney | 44 |
| Christchurch | 39 | Wellington | 41 |

In none of these cities is there any system of compulsory sickness insurance. In the insured nations of Europe, fifty-two German cities had an infant mortality of 60 in 121 English cities, 63 in Berlin, 59 in Glasgow, 98, and in London, 67. In South America in Santiago, Chile, with a system of compulsory insurance there were 244 deaths per thousand of infants under 1 year. Buenos Aires in Argentina, with no insurance, had 63.

The fact that by all these tests the countries without sickness insurance consistently make a better showing than those in which a large percentage of the population are cared for under insurance systems would seem to justify the conclusion that the people generally receive a better medical service where private practice is maintained than where the physicians are required to practice under insurance regulations.

¹ Allbutt T. C. *Quart J Med* 4 342 1910 1911.
² Gulland G. L. and Goodall Alexander. *The Blood* ed J. Edinburgh W. Green & Son 1925 p. 40.
³ Annual Epidemiological Report. Corrected Statistics of Notifiable Diseases for the Year 1934. Published by the Health Section Geneva 1936. Figures in the text are taken from this unless otherwise stated.

² Influence of Sickness Insurance on Diphtheria Morbidity and Mortality *J. A. M. A.* 104 1335 (April 13) 1935.

³ Tuberculosis and Insurance *J. A. M. A.* 104 1423 (April 20) 1935.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

ALABAMA

The Poliomyelitis Situation—The state health officer of Alabama reports that 247 cases of poliomyelitis were reported in the state from June 1 up to August 7. The heaviest concentration has been in Lauderdale, Limestone, Colbert, Morgan, Cullman and Jefferson counties. Birmingham is in Jefferson County, where forty-seven cases have occurred. Up to June 1 eleven cases had been reported.

Society News—At a meeting of the Alabama State Association of Railroad Surgeons in Birmingham, July 10, speakers included Drs. Samuel Kirkpatrick, Selma, on "Management of Eye Injuries by the Local Surgeon," and R. W. Waldrop, Bessemer, hernia. Dr. H. Earle Conwell, Birmingham, president of the Jefferson County Medical Society, displayed lantern slides of "Compressed Fractures of the Spinal Vertebrae."

CALIFORNIA

Western School of Public Health—The University of California and Stanford University have organized a Western School of Public Health to assist health departments of western states in the training of public health personnel. Social security funds are used to finance the school and the education of certain public health workers. Health officers, public health nurses, sanitary inspectors, public health statistical technicians and public health laboratory technicians in the ten western states are eligible on recommendation of their health officers for attendance at these courses, which will be given during the summer months. The object is to train those who are already employed in health departments, provided they are considered worthy of receiving additional education. Applicants for the regular work, which may lead to a degree in public health, will be asked to meet definite matriculation requirements and must be within certain specified age limits.

COLORADO

Cragmor Reopens the Main Building—The main building of Cragmor Sanatorium, at Colorado Springs, which was closed during the recent reorganization of the institution, has been opened after a complete renovation. Under the reorganization (*THE JOURNAL*, March 14, p. 927) the sanatorium was incorporated as a 'nonprofit, nonsectarian organization created for benevolent, charitable and humanitarian purposes and for the treatment of tuberculosis and other ailments' as well as for research work. It was established in 1906 with accommodations for twenty-five patients, its present capacity is 130 beds.

CONNECTICUT

New Milk Regulation Adopted—The New Haven Board of Health recently adopted a regulation requiring that all milk or cream brought into or produced in the city, for sale within New Haven, must be pasteurized or come from accredited certified herds or both.

Coordinating Agencies in Cancer Survey—The Connecticut Health Bulletin announces the completed plan of organization for the statewide cancer survey now under way. The state department of health, functioning through its bureau of preventable diseases, has recently become a coordinating unit in this program through an act of the legislature. It will handle statistical analyses of cancer mortality tabulation and analysis of cancer clinic records and public education, cooperating with the state tumor committee of the Connecticut State Medical Society. This committee, appointed to carry on an educational program now has two active committees, publicity and scientific. The latter has been instrumental in organizing the Association of Connecticut Tumor Clinics of which there are about sixteen now operating at various general hospitals in the state. The first step in the survey was a statistical study made by Mr. Herbert F. Hirsche and the appointment of Dr. Matthew H. Griswold, Kensington, to a newly created position as public health physician in the state department of health to specialize in cancer work. (*THE JOURNAL*, July 4 p. 43)

FLORIDA

Personal—Dr. Ralph E. Stevens, health officer of St. Petersburg, has been named chief physician at the Florida State Hospital, Chattahoochee, succeeding Dr. James H. Pound, who resigned.—Dr. Thomas E. Morgan, Jacksonville, has been appointed in charge of the newly organized health unit in Pinellas County, with headquarters in Clearwater.—Dr. James Willard McMurray, Bartow, has been appointed district health officer of West Florida with headquarters at Marianna.

Society News—At a meeting of the Lake County Medical Society, June 1, Dr. John S. McEwan, Orlando, discussed "Traumatic Surgery."—The Florida Medical Association will hold a "stag" picnic at the Dudsread Country Club, Orlando, August 29.—Drs. Emil Novak and John A. Tompkins Jr., both of Baltimore, were guests of honor at a buffet supper given by the Orange County Medical Society at the Orlando Country Club, June 27.—At a meeting of the Shrine Club of the Pinellas County Medical Society in St. Petersburg, June 19, Dr. Annette M. Bieker, St. Petersburg, read a paper on "Ultraviolet Ray in the Treatment of Erysipelas."

Graduate Institutes—The Florida Medical Association, cooperating with its committee on maternal welfare, sponsored a series of graduate medical institutes on maternal and child health, June 1-16. Each institute lasted two days and consisted of afternoon and evening sessions, with Drs. Everett D. Plass, professor and head of the department of obstetrics and gynecology, State University of Iowa College of Medicine, Iowa City, and Samuel F. Ravenel, pediatrician, Greensboro, N. C., as the lecturers. The institutes were conducted in cooperation with the local medical societies and were held in West Palm Beach, Miami, Fort Myers, Tampa, Lakeland, Orlando and Daytona Beach.

IDAHO

New Health Units—Dr. Marion W. Caskey, Tynlorsville, Ky., has been appointed head of a new health unit at Lewiston, one of ten to be established in the state. Dr. Lester C. Krotcher, Coeur d'Alene, has been placed in charge of a unit at Twin Falls.

ILLINOIS

Memorial Archway to Leonard Wood—A stone archway was dedicated at Fort Sheridan, July 28 as a memorial to Major Gen. Leonard Wood, founder of the Citizens Military Training Camps. The archway, which stands at the entrance to the citizens military training camp area, was built by men of the army post under the auspices of the Chicago Historical Society and the Military Training Camps Association. General Wood graduated from Harvard Medical School, then practiced medicine in Boston, then was appointed an assistant surgeon in the army in 1886. He had a distinguished record in the Spanish-American War, after which he was appointed military governor of Cuba. He was commissioned brigadier general in the regular army in 1901 and major general in 1903. He served in the Philippines as governor of the Moro province from 1903 to 1906 and as commanding general of the Philippine Division until 1908. General Wood was partly responsible for the creation of the general staff of the army and served as its first chief from 1910 to 1914. He originated the so-called Plattsburg plan of training reserve officers and during the World War trained the eighty-ninth division of the National Army, and the tenth division of the regular army. In 1921 he was made chairman of a special commission to the Philippine Islands, and then governor general, a position he occupied at the time of his death in 1927.

Chicago

Society News—At a recent meeting of the Chicago Urological Society, the following officers were chosen: Drs. Harvey A. Berkey, president, William J. Baker, vice president, and Colquitt Otis Ritch, secretary.—Newly elected officers of the Chicago Society of Internal Medicine are Drs. Walter L. Palmer, president, Andrew C. Ivy, vice president, and Clarence F. G. Brown, secretary.

Graduate Course on Tumor Pathology—A graduate course in tumor pathology will be held September 21-27, with morning sessions at the Palmer House and afternoon sessions at Michael Reese Hospital. Wednesday, September 23, the program will be offered at the Veterans Administration Facility, Hines, Ill. The course is arranged in the form of clinics, lectures, demonstrations and round table conferences and speakers will include Sir George Lenthal Cheate, London, England; Dr. Henri Coutard, director of x-ray therapy, Curie Institute, Paris, France; Dr. Max Cutler, director of the tumor clinic,

Michael Reese Hospital, Arthur H. Compton, Ph.D., professor of physics, University of Chicago, and Gioacchino Failla, D.Sc., physicist at Memorial Hospital, New York. At the banquet in the Palmer House Saturday evening, Dr. Morris Fishbein, editor of *THE JOURNAL*, will deliver an address.

Fund for Visiting Professorship—A fund has been established at the University of Chicago in memory of the late Dr. George Neil Stewart, from 1905 to 1907 professor of physiology at the university, and subsequently until his death in 1930 professor of experimental medicine and director of the H. K. Cushing Laboratory of Experimental Medicine at Western Reserve University School of Medicine, Cleveland. The fund, to be known as the G. N. Stewart Memorial Fund, is to be devoted to the research of Dr. Julius M. Rogoff, who has been appointed visiting professor of physiology. Dr. Rogoff, who collaborated with Dr. Stewart at Western Reserve for fifteen years, was until 1934 associate professor of experimental medicine. Since that time he has continued his investigations at the University of Chicago on the physiology of the adrenal glands, with particular reference to their relations to diabetes and hypertension. The fund was established through the contributions of the Louis D. Beaumont Trust, N. L. Dauby, Richard H. Kohn, Frances W. Lang and Howard E. Wise, Cleveland.

IOWA

Society News—At a meeting of the Buchanan County Medical Society, June 11, Dr. Lawrence P. Engel, Kansas City, Mo., among others, discussed 'Empyema of the Chest'.—Dr. Frank H. Krusen, Rochester, Minn., addressed the Floyd County Medical Society in Charles City, June 23 on 'Relationship of Physical Therapy to General Practice'.—The Hardin County Medical Society was addressed in Iowa Falls, June 30, by Dr. Samuel F. Haines, Rochester, Minn., on 'Glands of Internal Secretion'.—Speakers before the Jackson County Medical Society in the Bellevue State Park, June 18, were Drs. Howard R. Hartman, Rochester, Minn., on 'Disease of the Biliary Tract and Jaundice', James C. Kessler, Iowa City, 'Common Skin Diseases', and Horace M. Korns, Iowa City, 'Recent Advances in Diagnosis and Treatment'.—Dr. Herbert W. Rathe, Waverly, discussed 'Coronary Artery Disease' before the Tama County Medical Society in Tama, June 5.—At a meeting of the Webster County Medical Society in Fort Dodge, June 19, Dr. William A. O'Brien, Minneapolis, read a paper entitled 'Medicine Marches On'.

MASSACHUSETTS

Personal—Dr. Leroy M. S. Miner, professor of clinical oral surgery and dean, Harvard Dental School, was installed as president of the American Dental Association, July 16. Dr. Miner took his dental degree at Harvard and his medical degree at Boston University School of Medicine.—Dr. K. H. Gieritz, Stockholm, recently gave three lectures at the Peter Bent Brigham Hospital on 'Twenty-Five Years of Experience in the Treatment of Peritonitis', 'Thrombo-Embolic Disease and Its Surgical Treatment' and 'Development of Respiratory Apparatus for Thoracic Surgery'.

MICHIGAN

Expansion of Health Activities—An allocation of \$280,293 for public health activities in Michigan under the Social Security Act has been made available to the state department of health for the current fiscal year. In addition, \$89,352.85 has been assigned to the bureau of child hygiene and public health nursing by the children's bureau; this money will be used to extend services to mothers and children in rural areas, in areas suffering from economic distress and among groups in special need. A new bureau of industrial hygiene has been created in the state department of health and Menominee County has voted to establish a full-time department of health by October, newspapers reported.

Personal—Dr. Mark S. Knapp, Ann Arbor, has resigned as executive secretary and director of medical research of the Horace H. and Mary A. Rackham Fund, Detroit. Dr. Knapp had held the position since the fund was created in 1934.—Dr. Walter E. Mercer, for four years health officer of Webberville, has been placed in charge of the bureau of child health of the Lansing department of health.—Dr. Frederick G. Novy, dean emeritus and professor emeritus of bacteriology, University of Michigan School of Medicine, Ann Arbor, received the honorary degree of doctor of laws at the ninety-second commencement of the University of Michigan. This was the fiftieth anniversary of Dr. Novy's graduation from the university.

MINNESOTA

Society News—Dr. Everett C. Hartley, St. Paul, addressed the Northwestern Pediatric Society in Rochester, July 11, on 'Maternal and Child Welfare Legislation'. Dr. Waltman Walters, Rochester, showed a motion picture on 'Surgical Management of Congenital Abnormalities of the Genito-Urinary Tract'.

Hospital News—About 200 children on the waiting lists of the Gillette State Hospital for Crippled Children, St. Paul, the Eustis Children's Hospital and the Shriners Hospital, Minneapolis, will be hospitalized with social security funds now available. Some of these children have been waiting as long as two or three years, it was reported. Dr. Herman E. Hilleboe, St. Paul, will direct the state's crippled children program.

NEBRASKA

Health at Omaha—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended August 1 indicated that the highest mortality rate (201) appeared for Omaha and that the rate for the group of cities was 99. The mortality rate for Omaha for the corresponding week of 1935 was 205 and for the group of cities, 10. The annual rate for the eighty-six cities was 128 for the thirty-one weeks of 1936, as against a rate of 119 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

State Council on Medical Education—The Nebraska State Medical Association has formed a council on medical education to direct its educational activities. The council consists of a general chairman, the deans of the two medical schools in the state, the chairman of each educational activity, the president, the president-elect and the executive secretary of the state association. Dr. William P. Wherry, Omaha, is general chairman, and Dr. J. Stanley Welch, Lincoln, vice chairman. Other members are Drs. Charles W. M. Poynter, dean and professor of anatomy, University of Nebraska College of Medicine, Omaha; Bryan M. Riley, dean, Creighton University of Medicine, Omaha; Joseph D. McCarthy, Omaha speakers' bureau; Earl C. Sage, Omaha, maternal welfare; Ernest W. Hancock, Lincoln, tuberculosis; James F. Kelly, Omaha, cancer; Claude T. Uren, Omaha, hard of hearing; and James E. M. Thomson, Lincoln, fractures. George W. Covey, Lincoln, president; Roy W. Fouts, Omaha, president-elect; and Mr. M. C. Smith, Curtis, executive secretary. The council held its first meeting, June 23, and made plans for its work. A faculty from members of the association will be organized to prepare addresses to be used in graduate courses, talks for presentation to lay audiences and discussions to be used in county and district medical society meetings. The council will act as editorial critic and adviser to members in preparation of these addresses if desired. It was also agreed that whenever possible the results of special investigations become part of the educational program and that the activities of the council be united whenever possible with those of national and governmental units such as the state board of health, the American Society for the Control of Cancer and the National Tuberculosis Association.

NEW HAMPSHIRE

Food Poisoning Following Picnic—An outbreak of food poisoning occurred in Manchester, July 5, following a banquet during a convention of the organization known as 'Jehovah's Witnesses'. About 700 attended the meeting, which was held in a hall that had only a small refrigerator. The banquet began at 1 p.m. and about 4 o'clock during a speaking program the first victims began to be sick. An hour and a half later, when the health officer arrived, everything had been packed up, including the remains of any food, and a hasty exodus was in progress. About eighty-seven persons are known to have been treated in various towns in New Hampshire, having been stricken at intervals along their way, but the total number affected will never be accurately known, the health department bulletin pointed out. Symptoms were typical of food poisoning: nausea, dizziness, vomiting, diarrhea and intense abdominal pain. In spite of the fact that adequate tests could not be made, the health officials believed that the illnesses were caused by infection of one or more items of the food by some organism with subsequent rapid multiplication resulting from failure to hold the food at a lowered temperature.

NEW JERSEY

Society News—Dr Herbert T Kelly, Philadelphia, discussed diabetes at a meeting of the Cumberland County Medical Society, Millville, June 9.—Speakers before the Middlesex County Medical Society, Marlboro, June 17, were Drs Joseph Berkeley Gordon, on "Methods of Committing Mental Patients in New Jersey" Elsworth F Baker, "Functional Psychoses," and Diomedes Guertin, "Organic Psychoses"—Dr Harrison S Martland, Newark, addressed the Monmouth County Medical Society in June on "Medical Detection of Crime"

State Society Surveys Hospitals—The committee on medical practice of the Medical Society of New Jersey is making a survey of the general hospitals in the state. A sixteen page questionnaire has been distributed to about eighty hospitals. Questions are asked about administration, rates, business management, the medical staff and its relation to the administration, methods of appointment dispensary and out-patient staff, control of patients compensation and liability cases, laboratory service, hospitalization insurance and the pharmacy

NEW YORK

Memorial to Dr Jacobi—A grove of trees near the summer home of Dr Abraham Jacobi at Bolton Landing on Lake George was dedicated as the Abraham Jacobi-Carl Schurz Memorial Park, June 13, at the close of the annual meeting of the American Pediatric Society. A boulder with a bronze tablet was placed in honor of Dr Jacobi and the Carl Schurz Memorial Bench, formerly by the roadside a short distance from the grove, was moved and rededicated. Dr Jacobi, who died in 1919, was a pioneer pediatrician, he occupied the first chair in pediatrics in America and was President of the American Medical Association in 1912. The grove, which has been given to the village by Dr Jacobi's daughter, Mrs George McAneny, is part of a wood where Dr Jacobi and his friend Carl Schurz spent many hours in their declining years. Dr Frederic W Schlutz, Chicago, presided at the ceremony, and speakers were Dr Isaac A Abt, Chicago, Dr Frederic E Sondern, New York, Dixon Ryan Fox, Ph D, Schenectady, president of Union College and president of the New York State Historical Society, and Mr McAneny, son-in-law of Dr Jacobi

New York City

Society News—Speakers at the meeting of the Medical Society of the County of Queens, September 29, will be Drs Royd R. Sayers of the U S Public Health Service, Washington, D C., on "Silicosis, Evaluation in Relationship to Tuberculosis", James Burns Amberson Jr., "Epidemiologic and Social Phases of the Tuberculosis Problem," and Abraham Braunstein, "Practical Application of the Newer Methods of Treatment of Tuberculosis"

Study of Silicosis—The New York City Department of Health, Cornell University Medical College, New York Hospital and the New York Tuberculosis and Health Association are conducting a study of silicosis, made possible by an appropriation of \$91,944 from the Works Progress Administration. About 3,000 workers exposed to dust will be examined and some will be admitted to wards of New York Hospital, where intensive bacteriologic and pathologic as well as clinical studies will be carried out.

Personal—Dr John J Kindred who is also a lawyer received the honorary degree of doctor of laws at the recent commencement of John B Stetson University, DeLand, Fla. where he has for several years taught medical jurisprudence. Dr Kindred was the first president of the National Association of Private Psychiatric Hospitals organized in 1934. He was for ten years representative in Congress from the second New York congressional district.—The honorary degree of doctor of science was conferred on Dr Simon Flexner, member emeritus of the Rockefeller Institute for Medical Research by the National University of Ireland Dublin July 20.—Dr Alfred Appelbaum has been appointed assistant professor of ophthalmology and assistant attending ophthalmologist at the New York Medical College and Flower Hospital

Max R. Schneller Sentenced to Prison—Maximilian R. Schneller who has practiced medicine without a license in various states and served penitentiary sentences for various offenses has been sentenced again for larceny. Schneller's latest legal entanglement occurred while he was with the New York City Board of Education on an assignment from the Works

Progress Administration as a psychologist and psychiatrist. He took from the mail a check made out to a teacher, and endorsed it. On representation of his counsel that a plea of guilty to attempted forgery would necessitate his deportation to Germany where he would be executed as a result of conviction of treason during the World War, he was allowed to plead guilty to petit larceny instead. Schneller had been paroled in September 1935 from the New York County Penitentiary, to which he was sentenced in April 1934 after he was found to be practicing without legal authorization as physician to Hart's Island Prison (THE JOURNAL, May 12, 1934). The probation department and the psychiatric clinic of the New York Court of Special Sessions made an exhaustive investigation of Schneller's history. It was found that he was born Max Schneller in Munich, Germany, in 1896. In 1912 he was under observation in the psychiatric division of the University of Munich and in 1914 was in a hospital in Tournay, Belgium, with a diagnosis of hysteria, the court reported. Between 1912 and 1923, the year in which he came to the United States, he was several times convicted, once for burglary and once for assisting to treason, among other offenses. The psychiatric examination disclosed no evidence of defective intelligence but a psychopathic personality with extremes of emotional reactions. His attempts to represent himself as a physician indicate a definite pathologic trend, the report said, he has no medical education whatever.

NORTH DAKOTA

Appointments in State Health Department—Dr Harnet Bixby, Boston, has been appointed state bacteriologist and Dr August C Orr, Searles, director of the child hygiene division in the state department of health. Dr Bixby succeeds A W Ecklund Bismarck, who resigned. Dr Orr's appointment marks reestablishment of the division of child hygiene with social security funds after a lapse of several years.

OHIO

Gift for Research—The University of Cincinnati has received a gift that in five years will amount to \$55,000 from Mrs Louise Fleischman Yeiser to establish in the college of medicine the Craig Yeiser Memorial Fund in Preventive Medicine. She will give \$10,000 a year for five years and an additional \$5,000 for equipment to carry on research in preventive medicine in memory of her son, who died in 1935 of pneumonia.

Society News—The Eighth District Medical Society met at Rocky Glen Sanatorium, McConnelsville, June 25, with the following speakers: Drs John H J Upham, Columbus President-Elect of the American Medical Association on "These Changing Times" Sidney M McCurdy, Youngstown "Medical Problems in Industry", Emery R Hayhurst, Columbus, "Silicosis," and Walter R Griess, Cincinnati, "Treatment of Gastric Ulcer, with Special Reference to Emetine Hydrochloride"—Dr Arthur C Morgan, Philadelphia, addressed the Summit County Medical Society, Akron, June 2, on "Applied Therapeutics"

Personal—Dr William E. Thompson, Bethel, celebrated his one hundred and first birthday July 6.—Dr William Dean Collier professor of pathology, St. Louis University School of Medicine, has accepted a position as head of the department of pathology at St. Elizabeth's Hospital, Youngstown, to succeed Dr Robert B Poling who resigned to devote his time to private practice.—Dr Vaughn L Hartman, Medina has been appointed health commissioner of Medina County.—Dr Cyrus R Wood, Port Clinton has been appointed health officer of Ottawa County to succeed the late Dr Charles B Finelrock.—Dr John D Dunham, Columbus, has been appointed to the city board of health to succeed the late Dr Wells Teachnor Sr.—Dr Arthur H Franks Akron, recently took a degree in law at the Akron Law School.

PENNSYLVANIA

Hospital News—Bryn Mawr Hospital recently received \$42,000 from the annual Devon Horse Show and County Fair.—The state treasury recently mailed checks amounting to \$1,000,000 to state aided institutions, about half what is due them it is reported.—St. Mary's Mater Misericordia Hospital Scranton has recently opened a tumor clinic. Records accumulated during many years by the late Dr Jonathan M Wainwright Scranton have been made available to the clinic for study and research. Dr Wainwright was chairman of the cancer commission of the Medical Society of the State of Pennsylvania.

District Meetings—The annual meeting of the Eleventh Councilor District of the Medical Society of the State of Pennsylvania was held at Bedford Springs, July 16. Papers were presented by Drs Roy W Scott, Cleveland, on "Diagnosis and Management of Coronary Artery Disease", Randle C Rosenberger, Rahns, "Foods, Their Preservation and Food Poisoning," and John O Bower, Philadelphia, "Appendicitis Mortality in the Eleventh Councilor District". The following officers of the state society discussed organization problems. Drs Alexander H Colwell, Pittsburgh, president, Walter F Donaldson, Pittsburgh, secretary, and Chauncey L Palmer, Pittsburgh, chairman, committee on public health legislation. The Ninth Councilor District held a meeting at the Kittanning Country Club July 30, at which Dr Robert L Anderson, Pittsburgh, spoke on "Modern Methods of Treating the Enlarged Prostate Gland", Dr Maxwell Lick Erie, "Early Diagnostic Essentials in Abdominal Conditions", Dr Laurrie D Sargent Washington, "Hypotension" and Dr Milton M Auslander, Ernest, "Maternal Mortality in the Ninth Councilor District". Dr Colwell made an address on "The Incompatibility of the Economics of Business and the Ethics of Medicine". Dr Palmer, on "Federal Social Security Contribution to Pennsylvania Health Activities," and Dr Donaldson, "Our State Society".

RHODE ISLAND

Fiske Fund Prize Essay—The trustees of the Fiske Fund, administered by the Rhode Island Medical Society have announced that the subject for the 1937 essay will be "Newer Methods of Prevention and Treatment of Acute Anterior Poliomyelitis". The prize is \$250. Competitors should forward copies of their dissertations, marked with a motto to the secretary on or before May 1, 1937. They must be typewritten should not exceed 10,000 words and should be accompanied by a sealed envelop bearing the motto on the outside and the name and address of the sender within. The author of the successful dissertation must transfer to the trustees his right, title and interest in it for the use of the Fiske Fund. Letters accompanying the unsuccessful dissertations will be destroyed unopened and the papers may be obtained by their authors if requested within three months. The secretary is Dr Wilfred Pickles, 184 Waterman Street, Providence.

SOUTH CAROLINA

Society News—At a meeting of the Fifth District Medical Society in Winnsboro in May, speakers included Drs Richard M Pollitzer, Greenville, on infantile paralysis. Henry W deSaussure, Charleston, fatal accidents of pregnancy and Austin T Moore, Columbia, management of fractures. Speakers at the semiannual meeting of the First District Medical Association at Walterboro, May 28, included Drs F Adelbert Hoshall, Charleston on Fractures of the Leg and William H Prioleau, Charleston, "Removal of Needles from the Hand". Drs James R Howell and William A Whitlock Jr, Aiken, addressed the Ridge Medical Association, Batesburg, June 15, on Emergency Operations and Anesthesia and Treatment of Hemorrhoids respectively.

TENNESSEE

New Hospital Superintendents—Dr Henry Bryan Brackin, Nashville, has been appointed superintendent of the Davidson County Hospital, near Nashville to succeed the late Dr William W Core. Dr Raymond R Crowe of the staff of the Davidson County Tuberculosis Hospital Nashville has been appointed superintendent to succeed the late Dr Blackburn G Tucker. Dr Jewell R Wilson of the staff of the Western State Hospital has been named head of the institution to succeed Dr Edwin W Cocke, who resigned recently.

TEXAS

Society News—At a meeting of the Cooke County Medical Society in Gainesville June 8 Drs Milton L Martin and Priestley Lipscomb, Denton, spoke on medical history and prevention of sinus infection respectively. Drs James Vance and John L Murphy, El Paso, addressed the El Paso County Medical Society in May on Intra-Abdominal Ovarian Hemorrhage and Varicose Ulcers and Their Treatment respectively. At a meeting of the Kaufman County Medical Society June 2, speakers were Drs David W Carter Jr, Dallas on Treatment of Diabetes. Loman C Carter, Marlin "Coronary Heart Disease" and Gough H Alexander Terrell "Newer Aspects in the Treatment and Diagnosis of Peptic Ulcer". Drs George H Beavers Jr and William Porter

Brown, Fort Worth, among others addressed the Tarrant County Medical Society Fort Worth, recently on "Abruptio Placentae" and "Limitations of Radiation Therapy in Dermatology," respectively.

UTAH

Plague Infection—According to *Public Health Reports*, bacteriologic examination for plague was positive in a boy bitten by a ground squirrel, June 24 near Beaver. Beaver County Ground squirrels from a ranch two miles north of Bone, shot June 23, and from a ranch four miles southwest of Bone June 24 were proved to be plague infected. Fleas taken June 25 and 26 from seventy-five squirrels on the latter ranch were found positive for plague.

WEST VIRGINIA

Physician Appointed to Social Security Council—Dr William S Fulton, Wheeling has been appointed by Governor Kump to the new State Public Assistance Council which will carry out the state's social security program under a new state law. Dr Fulton's appointment is for six years.

Annual Clinic—The annual program presented by the Golden Clinic of the Davis Memorial Hospital, Elkins, was given July 16. Clinics were conducted in the morning at the hospital. In the afternoon addresses were made by Drs Moses Paulson, Baltimore, on "Common Diseases of the Digestive Tract", Albert E Goldstein, Baltimore, "Renal Disorders in General Practice" and Lloyd F Craver, New York, "The Lymphomatous Diseases". A motion picture showing a technique for correction of inguinal hernia, produced at the Golden Clinic was presented. At a banquet in the evening Dr Robert J Wilkinson, Huntington, was toastmaster and the speaker was Dr Frank E Adair, New York, on "Tumors of the Breast".

WISCONSIN

Graduate Courses—Three new circuits for the graduate courses in obstetrics and pediatrics conducted with the aid of federal funds have been announced. Drs Otto H Schwarz, St Louis, and Francis R Janney, Wauwatosa began one July 20 at Balsam Lake, continuing at Hudson, Menomonie, Eau Claire and Ladysmith. The second began July 27 with Drs Fred L Adair, Chicago, and Horace K Tenney Jr, Madison, as instructors at the following towns: Marinette, Shawano, Fond du Lac, Wausau and Antigo. The third also began July 27 with Drs John W Harris and John E Gonce Jr, Madison, as instructors at Park Falls, Hayward, Superior, Ashland and Rhinelander.

Foundation Patents Pituitary Hormones—The U S Patent Office has recently issued to the Wisconsin Alumni Research Foundation two patents on the isolation and purification of the gonadotropic hormones of the anterior pituitary gland. These patents (Nos 2030209 and 2030210) were on the application of Frederick L Hisaw, Ph D, and Harry L Fevold, Ph D, Madison and were assigned by them to the Wisconsin Alumni Research Foundation. The foundation announces that although it contributed in part to the development of this research through grants in aid, it will administer these patents in a way designed to benefit the public without thought of any financial return other than that required to safeguard and control proper use of the products. Under these conditions Dr Hisaw and Dr Fevold will not receive any pecuniary reward for their discoveries.

WYOMING

State Medical Meeting at Cody—The thirty third annual meeting of the Wyoming State Medical Society will be held at Cody August 24-25 under the presidency of Dr Joseph L Wicks. Evanston. Scientific papers will be delivered by the following:

Dr Wicks (presidential address) "Forty Years Progress in Medicine."
Dr Joseph C Buntin, Cheyenne "Nephropathy and Its Treatment."
Dr George R James, Casper "Squint—A Problem of the General Practitioner."
Dr George H Phelps, Cheyenne "Recent Trends in Obstetrics."
Dr Reuben J Boesel, Cheyenne "Injection Treatment of Hernia."
Dr Peter M Schunk, Sheridan "Use of the Ultraviolet Ray in the Treatment of Erysipela."
Dr Frederick L Beck, Cheyenne "Acute Otitis Media."
Dr William Andrew Buntin, Cheyenne "Localization of Brain Tumors."
Dr Harry H Wear, Denver "Prelitus with Special Reference to Treatment."
Dr Thomas D Cunningham, Denver "Diagnosis and Treatment of Peptic Ulcer."

Guest speakers will include Drs John H J Upham, Columbus Ohio, President-Elect, American Medical Association on "Heart Disease in Middle and Past Middle Life." Claude F

Dixon, Rochester, Minn., "Acute Abdominal Disease", John R. Nilsson, Omaha, "Surgical Conditions of the Esophagus," and William F. Braasch, Rochester, Minn., "Practice of Medicine Under State Control." There will be a smoker Sunday evening and a golf tournament at the Cody Golf Club, Monday morning. The woman's auxiliary also has a program planned for August 24-25.

GENERAL

Board Examination in Gynecology and Obstetrics—The American Board of Gynecology and Obstetrics announces that its next written examination and review of case histories will be held in various cities in the United States and Canada, Saturday November 7. Application blanks and booklets of information may be obtained from Dr. Paul Titus, secretary of the board, 1015 Highland Building, Pittsburgh. Applications should be filed in the secretary's office sixty days before the date of examination.

Automobile Deaths Decrease in Six Months of 1936—There were 500 fewer automobile deaths during the first six months of 1936 than in the similar period in 1935, according to a report in the *Chicago Tribune* based on figures from the National Safety Council. This decrease was noted despite an 8 per cent increase in highway travel in the nation, it was stated. There were 15,390 traffic fatalities up to July 1 this year as compared with 15,890 for the same period last year. Deaths for June of this year, however, were about 5 per cent above those for the same month in 1935. Twelve eastern states having standard drivers' license laws and other effective motor vehicle control measures showed a reduction in automobile fatalities of 10 per cent, contrasted with the national decrease of only 3 per cent, it was stated. Chicago was the only city of more than 500,000 population to show an increase in these deaths during the six months period, the total was 367, one more than for the same period last year.

German Surgical Instruments Not Now Subject to Increase of Duty—Surgical instruments imported from Germany pursuant to contracts consummated subsequent to July 25, 1936 will not be subject to the increase in duty of 56 per cent of the invoice value that was imposed by a Treasury decision effective July 11 last. This countervailing or increased duty was imposed to offset certain bounties paid by the German government to German exporters of surgical instruments to the United States that enabled such exporters to compete in the domestic markets to the disadvantage of our own manufacturers (*THE JOURNAL*, 106 2163 [June 20] 1936). Since the imposition of the countervailing duty, however, the Treasury Department has received official advice that for any transactions concluded after July 25 the German government will neither pay nor permit the payment of any bounty to exporters of surgical instruments to the United States. The countervailing duty remains effective, apparently, with respect to surgical instruments that arrived in this country from Germany between July 11 and July 25 and to shipments contracted for prior to July 25 but arriving after that date.

Annual Congress of Physical Therapy—The fifteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held at the Waldorf Astoria, New York, September 7-11. An educational conference will be conducted Monday afternoon with the following speakers:

Dr. Oswald N. Andersen, Council on Medical Education and Hospitals, American Medical Association, Chicago. Educational Standards for Physical Therapy Technicians.

Dr. Grant E. Ward, associate in surgery, University of Maryland School of Medicine, Baltimore. Teaching Value of the Cancer Clinic in Medical and Dental Schools.

H. H. Horner, assistant commissioner of higher education, state department of education, Albany. Ten Years Experience with Licensing Physical Therapists.

Margaret Oliver Hewlett, director, department of occupational therapy, Presbyterian Hospital, New York. Some Aspects of Occupational Therapy as Demonstrated in a General Hospital.

Marion G. Smith, registrar, Chicago American Registry of Physical Therapy Technicians.

At the opening session Tuesday evening Dr. William Bierman, New York, who will be installed as president, will speak on "Electricity and Medicine." The fourth annual William Benham Snow Memorial Lecture will be delivered by Major Oral B. Bolbaugh, medical corps, U. S. Army, on "The Role of Physical Therapy in Fractures." The session will conclude with an address by Dr. Norman B. Cole, assistant director of physical therapy, Johns Hopkins Hospital, Baltimore, entitled "Pathologic Changes of the Circulation." The general program will include symposiums on iontophoresis, fractures, vascular diseases, dermatology, fever therapy, arthritis, clinics and clinical conferences. The annual dinner will be held Wednesday evening.

Society News—Dr. Frank H. Lahey, Boston, was chosen president-elect of the American Society for the Study of Gout at its recent annual meeting in Chicago, and Dr. Nelson M. Percy, Chicago, was inaugurated as president.—Dr. Charles E. Sears, Portland, Ore., was chosen president-elect of the Pacific Northwest Medical Association at its annual session in Portland July 11, and Dr. Russell T. Congdon, Wenatchee, Wash., was installed as president. Vice presidents elected are Drs. Richard C. Monahan, Butte, Mont., and Samuel E. Lambert, Spokane, Wash. The 1937 meeting will be in Great Falls, Mont.—Dr. Marion T. Davidson, Birmingham, was chosen president of the Chattahoochee Valley Medical Association at its recent meeting in Albany, Ga. Other officers are Drs. Edgar H. Greene, Atlanta, and Clayton E. Royce, Jacksonville, vice presidents, and Frank K. Boland, Atlanta, secretary.—The American Association of Industrial Physicians and Surgeons will hold its annual meeting at the Hotel Traymore, Atlantic City, October 5-6. Dr. Volney S. Cheney, Chicago, is secretary.—The Academy of Physical Medicine will hold its annual meeting in Boston at the Hotel Statler, October 20-22.—The thirty-ninth annual meeting of the Association of Surgeons of the Southern Railway System was held in Knoxville, Tenn., June 16-18, with the following speakers, among others: Dr. Edward T. Newell, Chattanooga, on "Treatment of Fractures, Report of 11,000 Cases"; Thomas H. Hancock, Atlanta, Ga., "The Time to Amputate Crushed Limbs"; Wyatt H. Blake, Jr., Sheffield, Ala., "Treatment of Skull Fractures and Brain Injuries"; William Battle Malone, Memphis, Tenn., "Gas Gangrene," and Hubert A. Royster, Raleigh, N. C., "The Pressure Dressing."—Dr. William W. Francis, Montreal, Que., was reelected president of the Medical Library Association at its annual meeting in St. Paul recently. Mr. James Ballard, Boston, was made vice president and Miss Janet Doe, New York, reelected secretary. The 1937 meeting will be in Richmond, Va.

CANADA

Society News—Dr. Myron Metzenbaum, Cleveland, was a guest speaker at the meeting of the Ontario Medical Association in London recently. He conducted a clinic demonstrating a procedure for replacements of dislocations of the lower end of the septal cartilage in children and gave a paper on the subject.—Dr. Gordon C. Kenning, Victoria, was elected vice president and president-elect of the British Columbia Medical Association at the annual meeting in Vancouver in June and Dr. George F. Strong, Vancouver, was installed as president.—Dr. George Clingan, Virden, was elected president of the Manitoba Medical Association at its annual meeting in May.

FOREIGN

British Medical Association—The one hundred and fourth annual meeting of the British Medical Association was held in Oxford July 17-25, under the presidency of Sir James Barrett, Melbourne, Australia. On the provisional program were noted the names of several American physicians. Papers were presented by Drs. Lloyd D. Felton, Baltimore, on "Prophylaxis of Pneumonia"; Foster Kennedy, New York, "The Neuroses from a Neurologist's Point of View"; Gabriel Tucker, Philadelphia, "Inflammatory Tumors of the True Vocal Cords"; and Arthur J. Bedell, Albany, "Choroideremia." Dr. Royal Whitman, New York and London, was scheduled to open a discussion of "Treatment of Intracapsular Fractures of the Neck of the Femur" and Dr. Ralph M. Waters, Madison, Wis., one on "Cyclopropane." Prof. Robert J. Johnstone, professor of gynecology, Queen's University, Belfast, Ireland, was named president-elect and Sir E. Farquhar Buzzard, Oxford, was inducted into the presidency.

Society News—The fifteenth International Congress for Hydrology, Climatology and Medical Geology will be held at Belgrade, September 25-29. Subjects for discussion will be thermal treatment of diabetes, new problems in the biophysics of water, climate in the prevention and treatment of juvenile tuberculosis, and geology of the spas of Yugoslavia. Information may be obtained from Prof. Milutin Neskovic, 42/1 R. Nemanzina, Belgrade.—Dr. Anthony Bassler, New York has been appointed president and Dr. Martin E. Rehfuess, Philadelphia, vice president of the American delegation to the International Congress on Hepatic Insufficiency in Vichy, France, Sept. 16-18, 1937.—The third International Congress for Study of Light will be held in Wiesbaden, September 17, under the presidency of Dr. W. Friedrich Berlin. Subjects to be discussed are physical and biologic bases of phototherapy, light treatment in tuberculosis, use of light in pediatrics, internal medicine and other medical disciplines. The general secretary is Dr. H. Schreiber, Berlin NW 7, Robert Koch Platz 1.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 27, 1936

The Prescribing of Hearing Aids

At a joint meeting of the Sections of Otolaryngology of the Royal Society of Medicine, Mr T E Cawthorne said that no branch of otology had received less attention than the prescribing of hearing aids, with the result that the deaf turned elsewhere, attracted by extravagantly worded advertisements, the cost of which was reflected in the price they had to pay for their appliances. No wonder that they were satisfied to sacrifice efficient performance for pleasing appearance. The vendors filled their pockets by flattering the patient's eye at the expense of his ear. A hearing aid was desirable when the hearing defect was such that, despite treatment, normal methods of communication were impossible or irksome. The complete solution of many complex problems presented by the correction of a hearing defect was not possible in the present state of knowledge, but the invention of the thermionic valve had so increased the amplification of sound that already a great increase in the efficiency of hearing aids had been brought about and it was not beyond the bounds of possibility that as good results would be attained in prescribing hearing aids as had been achieved in prescribing visual aids. Unfortunately there was not at present any standard of performance of hearing aids for the guidance of the otologist or the safety of the patient. The greatest service the otologist could render the incurably deaf was to guide him in the choice of a hearing aid.

Some unit of hearing loss must be used to facilitate understanding between the prescriber and the dispenser. At present the most favored unit was the decibel, which roughly represented the smallest increase in sound intensity appreciable by the normal ear. It was a logarithmic unit, i e., 10 decibels corresponded to a tenfold increase in sound intensity, 20 to a hundredfold, 30 to a thousandfold. The level for ordinary conversation was about 55 decibels. The method of estimating hearing capacity both for speech and for pure tones lent itself to accurate reproduction, so that improvement with an aid could be measured. The audiometer had the advantage over the tuning fork that its output could be raised kept constant or increased at will and was susceptible of accurate measurement. It was far quicker and far more accurate than the tuning fork for measuring hearing capacity for pure tones. In a speech test monosyllables should be used, each chosen to accentuate a different vowel or consonant. All patients with pure middle ear deafness could derive benefit from an aid. In deafness with less than 50 per cent of cochlear function the amplification required for an aid was such that its intensity would approach the upper threshold of hearing, and confusion and discomfort would result. The care and upkeep required for valve aids was often more than the patient could afford. A hearing aid department should be essential to every well equipped otologic clinic.

"The Holmes-Adie Syndrome"

At a meeting of the Medico-Chirurgical Society of Edinburgh, Prof Edwin Bramwell read a paper on a benign condition that is important because it is easily mistaken for syphilis of the nervous system. In the present state of knowledge an etiologic or pathologic terminology is impossible, so he proposed "the Holmes-Adie syndrome," because the two English neurologists mentioned were chiefly responsible for its isolation in 1931. In 1924 he saw a woman, aged 56, of whom it had been noted at the eye department of the Edinburgh Royal Infirmary that she had Argyll Robertson pupils. From there

she was sent to the department for venereal diseases, where it was found that the blood Wassermann reaction was negative and the cerebrospinal fluid normal. Professor Bramwell noted that the condition of the pupils was particularly interesting, both being large and immobile to light but contracting on convergence. The left eye on convergence slowly in the course of ten to fifteen seconds came down almost to pinhole size and then slowly dilated, reaching its ordinary size in a minute to a minute and a half. He had never seen anything like this before. The right pupil reacted normally on convergence and did not become nearly so small as the left. Ankle and knee jerks were absent. The immobility of the pupils to light and the absent knee jerks suggested syphilis, but three facts were against this diagnosis: the absence of other symptoms of tabes, the negative Wassermann reaction and the large pupils with the slow contraction of the left pupil on convergence and its still slower dilatation. Professor Bramwell indexed the case as a pupil abnormality with absent tendon jerks and did not commit himself to a diagnosis, but the probability of syphilis must have occurred to him, for he prescribed mercury and iodide.

To the peculiar pupillary reaction which this case exemplifies Holmes applied the term "the tonic pupil." In 1931 he read a paper at the Ophthalmological Society entitled "Partial Iridoplegia with Symptoms of Other Diseases of the Nervous System." Among fifty-four cases of partial paralysis of the pupil of unknown etiology, which he had observed, some of the tendon jerks were diminished or lost in nineteen. In all, one or both pupils were quite immobile to light. He concluded "In the present state of our knowledge a separation of those cases in which the tendon jerks are absent from those in which they persist is unjustifiable." Adie analyzed thirteen cases that had come under his personal notice and nine previously recorded in which the tonic pupil was associated with absent tendon jerks. He expressed the view that the tonic pupil when found all alone was a milder form of the same condition. He was the first to apply "benign" to the syndrome, because no further developments ever occurred. It seems that the syndrome is often mistaken for syphilis by those unacquainted with it and Professor Bramwell thinks that in former years he himself must have repeatedly made the mistake. Unlike nervous syphilis, it is much more common in women than in men. It is unknown to most clinicians because it has not received a name. Hence Professor Bramwell's suggested name for it. It does not appear to be very uncommon. It may be unilateral. Incomplete forms are seen in which tonic pupils, iridoplegia, ophthalmoplegia interna or absent knee jerks occur as isolated phenomena.

New Test for Carcinogenic Oil

The Manchester Committee on Cancer reports that a specification for mineral lubricating oils has been drawn up, which should reduce to a minimum the risk of the production of cancer in mule spinners and other workers. Dr C C Twort, director of the Cancer Research Laboratories, describes a new test for assessing the carcinogenic and dermatitic properties of mineral oils, which has the advantage of requiring only seven to ten days to complete. It consists in injecting a few drops of oil into an animal and subsequently recovering the oil for examination. If the oil is toxic, its physical characters will be altered; if nontoxic, they will remain unaltered.

The Institute of Medical Psychology

The Institute of Medical Psychology, which was founded in 1920, has expanded considerably. It has now twenty-two consulting rooms of which six were recently added, yet functional nervous disorders are so prevalent that it has always a long waiting list of patients. In 1925 the number of attendances of patients was 20,614, an increase of 3,828 over the previous year. The medical staff now amounts to sixty-nine, an increase of

eight, not counting those concerned with physical investigation. Patients with anxiety neurosis predominated and derived much benefit from the community life of the hostel. In the children's department more than 600 attended and much is being learned of the psychology of the neurotic child. An interesting feature is a museum of toys from all over the world. In order to deal more effectively with functional nervous disorders the institute has now acquired a site on which a hospital will be erected with accommodation for 100 beds.

The institute is a center of education in psychologic medicine and has a well equipped laboratory. The training course for physicians as specialists in psychotherapy covers two years. For the advanced investigation of psychopathology by members of the staff a series of study groups has been formed to deal with such conditions as personality types and sex perversions and disorders of childhood, as well as one for social workers and playroom supervisors.

PARIS

(From Our Regular Correspondent)

July 10, 1936

A Loophole in the Social Insurance Law

The social insurance law in France permits the insured worker to select his own physician. This is not the case in some other European countries. There is a bureau to which employers and employees pay in equal amounts a premium based on the salary and civil status of the employee. When the latter is ill and is cared for by the physician he has selected, the fees of the medical attendant are paid by the patient, who is reimbursed by the bureau through which he is insured. In the May 31 issue of the *Concours medical* is an article by Paul Boudoin, the medicolegal editor, entitled

"Can a Physician Oppose Payment of Indemnity to the Insured if the Physician Has Not Been Paid?" In the case which forms the subject of the article, the physician was not paid by the insured worker and hence demanded that the bureau through which the worker was insured should pay for the medical services that had been rendered. The law states that in order that an insured worker should be indemnified for any medical expenses, his certificate of illness must be countersigned by the attending physician. The bureau ignored this requirement and reimbursed the insured who had not, as stated in the law, previously paid his physician. Boudoin gave as his opinion that as a matter of equity the physician had a right to sue the bureau for the amount of his fee. Unfortunately, the social insurance law contains clauses according to which the attending physician can hold the insured responsible only for medical services and that the local bureau assumes no obligations to pay the physician directly but in reimbursing the insured it supposes that he will immediately pay the attending physician. The moment that a physician signs the illness certificate of the insured the bureau has every reason to believe that the physician has been paid. In the case which formed the object of the query the bureau had reimbursed the insured even though the certificate had not been signed and the attending physician is powerless to collect his fee.

This is a serious loophole in the social insurance law.

Social Insurance Organization Establishes Diagnostic Centers

Some time ago Cibrie, secretary of the principal association to protect medical interests, warned the profession that unless diagnostic centers were established by organized medicine in association with the social insurance authorities the latter would do so independently. Cibrie's prediction has been verified and although a "center of control" already existed in Paris the *cassés* or *bureaux* which receive the premiums from the assured and their employers and, as called on, pay all medical expenses of the assured have now opened a "diagnostic center" at which

radiologic, serologic and other examinations are compulsory in order to receive maternity benefits. Cibrie states that this is only the first invasion of the field of organized medicine and that unless the latter shows itself willing to cooperate with the social insurance authorities they will go ahead heedless of all interference.

Meeting of Biologic Society

At the May 16 meeting of the Société de biologie of Paris, Loeper and Lesure reported that, as the result of their investigations, tyramine and similar substances are to be found in increased quantities in the serum in cases of hypertension. This increase is less absolute than relative in relation to the hypotensive bases, which are derivatives of histamine. It would appear as if, in pathologic cases, an imbalance could occur in the relation of tyramine and histamine, substances that are antagonists.

REFRIGERATION FOR THE CONSERVATION OF VIRUS

Lepine showed that it is of importance, in order to conserve virus of neurotropic type, to use as a substitute refrigeration (to minus 10-20 C.) of emulsions or viscera containing a virulent virus in place of glycerin, which weakens the virus. Even a virus that offers little resistance to glycerin can be conserved by such a refrigeration. To attain its full effect, the refrigerated virus should be kept in as dry a condition as possible and protected from contact with the air. Refrigeration is a simple and efficacious method of conservation of a virus.

EFFECTS OF EPINEPHRINE ON THE CEREBRAL CIRCULATION

The direct microscopic observation of the vessels of the cerebral cortex in dogs was rendered possible for Cachera and Fauvert by utilizing a transparent (glass) vase placed in a trephine opening in such a manner as to exclude the air. They were able to secure a number of photomicrographs which permitted them to measure accurately the caliber of the cerebral vessels and to graph the blood pressure in and volume of the brain. Thus a comparison can be made between the caliber of the cerebral vessels and the level of the blood pressure at the same time. An analysis of the vasomotor reaction of the brain is thus made possible. When epinephrine was administered intravenously or into the carotid, the following results, which confirm recent work of other investigators, were obtained: 1. Dilatation of the cerebral arterioles (plus 10-45 per cent). 2. Slightly increased caliber of the veins (plus 10-20 per cent). 3. Increased volume of the brain. The vascular dilatation is not always immediate, however, no initial vascular constriction was ever observed. This vascular dilatation seems to be passive, closely related to the variations in general blood pressure, but there is no close proportional relation between the dose of epinephrine that had been given and the generalized rise in blood pressure, on the one hand, and the degree of cerebral vascular dilatation on the other. The latter can persist a long while after a drop has occurred in the hypertension due to the epinephrine.

Arteriectomy for Volkmann's Contracture

At the April 1 meeting of the Académie de chirurgie of Paris two cases were reported by Leveuf, one for Salmon the other for Perrot in which arteriectomy was performed for the syndrome known as Volkmann's contracture, in both cases following supracondylar fracture of the humerus. In Salmon's case a boy aged 14 had been seen on the day after the accident. He was unable to move his hand and the fingers were flexed. Only slight extension movements were still possible and there was complete anesthesia over the skin areas supplied by the median and ulnar nerves. Immediate operation was contra-indicated on account of the presence of bullae on the skin of the forearm. Reduction of the fracture was carried out under

fluoroscopic control. Electrical examination on the seventh day revealed marked diminution in the excitability of the median, ulnar and radial nerves as well as in the muscles of the forearm. At operation, twenty-seven days after the accident the brachial artery and median nerve at the level of the front of the elbow were found embedded in a mass of scar tissue. Four centimeters of the artery was resected at this level. Examination of the specimen revealed that the lumen of the artery was completely occluded by an organized clot. Following this operation, temporary improvement occurred in the form of better circulation in the hand and less marked flexion deformity of the fingers for forty-eight hours. The boy was not seen again until six weeks later. At this time he could move the fingers better, but the hand was cold. The nerves of the forearm showed a hypo-excitability to electrical stimulation and there was a reaction of degeneration in the muscles of the forearm. No improvement having followed the use of electricity and massage during the next six months, three centimeters of the shafts of the radius and ulna was resected. This was followed by the boy's being able to extend the fingers completely. A year after the accident, all active movements of the wrist and fingers could be executed. Only a slight limitation of extension of the wrist and of flexion of one of the fingers persisted. With the exception of slightly decreased electrical excitability of the extensor muscles, all nerve and muscle reactions are now normal.

In Perrot's case, a boy, aged $2\frac{1}{2}$ years, had sustained a supracondylar fracture of the humerus with marked displacement of fragments. Reduction was done under fluoroscopic control and a well padded splint applied. Eight days later the hand and forearm were found to be cold and edematous, the radial pulse was imperceptible and the child was unable to move the wrist or fingers. The fracture area was exposed the following day and the brachial artery found embedded in fibrous tissue and raised up by the upper fragment. The median nerve was intact. Three centimeters of the obliterated (thrombosed) artery was resected. Half an hour after the operation the circulation in the hand seemed to be reestablished and the following day some movement of the fingers was possible. This improvement lasted only forty-eight hours so that eighteen days after the operation the typical Volkmann deformity of the hand was marked. This condition, associated with anesthesia in the skin area supplied by the ulnar nerve, and marked electrical changes in the muscles of the forearm and thumb were still present three and a half months after the operation. The child was not seen again by Perrot until a year after the accident. At this time the hand appeared normal.

Infantile Acrodynia in France and Other Countries

At the May 5 meeting of the Académie de médecine an exhaustive report was made by Péhu and Boucomont of the distribution all over the world of infantile acrodynia. A complete statistical study is at present impossible because the disease is not always recognized. In addition, the health authorities have as yet not demanded its declaration. In France it is found in all portions but in central France it occurs frequently. This is true also of Belgium, the Netherlands, Great Britain, the northeastern section of Switzerland and southwestern Germany. Few cases have been observed in Austria, Hungary, the Balkan countries, Italy, Spain and Portugal. A striking fact is that it does not seem to occur in the Scandinavian countries. Outside of Europe one may cite Australia and the United States as reporting a large number of severe cases. The distribution does not seem to follow any geographic or climatic laws. The disease is especially common in small rural communities. The larger centers of population appear to be relatively immune. Acrodynia does not occur in epidemic but rather in sporadic form.

Does Traumatic Lumbago Exist?

The question whether there is a traumatic form of lumbago has been the subject of a suit against an insurance company which was willing to pay an indemnity, if it could be shown that a lumbago could be regarded as an industrial accident. There is so much opportunity for malingering in such a clinical condition as lumbago that insurance companies in France have maintained that the claimant must prove the direct relation between the accident and the lumbar pain complained of.

In 1933, one of the departmental appellate courts held that the effort, even ordinary, which an employee made in carrying out his work can give rise to an injury and that the latter must be considered as an industrial accident. The employer is thus obliged to prove that a given lesion such as a lumbago is not the result of an accident incurred during the performance of ordinary tasks. A well known French medical expert declares that traumatic lumbago is due to a muscular rupture and that the resultant pain would be so severe as to cause the individual to cease work immediately and to be confined to bed for a variable period. Hence, if before the accident there was no interruption of work and if witnesses can affirm that a claimant was obliged to discontinue his task immediately in attempting to immobilize the lumbar region, there was a direct cause and effect relation unless it could be proved by other means that no such accident was possible in the normal course of the duties of the worker.

Hemolytic Familial Icterus

At the May 15 meeting of the Société médicale des hôpitaux of Paris, Debré, Lamy, See and St Schrameck reported their observations, in nine families, of twenty-five cases of congenital hemolytic icterus. The disease frequently presents a clinical picture which differs from that of the classic descriptions. For example, several of the patients had only a subicteric hue of temporary character and only after considerable questioning could the patient remember having been slightly jaundiced. Some have never been icteric or subicteric. This was true of five of the twenty-five cases. The anemia, although more constantly observed than the icterus, may also be absent. Most frequently the red blood count is between 3,500,000 and 4,000,000. Only once was a red blood count less than 3,000,000. Splenomegaly was found in all the twenty-five cases.

These variations illustrate the polymorphism of a disease which at times presents as the chief sign a splenomegaly, at others a chronic icterus and finally a splenic anemia. The "formes frustes," recognized only after a systematic research into the family history, as a result of finding a moderately enlarged spleen, are certainly frequent. Several such cases have been discovered in nurslings and older children.

Certain hemolytic stigmas do not have the importance that is usually ascribed to them. This is especially true of the decreased resistance of the red blood cells toward hypotonic solutions. This finding is often lacking. On the other hand an increased bilirubin content of the blood can be regarded as the most accurate index of the hyperhemolysis. The latter is usually accompanied by evidence of a compensatory hyperactivity of the bone marrow in the form of an increased number of reticulocytes, as the myelograms (obtained by puncture of the sternum) reveal. The evolution of the "hemolytic disease" is often interrupted by acute attacks of biliary colic and of deglobulization. The latter are especially to be dreaded. The authors observed this complication in four children, seldom in adults. These acute attacks of deglobulization present the following clinical picture: high temperature, tachycardia, splenomegaly with or without hepatomegaly, rapid deglobulization so that the number of red blood cells reaches the low figure of a million, marked pallor and a soft systolic murmur over the heart area. As a rule the attack lasts only from twelve to fifteen days. At times the attacks assume a subacute character.

Other complications observed by the authors are cardiac insufficiency, corneal infiltrations and disturbances in development, i. e., in weight and height.

On account of its polymorphism, the disease often remains unrecognized unless a careful inquiry is made as to similar cases in the family of the patient. Many acute hemolytic anemias, splenic anemias of the Banti type and supposedly acquired hemolytic anemias are in reality cases of the 'familial hemolytic disease,' according to the authors. The disease is constitutional and familial, being transmitted in accordance with the mendelian laws, and it bears no relation to syphilis. The only treatment is splenectomy, and this should be done even in children.

In the discussion, Noel Fiessinger stated that one can find in the family of such patients a splenomegaly without icterus and without anemia. It is the splenomegaly which is hereditary, hence he would suggest calling the disease 'familial hemolytic splenomegaly' instead of 'congenital hemolytic icterus.'

Chabrol endorsed the view that the essential feature is the splenomegaly. The globular fragility is a secondary factor. Certain patients can live for years and the condition be diagnosed as acquired hemolytic icterus, the real diagnosis 'congenital icterus' never being suspected. Splenectomy is indicated if the anemia is progressive and also if there are recurrent attacks of severe right upper quadrant (biliary colic) pain.

New Fellows of Academie de Chirurgie

The following have been honored by election as fellows of the Academie de chirurgie: Professor d'Arsonal of the College de France, Leclanche, vice president of the Academie des sciences, the roentgenologist Antoine Beclere, and Claude Regaud, professor at the Institut Pasteur.

BERLIN

(From Our Regular Correspondent)

June 29, 1936

Joint Congress of "the New German Medicine" and Internal Medicine

At the end of April the joint congress of the National Cooperative Association for New German Medicine and the German Society of Internal Medicine took place as scheduled at Wiesbaden, a city which the internists for decades have made their gathering place. This joint congress had been looked forward to as of great historical significance, especially since the national führer of medicine, Dr. Wagner, had asserted that in future every German physician should resort to tested and approved Nature Cure procedures as readily as to any other therapeutic or prophylactic measure. Wagner has also stated, however, that "we do not blink the fact that when entrusted to the ignorant and the unskilled the mighty forces of nature may conceivably work as great a mischief as would the incorrect prescription of a medicament, for example." As a result the attendance at this congress was unusually large, all medical and political ranks of National Socialism in any way concerned being represented. When the internists and the Nature Cure men met in joint session on the third day, the attendance was estimated at 2000 persons, an almost unprecedented figure. But, as a leading German medical weekly regretfully notes, many of the older professors who are usually most regular in their attendance men who might be called the guiding spirits of past congresses at Wiesbaden, were absent. Professor Schwenkenbecher of Marburg presided over the internists while the National Cooperative Association had as its chairman Professor Kötschau of Jena, head of the Biologic Policlinic and a former pupil of Professor His at the University Clinic in Berlin.

The contrasting opinions to be reconciled at Wiesbaden were various and sundry. As the *Deutsche Arztzeitung* expresses it

the chief differences discussed were those existing between physician and public, between academic medicine and the biologic movement, between specialized science and knowledge and doctrine intuitively arrived at. This congress served to elucidate many strange things.

On the first two days the Reichsarbeitsgemeinschaft held sessions. Presiding officer Kötschau stressed first of all that the organization, far from being a rallying point of irregular medicine, is just as dependent on scientific medicine as so-called academic medicine, despite the fact that the new medicine includes therapeutic methods that have for centuries enjoyed wide usage among the people and are of proved worth. The views of many among the internists and the views of the Nature Cure physicians were in many respects similar. The permeation of the entire medical profession with the ideology of a biologic medicine has been made necessary by political expediency. Under the circumstances the congress should be purely informative in character, its objective should be to acquaint the medical profession as a whole with the new doctrines. A free interchange of ideas can lead to symbiosis and synthesis and ultimately to a unified new German medicine. Three years of National Socialistic government has already made possible the removal of a whole mass of prejudice, and the dawn of a new era in German medical science has been recognized. The way now lies open for the composition of all differences.

As might have been expected, the papers expressed for the most part the views of the exponents of "Biologic Therapy" and were supposed to supply scientific bases and substance to therapeutic methods that owe their practical success largely to empiricism. One author, for example, sought to illustrate the relation of paracelsian doctrine to the German medicine. Paracelsus, he said, considered all medical activity as rooted in the folk and in the soil. The Jena anatomist Professor Boker explained in a paper on "Morphologic Bases of the Biologic Theory of Medicine" that academic and biologic medicine differ not so much with regard to the therapeutic methods employed by practitioners, but more radically with regard to basic theoretical concepts. The difference might be epitomized as the opposition of Mechanism to "Holism" (entirety, a synthesis of mechanistic and vitalistic elements), of causal analysis to causal synthesis, of passive-technical events to active animated reactions. Academic medicine is based on the chemico-physical or mechanistic theory, the new movement while not akin to an extreme vitalism, may lead to a superordinated Holism, which would reckon vital phenomena as active processes closely bound to passive processes.

Among other communications by adherents of this movement, that of G. Wegener should be mentioned. Wegener is director of the National Federation of Societies for Life and Therapeutic Methods in conformity with Nature and is not a physician. He spoke, of course, in behalf of the popular medicine movement and asserted that Nature Medicine had been misunderstood—on the one hand by presumptuous persons who had not wished to believe that nature can heal (?) and on the other by "those charlatans and false prophets who would hawk their Nature Medicine as if it were merchandise at a fair." One seems always to forget "the souls of German men," which 'possess a lighter and finer sensitivity perhaps than those of any other people on earth.' 'German man, in his unspoiled naturalness experiences an emotional element in healing, a feeling that the hand of a true physician and a pair of soulful eyes from which shine forth a noble spirit are of greater worth than a plenitude of physical and chemical apparatus.' The foregoing are excerpts from the learned address of the Director of the entire German Popular-Healing Movement delivered at a medical convention held under the special protectorate of the national führer of medicine. Further quotations from the

same speech exemplify even more graphically the implications of the philosophy of the new school. "It is inimical to the cooperation between doctor and people that the tiny microscopic lamp should so often be confounded with the mighty Sun,

the objectives of the Popular-Healing Movement are these: to instruct in matters of health and hygiene, to point out the paths to be followed and to disseminate necessary knowledge so that self help and the organism's defense mechanism can be supplemented and first aid measures carried out before the arrival of a physician. The physician and the recognized healing practitioner both stand ready to treat and to cure disease."

Additional speeches bore the imprint of the same train of thought. One doctor set forth a new type of hospital procedure: the patient should be repeatedly advised and persuaded that he shall quit the hospital both internally and externally restored to health, such a suggestion may help to bring about a "constitutional alteration." Another speaker believed that since the weltanschauung and leading practical principles of New German Medicine must parallel the development of National Socialism, popular medical orators should receive special training in schools of elocution. Thousands of physicians would thus find promising fields of activity as medical instructors in hygiene and as *führers* of the various Nature, Kneippian and Reformed organizations.

There were in addition the expected papers on the integration of homeopathy with New German Medicine and on the value of medicinal herbs. Here at last were topics amenable to being discussed by scientifically trained physicians. None of these papers, however, presented anything fundamentally new. More specific problems were next discussed. Dr. Bottenberg of Frankfurt-on-Main, already well known for his publications in the field of "biologic therapy" and more of a critic than many others, took this opportunity to point out that the unrestricted use of sweatings, venesections, blood leeches and so on must needs have a deleterious effect on the patient. This warning indicates how widespread the use of these methods, many of them snatched from oblivion, has become in present-day Germany. Further papers dealt with questions of psychic import in the well known manner.

A paper on the function of biologic dentistry told of a startling increase in dental and maxillary disturbances as disclosed by group examinations among the Hitler youth and other young peoples organizations. Here the problem is to overcome the predisposition to caries and parodontitis. There followed discussions of several clinical topics such as bronchial asthma, rheumatism, passive aortic gymnastics, physical exercise and radon emanation treatment.

The third day of the gathering was given over to the joint session with the internists. In an introductory address Professor Schwenkenbecher of Marburg delineated tactfully the tasks confronting the joint assembly and recognized the *reichs-arbeitsgemeinschaft* as a scientific body. He pointed out that turning away from the exclusively natural scientific concept is for the understanding of the vital processes tantamount to a rejection of purely materialistic philosophy, such a trend has suddenly received new significance since the National Socialist revolution. Physicians of the so-called academic medicine are many times lacking in first hand knowledge and ability to apply physical methods. Fundamental differences exist particularly with regard to dietetics, the abundance and variety of dietary methods, most of which are carefully tested and which strive to adapt themselves to the individual case, form quite a contrast to the only slightly varying raw vegetable diet of Nature Cure Medicine. The work of the association must not be restricted to speeches and debates: there must be mutual clinical activity, thoroughgoing mutual examination of methods and mutual acquaintance with the other fellow's way of think-

ing. Even when these things are obtained it will still be difficult to determine whether or not a course of treatment will produce the desired result. The most diverse results are possible, owing to idiosyncrasies of the patient selected for a test, to differences in experimental methods themselves and to the method used to evaluate the results. Medical tradition, moreover, hinders a proper evaluation. Cooperation ought not, however, to lead to a hasty superficial equalization of the differing *anschauungen* and methods. Precisely in differentiation are to be found those forces which are indispensable for mutual stimulations and reciprocally fruitful contacts.

In contrast to the prudent formulations of Schwenkenbecher was a forceful, aggressive speech by Professor Kötschau on "The Place of Preventive and Other Treatment in New German Medicine." The acceptance of a scientific principle is justified only after its practical utility has been authenticated. On a basis of this essential utility, history delivers its verdict. This justification of a scientific principle may well depend on how deeply it is rooted among the people. "We of today realize," said Kötschau, "that the dream of an absolute, supposititious, objective natural science and medical science has been dreamed out." The younger medical men, he continued, are turning from the misuse of exact natural science in biology and in medicine. Contemporary scientific medicine is by no means to be rejected, but, on the other hand, the scientist must guard against a priori rejections of methods and ideas which are alien to his accustomed train of thought. One of the most important of all therapeutic procedures is, from the standpoint of the strictly scientific school, incomprehensible and inexplicable: the process of natural healing. Both health and disease are to be understood as manifestations of the hidden, ever active healing forces of nature. By prophylaxis, that is, activity in conformity with nature, the need for therapeutic measures should be less frequent, for treatment is usually first instituted when a disturbance is already manifest. New German medicine is simple, self comprehensible and natural, it can never become alien to the people (this last is a reproach, which has been directed at academic medicine by adherents of the new doctrine with increasing frequency.)

A middle position between the points of view of these two chairmen was taken by the national *führer* of medicine, Dr. Wagner, the man responsible for the holding of this joint assembly.

The more interesting portions of his discourse are paraphrased. It is desirable that in future a difference between "biologic" and academic physicians shall no longer be recognized. The ideal for which all should strive is that of the general, trained family doctor, the German people's physician whose principal concern is the actual needs of his fellow countrymen! When the confidence of those fellow citizens is again won, then we shall approach a problem the solution of which is an imperative necessity, that of unrestricted therapeutic activity. All men concerned are agreed on one point, that the present unrestricted therapeutic activity is incompatible with the *anschauung* and requirements of National Socialism. Accordingly this too great freedom with regard to healing must be ended as soon as possible. This also represents the wish of the healer himself, and certain concessions must in the future be made for a selected group of these practitioners (who might more accurately be termed quacks, since they are certainly not physicians and have had no regular course of training).

This talk of a finally imminent suppression of the independent healer or quack whose pernicious doings have been reported more and more frequently in recent years was Wagner's reciprocal gesture of gratitude for the recognition of the Nature Cure physicians by scientific medicine through the latter's most representative German group: the Society of Internal Medicine. The internists were fully aware of this fact.

Of like interest were the remarks of the deputy to the führer of medicine, Dr. Blome, who, speaking on postgraduate medical studies, attempted to give both academic and Nature Medicine their due. It is unfitting, he declared, that certain cliques should make it their business to decide onesidedly what direction medicine should follow. How frequently it happens that specialists who consider themselves authorities in their proper fields and perhaps are so in fact may be virtually ignorant of what their colleagues in other fields are doing. Continued Blome, "There is no denying that there exists today an exaggerated specialism which the average German rejects instinctively as foreign to his nature. American methods and anschauungen certainly must not prevail in Germany. This inability to think in any other terms but those of organs and systems of organs frequently causes the specialist to become narrow, short sighted and, as a consequence, intolerant of others." The important function of pure science should be fully appreciated but the direction of sanitary affairs is the duty not of the scientist but of the National Socialist movement, of the party. It is of paramount importance that the family physician whose general training is excellent be restored to the people and that cliques of mediocre specialists, such as exist today, be put out of commission. The extremists of both groups, the recalcitrant dogmatic academicians together with the nature cure monomaniacs, shall be left out of the picture. Nor must any one think for a minute that Nature Cure Medicine is presuming to dictate to academic medicine. A synthesis of the two schools must be accomplished. The foregoing explanations are of particular significance, falling as they do from the lips of one who controls compulsory postgraduate study throughout Germany.

The Berlin internist Professor Siebeck next spoke on the treatment of cardiac insufficiency.

Finally, the two assembled bodies passed a joint resolution which requested that a strictly scientific but unbiased investigation and further development be made of all natural therapeutic procedures which seem to promise favorable results. The joint session was forthwith adjourned. Subsequently the internists alone held a further session. Taken all in all, the joint assembly occasioned the expression of many opinions which are of interest even for those of us who cannot subscribe thereto and, in any case, it permitted a good glimpse of the road that German medical science of today is perforce traveling.

BELGIUM

(From Our Regular Correspondent)

May 25, 1936

Can Incurability be Determined in a Criminal?

Dr. Vervaecke, who has studied the problem whether or not incurability can be determined in a criminal, questions the efficacy of the classic methods of treating criminals. He doubts whether these procedures exercise any appreciable influence on the subjects. The better to inform himself on the question the author made use of some Belgian statistics on recidivism. In the year 1924, out of 91,597 offenders sentenced, 17,299 were recidivists more than half of whom had repeated the same type of offense which had brought about the previous convictions. Two divergent views are taken of recidivism. Jurists and prison officials generally hold the imperfect character of the penal system at fault while medical men look on the recidivist as a victim of biologic predispositions. Vervaecke, after thirty years' experience favors the second point of view, he recognizes not only the influence of predispositions but that of the circumstances as well as having caused the misdeed. World predispositions are frequently observed in recidivists of the group studied only 3 per cent possessed more than average intelligence and these had been convicted on frauds and confidence games.

There are no certain indications for prognosis of incurability. Most significant from the author's point of view are the number of offenses committed, repetition of an offense after a short lapse of time, the culprit's reaction on learning what is to be his punishment, and so on. Anthropologic examinations yield interesting indications but no certain diagnostic method. Neither the large number nor the gravity of the indications leads to a pessimistic conclusion. A change for better or for worse may intervene, caused by changing qualities within the criminal and by that which Vervaecke calls "slackened psychologic development," that is, age, emotivity, and sequels of contagious diseases such as typhoid and encephalitis, all factors capable of offering a certain resistance to his inclination.

The foregoing statement suggests that recidivists are frequently afflicted with biologic anomalies. The author quotes statistics from the Merxplas asylum, an institution especially designed for the care of recidivists in Belgium, in which 90 per cent of the inmates presented physical abnormalities or were afflicted with psychopathic, moral and emotional defects. None of these defects, however, can lead to a determination of definitive incurability.

Investigation of the Etiology of Epilepsy

Mr. Laruelle discussed before the Medicosurgical Society of Brabant an investigation of 375 cases of epilepsy which had led him to conclude that no essential difference exists between general epilepsy and partial epilepsy. Of 375 patients, most of whom had been listed as presenting essential epilepsy, Laruelle was able to establish the etiology in 62 per cent. In the first rank, one finds a notable proportion of heredoalcoholic persons (13 per cent). The alcoholism was established in three generations. The second most important etiologic factor was cranial, including obstetric, trauma. The relation of the traumatism to the epilepsy is often most difficult to establish, modifications in the form of the ventricles at certain points are here of great value, particularly cicatricial retractions secondary to arachnitis. Heredo-epilepsy was determined in a number of cases. In other cases the disease arises in heredo-syphilis. Infantile eclampsia, however, must not be placed on a level with epilepsy. Eclampsia is due in part to cerebral conditions, since at that particular epoch the brain is not held in check like that of an adult. Cerebral tumors are responsible for convulsive reactions appearing in 20 per cent of the cases. Humoral examinations conducted by Laruelle failed to show any constant metabolic variation in epilepsy. On the other hand, great instability of the humoral equilibrium was encountered, attributable perhaps in addition to the irritability of the cortex to an alteration in the region of the floor of the third ventricle or median diencephalon. Epilepsy and migraine present many common characters, cerebral angiospasm and allergic factors, for example. Since epilepsy is so prevalent (more than one case for each 400 persons) a thorough etiologic investigation should be undertaken in each instance. This may lead to a therapy based on causal factors. If need be, one should even resort to surgical exploration.

Antidiphtheritic Immunity in the Congo

It is generally conceded that diphtheria is nonexistent in the Belgian Congo. Van Slyke, however, has called the attention of the Belgian Society of Tropical Medicine to his investigations among natives from the region of the rivers Lomami and Kasai. When the Schick reaction test was given to forty-four healthy adults, 56.8 per cent of the subjects showed a negative reaction, evidence of an anterior immunization. Accordingly an attenuated type of diphtheric infection would seem to be present among the aborigines of the Belgian Congo so mild as ordinarily to pass unnoticed but leaving its imprint on the person.

Marriages

RICHARD B GREENE Philadelphia, to DR LUCILLE ELISE TUCKER of Reading, Pa., in New York, June 24

JOHN PHILIP GRAHAM, Galesburg, Ill. to Miss Eleanor Hegy of San Jose, Calif., in New York, June 13

LAWRENCE BREITBART, Flushing, N Y, to DR. SARA YAMPOLSKY of Edmonton, Alta., Canada, July 1

JACKSON T RAMSAUR, Cherryville, N C, to Miss Lucile Byrd Draughon of Durham, May 30

LINWOOD MALONE GABLE to Miss Martha S Bidaman, both of St Petersburg, Fla., June 27

NORMAN O SPIKES Durham, N C, to Miss Vera B Baldwin of Atlanta, May 4

RICHARD GLENN HAHN to Miss Margaret Miller Landes, both of Bath, Pa., July 15

HUBERT E BONEBRAKE to Miss Mildred Reinhart, both of Portland, Ore., June 3

MORRIS W GREENBERG to Miss Sarah Freedman, both of Brooklyn, recently

BERNARD A. KAMAI to Miss Mary Dailey, both of South Bend, Ind., May 25

Deaths

Daniel S Dougherty @ New York, University of the City of New York Medical Department, 1884, member of the House of Delegates of the American Medical Association from 1927 to 1928, from 1930 to 1932 and in 1935, since 1916 secretary and since 1929 director of activities of the Medical Society of the County of New York, secretary of the Medical Society of the State of New York since 1925, and at the recent annual session of the society made secretary emeritus, for many years professor of otology at the New York Polyclinic Medical School and Hospital, formerly secretary of the New York Academy of Medicine, member of the American Laryngological, Rhinological and Otological Society, fellow of the American College of Surgeons, attending otologist to the New York Polyclinic Medical School and Hospital, consulting otolaryngologist to the City, People's Midtown, West Side, and Jewish Memorial hospitals, New York, Nyack (N Y) Hospital and the Long Beach (N Y) Hospital, aged 75, died suddenly, August 4, at his summer home in Nanuet, N Y

Harry Osgood Spalding, Hingham, Mass Boston University School of Medicine, 1897, member of the Massachusetts Medical Society, the American Psychiatric Association and the New England Society of Psychiatry, assistant in materia medica from 1900 to 1904, and instructor and associate professor of clinical psychiatry at his alma mater from 1912 to 1919 assistant superintendent of the Norwich (Conn) State Hospital from 1904 to 1912, formerly superintendent of the Westboro (Mass) State Hospital and the Wiswall Sanatorium, Wellesley, aged 65, died, May 10, in the Massachusetts Memorial Hospital, Boston, following an operation for adenoma of the prostate

Herschel Porter Hamilton @ Omaha University of Louisville (Ky) Medical Department, 1887, fellow of the American College of Surgeons, formerly professor of principles and practice of surgery and clinical surgery at the John A Creighton Medical College, chief of staff emeritus Evangelical Covenant Hospital, aged 76, died, May 28, of angina pectoris and coronary sclerosis

Alberta Sylvia Boomhower Guibord @ Newton Mass Boston University School of Medicine, 1899 member of the American Psychiatric Association and the New England Society of Psychiatry, at one time instructor in psychotherapeutics at her alma mater, psychiatrist in charge of the School Clinic, Boston State Hospital and consultant to the New England Hospital for Women and Children aged 62, died, May 27, of lobar pneumonia

Walter Byrd Pollard @ Winton N C University of Pennsylvania Department of Medicine Philadelphia 1899, past president and secretary of the Hertford County Medical Society, county health officer, member of the medical examining board during the World War and volunteered for medical service overseas aged 61, died, May 16, of chronic myocarditis and mitral regurgitation

Stewart McKee, Leavenworth, Kan, College of Physicians and Surgeons, Keokuk, Iowa, 1895, member of the Kansas Medical Society, past president of the city board of education, at one time city and county physician formerly on the staff of the U S Penitentiary Hospital, aged 75, died May 5, in St John's Hospital, of an infection following a prostatectomy

Seth Bachman Kistler, Nanticoke, Pa, Hahnemann Medical College and Hospital of Philadelphia 1928, member of the Medical Society of the State of Pennsylvania on the staff of the Wyoming Valley Homeopathic Hospital Wilkes-Barre, aged 31, died, May 15, in the Hahnemann Hospital, Philadelphia, of gastro-intestinal hemorrhage

J Carl Schmuck, Lawrence, N Y University of the City of New York Medical Department, 1882, for many years bank president and health officer of Lawrence, formerly on the staffs of the Nassau Hospital, Mineola, and St Joseph's Hospital Far Rockaway, aged 77, died, May 21, in Atlantic Beach, of diabetes mellitus and coronary thrombosis

Lester Graham Miller, New Orleans, University of Tennessee College of Medicine, Memphis, 1917, acting assistant surgeon U S Public Health Service, connected with the U S Quarantine Station of Algiers, aged 46, was killed, May 26, when he fell into the river as he was preparing to leave a steamer

Hiram Holden, Trenton, Mich, Michigan College of Medicine, Detroit, 1883, Bellevue Hospital Medical College, New York, 1890, at one time a druggist, formerly village president and president of the board of education aged 80, died, May 23, in the University Hospital, Ann Arbor, of bronchopneumonia

Foster Reed Winn @ Alvin, Texas, Marion-Sims College of Medicine, St Louis, 1896, past president of the Brazoria County Medical Society, veteran of the Spanish-American and World wars, for many years president of the school board, aged 66, died, May 5, in St Mary's Infirmary, Galveston

Charles Sidney Tate, Ramseur, N C, Baltimore Medical College, 1893, member of the Medical Society of the State of North Carolina, president of the Randolph County Medical Society, formerly county coroner, member of the local school board and county board of health, aged 72, died, May 25

Thomas Scudder Winslow, New York, Columbia University College of Physicians and Surgeons, New York, 1913, member of the Medical Society of the State of New York served during the World War, aged 52, director of the clinical laboratory of the Roosevelt Hospital, where he died, May 28

Richard Hayes Meagher, New York, Cornell University Medical College, New York, 1927, assistant professor of surgery at his alma mater, member of the American Psychiatric Association, assistant attending surgeon (neurosurgery), New York Hospital, aged 37, died, May 27, of heart disease

Carl George Zeidler, Belleville, Mich, Michigan College of Medicine and Surgery Detroit 1905 also a minister, formerly president of the village of Belleville, justice of the peace and health officer, aged 66, died May 24, in St Joseph's Mercy Hospital, Ann Arbor, of bronchopneumonia

John Pope Stewart, Attalla, Ala., Medical College of Alabama Mobile, 1885 member and life counselor of the Medical Association of the State of Alabama, past president of the Etowah County Medical Society formerly mayor of Attalla, aged 77, died, May 18, of myocarditis

Willmert Paul Laue, Santa Monica, Calif, Saginaw (Mich) Valley Medical College 1903, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1908, at one time a practitioner in Gary and South Bend, Ind., aged 58, died, May 2

Lee Monte Sankey, Jeannette, Pa Cleveland Homeopathic Medical College, 1908 fellow of the American College of Surgeons, served during the World War, member of the surgical staff of the Westmoreland Hospital, Greensburg, aged 54, died, May 14, of coronary thrombosis

Robert McWilliam O Neal, Santa Monica Calif College of Physicians and Surgeons of San Francisco 1904 served during the World War aged 56 on the staff of the Santa Monica Hospital where he died May 1 of carcinoma of the bladder with metastases

John Joslyn Kelley, Burr Oak Mich, Hahnemann Medical College and Hospital, Chicago 1900, served during the World War, for many years member of the board of education, aged 60 on the staff of the Sturgis (Mich) Memorial Hospital, where he died May 22

John Montgomery Randolph ☉ Rahway, N. J. University of the City of New York Medical Department, 1888, member of the board of education, for many years on the staff of the Memorial Hospital, aged 69, died, May 17, of cerebral thrombosis

John W. Sosbee, Stroud, Okla., College of Physicians and Surgeons, Dallas, 1904, member of the Oklahoma State Medical Association, past president of the Lincoln County Medical Society, aged 59, died suddenly, May 21, of coronary thrombosis

Samuel Dwyer Henry ☉ Excelsior Springs, Mo., Kansas City (Mo.) Homeopathic Medical College, 1894, past president of the Clay County Medical Society, on the staff of the Excelsior Springs Sanitarium and Hospital, aged 76, died, May 23

Emanuel F. Snyder ☉ Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898, aged 65, formerly on the staff of the Michael Reese Hospital, where he died, May 8, of coronary thrombosis

John Frederick Pritchard, Manitowoc, Wis., Rush Medical College, Chicago, 1871, member of the State Medical Society of Wisconsin, for many years member of the school board, aged 89, died, May 17, in the Holy Family Hospital, of senility

Samuel Engle Lee ☉ Greenville, S. C. University of Maryland School of Medicine, Baltimore, 1911, formerly superintendent of the Greenville County Sanatorium, aged 56, died, May 17, in Mountain Lake Park, Md., of coronary thrombosis

Kristian Henrik Egede Nissen, Minneapolis, Kongelige Frederiks Universitets Medicinske Fakultet, Oslo, Norway, 1888, formerly member of the state board of health, aged 72, died, May 7, of congestive heart disease and arteriosclerosis

William Ebenezer Waugh, London, Ont., Canada, McGill University Faculty of Medicine, Montreal, Que., 1872, bursar and for many years a member of the teaching staff of the University of Western Ontario, aged 85, died, May 25

Sidney Addison Sumbly, Saginaw, Mich., Howard University College of Medicine, Washington, D. C., 1930, member of the Michigan State Medical Society, aged 30, died, May 11, in the Saginaw General Hospital, of pneumonia

James Marcus McDavid, Memphis, Tenn., Kansas City College of Medicine and Surgery, 1919, at one time health officer of West Helena, Ark., and coroner of West Memphis, aged 49, died, May 10, of pneumonia

Francis W. Willard, Chicago, Marion-Sims College of Medicine, St. Louis, 1891, also a dentist, aged 70, died, May 14, in the Frances E. Willard Hospital, of diabetes mellitus and acute dilatation of the heart.

Thomas Richard Stack, Cleveland, Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1888, at one time county physician, aged 67, died, May 8, of cerebral hemorrhage.

Edward Louis Schreiber, Milwaukee, Wisconsin College of Physicians and Surgeons, Milwaukee, 1904, on the staff of the Wisconsin General Hospital, aged 57, died, May 14, of a skull fracture received in a fall

John Joseph Healey, Providence, R. I., Harvard University Medical School, Boston, 1909, served during the World War, aged 53, died, May 4, of hypertension, chronic nephritis and cerebral hemorrhage.

Armand J. Prudhomme ☉ Cleveland, Medical Department of Ohio Wesleyan University, Cleveland, 1905, on the staff of the Lutheran Hospital, aged 53, died, May 19, of gastric carcinoma and myocarditis

James Gilbert Howell, Enville, Tenn. (licensed in Tennessee in 1910), member of the Tennessee State Medical Association, aged 57, died, May 7, in a hospital at Jackson, of chronic arthritis and pneumonia

Lambert C. Brewer, Los Angeles, Atlanta College of Physicians and Surgeons, 1901, member of the California Medical Association, aged 59, died, May 10, in a local hospital, of pulmonary tuberculosis

David A. Williams, Nangua, Mo., Missouri Medical College, St. Louis, 1882, member of the Missouri State Medical Association, for many years bank president, aged 81, died, May 9, of pneumonia

John W. Howard, Oklahoma City, Kentucky School of Medicine, Louisville, 1876, member of the senate in the first territorial legislature, aged 87, died, May 10, of cardiorenal vascular disease

Lewis Carl Cook, Columbia, Miss., Memphis (Tenn.) Hospital Medical College, 1911, member of the Mississippi State Medical Association, aged 60, died, in May, of acute dilatation of the heart

Alfred McKinnon Curl, Quincy, Ohio, Jefferson Medical College of Philadelphia, 1891, member of the Ohio State Medical Association, served during the World War, aged 69, died, May 10

Joseph Browne Jackson, Zanesville, Ohio, Howard University College of Medicine, Washington, D. C., 1925, served during the World War, aged 40, died, May 13, of heart disease.

Robert Leeper Doig, San Diego, Calif., College of Physicians and Surgeons, Keokuk, Iowa, 1880, member of the California Medical Association, aged 81, died, May 9, of heart disease

Samuel John Will, Jefferson Barracks, Mo., Missouri Medical College, St. Louis, 1880, member of the Missouri State Medical Association, aged 77, died, May 18, of arteriosclerosis

Frank M. Solar ☉ Cincinnati, Medical College of Ohio, Cincinnati, 1890, on the staff of St. Francis Hospital, aged 67, died, May 22, of hemorrhage due to an intra-abdominal tumor

Henry George Meyer, Chicago, Hering Medical College, Chicago, 1906, member of the Illinois State Medical Society, aged 66, died, May 8, of cardiac decompensation and nephritis

John Driver, Ogden, Utah, Marion Sims College of Medicine, St. Louis, 1891, honorary president of the Utah State Medical Association, aged 87, died, May 8, of myocarditis

William Henry Flint, Perry, Mich., Detroit College of Medicine, 1897, formerly a minister, aged 77, died, May 4, in a hospital at Lansing, of carcinoma of the bladder

Lovick Thomas Pattillo, Atlanta, Ga., Atlanta College of Physicians and Surgeons, 1904, formerly state bacteriologist, aged 60, died, May 12, of carcinoma of the larynx.

Frank J. Livingston, Salt Lake, Pa., Eclectic Medical Institute, Cincinnati, 1888, bank president, formerly county coroner, aged 67, died, May 5, of cerebral hemorrhage

Tobe E. Dalton, Opp, Ala., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1894, aged 69, died suddenly, May 4, of heart disease

Calvin S. Branyon, Valdosta, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1892, aged 76, died, May 3, of myocarditis

Andrew B. Estock, Eugene, Ore., Dunham Medical College, Chicago, 1901, aged 65, died, May 19, following an operation on the prostate

Orland L. Cook ☉ Pittsburgh, University of Louisville (Ky.) Medical Department, 1911, aged 55, died, May 5, of cerebral hemorrhage

West B. Bailey, White Plains, Ky., Kentucky School of Medicine, Louisville, 1891, aged 75, died, May 8, of cardiovascular renal disease

James McKissick Moore, Spring Hill, Tenn., University of Nashville Medical Department, 1875, aged 87, died, April 18, of senility

Bert P. McWhinney, Indianapolis, Eclectic Medical Institute, Cincinnati, 1897, aged 67, died, April 14, of cardiovascular renal disease.

Michael J. Flanagan, Shamokin, Pa., Jefferson Medical College of Philadelphia, 1890, aged 68, died, May 16, of chronic myocarditis

Charles M. Steward, Kansas City, Mo., Eclectic Medical University, Kansas City, 1913, aged 58, died, April 23, of heart disease.

Peter Douglas McLean, Woodbridge, Ont., Canada, University of Toronto Faculty of Medicine, 1879, aged 79, died, April 5

Sylverter Summerfield Thomas, Maben, Miss., Louisville (Ky.) Medical College, 1889, aged 70, died, April 24, of pneumonia

Jessie Thomas Orr, Olathe, Kan., Woman's Medical College, Chicago, 1886, aged 72, died, May 4, of carcinoma of the liver

Benjamin F. Herring, House, N. M. (licensed in New Mexico in 1905), aged 77, died, May 5, of cerebral hemorrhage

James McDougale Humboldt III, Rush Medical College, Chicago, 1877, aged 83, died, May 13, of cerebral hemorrhage

C. P. Capps, Meherrin, Va., University College of Medicine, Richmond, 1895, aged 68, died, May 12, of cerebral hemorrhage

Alexander L. Davidson, Chicago, Chicago Medical School, 1922, aged 46, died, May 21, of coronary thrombosis

L. R. McClain, Cookeville, Tenn. (licensed in Tennessee in 1879), aged 91, died, in April, of senility

Bureau of Investigation

THE "GLYOXYLIDE" OF WILLIAM F KOCH

New Steps in the Evaluation of the Detroit Cancer Cure

On April 6, 1936, the Bureau of Investigation received from an Alabama physician what was to be the first of numerous inquiries regarding William F Koch and his "Glyoxylide." The inquirers had received an advertisement consisting of a one-page printed letter bearing the heading "Koch Laboratories" and carrying the names of William F Koch, Ph D, M D, and G J Warnshuis, M D

The body of the letter was devoted to what the signatory, Koch, was pleased to term "the most important recent achievement in medicine." The name of this "recent achievement" was "Glyoxylide." The promulgators claimed they had "demonstrated its efficiency not only in the treatment of cancer, but also in such infections as tuberculosis, psoriasis, leprosy, poliomyelitis and syphilis."

Koch sends with his letter a four-page leaflet. The leaflet contains several remarkable photographic reproductions of the "before and-after" type entitled "Examples of Efficiency of Natural General Immunity Body Synthetically Reproduced."

The first page of the leaflet depicts two photographs. One above the title "4 years of intense suffering with Psoriasis," shows a man covered with skin lesions. The other is entitled "Recovery after 2 Injections of Glyoxylide." No other explanation is offered. The time interval between injections is not mentioned, although in the recovery picture several inches have apparently been added to the patient's girth.

The second page of the leaflet contains under the caption "Cancer of Stomach," two photographs of "Mr R." The upper picture carries the legend "Mr R before treatment. Note the bulging of the cancer masses throughout the abdomen." A picture similar in all details of shadows and highlights appears on page 38 of the book "Natural Immunity" published by Koch. To this picture is appended the legend "Mr R after recovery. Abdomen completely normal. All traces of cancer masses have been absorbed." Below the picture of "Mr R." in the leaflet and in the book is another picture of "Mr R," with the legend "Mr R abdomen drawn in to show the freedom from cancer masses." A careful comparison of these four pictures shows identical folding of the patient's shirt. It is difficult to conceive of Mr R's clothing being folded in exactly the same way on different occasions. If the leaflet pictures are to be accepted, Glyoxylide evidently works so rapidly that the cancer masses melted away before Mr R had an opportunity to pull down his shirt.

Koch's presentation of the theoretical basis of his treatment involves a smattering of the sciences, thoroughly agitated in the authors' cerebrum and poured on paper. One reads of the reputed peregrinations of electrons in body processes, the alleged effects of mitogenetic and necrobiotic rays, oxidative processes unknown to biochemistry, an alleged relation of photochemical reactions to the effects of carcinogenic hydrocarbons, and immune reactions completely foreign to modern immunology. The phraseology may be impressive to the novice, to any one with even a modicum of scientific education the major portion of the treatise is pure nonsense.

The author presents what purports to be a chemical reaction whereby "Glyoxalic acid" passes by way of glyoxal into glycollic acid and oxalic [sic] acid with the unsaturated diketone, vinyl dioxide in hydrated form as an intermediary.

Careful inspection of the structural formulas alleged to represent these substances shows that only one of them (oxalic acid) is properly indicated. The exact nature of Glyoxylide is not stated; this compound presumably has something to do (just what is not clear) with an alleged unsaturated diketone which Koch represents thus



This appears to be as incomprehensible as the other structural formulas already mentioned, the existence of such a compound is at least improbable.

A companion piece of Koch's Glyoxylide letter emanating from the same Detroit address, is from Gerrit John Warnshuis,

announcing his identification with the Koch Cancer Clinic. In this Warnshuis states in the second paragraph

"After eighteen years of extensive clinical tests it is now clearly apparent that the vicious persistency of the American Medical Association in adhering to its original policy of accepting the hasty condemnation given by the Wayne County Medical Society to Koch's work is unjustified and against public interest. Those familiar with the facts are quite aware that the original report of the Wayne County Medical Society was not based on any serious scientific investigation of the subject. This situation has been quite clearly described in previously published statements by Dr Koch, copies of which can be had upon request."

The Koch nostrum has been for some eighteen years before the medical profession and there is nothing even slightly resembling scientific evidence to justify any confidence in its merit. In 1918 William F Koch of Detroit was graduated in medicine by the Detroit College of Medicine and Surgery. He had been an assistant in physiology and an instructor in histology in the University of Michigan Medical School. He also had been professor of physiology in the Detroit College of Medicine and Surgery. Less than a year after his graduation in medicine Dr Koch announced that he "had developed a real specific cure for cancer." His thesis at that time seemed to be that cancer was caused by a micro organism resembling the spirochete of syphilis. He claimed that he had developed a differential poison—"Koch's Synthetic Anti-toxin," that would destroy the cancer germ without injuring the host. This remedy has been described in one place as "a synthetic chemical compound of very definite molecular arrangement" and in another place as a "difficultly prepared synthetic structure, worked down on a recrystallization process"—two descriptions that make up in sonorosity what they lack in clarity.

Undisputable records do not reveal a single instance in which a case of unquestioned malignant disease has been cured by the Koch treatment. There is, however, plenty of information regarding individuals who "promptly died" after taking the treatment.

At different times the Wayne County (Detroit) Medical Society has appointed three committees to investigate Koch's "cure." Each of the three reports has been unfavorable.

These facts have been discussed at different times in THE JOURNAL, and the matter is available in reprint form to any one who will send a self-addressed, stamped envelop for it. The Koch treatment is a highly commercialized promotion of a nostrum now elaborated from limitation as a cancer cure to the fields of tuberculosis, psoriasis, asthma and similar chronic conditions. Cancer quackery is cruel and ghoulish. The other conditions are chronic diseases involving great numbers of people ever hopeful and therefore a fertile source of income for all varieties of charlatanism. The record of Koch during the eighteen years since he first appeared on the horizon of quackery is not such as to indicate any safety in reliance on him or his products. His new associates are not reputed for scientific attainment or for any other reason except the kind of repute earned by association with William F Koch.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States
Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Live On Treatment.—Live-On Medicine Co. St. Louis. Composition: Essentially rhubarb extract, tar, vinegar, alcohol and sirup. For coughs, catarrh, asthma, etc. Fraudulent therapeutic claims.—[N. J. 21227 August 1934]

Glenn's Sulphur Soap.—Century National Chemical Co. New York. Composition: Essentially sulfur (34 per cent) soap (59 per cent) per fume and water. For skin disorders such as eczema, acne, etc. Fraudulent therapeutic claims.—[N. J. 23799 May 1935]

Correspondence

STATUS OF ALLERGY TEACHING

To the Editor—In THE JOURNAL, April 18, page 1409, Dr Richard A Kern comments on my article entitled "Status of Allergy Teaching as Indicated in Medical School Announcements," which appeared in THE JOURNAL, Aug 31, 1935, pages 744-746.

A reply would require reprinting my entire article, the points that he raised are answered not only in the body of my article but also in tables analyzing the data.

I have a few extra reprints for any one interested in the controversy.

I HARRISON TUMPEER, M.D., Chicago

THE LEUKOPENIC INDEX AND FOOD ALLERGY

To the Editor—The editorial on "The Leukopenic Index and Food Allergy" in THE JOURNAL (June 6) refers to eight papers by various authors, on variations in the leukocyte count, either fasting or postprandial. These quotations emphasize the sometimes extremely wide variation in leukocyte counts even the fasting counts, when they are repeated at long or short time intervals.

While the quotations are correct, they do not consider the fact that these wide fluctuations take place almost always in the afternoon and that the morning white counts are surprisingly constant as compared with those of the afternoon.

With one exception the articles referred to show that it is customary to observe a fasting fluctuation of around 2000 during the morning hours although, as in my experience, there are exceptions. The one article in which this is not true deals only with infants under 25 weeks of age. It is well known that there is a very pronounced variation in white counts in the new-born.

The leukopenic index determination is made in the morning, with the patient fasting. My own observations on the normal morning fluctuation of the fasting white counts as based on leukopenic index studies are quite in agreement with the morning observations of the authors referred to. Their observations are not opposed to my own. A detailed analysis of the observations of these authors will appear in the September issue of the *Journal of Laboratory and Clinical Medicine* under the title "The Leukopenic Index as a Diagnostic Method in the Study of Food Allergy."

WARREN T VAUGHAN, M.D.,
Richmond, Va.

GLOMUS TUMORS

To the Editor—The article "Glomus Tumor" by F J Jirka and C S Scuderi in THE JOURNAL, July 18 gives a fairly complete bibliography but fails to mention two articles in the English literature. One is a complete description of this condition with expensive color photographs by Victor Raisman and Leo Mayer under the title of "Tumor of the Neuromyo-Arterial Glomus" and appeared in the *Archives of Surgery* (30 911-929 [June] 1935). THE JOURNAL of July 27 1935 gave quite a long abstract of this on page 313. The other is an article by M S Furman and A M Gold in the *New York State Journal of Medicine* (35 618-620 [June 15] 1935). In the bibliography of this second article there is reference to an article by F E Adair (Glomus Tumor *Am J Surg* 25 1 [July] 1934). These three papers deserve mention as they appeared before the excellent description by Lewis and Geschickter mentioned in the bibliography.

ABRAHAM S ROTHEBERG, M.D., New York.

EFFICACY OF GARGLES

To the Editor—In a communication to THE JOURNAL, May 9 page 1679, I mentioned my objection to the roentgenographic method of investigating the efficacy of the gargle, as well as the fallacy of the conclusions arrived at by this method. I mentioned that it was more logical to inspect the interior of the throat directly and stated that after gargling with a suspension of bismuth the mouth, pharynx, tonsils and piriform recess are found coated with the bismuth.

June 27 there appeared in THE JOURNAL, page 2253, a communication from Dr H M Walker of London, stating that he fully agreed with my conclusions. He mentioned, however, that on investigation of ten patients whom he had gargle with a solution of methylene blue after administration of atropine, in no instance had the fluid reached (stained?) the tonsil, posterior pharyngeal wall, or other structures. This led him to the conclusion that gargling was entirely useless as a method of introducing an antiseptic medication to the tonsil or pharynx. His experience being at such variance with my own, I find it necessary to continue the controversy or leave the impression of agreeing with Dr Walker's conclusions.

In my original investigation I also employed a gargle of methylene blue solution (2 per cent aqueous), and after gargling for a whole minute I was surprised on inspection that the vigorous agitation had left the mouth and throat of the patient unstained. I then tried application of the solution with a cotton swab and found it almost impossible to stain the normal mucous membrane of the mouth and throat. The tongue of course staining readily. I then tried a bismuth suspension, which, as I stated, coated the mouth, tonsils, posterior pharynx and piriform recess. This of course is no indication of the efficacy of the gargle but of the fact that the solution does reach these various parts of the mouth and throat.

JULIUS KAUNITZ, M.D., New York.

BARBITURATES AND IRRADIATION

To the Editor—In THE JOURNAL, May 2, page 1588, Dr I S Trostler of Chicago discussed briefly the harmful effects of the barbiturates during irradiation. A case reported by Uhlmann on roentgen reaction elicited by barbiturates (*Deutsche med Wochenschr* 63 216 [Feb 7] 1936) is incorporated in Trostler's note.

Our review of Uhlmann's original report suggests strongly that it was a case of ordinary dermatitis medicamentosa. It is generally accepted by dermatologists and radiologists that a drug eruption will cause the skin to be more sensitive to any type of external irradiation. Since the appearance of an eruption due to barbiturates is relatively rare in view of their extensive use, and since it usually develops in people with marked hypersensitivity, it seems that the use of barbiturates to overcome nausea and vomiting as a result of irradiation is not contraindicated. We have previously reported (Popp, W C Nausea and Vomiting Following Roentgenologic Treatment *Proc Staff Meet Mayo Clin* 11 222 [April 1] 1936 discussed by M W Binger, p 223) the beneficial effect of pentobarbital sodium in preventing roentgen nausea. We have used pentobarbital sodium in doses up to 4 grams (0.26 Gm.) at each treatment session and have in some cases given total doses of 30 grams (2 Gm.) in a series of more than 15 patients undergoing roentgen treatment. We have seen no excessive roentgen skin reactions in any case and since the drug produces definite relief of roentgen nausea we feel that its continued use is indicated in spite of the fact that it rarely cause a drug eruption.

W C POPP, M.D.
M W BINGER, M.D.
Rochester, Minn.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TOBACCO AND HEART DISEASE

To the Editor—A few days ago I was called to a restaurant to examine a man aged 76 who had suffered a momentary syncope shortly after finishing a light supper. There was nothing to the supper or to the circumstances at the time that could be especially implicated as causing the ictus. On examination I found a blood pressure of 150 systolic, 100 diastolic and a pulse rate of 56 beats per minute with an occasional extrasystole. There were no abnormal sounds or murmurs on auscultation of the precordial area. I put the patient to bed ordering absolute repose. Finding that he was in the habit of smoking six cigars during the afternoon and evening I limited him to one after dinner and one after supper, believing that the psychologic effect of limiting the number would be preferable to the absolute prohibition of smoking after so many years of indulgence. The patient was quite worried as to the slight irregularity in his pulse for he said that he had had a physical check up shortly before coming to Mexico City and that no such irregularity had ever been encountered. For that reason I referred him to an eminent cardiac specialist in this city for examination. The electrocardiogram showed an interpolated ventricular extrasystole in lead 1 and slight negative irregularity ST in lead 2. The consultant diagnosed an arteriosclerosis and gave his opinion that the disturbance the week before was of coronary origin. He absolutely forbade the use of tobacco. (Blood examination the day after the attack showed urea nitrogen 17.35 mg per hundred cubic centimeters of blood; urinalysis a few pus cells. Subsequent blood pressure readings have been between 115 and 140 mm. of mercury maximum.) The reason for my letter is the advertisements that have appeared in *THE JOURNAL* of the Canava Cigars in the Nov. 2, 1935 issue and the advertisements of the Health Cigar Company appearing weekly. Does the publishing of these advertisements indicate that the Council on Pharmacy and Chemistry approves these products and the advertising copy? The article by Lampson in *THE JOURNAL* June 1, 1935, page 1963 is quite encouraging as to permitting the use of denicotinized tobacco but Wright and Moffat's article of Aug. 4, 1934, page 318 does not seem in complete accord and the previous article on the Nicotine Content of Tobacco (July 29, 1933, p. 385) shows quite a variable content in so-called denicotinized cigars and cigarettes. Just how liberal can one be in their use, and do you think that in the present case it would be permissible to allow a cigar after meals preferably of the type advertised in *THE JOURNAL*. M.D.

ANSWER.—The reasonable limitation of tobacco advised in this case is in accord with the opinion of a large number of physicians specializing in heart disease in this country. One cigar, preferably of a partially denicotinized type, after meals, should not cause harm even though there is a moderate amount of heart disease present, unless it is clear that this use of tobacco precipitates trouble. There are many individual variations, but most patients can use a moderate amount of tobacco without toxic symptoms and without harm to the heart.

It seems unlikely that in the case in question there is any severe acute coronary disease. The momentary syncope does not point to this in the absence of other symptoms, and extrasystoles certainly do not indicate its presence. The electrocardiogram did apparently show some abnormality of the ST interval in lead 2. Some chronic heart disease, most likely coronary disease, may have been responsible. On this finding alone one cannot diagnose coronary occlusion.

On general principles it is well in the presence of coronary disease to advise moderation in all things, including tobacco. The complete omission of tobacco is often worth while in such individuals if such omission does not cause great discontent, but it is not usually essential.

INCUBATION PERIOD

To the Editor—What is the derivation of the term incubation period? Can you refer me to comprehensive articles on incubation periods? What is the present-day explanation of the incubation period? Please omit name.

M.D. Massachusetts

ANSWER.—Incubation is derived from the Latin verb *incubare* to hatch out, and incubation in one sense means hatching. To find out just when and where incubation was introduced into medical literature would require a great deal of work. The Oxford Dictionary refers to its use by George Gregory in the fourth edition (1835) of his *Elements of the Theory and Practice of Physic*. In one of the earlier editions Gregory makes this statement: "Attempts have been made to ascertain the exact period at which contagion begins to exert

its influence, and it has been satisfactorily shown in this respect that each particular contagion acknowledges a different law." With time the conception of incubation became clearer and in Austin Flint's *Treatise of the Principles and Practice of Medicine*, 1886, page 97, one reads "Incubation, signifying hatching, relates to the time which elapses after the reception of special causes of disease before any morbid manifestations take place. For example, after inoculation with the virus of smallpox a certain number of days elapse before any morbid phenomena make their appearance. But, in the meantime, occult operations are going on in the system, and when these are sufficiently advanced the period of invasion or access begins. The significance of the word incubation is thus apparent. It is rendered especially significant by the germ doctrine of the causation of many diseases. The existence of the period of incubation is one of the points in evidence of the truth of this doctrine." At present the incubation period is generally interpreted in harmony with this statement as the time that elapses between the entrance into the body of the agent of an infectious disease and the clinical manifestations of that disease. What happens during this period? In diseases such as diphtheria and scarlet fever, in which the main disturbances are not due to generalized infection but to intoxication by specific toxins, the incubation period would seem to be occupied with the elaboration in the throat and other places of local infection of sufficient toxin to cause characteristic symptoms. The time required appears to vary somewhat from case to case, hence the incubation period of diphtheria and of scarlet fever, though comparatively short, varies in length. In certain other diseases, notably measles, smallpox, chickenpox and vaccinia, the incubation period is longer and as a rule more precise. Here there is reason to believe that during incubation the infectious agent, which may be multiplying sets up reactive processes in the body of the patient with elaboration of specific antibodies, and that the acute attack is caused by the products of the interaction between the infectious agent, the antigen, and the specific antibodies. Undoubtedly the two lines of explanation now suggested of the incubation period may play a varying part in different infections. At any rate the specific poisons of infecting microbes and the reaction between microbe and specific antibodies both take part in the phenomena of infection and both require time for their evolution.

VASOMOTOR RHINITIS

To the Editor—In a definite case of vasomotor rhinitis in which no etiologic factor can be found after thorough skin testing by a most competent allergist and the nasal secretions show an eosinophil count of 25 per cent, what can be done to offer relief? The patient has no intranasal disorder and does not respond to the nasal treatment of ephedrine, epinephrine and so on. Ionization has been tried three times (eight minutes 10 milliamperes on both sides) with only temporary relief. There is no allergy or history of allergy in the family. How can one prove to one's satisfaction a physical allergy and if so what can be done? I would appreciate any suggestion as to treatment. What do you think of alcohol injections intranasally? Please do not use my name.

M.D. New York.

ANSWER.—The presence of an eosinophil count of 25 per cent in the nasal smear would seem to clinch the diagnosis of "allergic rhinitis, despite the failure of the history and skin tests as clues to finding the cause of symptoms. Let it be assumed that skin tests have been adequately carried out, with tests for all possible causative factors including foods, animal derivatives, pollens and such miscellaneous substances as orris root, cottonseed, house dust, flaxseed, silk and pyrethrum.

In many cases of vasomotor rhinitis the skin tests will be negative yet the symptoms can be shown to be due to hypersensitivity to one or more substances. It is necessary then to try various clinical procedures. First of all the usual causes of vasomotor rhinitis should be avoided as completely as possible—contact with animals, as the dog, cat or horse. Feather pillows or comforters should be removed, in many cases excellent results are obtained by enclosing completely the pillows and mattress in rubberized sheeting, sewed securely. Orris root is probably the most common cause of vasomotor rhinitis in women, there are several orris root-free cosmetics on the market, any one of which may be recommended. Ozite paddings under carpets should be removed if present, as well as dusty rugs, curtains or drapes. Occasionally the symptoms come from some ordinary drugs, such as quinine or acetylsalicylic acid. Sometimes occupational dusts may be factors, such as wheat flour, cottonseed linseed or flowers. Foods too are frequent offenders and elimination diets may be very successful. There are various ways of trying these, such as (1) beginning with milk alone for two or three days and then adding foods, (2) starting with a full diet and gradually removing suspected foods, or (3) starting with simple fixed diets and adding new foods at intervals. Food diaries are helpful.

If all these measures fail, one must turn to nonspecific measures, of which there are many. Vaccine therapy, autogenous or stock (no special choice), is probably the best. Injections of iodides sometimes are of service. Autohemotherapy occasionally is an aid. As ionization has failed it is unlikely that any other local procedure will succeed, though injections of alcohol may be tried, that method is not recommended.

It is well in all cases to build up the general resistance of the patient to as high a standard as possible. To this end removal of foci of infection, tonics, glandular products when indicated and vitamin therapy are to be tried.

It is not easy to demonstrate physical allergy, although history of symptoms occurring only in cold air or in warm places, or only with exertion, are suggestive. Desensitization to heat and cold have been attempted by gradual exposure and some results have been reported.

PAIN IN OVARIAN AREA

To the Editor—I have under my care a woman aged 35, divorced, engaged in office work, who contracted syphilis several years before she became a patient of mine, and her symptoms were such that the disease was discovered only through the routine Wassermann test. In spite of intensive treatment we have been able to get only a negative Wassermann reaction. Since the disease had gone so long without any special treatment, however, I have not been greatly surprised at this. Two years ago I operated on her removing a chronically inflamed appendix and a cystic portion of the right ovary. I think now that probably much of the previous pain was caused by the ovary instead of the appendix. The most troublesome symptom now is a severe aching cramping pain in the lower right quadrant of the abdomen coming always between the fifteenth and the twentieth day after the beginning of the menstrual period. At times this is very severe almost disabling her for her work. The pain lasts usually for about three days and gradually disappears and an occasional attack is very mild. It is my own opinion that this pain is probably due to ovulation. On this basis I have wondered if it might be possible to sterilize the right ovary alone using the x-rays and if so whether or not it would probably bring about a cessation of the trouble. Any suggestions you may care to make with regard to this case will be gratefully received.

M D Nebraska

ANSWER—The relationship of the pain to ovulation can be determined less accurately from the time of the preceding menstruation than from that which follows ovulation. If the distress is acute and at its height approximately fourteen days prior to menstruation, it is very likely that the precipitating cause of the pain is ovulation. Even so, there is probably an associated pathologic condition.

In most cases with a history such as this, there are complicating pathologic conditions in the right lower quadrant, most often adhesions, sometimes an unhealthy ovary—perhaps adherent or cystic or both.

The use of x-rays for the purpose of producing ovarian atrophy is contraindicated in most patients with pain, because pain usually betokens an inflammatory condition or adhesions. Unilateral irradiation to produce atrophy of one ovary is rarely attempted and is not on record in a sufficient number of such cases to warrant deductions as to its efficacy. Theoretically the outlook is dubious with such treatment. Palliative care or surgical intervention preferably the latter would be the procedure of choice despite the fact that the patient has already been subjected to one operation.

SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

To the Editor—A man aged 30 had an intra urethral chancre with a 4+ Wassermann reaction two years ago. He was given about sixty 0.45 Gm doses of nearsphenamine about seventy five intramuscular injections of bismuth salicylate and about thirty of bismuth arsenamine sulfonate in continuous treatment. He still has a 3+ Wassermann reaction after two years of treatment. The patient has also had a chronic bilateral otitis media for about twenty years. What further treatment do you suggest? Would you recommend a spinal puncture in a patient with chronic otitis media?

HERMAN I. SWITZER, M.D. Bronx, N. Y.

ANSWER—It is essential that the patient's spinal fluid be examined to determine whether or not invasion of the central nervous system has occurred. The presence of a chronic otitis media is not a contraindication to doing a spinal puncture. If a positive spinal fluid report is obtained it is advisable that the character of the condition found be noted. For example, the test should include not only a Wassermann test but also a cell count (done soon after withdrawal of the fluid), a globulin estimation and a colloidal gold test. The degree of positivity or in other words the character of the spinal fluid report is a valuable guide in subsequent treatment. If the report shows evidence of a parietal formula fever therapy, (malaria) would seem warranted in this case. If a patient

has had intensive treatment, and a persistently positive spinal fluid is found, the use of nonspecific measures is warranted. If the patient's spinal fluid is weakly positive, persistence in treatment or the use of intraspinal therapy may reverse it to negative. If the spinal fluid report is negative examination of the heart and viscera for evidence of syphilis is advisable, and if such examinations are negative, the alternate use of courses of bismuth compounds and mercury, fifteen injections of each to a course at intervals of two months, are recommended. This treatment should be continued for the ensuing three years.

CHRONIC ARTHRITIS

To the Editor—A man aged 62, 6 feet (183 cm) tall, weighing 155 pounds (70 Kg) has lost 20 pounds (9 Kg) in five months but is in good general health. While playing tennis last July he noticed pain of a gnawing character in the right shoulder joint with sharp stabbing pain in the arm muscles and with stiffness and wasting of the muscles. The pain was relieved by exercise but soon returned. He feels toxic and fatigued but has no fever. The pulse is about normal. The pain gradually spread to the left shoulder and arm with pain and stiffness of the wrist joints and fingers and also involvement of the cervical and dorsal spine. Later it spread to the hip joints with aching and pain in the legs and feet. The pain is worst at night and he is unable to sleep more than an hour at a time. The urine is normal but he micturates excessively at night. The tonsils, teeth and sinuses have been explored by x-rays and found normal. There is no evidence of appendicitis or gall bladder infection. The prostate is quite large but without sign of any infection. There is a history of constipation during adolescence but not of late years. The stools are now greenish and pasty and he has to use laxatives and enemas for relief. His appetite is good but he feels drowsy, has a slight headache and is tired. The blood pressure is 130 systolic, 70 diastolic. The blood sugar is 170 mg. Blood count is normal except for a leukocytosis of from 13,000 to 15,000. The Wassermann reaction is negative. My diagnosis is atrophic arthritis and I first saturated him with salicylates without avail. Acetylsalicylic acid in doses of from 15 to 20 grains (1 to 1.3 Gm.), however, give him some relief. I have tried colloidal sulfur 10 grains (0.65 Gm) intravenously every other day but this has not given any relief. I have restricted carbohydrates in the diet and increased fruits and vegetables. Do you think my diagnosis is correct? What preparation of colloidal sulfur has met with most success and in how large doses? Are stock vaccines of any service? How about Russian baths or treatment at a hot spring? I will appreciate any suggestions for treatment in this case. Please omit name.

M D Chicago.

ANSWER—The presence of chronic polyarticular involvement with considerable disability, loss of weight and fatigue suggest chronic atrophic (infectious, rheumatoid) arthritis, although the patient is at an age when chronic hypertrophic arthritis is more common. A diagnosis of "tennis arm" is of course untenable in view of the polyarticular progression but the initial appearance and occurrence of symptoms in a region of trauma illustrate the importance of trauma in precipitation and progression of the disease and illustrate also the importance of reducing chronic trauma of weight bearing or occupation to the affected joints.

Careful attention to all foci seems to have been given. Special roentgenographic examination of the bowels, culture of the stool and tests of the passage of charcoal reveal data of questionable significance, therefore they cannot be urged, although they might be made. Sulfur in various forms is an old remedy for atrophic arthritis and has been discarded from time to time only to be revived periodically when a new preparation of sulfur is exploited. The use of colloidal sulfur is now being energetically pushed by various manufacturers. Only a few clinical reports are so far available. Some users are enthusiastic at times violently so, others have been disappointed with results. None of the work to date has been well controlled. Opinions differ as to the value of a low carbohydrate diet or of stock vaccines. If the patient does not improve materially after being on a restricted carbohydrate diet for a reasonable time it would be well to advise a fairly high carbohydrate, high vitamin, anticonstipation diet but to avoid obesity. If the arthritis is progressive a trial of stock vaccine is justified. The vaccines in most current favor are those of Dr. R. L. Cecil of New York, Dr. E. C. Rosenow of Rochester, Minn., and Dr. J. C. Small of Philadelphia and can be obtained by writing to these men.

Physical therapy or various sorts may provide more relief than any other treatment but should be used in conjunction with other treatment. The superior physical therapeutic facilities of spas are undoubted but if physical therapy is not continued consistently by the patient after leaving the spa the advantages of a short stay at a hot spring may be but temporary. The patient should be instructed in methods to be used daily in his own home and supplemented by professional physical therapy in a physician's office or physical therapy technician's office two or three times a week if possible. Instruction in

home physical therapy can be given by a trained technician or can be obtained by writing to Mr H A Carter, secretary of the Council on Physical Therapy of the American Medical Association

If an intensive program of adequate rest, daily physical therapy, a nutritious eliminative diet and trial of an arthrotropic streptococcus vaccine are not soon productive of improvement, attention to other available methods of treatment is in order and the correspondent is referred to a recent "Rheumatism Review" published for the American Committee for the Control of Rheumatism, which appears in the *Annals of Internal Medicine* for April, May and June 1935

MODERN TREATMENT OF VAGINITIS

To the Editor—Since August 1935 I have been treating a gonorrheal vaginitis and Bartholin abscess in a girl aged 6 years. She is in good condition except for this infection which is of about two years duration. Smears have revealed numerous gram negative intracellular diplococci on several occasions. Treatment began with a course of oral amniotin in doses of 1 000 international units three times a week. After ten weeks the patient showed a tinge of blood in smears and in the discharge. Smears at this time showed a mixed type of infection and the discharge was unabated. Treatment was changed to the Corbus Ferry gonococcus toxin which was given at weekly intervals until a maximum dosage of 0.4 cc. of the undiluted toxin was given. This resulted in the healing of the Bartholin abscess which had continued to discharge following electrocoagulation and incision. At this point the treatment with oral amniotin in doses of 1 000 international units three times a week was resumed. At the end of the second week the discharge showed a slight bloody tinge. The discharge is profuse and there are numerous organisms diplococci and bacillary in form. The vaginal discharge is profuse. What is the proper dose of oral amniotin for a child of this age? Have you any suggestions as to treatment? All local remedies such as irrigations suppositories, ointments and local applications have been of no avail. Is non specific protein therapy advised? Please omit name. M D Nebraska

ANSWER—The treatment with preparations containing estrogenic substance is purely empirical and the dosage is unsettled. The treatment is intended to stimulate proliferation of epithelial cells of the vaginal mucous membrane and thus render the vagina more resistant to infection. R M Lewis (*Am J Obst & Gynec* 26 593 [Oct.] 1933) advised small doses of theelin given at short intervals in the belief that they are more effective than larger doses given less frequently. The hormone treatment has not, however, been generally accepted as a cure of gonorrheal cervicovaginitis. The gonococcus attacks glandular structures such as are found in the endocervix, Skene's and Bartholin's glands, and recurrence or persistence of the discharge is usually due to latent infection in one of these sites.

Te Linde and Bawner (*Am J Obst & Gynec* 30 512 [Oct.] 1935) report that the oral use of amniotin was ineffective in their cases of gonorrheal vaginitis in children but that the daily hypodermic administration of amniotin in oil gave good results and the daily use (at bedtime) of amniotin vaginal suppositories produced excellent results. Presumably, other estrogenic preparations would be equally effective.

In chronic cases of cervicovaginitis such as the one described, a vaginoscopic examination should be made. By this means the source of the discharge may be disclosed. A male urethro-scope may be used as a vaginoscope and the examination can be made without anesthesia. If the cervix is observed to be infected, electrothermic cautery treatment may be given as in adults with chronic endocervicitis (Titus, E. W., and Notes, *B Arch Pediat* 50 284 [April] 1933). Topical applications of weak solutions of silver nitrate may be made to the infected areas by direct vision through the vaginoscope. These may be followed by daily instillation of 1 per cent mercurochrome ointment (Stein, I. F., Leventhal, M. L., and Sered, Harry. *Cervicovaginitis, Am J Dis Child* 37 1203 [June] 1929) or by irrigation with 1 per cent lactic acid solution.

L. H. Biskand (*Surg Gynec & Obst* 57 261 [Aug.] 1933. *Lancet* 2 1049 [Nov 9] 1935) and José Farriols (*Arch de med, cir y especialid* 38 52 [Jan 30] 1935) report excellent results in the treatment of vaginitis by the use of basic phenylmercuric nitrate or phenylmercuric borate, which have the highest antiseptic potency of any compounds so far discovered. (Report of the Council on Pharmacy and Chemistry, *THE JOURNAL*, April 14, 1934, p 1224). The technic as given by Biskand for treating vaginitis in children is as follows. An endoscope is inserted when possible, a smear taken and 1 or 2 cc. of a 1:1,500 aqueous solution of basic phenylmercuric nitrate is instilled with a blunt syringe into the vagina, the hips are elevated and the solution is thus retained for several minutes. This is done once or twice a week. Daily or twice daily irrigations are made with a pint of 1:25,000 solution of basic phenylmercuric nitrate by means of an infant enema tip or a soft rubber catheter.

DYNAMICS OF HEART AND CIRCULATION

To the Editor—A man aged 70 who has had attacks of paroxysmal tachycardia at irregular intervals since the age of 15 was seized with an attack at 2 30 p. m. February 2 which lasted until 5 40 p. m. the same day. His pulse rate in the attack was found to be 210 which is three times his ordinary pulse rate. His blood pressure which is ordinarily about 130 systolic and 80 diastolic, was found to be 76 systolic and 60 diastolic. There were no signs of congestive circulatory failure no rales over the pulmonary bases no coldness of the extremities or visible edema. The blood pressure remained about the same as already noted (76/60) for half an hour after the cessation of the attack and then began to rise. These observations were made by another physician who reported them to me. The query suggested by these observations is this: Does the commonly accepted theory of the dynamics of the circulation which is expressed in a recent textbook on physiology (Wiggers. *Physiology in Health and Disease*, 1934 p 509) as follows: The ventricles pump the blood from the terminal reservoirs (auricles) into the distributing system under an initial pressure sufficient to secure a continuous capillary flow as well as a return flow to the heart fully explain the circulatory dynamics in this case? Could the heart alone contracting at the rate of 210 per minute in the very low portion of the blood pressure scale (76/60) and with a pulse pressure of only 16 develop force enough to push the blood mass through the vascular circuit in the accepted circulation time against the resistance in the hundred thousand miles or more of vascular tubing (Statistical Data in Human Anatomy *THE JOURNAL*, May 12 1934 p 1632) in the successful manner in which it was observed to be done in this case?

EDWARD E. CORNWALL M D, Brooklyn

ANSWER—No difficulty is offered in explaining the facts presented in accordance with the currently accepted views concerning the dynamics of the heart and the circulation. When the heart rate increases to 200 or above a minute, the period of diastolic filling is cut short to such an extent that not only each systolic discharge but also the minute output is decreased. The effects on systolic and diastolic blood pressure are those of decreased systolic discharge, i. e., the effects would be the exact opposite of those described in the textbook mentioned, page 600, for augmented systolic discharge. No other dynamic effect is conceivable than that systolic pressure should fall more than diastolic. This is beautifully illustrated by the data in the case presented.

It must not be forgotten that the blood pressure 76/60 mm. of mercury in the central vessels, regardless of how created, represents the pressure head that forces blood through the vascular circuit. References to the hundred thousand miles of vascular tubing should not be misinterpreted. It is conceivable that the minute vessels, if placed end to end, might stretch round the globe just as considerable linear mileage could be calculated if all the streets of Brooklyn were similarly connected. It would be unfair, however, to leave the impression that a tourist passing through Brooklyn would actually have to travel that distance or would meet the traffic resistance of all the streets combined. This is equally true for circulating corpuscles.

SPECIFIC GRAVITY OF URINE

To the Editor—Assuming that the temperature of the water is the same as the urine and that no protein is precipitated is the specific gravity of urine diluted with water in direct proportion to the dilution? I have apparently not found this to be the case although I admit that I have not controlled the temperature. Thus a specimen of 15 cc was diluted with 30 cc. of water and the specific gravity was 1.012 was the true specific gravity 1.036? Another was diluted with equal parts of water and the specific gravity was 1.018 was the true specific gravity 1.036?

SAMUEL L. IMMERMAN M D Philadelphia

ANSWER—At a constant temperature and in the absence of any precipitation, the specific gravity of the urine diluted with distilled water will vary in direct proportion to the dilution. A specimen with a specific gravity of 1.036 diluted with an equal amount of water should show 1.018.

Specific gravity is one of the most important tests in estimating renal function. The procedure is simple but before placing reliance in the results one should be certain that the readings are correct. The urinometer should be twirled as it goes into the urine to prevent adhesion to the side of the container and also to remove any air bubbles that might adhere to the bulb. The urinometer should be a long one with a stem at least 3 inches long, and should be graduated from 1.000 to 1.040. The very small urinometers with close graduations are worse than useless.

Each urinometer should be tested by immersion in distilled water at room temperature, when the reading should be exactly 1.000. It should again be tested with an accurate 5 per cent solution of sodium chloride, which will give a specific gravity of 1.035 at 25 C (77 F).

The specific gravity of urine varies considerably with the temperature. At body temperature of 37 C. it is 5 points lower than at 25 C., or room temperature. For urines at extreme

temperatures, corrections should be made by adding 0.001 for each 3 degrees centigrade above the temperature for which the urinometer is standardized, or subtracting 0.001 for each 3 degrees centigrade below. Some urinometers are supplied with a thermometer specially graduated for making quick corrections. It is always better to get sufficient urine than to dilute with tap water to make the reading.

USE OF DIGITALIS AS PREVENTIVE OF CARDIAC HYPERTROPHY

To the Editor—Christian asserts that digitalis apart from its value in controlling cardiac decompensation is valuable in inhibiting cardiac hypertrophy and retarding the aging process of the myocardium. Therefore he advises use of digitalis in all cases of hypertrophy and in cases in which hypertrophy is likely to appear (hypertension, murmurs, rheumatic heart disease with murmurs, and so on) for the remainder of the patient's life. He believes that cardiac hypertrophy instead of being a beneficent process has an injurious influence on the functions of the heart. I remember reading an article in which Cloetta proved Christian's contentions by animal experimentation. I have been considering advocating this therapy to a number of my patients but I should first like to know whether there is any evidence to show that such a long continued use of digitalis would be harmful and also whether larger doses of digitalis would prove successful in a patient with decompensations who had been taking digitalis for several years according to Christian's teachings. What seems to be the consensus among cardiologists concerning this form of preventive medicine? Is there much clinical proof to back it up? Please omit name.

MD New Jersey

ANSWER—As mentioned in the query, Cloetta has asserted that cardiac dilatation and hypertrophy secondary to experimentally induced aortic insufficiency of animals can be prevented or be reduced in degree by administering digitalis. Observations in man indicate that part of the beneficial effect of digitalis in patients with dilated and failing hearts is due to the increase in the "tonus" of the myocardium and to the reduction in the size of the heart. Evidence also exists showing that in the majority of instances cardiac hypertrophy is preceded by cardiac dilatation. Indeed, it is claimed that primary dilatation of the ventricles and the resulting stretching of the myocardial fibers serve as a stimulus to hypertrophy. Clinical observations indicate that a hypertrophied myocardium often is inadequate in function. Thus there is indirect support for the belief that digitalis may be beneficial in the prevention of ventricular dilatation and hypertrophy. Whether digitalis actually accomplishes such a function is not known, as the proof of such therapeutic action is exceedingly difficult to establish. Hence, such a therapeutic practice is based on clinical suggestion and on indirect evidence rather than on proof or on empirical results.

There is no reason to believe that the long-continued use of digitalis is harmful, or that it builds up "tolerance." Hence larger doses of digitalis will be beneficial in the presence of circulatory failure even if the patient has taken digitalis for several years previous to the onset of congestive failure.

Nevertheless it is fair to state that the practice of giving digitalis to patients with organic heart lesions but with no evidence of pulmonary or peripheral congestive failure is not at present an accepted procedure.

MISCARRIAGE WITH NOSEBLEED

To the Editor—A patient has had two pregnancies both terminating in miscarriage at the second and the sixth month. Each time the miscarriage was preceded by a persistent slight nosebleed. The nose felt congested and there was a slight steady ooze of blood. During the first pregnancy the nosebleed lasted for but a week. During the second it started two months before the patient went into premature labor. In each case the bleeding stopped immediately after the uterus emptied itself. Examination of the nares a few weeks later showed nothing abnormal. I did not see her during the pregnancies and do not know what condition her nose presented at that time. She tells me that she has had a few nosebleeds concomitant with menstruation and she does not recall any at other times. Do you think that there is any relation between the bleeding and the miscarriages? Can you suggest any procedure to insure her a successful pregnancy?

E. M. ABRAHAM, M.D. Brooklyn

ANSWER—It is difficult to explain the relationship of the nosebleed and the miscarriages in this case without more information. It would be essential to know the blood pressure and the results of urinary and blood examination. The state of the fetus and the placenta would also be enlightening.

There are a number of possibilities that might explain both the nosebleed and the miscarriages. There may have been some nephritis or toxemia with high blood pressure which could cause nosebleed and fetal death with abortion. There may have been some blood dyscrasia which would cause bleeding from mucous surface, such as the nasal and the uterine mucosa, and

which could account for both the nosebleed and the abortion. One should consider the possibility of syphilis, which might produce a nasal lesion with resultant bleeding and also cause a miscarriage. An infection of the upper respiratory tract might be responsible for one or both of the phenomena. Infectious organisms from such a focus might locate in the genitalia and cause fetal death. One should also exclude a malarial infection if the patient has lived in a district where such disease is prevalent. Malta fever might be considered, and the blood test for *Brucella abortus* should be carried out. In these days one has at least to consider endocrine factors. It might be worth while to determine the basal metabolic rate.

So far as treatment is concerned, one would have to be guided by additional information, but in general one would be justified in placing the patient on a diet rich in vitamins and minerals, making sure of a rather high calcium content with some iodine. Iron might be requisite if the woman should be anemic. With a low basal metabolic rate the administration of thyroid extract would, of course, be desirable.

This reply has been rather general, in view of the lack of greater detail in the query. It may be that close and detailed examination of the patient will fail to reveal the cause of the phenomena, the occurrence of which may be purely coincidental.

SUBCUTANEOUS EMPHYSEMA AFTER WOUNDS

To the Editor—A young Negro a hospital employee cut his finger on a clean metal door. The injury appeared trifling and the only treatment was application of an antiseptic (tincture of mercuriolate I believe). Within twenty-four hours a mild swelling and lymphangitis of the hand developed. He suffered no pain and his general condition was excellent. Within another twelve hours there was definite subcutaneous emphysema and the patient was hospitalized. Needling of the area (the dorsum of the hand and lower forearm) revealed gas and the swelling disappeared to recur within six or seven hours. His general condition gave no evidence of infection. The subcutaneous emphysema gradually subsided within three or four days and a complete recovery was made. Please discuss causes of subcutaneous emphysema especially as in this case in which I feel sure gas gangrene has been ruled out. Please omit name.

MD, Ohio.

ANSWER—Under the unusual causes of gas in the tissues one should consider inclusion of air beneath a blood clot or sutured wound such as of the abdominal wall and in injuries around compressed air machines. It is not likely that it would occur from an ordinary injury.

It is not uncommon to see air in the tissues in a roentgenogram for possible fracture after a rather extensive wound.

Gas may be produced in the tissues by *Bacillus Welchii* (*Clostridium Welchii*) types 1, 2, 3 and 4, *Vibrio septique* (*Clostridium oedematis-maligni* Koch), *Bacillus oedematis* (*Clostridium oedematis*), *Bacillus fallax* (*Clostridium fallax*), *Bacillus tertius* (*Clostridium tertium*) and *Bacillus coli* verus and *Bacillus coli-communior* (*Escherichia coli* and *Escherichia communior*).

The first five are strictly anaerobic and the colon group may grow under anaerobic conditions.

It is well known that *Bacillus Welchii* was the most common cause of gas gangrene (75 per cent) and wound emphysema following war wounds, although it was nearly always associated with other organisms, especially *Bacillus sporogenes* and *Bacillus histolyticus*, which are proteolytic but do not produce gas.

Of considerable importance is the fact that only certain very virulent strains of *Bacillus Welchii* can produce gas gangrene when present alone in a wound and then only when necrotized tissue is present. It is this requirement which led to the development and success of the surgical procedure of debridement.

In the first few days, smears from wounds with gas gangrene having a foul smelling reddish brown discharge usually show *Bacillus Welchii* and streptococci. In the second week the pus becomes more purulent and *Bacillus Welchii* is infrequent while streptococci, staphylococci and coliform bacilli are abundant.

The majority of war wounds having *Bacillus Welchii* infection cleared up without spreading gangrene. Dilute solution of sodium hypochlorite is of great value in the treatment of all gas-producing infections.

It is probable that the emphysema here was due to an avirulent or pure *Bacillus Welchii* infection. Certainly with careful cultures made on special mediums one could rule out infection by some other organism mentioned.

Treatment should demand the entrance of oxygen to the tissues either by wide opening of the wound or by surgical incisions. When muscle is infected extension is along the fibers necessitating incisions along the entire length of the muscle. If gangrene is present the entire muscle should be debrided and not infrequently amputation may be necessary.

DIFFERENTIAL DIAGNOSIS OF DERMATITIS

To the Editor—A woman, aged 68, developed an eruption on both hands about Oct. 20 1935. There was a previous similar attack a year before which was treated with hypodermic injections in the arm. An attack of herpes zoster occurred shortly after treatment was begun. Following the herpes the eruption on the hands disappeared. There is a history of anxiety and worry which preceded each eruption on the hands. The eruption began as ill defined patches of red fissured scaling skin between the third and fourth and the fourth and fifth digits of the left hand. An eruption then occurred on the flexor surface of the left wrist as a shiny reddish purple patch measuring 4 by 3 cm. It was flat and slightly infiltrated and the skin was thin and cracked. There was no exudation. A patch about 2 cm in diameter then appeared on the flexor surface of the right forearm at the junction of the middle and lower thirds. The dorsum of the right hand was next affected with an indefinite area of redness, scaling and fissuring which was not as severe as the preceding. The eruption is preceded by itching of mild degree and the itching continues after the eruption has occurred. In the small patch on the right forearm several pin point sized vesicles were noted. The skin of both hands and forearms is dry shiny wrinkled and thin at the elbows the skin abruptly changes to a normal appearance. Treatment with ultraviolet rays and 10 per cent naftalan ointment gave prompt relief in a week with return of the skin to normal appearance. Dressings with zinc oxide ointment were used later. When the dressings were removed to enable her to cook Thanksgiving dinner itching began in a few hours followed next day by the typical chapped fissured appearance of the eruption in the same locations as before. The patient has been instructed to avoid the use of soap and water on the hands and to wear rubber gloves while washing dishes but she has not cooperated very well. She was formerly using Palmolive and Woodbury's soap on the hands. She uses Espey's lotion on them at present.

M D Illinois

ANSWER—The eruption described may be a mild dermatitis venenata, an eczema or an eczematoid ringworm. The history of its having cleared after an attack of herpes zoster, and again on treatment with ultraviolet rays and 10 per cent naftalan ointment favors the diagnosis of a dermatitis due to irritation of an atrophic skin. Nevertheless scales should be examined for ringworm. Mental conditions, anxiety and worry may easily have something to do with bringing on an attack. Perhaps worries about her cooking, as at Thanksgiving or the heat or the irritation of soap and water caused a recurrence then.

The soaps mentioned are mild but no soap at all is still less irritating. Espey's lotion probably contains Irish moss, glycerin and boric acid. The patient should be patch tested for these ingredients, as well as for soap and any other substance she handles frequently.

Judging by the evident atrophy of the skin of the hands and forearms and the frequency with which dryness and sensitization to alkalis cause dermatitis during the fall, it is probable that the dermatitis is caused in this way and should be treated, as it evidently is already being treated, by the use of soothing and softening ointments and lotions, and abstinence from soap. Cooperation on the part of the patient is absolutely necessary to success or even partial success.

PSORIASIS

To the Editor—The special article on the treatment of psoriasis from the Cook County Hospital (THE JOURNAL July 13 1935 p 115) contains no mention of dioxyanthranol (anthralin). I have seen references in literature to dioxyanthranol as the modern substitute for chrysarobin. I am wondering whether dioxyanthranol is actually superior to chrysarobin and whether it seems that it will ultimately replace chrysarobin in the treatment of psoriasis. Information in regard to this will be appreciated. Please omit name.

M D Georgia

ANSWER—In the article mentioned as was stated, chrysarobin served only as the prototype of the general group of reducing substances to which it belongs. As other members in this group one may mention neorobin and dioxyanthranol. These were not mentioned, not because they are not of service but to keep the article within reasonable limits.

The exact merits of dioxyanthranol in comparison with chrysarobin cannot be definitely stated at present. Chrysarobin has had a much wider and longer use. It has stood the test of time. It is much cheaper than dioxyanthranol and does not deteriorate so rapidly. This is an important consideration when the combated eruption is widespread and large quantities of medicament are necessary. While chrysarobin may produce certain untoward reactions these are well known and can be avoided with reasonable care. Nor is the use of dioxyanthranol free of all danger. It may produce irritation, sometimes severe. It stains clothing to a lesser extent than chrysarobin and has less tendency to produce conjunctivitis. It has equivalent action in approximately one twentieth the concentration of chrysarobin. As a substance, dioxyanthranol is a much more intense reducing substance than chrysarobin and this intensity has been

measured. These data are to be published in the *Archives of Dermatology and Syphilology*. Dioxyanthranol samples from various batches is more uniform in strength, chrysarobin varies markedly in strength from sample to sample. Many dermatologists feel that the modern treatment of psoriasis with chrysarobin is more properly carried out in the hospital. With such proper use of chrysarobin, it is an efficient drug. It is too early since the more general use of dioxyanthranol in this country was begun to predict that it will entirely supplant chrysarobin, but the efficiency of the latter when properly used together with its easy availability makes this doubtful.

ENCEPHALOMYELITIS AFTER VACCINATION

To the Editor—A girl baby aged 13 months of normal full term delivery had an uneventful first few months of life except for the fact that she had obstinate constipation. She has been artificially fed for the past ten months. At 10 months of age the baby weighed 20 pounds (9 Kg). At this time she received an unsuccessful smallpox vaccination. This being negative a second vaccination was performed two weeks later. This resulted in a severe take and the child was ill for about ten days. In the meantime she had lost her appetite and became listless. The local and general reactions subsided but were followed by a marked generalized muscular flaccidity. Prior to inoculation she was beginning to crawl and sit up and she had made efforts to walk. Since the vaccination she has no longer made efforts to sit, crawl or walk. When an attempt is made to teach her to walk the legs crumple up under the effort. She cannot sit erect unless propped up. Her appetite has returned but constipation is still a marked symptom. She has developed a urinary incontinence and there is a dry desquamation on both legs. Her cry is weak by comparison to her previous cry. She is now 13 months of age and there has been no muscular improvement. Although she has gained a little there is still asthenia of a marked degree. Has this syndrome anything to do with the vaccination? Also what is to be done to improve the condition? These are the questions I should like answered.

M D, Chicago

ANSWER—In recent times in various parts of the world, notably in Holland and England, but in other countries as well not excluding the United States, cases of disseminated encephalomyelitis have been observed following vaccination. The first symptoms appear about the tenth day, though they may occur as early as the fourth or as late as the thirtieth day after vaccination. These patients complain of stupor, convulsions, headache, vomiting and fever. Ocular paralyses have been noted, with unequal pupils, but the involvement of other cranial nerves is not frequent. There is usually paralysis of the legs and loss of sphincter control. The neck is usually stiff, and Kernig's sign may be present.

Postvaccinal encephalomyelitis is less frequent in infants than in older children or adults. Many of these patients recover after a few weeks or months, though sometimes mental deterioration and spasticity may continue. It has been estimated that the mortality of postvaccinal encephalomyelitis is from 30 to 40 per cent. The designation of the disease, encephalomyelitis, indicates spinal cord involvement. A number of investigators have reported spinal cord lesions.

As has already been indicated, the majority of these infants tend to recover spontaneously, though unfortunately there are exceptions to this statement, because there may be residual effects. The baby may receive some benefit from warm baths, gentle massage, passive exercise and also a well balanced diet, with an eye to its nutritive qualities and the proper vitamin content.

MEASURING VISUAL CAPACITY

To the Editor—I am at a loss to interpret the degree of impaired vision of an applicant whose physical examination form (as submitted by a physician in California) shows Visual acuity R. 10/32 L. 10/32.1. Corrected R. 20/38.4 L. 20/38.4—A M A Rating. It will be appreciated if you can give your opinion of the percentage of visual acuity of this applicant with and without glasses.

R C O'Connor M.D. New York

ANSWER— $10/32.1 = 20/64.2$ (approximately 20/65)
 $= 47.5$ per cent visual acuity

$10/38.4 = 20/76.8$ (nearly 20/80)
 $= 42.5$ per cent visual acuity

NEW METHODS IN ACNE AND TRICHINOSIS

To the Editor—Would you be kind enough to give me some information regarding the treatment of acne vulgaris by means of manganese preparations and the value of silver arspenamine in the treatment of trichinosis?

A E. Dale M.D. Danville Ill

ANSWER—Neither of these forms of treatment could be considered as accepted or as scientifically established.

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AMERICAN BOARD OF INTERNAL MEDICINE *Written examination* will be held simultaneously in different centers of the United States and Canada in December *Practical or clinical examination* will be given in St Louis in April. Chairman Dr Walter L Bierling 406 Sixth Ave Des Moines

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Maryland (Homeopathic) June Examination

Dr John A Evans, secretary, Board of (Homeopathic) Medical Examiners, reports the written examination held in Baltimore, June 9-10, 1936 The examination covered 9 subjects and included 70 questions An average of 70 per cent was required to pass Seventeen candidates were examined, all of whom passed The following school was represented

| School | PASSED | Year Grad | Per Cent |
|---|--|-----------|----------|
| Hahnemann Med College and Hospital of Philadelphia (1935) | 78 5 80 7 82 4 84 6 84 9 87 2 | (1936) | 79 6 |
| | 81 6 85 6 86 8 86 3 86 6 86 6 90 6 91 6 92 5 | | 82 3 |

Puerto Rico March Examination

Dr O Costa Mandry, secretary, Board of Medical Examiners, reports the written and practical examination held in San Juan March 3, 1936 The examination covered 14 subjects and included 80 questions An average of 75 per cent was required to pass Five candidates were examined all of whom passed The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| Tufts College Medical School (1931) | | (1931) | 76 2 |
| Hahnemann Med College and Hospital of Philadelphia (1909) | | (1909) | 87 2 |
| Université de Paris Faculté de Médecine (1934) | 78 6 | (1935) | 75 3 |
| Université de Toulouse Faculté de Médecine et de Pharmacie (1935) | | (1935) | 77 3 |

* Verification of graduation in process

Arkansas May Examination

Dr A S Buchanan, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held in Little Rock, May 11-12, 1936 The examination covered 12 subjects and included 120 questions An average of 75 per cent was required to pass Forty-four candidates were examined, all of whom passed The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|--|---|-----------|----------|
| University of Arkansas School of Medicine (1936) | 77 8 78 3 78 5 78 9 79 2 79 7 80 3 80 4 | (1935) | 81 3 |
| | 80 6 80 8 80 8 80 8 80 9 81 1 81 3 81 8 81 9 82 2 | | |
| | 82 3 82 3 82 3 82 4 82 4 82 8 82 8 83 2 83 3 83 3 | | |
| | 83 4 84 1 84 1 84 3 84 3 84 3 84 8 85 3 85 3 85 4 | | |
| | 85 5 | | |
| Rush Medical College (1935) | | (1935) | 85 2 |
| University of Tennessee Col of Medicine (1933) | 81 | (1936) | 80 81 |

Two physicians were licensed by reciprocity and 1 physician was licensed by endorsement from January 11 through March 3 The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--|-------------------------|-----------|------------------|
| Washington University School of Medicine (1894) | | (1894) | Illinois |
| University of Tennessee College of Medicine (1932) | | (1932) | Tennessee |
| School | LICENSED BY ENDORSEMENT | Year Grad | Endorsement of |
| Johns Hopkins University School of Medicine (1933) | | (1933) | N B M Ex |

Mississippi June Report

Dr R N Whitfield assistant secretary Mississippi State Board of Health, reports the written examination held in Jackson June 22-24 1936 The examination covered 12 subjects and included 96 questions An average of 75 per cent was required to pass Twenty-six candidates were examined 22 of whom passed and 4 failed Seven physicians were licensed by reciprocity The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|--|---------------------------------------|-----------|----------|
| Tulane University of Louisiana School of Medicine (1936) | 79 2 81 7 83 83 3 84 6 86 2 86 3 86 6 | (1935) | 87 3 |
| | 88 1 89 1 93 | | |
| University of Tennessee College of Medicine (1935) | 84 5 (1936) 85 1 85 8 87 | (1932) | 89 8 |
| Vanderbilt University School of Medicine (1936) | 84 1 85 2 87 7 90 1 | (1936) | 84 |

Nongraduates * FAILED 51 52 2 56 1 67 6

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--|-------------------------|-----------|------------------|
| Tulane University of Louisiana School of Medicine (1935) | | (1935) | La 1935 |
| Memphis Hospital Medical College (1932) | | (1932) | La 1935 |
| University of Tennessee College of Medicine (1932) | | (1932) | La 1935 |
| (1932) (1933) (1935) Tennessee (1935) Louisiana | | | |

Permitted to come before the board for examination by reciprocity of the legislature.

Book Notices

Dental Roentgenology By LeRoy M. Ennis D.D.S. Assistant Professor of Roentgenology in the Thomas W. Evans Museum and Dental Institute School of Dentistry University of Pennsylvania Second edition Cloth Price \$6.50 Pp 351 with 093 Illustrations Philadelphia Lea & Febiger 1936

This book is not only one for the student but one that will be of great aid to the general practitioner. The introductory chapter with its statistics gives one quite a comprehensive knowledge, as well as keen insight regarding the value of dental roentgenology and the relationship that should exist between the dentist and the physician and vice versa. The early chapters give one a thorough understanding of the construction of the machine and the types of tubes, also a description of the electrical terminology, so that the reader knows just what is meant when certain terms are used. Dark room procedure which is important, is also discussed, as well as the care and precautions to be observed not alone by the operator but also toward his patient. The book also deals with another important phase of roentgenology, that of angulations and the various types of technic for the intra-oral and extra-oral as well as occlusal and bite-wing films, also for stereoroentgenography. What may be seen in one roentgenogram may not be seen in another angle of the same area. The greater part of the book, however, is devoted to dental pathology with a review of the normal anatomic landmarks of the teeth and jaws as seen in the roentgenogram. One does not realize that many of these landmarks can easily be mistaken for abnormal or pathologic conditions. In the chapters that deal with various dental pathologic conditions, the author gives a definition or a description of the condition, also the etiology, symptoms and roentgenographic observations. These are followed by profuse illustrations covering or illustrating the point in question. As in the first edition the author clings to certain terms that are obsolete and should be changed, he uses the term premolar instead of bicuspid and refers to mandibular and maxillary molars instead of upper and lower molars.

The Localization of Sound By H. E. O. James Medical Research Council Reports of the Committee upon the Physiology of Hearing III Special Report Series No 207 Paper Price 9d Pp 38 with illustrations London His Majesty's Stationery Office 1936

If from a source of sound two equal tubes are led one to each ear of an observer, the sound will be said to be heard in the middle of the head. If one tube is shortened, the sound will be heard on that side even though the source of sound remains the same distance from the observer. Instruments of this character have a practical military significance in that they permit accurate localization of submarines and airplanes. By means of sound-collecting devices the observer 'tunes in' the sound of a distant airplane, let us say and finally getting the sound to appear as if it were in the middle of his head, he is able to calculate with a fair degree of accuracy from what direction it is coming and which way it is going. The question arose as to what the effect of other sounds on an observer so occupied would be on the accuracy of his determinations, and the larger question of protection against industrial hazards in the presence of noise also arose. The problem of 'attunement' came up. An observer who localizes a sound as if it were in the middle of his head will not do so if one ear has been exposed to sound for a short time before this. He has become 'attuned.' The author experimented on the accuracy of localization and on the speed with which it returns after exposing one and both ears to sounds with a number of various types of apparatus. Different kinds of sounds were used. The effect of exposing the observer first to sounds of different intensities and of varying durations and different frequencies, and the effect of the subsequent 'attunement' on accuracy of localization, were determined. The greater question of auditory fatigue was considered. Does an observer exposed first of all to a sound in one ear and then bilaterally stimulated refer it to the unexposed ear because the first ear is tired? That is, is auditory fatigue present? If the proper explanation is auditory fatigue why does the patient suffer from diminution in hearing ability in the opposite

unstimulated ear? Apparently auditory fatigue, better called as the author says "experimental deafness" cannot be entirely explained by fatigue of the end organ. There must be, some observers feel, an additional central factor. These and a number of other interesting questions are raised to intrigue the interest of otologists, psychologists and physiologists in the fundamental mechanism of hearing. More valuable than the practical results of these experiments is the feeling that much that is of importance will come in the future from further work in this only recently explored field.

Nouvelle pratique dermatologique Publiée par MM. Darier, Sabouraud, Gougerot, Milian, Pautrier, Ravaut, Sézary, Clément, Simon, Secrétain, général, Clément, Simon. Tome I. Table générale des huit volumes du traité. **Dermatologie générale** Par MM. J. Darier, A. Clément, A. Flandin, A. Tzanck. Half Cloth Price 300 francs Pp 720 with 220 illustrations. Tome II. **Dermatoses parasitaires** **dermatoses microbennes** (début) Par MM. H. Gougerot, M. Langeron, A. Lévy, Franckel, A. Louste, G. Milian, P. Pignot, H. Rabeau, P. Ravaut, E. Rivalier, B. Sabouraud. Half Cloth Price 300 francs Pp 948 with 555 illustrations. Tome III. **Dermatoses microbennes** (suite) Par G. Barbier, L. Chateiller, Mme. Cherrel, Bodin, H. Galliard, H. Gougerot, G. Lacapère, G. Milian, L. M. Pautrier, L. Queyrat, E. Rivalier, P. Vigne. Half cloth Price 300 francs Pp 1027 with 343 illustrations. Paris. Masson & Cie 1936.

"The present work is destined to replace the *Pratique dermatologique* published in 1900 under the direction of Besnier, Brocq and Jacquet, and which in its time, marked a date in the history of dermatology." Thus begins the introduction to this monumental work in eight volumes. Careful examination of the first three volumes justifies the statement that "the directors of this treatise have undertaken and have realized this task." One notes with regret that of the eighty-nine notable collaborators Paul Ravaut, Audrey, Barbier, Lacapère, Louste, Montlaur, Miget and Queyrat have passed away since the beginning of the gigantic undertaking. The first volume contains a table of contents for the entire eight volumes. One has an opportunity, thereby, to envision the comprehensiveness and the completeness of the work. An alphabetical index will appear in the eighth volume. The books are beautifully bound and are printed on the best of paper, with numerous illustrations done with the most modern technic. One regrets, therefore that the directors saw fit to include a group of ancient, meaningless drawings on pages 493 to 497.

The first volume comprises a historical review of the classification of the dermatoses, macroscopic anatomy and histology of the skin, physiology, histopathology, lesions of the adnexa, etiology and general pathology. A chapter on diagnosis and another on therapeutics complete the volume.

The second volume opens with ninety-eight pages devoted to the animal parasites by Louste and Lévy-Franckel. The chapter is of such unusual excellence that an attempt was made to find an omission none but bird scabies was discovered. Sabouraud continues with a chapter on mycoses of the scalp done as only this great master of the fungous diseases could do it. This chapter is followed by a series of exhaustive articles on all phases of the mycotic diseases by Sabouraud, Rivalier, Pignot, Gougerot, Ravaut, Rabeau and Langeron. If one had no other reference book one could get on well with this volume alone, aided by the lengthy bibliography. The remaining pages in the volume are devoted to a monograph on syphilis by Milian. The only criticism one could make of the monograph is that the bibliography is scanty.

The third volume has the first 200 pages given over to a continuation of the monograph by Milian, followed by a short article by Lacapère on African and Asiatic syphilis. Following this are excellent articles on yaws, leishmaniasis, oriental sore, trypanosomiasis and the fusospirillar infections. The bulk of the volume is taken up by a monograph on the entire field of cutaneous tuberculosis by Pautrier. This chapter is done in a most authoritative manner, well documented and beautifully illustrated. Pautrier has included lupus erythematosus, as he has been a partisan of the tuberculous origin of the disease for thirty years. After an exhaustive analysis of all the views as to etiology, Pautrier says "There remains the tuberculous theory, it is the most logical, the most reasonable, the one which best satisfies the spirit, the one which unites the maximum of probability with the beginnings of proof." The article is brought to a close with an excellent discussion of granuloma

annulare, which has only an "uncertain and debatable connection with tuberculosis." Gougerot contributes a valuable article on leprosy, and Rivalier closes with an excellent and beautifully illustrated chapter on chancroidal infections.

The dermatologic world is greatly indebted to the French school of dermatology for having produced such handsome and valuable volumes. The arrival of the remaining volumes will be eagerly awaited.

Dental Infection and Systemic Disease. By Russell L. Haden, M.A. M.D. Chief of the Medical Division, Cleveland Clinic, Cleveland, Ohio. With a foreword by Dr. Edward C. Rosenow. Second edition. Cloth. Price \$2.50. Pp. 163 with 63 illustrations. Philadelphia: Lea & Febiger, 1935.

By his studies and clinical data, the author evaluates the present status of dental infection in relation to the clinic. He speaks of the education of dentists, physicians and public to the danger of infected teeth as yielding beneficial results, shown by the decreased incidence of pulpless teeth. This is also due to dental advancement in that the dentist is conserving the teeth and their pulps to a greater degree. The volume offers a complete guide for the research worker whose interest may lead him to corroborate the painstaking work of the author and whose conclusions may stimulate further interest in preventive dentistry.

Biologische Wirkungen des Alkohols auf den Stoffwechsel. Ergebnisse experimenteller Untersuchungen in dem von mir geleiteten Laboratorium unter Verwendung der Wismarschen Mikromethode der Blutalkoholbestimmung über Wirkungen des Alkohols auf den Stoffwechsel. Über die Verwertung des Alkohols bei der Muskelarbeit, über Beziehungen des Blutalkoholgehaltes zum Rauschzustand, über Insulinbehandlung der Alkoholintoxikation und die Insulinblockade der Ganglienzellen. Von Adolf Bickel, Professor der pathologischen Physiologie an der Universität Berlin. Paper. Price, 90 pfennigs. Pp. 31. Leipzig: Georg Thieme, 1935.

This summary of the quantitative studies of Professor Bickel and his students is an amplification of a public address recently delivered, and consequently the conclusions and interpretations are given without the evidence on which they are based, which may be found in part in more technical publications. Some of them, at variance with previous observations, require further analysis and experimental verification before they can be unqualifiedly accepted. They are briefly as follows: 1. Alcohol frequently, but not regularly, has a specific dynamic effect, increasing the total metabolic rate. 2. The rate of oxidation of the alcohol itself is increased by small doses but diminished by large amounts of alcohol. 3. The presence of alcohol hastens the oxidation of other materials in the body. 4. Alcohol burns faster during muscular work but does not itself serve as a source of muscular power. 5. The effect of alcohol on the blood sugar or on the sugar tolerance curve is not consistent. 6. The normal insulin supply of the body controls the height of the blood sugar without definite effect on the blood alcohol content. 7. The injection of insulin subcutaneously produced a lowering in the alcohol content of the blood, in addition to the reduction in the blood sugar. The lowering of the blood alcohol through insulin is greater with larger doses of insulin and with lower blood sugar levels. 8. With high blood sugar and high blood alcohol concentrations, insulin causes a lowering of the blood sugar without influencing the blood alcohol concentration but may cause a shortening of the intoxication by insulin "blockade" of the ganglion cells. 9. The height of the blood alcohol content therefore is within certain limits no infallible index of the amount of the total disturbance of the nervous system at a particular moment. 10. The insulin treatment of alcoholic intoxication in man may serve as a therapeutic possibility for the consideration of the clinician. The observations discussed are both theoretically stimulating and clinically attractive. Before the classic dictum of Mellanby that the rate of oxidation of alcohol in the body is independent of concentration or external factors is abandoned, however, further work is necessary to demonstrate that the results reported may not in fact be explainable on the basis of variable excretion rather than oxidation rates and that the differences observed are really statistically significant. It is to be hoped that Professor Bickel and his students will continue their investigations and that other workers may confirm their results before the therapeutic suggestions made are given uncorroborated clinical application.

The International Medical Annual. A Year Book of Treatment and Practitioner's Index. Editors: H. Letheby, Tidy, M.A. M.D. F.R.C.P., and A. Rendle Short, M.D. B.S. B.Sc. Fifty-fourth year, 1935. Cloth. Price \$6. Pp. 555 with 154 illustrations. Baltimore: William Wood & Company [n.d.].

This book has established itself as a classic. It is the work of leading authorities and the fifty-fourth year of publication is a sufficient testimony to its merit. The editors wisely say in the introduction that "a year book must record the proceedings of the previous year like the minutes of a meeting. Minutes contain no implication that the opinions expressed by the speakers are justified or that the conclusions arrived at are correct." The introduction contains a short review of the principal accomplishments of 1935 in various fields of medicine. The scope of the book is not limited to internal medicine but includes also surgery, obstetrics, gynecology, radiology and related subjects. Such diversified themes as diets for athletes, school medical service and industrial diseases have not been overlooked. The handy book is illustrated with numerous charts, photographs, reproductions of roentgenograms, photomicrographs and colored plates. The usefulness of this work cannot be questioned, it should be helpful to the practitioner who desires concise and accurate information concerning recent advances in medicine. An impression gained from a brief review of the book is that the last year offered an unusually large number of comparatively simple new therapeutic methods for a great diversity of ailments. The arrangement of subjects in alphabetical order is open to criticism, as overlapping can not be avoided in many instances. The editors rendered a distinguished service, particularly to those who for some reason or other cannot avail themselves of library facilities.

The Treatment of Asthma. By F. T. Harrington, M.R.C.S. L.D.S.P. Cloth. Price 6s. Pp. 112 with 3 illustrations. London: H. K. Lewis & Co. Ltd., 1935.

This small book is published under the ambitious title of the treatment of asthma. With the exception of the first few chapters it is essentially a concise discussion of the general dietary and hygienic aspects of asthma. The author's rationalizations and theories on the etiology and pathogenesis of asthma will find little general acceptance. His idea that "without toxemia we cannot have asthma and treatment which does not include some means of lessening the toxic load is futile" would have been more convincing if he had been more explicit about the toxin or the mechanism by which it acts. That proper food and alimentation is important in the management of asthma will be readily agreed on but that these are fundamental factors will be seriously questioned. It is unfortunate that many of the author's practical statements are obscured by some of his poorly grounded theories. Had the author been content with dealing with diet and hygiene in asthma he would probably have provided the profession with a concise, usable text book. There is little else in this work to recommend it to the physician.

Recent Advances in Dermatology. By W. Noel Goldsmith, M.A. M.D. M.R.C.P. Physician to St. John's Hospital for Diseases of the Skin. With foreword by A. M. H. Gray, C.B.E. M.D. F.R.C.P. Cloth. Price \$5. Pp. 522 with 58 illustrations. Philadelphia: P. Blakiston's Son & Co. Inc., 1935.

This is an unusually able summary of the advances in dermatologic knowledge during the last twenty years. The author has emphasized particularly the newer research in immunology and biochemistry as related to cutaneous disorders and gives an impartial presentation of the views of different observers along with a personal commentary. The material is presented in an orderly fashion beginning with a consideration of such fundamental subjects as the blood vessels and glands of the skin and pigmentations. Of particular value are the chapters on the reticulo-endothelial system, disorders of metabolism, allergy, tuberculosis, fungous infections, filter passing virus, cancer and radiant energy. Each chapter is well illustrated and accompanied by a pertinent bibliography. To the practical dermatologist this digest of an enormous amount of research material should be of great value in the scientific study of diseases, although it emphasizes more the increasing complexity of modern dermatology.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Accident Insurance Death from Preexisting Heart Disease Aggravated by Strain.—The insurance company promised to pay certain benefits if the insured died from 'personal bodily injury effected directly and independently of all other causes through accidental means, and which injury causes total and continuous inability to engage in any kind of business or labor' The insured died from heart failure following overexertion. He had a preexisting heart condition described in the record as a "chronic valvular condition that had lasted so long that the valves had become calcified" The cause of death, as stated in the death certificate, was 'aortic mitral insufficiency present since childhood,' and the contributing cause was given as "acute cardiac dilation induced by overexertion in hauling a boat out of water" In a suit to recover the benefits, the trial court gave judgment for the beneficiary and the insurance company appealed to the Supreme Court of Wisconsin.

That the insured suffered a heart injury while pulling up the boat was undisputed. Assuming the death to have been caused by accidental means, the court said, the question arises as to whether the overexertion can be considered as having caused the death "independently of all other causes" If a disease or bodily condition exists and an accident occurs, to constitute the accidental means the sole cause of an injury it is sufficient if the accidental means would have solely caused some considerable injury had the disease or bodily condition not existed. If no considerable injury would have resulted had the insured not been afflicted with the existing disease or condition, the accidental means cannot be considered as the sole cause of the injury. From the undisputed evidence in the present case, no considerable injury would have occurred in the absence of the preexisting heart condition. The heart condition must therefore be considered as a substantial factor in causing the death. The death was not attributable, concluded the court, solely to accidental means within the meaning of the policy and the judgment of the circuit court for the beneficiary was reversed, with directions to dismiss the complaint.—*Herthel v Time Ins Co (Wis)* 265 N W 575

Workmen's Compensation Acts Pneumothorax Attributed to a Strain.—The employee, Delaune, while assisting in lifting a press cover weighing about 300 pounds, experienced a sharp pain in the region of his left lung. The following morning, while on his way to work, pneumothorax developed. Attributing this development to the strain of the preceding day, Delaune sought compensation under the workmen's compensation act of Louisiana. From a judgment awarding compensation, the employer appealed to the court of appeal, Orleans.

Two expert witnesses, on behalf of the employee testified that the collapse of the employee's lung was due to the strain which reawakened a dormant tuberculosis. One witness for the employer, on the other hand testified that the effort in lifting the press cover could not have caused the lung to collapse except by a very remote possibility. He testified that a person's lung may collapse without any exertion at all and that, in his opinion, tuberculosis was the sole cause in the present case. If the collapse of the lung had been caused by the exertion, this witness testified, it would have been a total collapse and the employee would not have been able to continue work until the end of his shift as he did. Another expert witness, appearing for the employer testified that the strain was too remote, in time from the collapse of the lung to have been its cause and that a person whose lung collapses by reason of injury or trauma would be unable to continue work. After reviewing this testimony, the court was of the opinion that the testimony for the employee must prevail over the testimony of the experts for the employer who while expressing the opinion that the strain did not produce the pneumothorax, con-

ceded that it might have done so. The judgment awarding compensation was therefore affirmed, subject to an amendment with respect to the number of weeks during which compensation must be paid.—*Delaune v Young (La)*, 166 So 149

Malpractice Mistake in Identity of Physician.—An operation was performed on Mrs McDonald Nov 23, 1930, for the removal of her appendix and fallopian tubes. Three years later a second operation was necessitated and a piece of gauze was found in her abdominal cavity. Peritonitis developed and the patient died. Attributing the death to the presence of the sponge, which, it was contended, was negligently left in the abdominal cavity after the first operation, suit was instituted against the defendant, Dr Garnier, alleging that he performed the first operation. The trial court gave judgment for the defendant and the plaintiffs appealed to the court of appeal of Louisiana, second circuit.

The testimony as to who performed the first operation was both conflicting and, to say the least, most unusual. Mrs McDonald was, according to evidence, a patient of Dr J N Jones, a surgeon, who testified that he did his own surgical work. Neither the patient nor her husband ever had a consultation with Dr Garnier. There was no request made that he operate, and he never submitted a bill for the operation. Witnesses for the plaintiff, consisting of Dr Jones and five relatives of the deceased, all testified that Dr Garnier performed the operation. Against this testimony, however, a physician who assisted in giving the anesthetic and the nurse who assisted in the performance of the operation both testified unequivocally that Dr Garnier was not present during the operation and that it was performed by Dr Jones. Furthermore, the evidence was convincing that Dr Garnier was in a different city at the time the operation was performed and could not physically have participated in it. A preponderance of the evidence, in the opinion of the court, was in favor of the defendant. The judgment of the lower court for the defendant was therefore affirmed.—*McDonald v Garnier (La)*, 166 So 147

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology New York
Sept 26-Oct 3 Dr William P Wherry 107 South 17th St. Omaha
Executive Secretary
- American Association of Obstetricians Gynecologists and Abdominal
Surgeons Bretton Woods N H Sept 14-16 Dr James R Bloss
418 Eleventh St. Huntington W Va Secretary
- American Congress of Physical Therapy New York, Sept 7-11 Dr
Nathan H Polmer 921 Canal Street New Orleans Secretary
- American Hospital Association Cleveland Sept 28-Oct 2 Dr Bert W
Caldwell 18 East Division St., Chicago Executive Secretary
- American Roentgen Ray Society Cleveland Sept 29-Oct 2 Dr Eugene
P Pendergrass 3400 Spruce St Philadelphia Secretary
- Colorado State Medical Society Glenwood Springs Sept. 9-12 Mr
Harvey T Sethman 1612 Tremont Place Denver Executive Secretary
- Idaho State Medical Association Boise, Aug 31 Sept 4 Dr Harold W
Stone 105 North Eighth St. Boise, Secretary
- Indiana State Medical Association South Bend Oct 6-8 Mr Thomas
A Hendricks 23 East Ohio St. Indianapolis Executive Secretary
- Kentucky State Medical Association, Paducah Oct. 5-8 Dr Arthur T
McCormack, 532 W Main St Louisville Secretary
- Michigan State Medical Society Detroit Sept. 21-24 Dr C T Ekelund
35 West Haron St Pontiac, Secretary
- Mississippi Valley Medical Society Burlington Iowa Sept 30 Oct. 2
Dr Harold Swanberg 510 Maine St. Quincy, Ill Secretary
- National Medical Association Philadelphia, Aug 16-22 Dr W Harry
Barnes 1315 North 15th St Philadelphia Acting Secretary
- Nevada State Medical Association Reno Sept 25-26 Dr Horace J
Brown, 20 North Virginia St Reno Secretary
- Northern Minnesota Medical Association Fergus Falls Aug 31 Sept. 1
Dr Oscar O Larsen Detroit Lakes Secretary
- Ohio State Medical Association Cleveland Oct. 7-9 Mr C. S Nelson
79 East State St Columbus Executive Secretary
- Oregon State Medical Society The Dalles Oct. 8-10 Dr Morris L
Bridgeman 1020 S W Taylor St Portland Secretary
- Pennsylvania Medical Society of the State of Pittsburgh Oct. 5-8 Dr
Walter F Donaldson 500 Penn Ave., Pittsburgh Secretary
- Southern Minnesota Medical Association Albert Lea Aug 30-31 Dr
Harold C Haben 102 Second Ave Rochester, Secretary
- Washington State Medical Association Yakima Aug 31 Sept. 2 Dr
Vernon W Spickard 1303 Fourth Avenue, Seattle Secretary
- Wisconsin State Medical Society of Madison Sept. 8-11 Mr J G
Crownhart 119 East Washington Avenue Madison Secretary
- Wyoming State Medical Society Cody Aug 24-25 Dr Earl Whedon,
50 North Main Street Sheridan Secretary

AMERICAN ASSOCIATION FOR THE STUDY AND CONTROL OF RHEUMATIC DISEASES

*Third Annual Meeting and Fifth Conference on Rheumatic Diseases
held in Kansas City Mo May 11 1936*

LORING S SWAIN, MD, Secretary

(Concluded from page 458)

The Differential Diagnosis of Rheumatic Fever

DR. R. A. KINSELLA, St Louis The approach to the differential diagnosis of rheumatic fever must begin with a clear recognition of the disease itself. The various features that make up the so-called rheumatic state are in themselves insufficient for diagnosis and may exist in combination even in those conditions which are not rheumatic fever.

There are two features which seem to distinguish the disease in a definite way. The first of these is the rather short duration of the reaction about a given joint, even while the disease continues in other joints. This period of sojourn is usually from three to five days, during which symptoms and signs are definite, although stiffness and indefinite soreness may persist for a longer time. The second and most important feature is cardiac involvement.

Cardiac involvement endows vague symptoms, such as "growing pains" with definite value. Without cardiac involvement, no single feature or combination of features in the so-called rheumatic state makes the diagnosis. With this idea accepted, differentiation from Still's disease, rheumatoid arthritis, gonorrheal rheumatism and bacterial arthritis is possible.

From Still's disease, rheumatic fever differs in many ways, although in the beginning of Still's disease the features may be similar. Acute rheumatic fever in children is usually accompanied by a devastating form of cardiac involvement which is entirely absent in Still's disease. In the latter disease the involvement of joints is tenacious and progressive, leading to permanent deformity, while in rheumatic fever the involvement of joints leads to no structural changes that are lasting.

Early cases of atrophic (rheumatoid) arthritis in young adults may closely imitate the clinical display of rheumatic fever. This is especially true in those cases in which there is fever, and tender red areas about joints, which last only a few days in each location. There is, however, a definite preference for small joints, the course is prolonged and leads eventually to permanent structural deformities, and throughout the prolonged course the heart remains intact. In both Still's disease and atrophic (rheumatoid) arthritis, which many regard as the same disease, subcutaneous nodules occur—a feature that is found also in rheumatic fever.

DISCUSSION

DR. T. DUCKETT JONES, Boston Because the age groups of rheumatic fever subjects coincides with that of so-called Still's disease, these two offer the greatest difficulty in differential diagnosis. The typical cases of each disease need not be confused but also it must not be overlooked that the two occur simultaneously. While the latter is not common it is not unusual to see a child with definite heart disease of the rheumatic fever type and active carditis in progress who also shows definite and progressive joint change characteristic of Still's disease. There are two types of Still's disease which offer difficulty. Occasionally one sees children with fever and severe joint pain, swelling and no evident heart disease and the patient recovers and is seemingly well. After varying periods there may be recurrences of this episode and the process continues with this story for several years prior to the development of permanent or appreciable joint change. I know of no diagnostic methods that are proof positive of either rheumatic fever or Still's disease in this group and the diagnosis must rest on the ultimate course of the disease process. A further type of Still's disease offering difficulty in diagnosis is the rare patient with pericarditis early in the course of acute illness. In some such cases evident slight enlargement or hypertrophy of the heart has been observed for a period of several years without evidence of valvular disease and the subsequent course does not seem to be similar to cases of heart disease as a result of

rheumatic fever. In postadolescents and young adults the difficulty of differentiating between rheumatoid arthritis and rheumatic fever may be impossible. Typical cases of either may be easily differentiated, as Dr. Kinsella has noted. Here again the two diseases may occur simultaneously. Transient changes demonstrated by electrocardiogram may show the presence of an active heart lesion, while examination of the joints may show progressive permanent joint damage. Cases of acute polyarthritis in this age group often may be indistinguishable from rheumatic fever and the diagnosis definitely determined only after a long period of observation. Salicylate therapy has not seemed to be of great diagnostic aid. Whether or not rheumatoid arthritis and rheumatic fever are in any way etiologically connected has been a subject for discussion for years and I see no way in which it can be settled at present. While the characteristic life story of the two diseases varies—one showing heart damage and the other progressive joint damage, there are points of similarity which make one wonder whether they may not be to some degree related. However, I have not seen any appreciable instances of rheumatoid arthritis develop in a large group of rheumatic fever subjects followed for a number of years. The suggestion that the variation between the two diseases is dependent on age, that there are strong similarities between the histologic picture of the nodules noted in the two, that both have chronic and recurring courses, as well as the fact that there are certain bacteriologic and immunologic factors which seem to play a part in each, leaves the question of a close etiologic connection muddled. I feel that cases in which there is a suggestion of both diseases should be carefully studied and that this possible relationship will be settled only when the agent of one or the other disease is known and it will be possible to have specific tests. I would make a plea that this society maintain its interest in rheumatic fever. In recent years rheumatic fever has been shown to be a disease with pathologic changes throughout the body, and while death is usually the result of damage to the heart, there are many other important general factors and it would be unwise to investigate the disease purely from a cardiology point of view. If physicians will keep open minds and observe large numbers of patients with rheumatoid arthritis and rheumatic fever it may be possible ultimately to solve many of the problems concerning the two separately, and the question of a common etiologic factor.

DR. RALPH H. BOOTS, New York Dr. Kinsella introduced a group of cases about which little has been said. These cases are occasionally referred to as "focal infection arthritis," not uncommon in older persons, sometimes suspected of being due to infected prostates. This seems to be an entity quite distinct from rheumatoid arthritis. Regarding the frequency of rheumatoid arthritis in older persons, although most patients are affected before 40 years of age, many of these continue with the disease the remainder of their lives, which accounts for its frequency in older persons. The patient referred to by Dr. Snyder was a woman, so the prostate was not a factor.

Differential Diagnosis of Traumatic Arthritis

DR. WILLIS C. CAMPBELL, Memphis, Tenn Little interest has been shown in this class of joint disorders "low grade traumatic arthritis." The etiology is trauma causing organic changes in the articular structures repeated occupational trauma, overuse or faulty posture with unequal articular pressure. The discussion is confined to the knee joint.

The changes after trauma depend on the intensity of the trauma and the reaction of the individual. The irritating process may involve the synovia, capsule or cartilage. Fluid may occur. Fibrinous adhesions may follow. The villi increase. Beneath the synovia the fibrous tissue reaction may impair circulation, giving a dusky hue to the synovia. Cartilaginous masses of embryonic cells are formed as loose bodies, osteochondritis or synovial osteochondromas. Fibrillation of the articular cartilage causes rough areas over the surface. Osteoporosis of the knee extremities follows every toxic or traumatic irritation. It is a characteristic mottling of the cavernous extremities. In hypertrophic changes are induced and osteophytes along the margins of the articulation occur. The pathologic process differs in that granulations, tuberculosis, round cell infiltration and infection are absent. The symptoms of pure trauma

arthritis may be pain, swelling or effusion again it may appear perfectly normal. Crepitation of a thickened capsule or villi or friction fremitus, as in pleurisy, may be present. There is no heat. Motion may not be limited. The history of immediate symptoms following trauma in the absence of other factors may determine the diagnosis. Only in those under 30 can one be fairly certain that a process is entirely traumatic.

Traumatic arthritis in which trauma is a factor but associated with other clinical and pathologic entities forms the largest group in which trauma plays a practical role. Such patients are approaching middle age. Hypertrophic arthritis is frequently the complicating agent. Trauma may induce persistent symptoms when hypertrophic changes are present in the spine. The question between trauma and previously existing disease arises in medicolegal work. "Uncomplicated traumatic arthritis exists only as a definite clinical entity in the young, male athletes most commonly. The pathology is definite. When other affections as hypertrophic arthritis, gout, syphilis, tuberculosis are present and trauma occurs, as careful a differential diagnosis is required as if no trauma had occurred. Biopsy may be the only way to be sure."

DISCUSSION

DR. CHARLES L. LOWMAN, Los Angeles. One thinks of traumatic arthritis as local or remote, with reactive changes in the immediate region of injury, in or near a joint, or in one or more adjacent or remote joints to which the jar or stress has been transmitted at the time of injury. Changes may occur in the spine when the major trauma is in the legs or pelvis or may be in the shoulder, the result of a fall on the hand injuring the wrist area. Traumatic arthritis is characterized by capsular thickening, irritation of synovial fringes, contusions, cracks or compression reaction in articular cartilages, interference with function, pain, tenderness, muscle atrophy, swelling, and often crepitation. Roentgenograms often show cartilage changes, spurring or lipping, and increased density of joint margins at the area of injury with adjacent atrophy not shown on the opposite side. At later stages an osteoporosis below the lesion may also be shown, which may be just adjacent to the joint or may involve a more extensive area, for instance, the whole wrist and hand when the lesion is in the elbow or shoulder, or the whole foot after leg fracture or a sprained ankle. In a young person, definite relation to specific trauma without arthritis in other localities is a great help in diagnosis, yet the coexistence of arthritis in other locations is no criterion of the nonexistence of a real traumatic arthritis. In compensation cases especially beyond the age of 40 the degree of static stress with incident moderate chronic arthritis, or the presence of definite rheumatoid or osteo-arthritic changes, makes it difficult to judge the worker's status and compensability. I feel that one is justified in giving the benefit of the doubt to the worker if he has been continuously employed and has given continuous service until interrupted by the injury. Dr. Campbell correctly points out that osteoporosis is probably due to a sympathetic nerve upset, which may occur especially in the presence of constitutional tendencies, such as glandular imbalance. Its occurrence with traumatic arthritis greatly prolongs the convalescence, giving a sensitive painful member which may be made worse by careless or improper handling. One must not be confused as to acuity of symptoms when the patient may have had faulty physical therapy, such as the improper use of heat either too deep or too prolonged. Pain and spasm are reduced by heat and the patient feels a sense of relief but many use the faulty technique of following it with active movement. The heat congests the area involved, enlarging the fringes. Unless they are drained and lessened in size by elevation and by depleting massage movement will pinch and irritate the joint constituents enough to produce more swelling and tenderness resulting in continuing spasm. Thus the ignorant may produce the very condition they are trying to remedy. One should not only make a diagnosis of the specific lesion but continue to diagnose the status at various intervals. When a technician reports that limitation of motion at a given point has not changed for two weeks new roentgenograms should be taken, diagnosis of the new status made and treatment

altered. If physicians will keep in mind the picture Dr. Campbell has shown of what is occurring in the traumatized joint, they will not go wrong in treatment, and much time and cost will be saved for all concerned.

Differential Diagnosis of Tuberculous Arthritis

DR. FRANK D. DICKSON, Kansas City, Mo. Tuberculous arthritis produces 20 per cent of the handicapped children in this country. It has a high mortality rate estimated as 20 per cent. There are three types.

1 Monarticular, the most usual and accepted type. Diagnostic criteria depend on the stage of involvement. There are two stages: an early stage without radiologically visible osseous foci and a later stage with definite changes. Early diagnosis is important because cure (if ever) is possible with function. Local objective signs and the laboratory examinations, negative Pirquet and Mantoux tests and positive guinea-pig inoculation are trustworthy. There is no characteristic x-ray picture. Later, with chronic joint involvement, and remissions, biopsy and x-ray examinations show uniform thinning of the cortex of the bone, destruction or thinning of the articular cartilages, decalcification of the bone ends, lack of new bone formation, presence of foci of bone destruction (epiphyses) and failure of the destructive process to extend along the shaft of the bone but tending to involve the neighboring joint.

2 Multiple tuberculous arthritis. The tuberculous process occurs in several joints in from 3 to 13 per cent of the cases. There is usually an interval in the involvement more than three intervals is unusual and against tuberculous arthritis.

3 Tuberculous polyarthritis. Poncet in 1897 described the so-called tuberculous rheumatism. The two forms were acute and subacute polyarthritis resembling rheumatic fever, and a chronic form resembling atrophic and hypertrophic polyarthritis. This type is rarely recognized and the literature is unconvincing. Kubirschky's six diagnostic points are refractoriness to salicylates, no endocarditis, presence of other tuberculous disease, positive tuberculin tests, positive animal inoculation from synovial fluid and predominance of mononuclear cells in the synovial fluid. So far there is little proof of the existence of this type of arthritis. Diagnosis of tuberculous joint disease is based on the history, local evidence and laboratory observations. Roentgenograms are of value only in the later stage.

DISCUSSION

DR. J. ALBERT KEY, St. Louis. Chronic progressive monarticular arthritis in the child is considered tuberculous arthritis until it is proved otherwise. I have never been concerned about the early diagnosis of tuberculous arthritis. I do not think it matters whether a tuberculous joint is diagnosed this month, next month or next year, and the reason is this: In this country I have not seen a single instance in which a large weight-bearing joint that was tuberculous was cured with useful motion. I am concerned not with the early diagnosis but with the positive diagnosis. Just as soon as I am sure that the joint is tuberculous I make it my purpose to eliminate that joint by arthrodesis. That is the only way I know by which the patient can be cured of tuberculosis. If a good bony ankylosis is obtained he is cured. If it isn't, the patient has a tuberculous joint as long as he lives. There are two ways of making the diagnosis in the early stage. One is aspiration and injection into a guinea-pig. I think Dr. Dickson is right about subcutaneous inoculation. I have always used intraperitoneal injection and I have had two negative guinea pigs from a joint which later was proved to be tuberculous. The other is biopsy. I have looked at many synovial membranes and when I find a typical tubercle I think it is tuberculosis. When I do not find typical tubercles I do not know. To treat the case expectantly is hard because most of these cases are in children and the parents want the child cured. If it is tuberculosis, the next thing to do is to pick a time to operate on the child or adult. The most important thing in the diagnosis of tuberculosis is the differentiation of a tuberculous joint from a pyogenic joint, strange as it may seem. If one operates on a fulminating tuberculous joint and tries to do an arthrodesis, one is apt to get into trouble. I have done it twice and both patients died, one before amputation and one after. There can

be all gradations in a tuberculous joint, from a simple synovitis with practically no thickening of the synovial membrane and negative x-ray signs which may persist over a period of years to a fulminating joint that is hot and exquisitely sensitive. The usual type is the one that is moderately sensitive with a doughy feel, a thickened synovial membrane, and not much fluid in the joint. I have performed synovectomy on two occasions for rheumatoid arthritis and when the sections came through I found it was tuberculosis. The symptoms recurred in a few months and an arthrodesis was done. On another occasion I drained an acutely involved elbow for a presumably pyogenic infection and the sections showed tuberculosis. The tuberculous rheumatism of Poncet as I recall it, is a tuberculosis without tubercle bacilli and without tubercles. I have never seen a case. I do not think it exists. I think Poncet was a man who was seeing rheumatoid arthritis but was so hipped on tuberculosis that he called his rheumatoid arthritis tuberculous arthritis.

DR. EDWIN W. RYERSON, Chicago. Yesterday I saw in Billings Hospital of the University of Chicago with Dr. Phemister a woman of 50 odd years, with typical severe, old arthritic manifestations, which are so familiar. Her hands, elbows and knees were swollen. She had been that way for years. A few weeks ago both elbows developed swelling just above the joint. Phemister cut into both of these and proved that they were tuberculous. After investigation they found a tuberculous process in the neck. I have seen two cases of pneumococcal arthritis in the joint, one in a child and the other in a woman. After evidently being proved pneumococcal, they ran a prolonged course and were later found to be tuberculous without tuberculosis in any other portion of the body. Dr. Dickson's paper is timely, because all of us are faced by joints which appear to be arthritic and are later proved to be tuberculous. The converse is also true.

DR. FRANK D. DICKSON, Kansas City, Mo. Five years ago I would not have said what I did. The experience of years has caused me to hold different opinions from those I have held in the past. For example, I have had under my care three cases of synovial tuberculosis of the knee, fairly well proved and cured with function. One of these patients—a boy—rowed on the Princeton crew several years ago, which would indicate a functioning knee. I had the patient under observation from the time he was a young boy, moreover, during the course of his disease he was seen by other surgeons and the diagnosis of tuberculosis was confirmed. Girdlestone reports a recent series of early cases of tuberculosis and recovery with function. These cases were carefully diagnosed. Girdlestone believes from his experience that better results in early cases of joint tuberculosis are not being obtained because they are not being recognized early enough and are not kept at rest long enough. It is my conviction that there has been a small but definite percentage of tuberculous joints in which the diagnoses were made early and recovery has occurred with function. If a tuberculous joint is seen in a child 2 or 3 years of age, one is not going to fuse that joint, it must be treated conservatively until such a time as one can do a fusion successfully. With this method, healing with function may be secured once in a while.

Differential Diagnosis of Gonococcal Arthritis

DR. STAFFORD L. WARREN, Rochester, N. Y. Gonococcal arthritis differs in the main from the large group of arthritides classified as infectious arthritis only in that the etiologic agent is known and can be identified in suitable cases. There is one major clinical syndrome which is of diagnostic importance aside from the discovery of the gonococci and that is the rapidity with which the acute process and the atrophy of the bone and muscle and tendon structures progress.

The diagnosis is made on a history of exposure followed by a yellowish discharge from three to twenty days later accompanied by the sequelae of painful urination and other conditions. Involvement of the prostate or tubal structures may follow the onset of this discharge by a few days or weeks or months and coincidental with this or at some later date any

joint or group of joints may develop symptoms of acute disease. A carefully taken history usually reveals transitory involvement of many joints at the onset over a period of several days followed by the acute major involvement of one or several joints or nearby structures. It is not unusual for the process to flare up successively in other joints. It is not infrequent for the major damage to involve a joint traumatized previously to infection.

Examination shows a bluish red, hot, tender joint not very different in appearance from that due to a nonspecific joint except that it produces unusually severe symptoms. The process may, however, be restricted in some cases entirely to the tendon sheaths or bursae around the joint or to the muscle and fascia near by. The atrophy progresses rapidly from the onset. The discharge from the genital urinary tract may show positive smears in about 40 per cent and positive cultures in about 60 per cent of all suspects, although in these acute cases the smear and cultures are usually positive. Joint, bursa and tendon sheath cultures in the early acute stages yield a growth of gonococci in 80 per cent. Later the joint fluid is sterile. Complement fixation tests on the blood are negative for from two to six weeks. When the patient has recovered, a complement fixation test may become negative within six to eight months, although some may still be positive four years after recovery. Skin tests are still in the experimental stage but may be significant if that material is freshly made. The toxin of the gonococcus produces an erythematous reaction in the skin in the absence of the disease.

In the absence of a history of exposure and negative smears and cultures, the positive blood complement fixation test is probably a significant aid in the diagnosis. I suggest making this test on the joint or bursa fluid also, although any body fluid is probably positive in active cases. With a previous history of infectious arthritis and a recent gonococcal infection with flare up of a joint, the situation is very complicated. A nongonorrheal arthritis may flare up because of the intoxication arising from the gonococcal infection without gonococcal invasion in the joint. Joints damaged probably offer fruitful soil for the gonococci. The acuteness of the reaction and the rapidity with which the joint surfaces are damaged and the rapid onset of the atrophy, far out of proportion to the changes that usually accompany ordinary arthritis, are suggestive points in differential diagnosis. The diagnosis of course cannot be established clearly without the cultivation of gonococci from the joint or synovial fluid.

The manner in which the cultures are made is of vital diagnostic importance. In women cultures should be taken from the discharge from the cervix during the last two days of and the two days following the cessation of the catamenia. In males without discharge after careful prostatic or urethral gland massage, the urethra should be washed out with sterile saline solution, cultures of which should be taken.

The radiographic appearance of diffuse atrophy and the tremendous extent of the bone destruction, considering the short duration of the disease, is characteristic. Chronic cases show extreme deformity and capsular thickening, not commonly found in the case of infectious arthritis. When a growth of the gonococcus is not obtained from the joint fluid and in the absence of a good history of gonococcal infection, the patient should be investigated for brucellosis, tuberculosis, typhoid, syphilis (secondary) and low grade staphylococcal and streptococcal infections. On failure to demonstrate any of these the diagnosis by exclusion is probably infectious arthritis (nongonorrheal).

The fallopian tubes may be sealed off and act as foci for years in the absence of evidence of disease in the lower part of the birth canal. The complement fixation test is of assistance. Chronic prostatitis with an occasional yellowish discharge or bleeding after urination may be due to a small residue of gonococci. Old infected structures and glands in the urethra of both sexes and Bartholin's glands may act as foci. Secondary invaders left as residual foci may help in setting up the syndrome of nongonococcal infection of the genital urinary tract. Such secondary invaders may persist for years.

The febrile reaction is mild in gonococcal infections but the pallor and intoxication and prostration are excessive. Electrocardiographic changes (prolonged PR interval up to 0.21 second) occur in about 5 per cent of all cases. These subside later and are probably due to the gonotoxin. The extreme dysfunction of the quiescent joint may be due in part to the destruction of its surface but in general is due more to the inflexible connective tissue granuloma infiltrating the capsule and other structures surrounding the joints, bursae, tendons and muscles concerned.

DISCUSSION

DR. C. B. FRANCISCO, Kansas City, Mo. I tell medical students that gonorrheal arthritis is one thing about which they need to know the clinical symptoms and story, for the reason that no matter how carefully the laboratory work is done there is a large percentage of cases that cannot be proved by laboratory methods the first time. I use that to illustrate the point that clinical medicine is ordinarily apt to be sufficient. The examination and a positive history or the finding of the gonococcus is positive proof, but it is very difficult to get a proper history. The clinical symptoms are characteristic. The extreme pain without much prostration and without much loss of weight is characteristic when preceded by this floating type of joint involvement. The pain is severe and it is extreme, and yet these patients do not lose a lot of weight. The appetite is good and they do not have much fever. The most important point in diagnosis is to think about it. One never diagnoses a thing that one does not think about, no matter how trivial the case may be.

DR. J. ALBERT KEY, St. Louis. Gonorrheal arthritis usually begins as an acute arthritis, but not always. A chronic low grade synovitis is seen which is not very painful and is due to gonorrhea, also the group is seen which I am trying to separate out at the present time, chronic polyarthritis which is due to the gonococcus but clinically rheumatoid arthritis. Most cases of gonorrheal arthritis are cured by fever therapy. If a patient with arthritis of unknown etiology is put in a cabinet, the temperature raised to 106 or 107 F. for four or five hours and he gets well, that is good evidence that the case was one of gonorrheal arthritis. I think that in the future I shall submit certain patients to fever therapy as a diagnostic procedure and if the arthritis is due to the gonococcus the patient will be cured by the test.

DR. MAURICE F. LAUTMAN, Hot Springs National Park, Ark. Dr. Warren has correctly stressed the ease with which the acute type of gonorrheal arthritis can be diagnosed. However, the differential diagnosis between gonorrheal arthritis and ordinary atrophy or rheumatoid arthritis is at times quite difficult, particularly if nongonorrheal foci of infection are present. In the zeal for eradicating the obvious infective foci, the possibility of a concomitant, postgonorrheal infection is frequently overlooked. Examination of the prostate and prostatic secretion has given a great deal of information. The cultural evidence is usually negative, particularly if the arthritis occurs long after the original infection. There are more or less typical subacute cases of gonorrheal arthritis in which the prostatic smears are negative bacteriologically. In these cases the only observation to which any importance can be attached is the presence of pus cells in the prostatic secretion, particularly by examining the fresh secretion under the high power field. The finding of ten or twelve cells per high power field is enough to incriminate the prostate as a focus of infection, but the finding of gonococcus either in stained specimens or in cultures is necessary to establish definitely a gonococcus foundation for the arthritic condition.

DR. STAFFORD L. WARREN, Rochester, N. Y. First I should like to answer Dr. Key that fever therapy is not a diagnostic procedure. What can be done with infection by known strains of gonococci that will stand forty hours of heating at 41.5 C. and not be cured? About the prostate, I meant to infer that secondary invaders may be left, that the gonorrhea may be gone and yet the prostate be the focus of infection. I think that some of these patients under ordinary conditions still harbor gonococci, and one can demonstrate them if a con-

certed search is carried on, especially if dyes are used to identify one or two colonies, which might be missed on a plate, because the plate is crowded with streptococci and staphylococci.

The Diagnosis of Gout and Gouty Arthritis

DR. PHILIP S. HENCH, Rochester, Minn. The diagnosis of gout is often missed. The conservative view is so prevalent that gout is called rheumatic fever and atrophic, hypertrophic or traumatic arthritis. In a hundred cases of gout an average period of fifteen years had elapsed from the first attack of gouty arthritis to the first diagnosis of gout. Gout is not properly understood. Several hundred cases of typical tophaceous gout and similar cases of pretophaceous gout were studied. Gout and gouty arthritis are not synonymous. There is more to gout than the joint symptoms. The first attack, usually after 40, is sudden, lasting from three to seven days, and completely disappears. Any joint may be affected. A year or two later the second attack lasts from seven to fourteen days. The tempo and severity increase, attacks coming every few months. From monarticular they become polyarticular. The diagnostic point of value is the complete recovery from the individual attacks. From five to forty years (average twelve) after the first attack a change occurs, joints no longer recover, the condition becomes chronic. This is the second stage of attacks and remissions. Finally exacerbations cease, the joints are painless, and the extremities are misshapen with tophi.

Tophi are the one pathologic criterion of gout. The hyperuricemia is first acute and transient, then chronic. It becomes more obvious later even between attacks and finally is always present. Tophi are rare in the first attacks in phase 1, are more common in phase 2, and are constant in period 2. Periarthritic fistulas occur as in tuberculosis. The urate crystals must be removed and examined, because the tophi resemble subcutaneous fibrous nodules of fibrositis and atrophic arthritis. Bone is often replaced by urate deposits. Similar areas are seen in atrophic and hypertrophic arthritis and are therefore not pathognomonic of gout. When the characteristic features (podagra, hyperuricemia, tophi, erosion) are present the diagnosis is highly probable. If the pattern is distinctive for gout in onset, recovery, recurrent attacks, even without tophi, the diagnosis is almost assured. It is not like other arthritis, which is chronic from the start without remissions.

Rheumatic fever, intermittent hydrops, periarthritic fibrositis, psoriatic arthritis, arthritis with ulcerative colitis or hemophilia, and recurrent subdeltoid bursitis, each has distinctive features from gout, although they have remissions.

If the first attack has no pattern, certain things are suggestive, as sex, age, season of the year, speed of onset and development, severity of the pain, joints involved, appearance of the joints, site of tenderness, duration and recovery. Certain renal lesions in mature cases are of diagnostic value. Ninety-eight per cent of patients are males. Gout is rare before 35 years but is the commonest form of acute arthritis among men over 40 and should be first thought of if gonorrhea and acute trauma are excluded. The attacks are mostly in spring and fall and between 2 and 7 a. m. The onset is rapid and reaches a maximum in two days. The pain is excruciating. The area is hot and bluish red, not clammy, cold and bluish white as in atrophic arthritis.

Trauma, dietary indiscretions, exposure, postoperative days, liver therapy, ketogenic diets, salyrgan, ergotamine tartrate or insulin may start acute attacks of gout. This is not true of atrophic arthritis.

Gout involves extra articular and intra-articular tissues, hence tendinitis and olecranon bursitis are almost diagnostic of gout as opposed to atrophic or hypertrophic arthritis. Visceral gout is not proved except in the kidney, where urate stones or gravel are frequent in period 2 and occasionally in period 1. Gout should be suspected with renal colic or nephritis.

Gout is still with us. Its rightful incidence is from 5 to 8 per cent of cases in an arthritic clinic.

DISCUSSION

DR. L. MAXWELL LOCKIE, Buffalo It seems that gout is more common in certain localities of the United States than in others. Around Buffalo and western New York State a fairly high percentage of gouty patients are seen in the average run of arthritic patients. In the greatest number the diagnosis can be strongly suspected because they present a typical history pattern. This is apparent after a few minutes' conversation. The blood uric acid is above the normal range in the big majority. It is well for one to be suspicious of gout in all male patients who have arthritis in whom there is some evidence of kidney insufficiency. Concerning therapeutic tests, no drug is so specific as colchicine, which acts so well to abate an acute attack. It has been observed that patients with gout are likely to develop an exacerbation if a high fat diet is given. With a change to a high carbohydrate diet the symptoms subside in from twenty-four to forty-eight hours.

DR. EDWIN P. JORDAN, Chicago I should like to ask Dr. Hench two questions. First, Does he think gout may start in the second stage without an attack of acute arthritis? I have had patients who had exacerbations of arthritis which at the time answered all the other criteria of gout but which did not let up between attacks. Second, Does he think the few cases of gout in families are on a hereditary basis?

DR. M. HENRY DAWSON, New York Since the appearance of Dr. Hench's paper several years ago I have looked for cases of gout in the clinic but only rarely have they been encountered. One, of course, sees more cases in private practice. However, I have wondered whether there may not be a geographic factor which may account for the varying frequency of gout in different parts of this country. It is well known that the incidence of gout varies greatly in different parts of Germany and Austria.

DR. R. GARFIELD SNYDER, New York I agree with Dr. Dawson that, if a high uric acid is considered an indication of the presence of gout, typical gout is relatively rare in New York City. I have seen only four cases of true gout in the last five years and only one case of tophi in fifteen years. In these four cases of gout over a period of five years the uric acid figures varied between 3.5 and 6.6 mg. per hundred cubic centimeters of blood, but as a rule the uric acid remained between 3.5 and 5 mg. I have seen a large number of cases in which, from the history and appearance of the patient, one cannot help suspecting gout. These patients have usually been on self-imposed diets with rigid restriction of red meats before coming for examination, and for that reason their blood uric acid figures are often within the normal limits. These I classify as atypical gout. Is it not reasonable to assume that a blood uric acid of from 3.5 to 5 mg. in cases of this type is indicative of or presumptive evidence of the presence of gout? I should like to ask Dr. Hench what method he uses to determine the amount of uric acid and what in his opinion is the lowest figure at which a case could be classified as gout. I have seen a few cases in which an acute attack of gout has been induced by the consumption of an excessive amount of sweets. Had Dr. Hench had any similar experience?

DR. J. ALBERT KEY, St. Louis I should like to ask Dr. Hench whether because a man has recurrent attacks of pain in the feet one should consider it a case of gout, or does he have other evidence? Naturally, since gout is so rare in the East and in St. Louis and is seen so frequently in Rochester, I suspect that most of his cases are not gout at all but are merely patients with foot strain.

DR. RUSSELL L. HADRY, Cleveland In a small group of patients in our urologic service who came because of prostatic obstruction four were immediately relieved by relief of the back pressure on the kidneys. Uric acid should be considered whenever prostatic obstruction is present.

DR. PHILIP S. HENCH, Rochester, Minn. When a patient comes with a history of a number of attacks of acute arthritis with complete remission but who has reached the stage where the attacks last six or ten weeks and when after a few days of a regimen of value only in gout he is running around entirely free from pain regardless of the presence or absence

of tophi, what else can we call it but gout? We have had this experience repeatedly, often with cases of tophaceous gout, which I believe would be accepted as true gout even in New York or St. Louis. The factor of heredity in gout is probably important, but it is not of much help in diagnosing gout in our American patients, for it is rare to find one who knows of any gout in his family. Regarding age incidence, gout does occasionally appear in young adults and from Europe come reports of gout in male children, but, in the majority of our cases, acute gouty arthritis first appeared after the age of 30 or 40 years. I believe that the fewer cases of gout in women included in any one series, the more accurate the diagnoses of gout probably are, and if an investigator states that many more than 5 per cent of his patients with gout are females, his criteria of diagnosis are open to question. In one German series of about 300 cases, about 35 per cent of the patients were females. In several hundred cases of gout seen at the Mayo Clinic, only three patients with tophaceous gout and about fifteen with presumptive (pretophaceous) gout were women. In each case the history was the same as that for males: recurrent attacks with complete remissions. At the clinic a normal concentration of uric acid in the blood is considered to be less than 4 or 4.5 mg. per hundred cubic centimeters (Folin method, 1930). Many patients with early gout have a normal concentration of blood uric acid, and there are other causes for hyperuricemia than gout. Quick recently summarized them as follows: states in which ketosis arises, such as in fasting, in severe diabetes and on a high fat diet, states in which an excessive accumulation of lactic acid may arise, such as in eclampsia, chloroform poisoning, pneumonia, circulatory failure and various other conditions of anoxemia, or with lactic acid feeding, after ingestion of excessive amounts of sodium bicarbonate, in severe renal disease, and after administration of benzoic acid, phenylacetic acid and numerous other aromatic acids that decrease uric acid excretion. To this list should be added leukemia and polycythemia. In most series of carefully studied cases of gout, tophi have been found at any given time in only about 40 to 50 per cent. It is foolish, however, to wait on pathologic proof (tophi) for a diagnosis of gout. If one is content only with a pathologic diagnosis, that is almost analogous to waiting for a stroke before diagnosing arteriosclerosis, or for a uremic convulsion to make a diagnosis of nephritis. We have used the provocative (high fat low carbohydrate diet) test for gout proposed by Lockie and Hubbard. It is useful but not consistently positive. When definite provocation is obtained, unexplainable on other grounds, gout is present in all likelihood, since this test diet does not seem to aggravate cases of atrophic or hypertrophic arthritis. It should be settled whether it is necessary to obtain ketosis before the diet will provoke gout. I have seen several cases in which unmistakable acute gouty arthritis developed while patients were on a ketogenic diet for the treatment of urinary infection with colon bacilli. I cannot confirm Dr. Snyder's experience. I have not seen gout provoked by candy or other excess of carbohydrates. According to Lockie's experiments and the opinion of Quick, an excess of carbohydrates should benefit gouty patients and tend to prevent attacks. An exception might be a patient with a double metabolic fault—one with gout and diabetes. When a gouty patient consistently fails to respond to a regular gout regimen, adhered to faithfully, experience has led me to hunt for some other metabolic disturbance complicating the gout, such as latent or unsuspected but active diabetes or an abnormality in thyroid function. I have studied several patients with both diabetes and gout in the past two years.

Differential Diagnosis of Periarticular Fibrositis and Arthritis

DR. CHARLES H. SLOCUM, Rochester, Minn. Fibrositis is the commonest form of acute or chronic rheumatism. Statistics of the British Ministry of Health show that 60 per cent of 2,500 insured patients with rheumatic disease had fibrositis. It occurs in association with gonorrhea, gout, rheumatic fever and atrophic arthritis but its real cause is not known. It is believed to be due to some unidentified infection or toxin.

A tentative classification based on etiologic grounds might be 1 Primary fibrositis independent of any other disease due to infection or toxemia—nonspecific fibrositis 2 Secondary (fibrositis) to some known cause, as trauma, gonorrhea, rheumatic fever, gout or influenza The clinical and pathologic features are still incomplete

Primary fibrositis is anatomically classified thus 1 Intramuscular fibrositis, or "muscular rheumatism" 2 Periarticular (capsular) fibrositis 3 Bursal fibrositis, "bursitis" 4 Tendinous fibrositis, "tenosynovitis" 5 Perineural fibrositis, "sciatika" These may have a common pathologic basis

The first stage is truly inflammatory The second is indurative with subcutaneous nodules and local thickenings of fibrous tissue. In the third stage the induration goes or remains as painless nodules with contractures Intramuscular and periarticular fibrositis are common types Slocumb finds that a fourth of his primary cases are intramuscular and a fourth periarticular Lumbago, torticollis, pleurodynia are examples Periarticular (capsular) fibrositis is mistaken for atrophic arthritis because it is indefinitely associated with use of the capsule or pressure on it and thickening occurs without x-ray evidence. The chief symptoms are stiffness on rising and in damp weather, and fatigue without any essential abnormality Nodules may appear over the elbows, the knuckles, and sacro-iliac or occipital regions Vagrancy of symptoms is characteristic of fibrositis and it may leave no deformity as compared with arthritis Fibrositis does not attack the joint cavity but it often occurs with infectious arthritis, synovitis, chondritis and osteitis The clinical incidence of fibrositis and atrophic arthritis are similar in age, onset, sex, bodily types affected and prodromal symptoms

Atrophic arthritis is, however, polyarticular There is articular tenderness, the stiffness is objective as well as subjective, muscular atrophy is common and swelling is present with fluid in the joint cavity Not one of these is characteristic of fibrositis Arthritis has few complete intermissions Exercise makes it worse, its symptoms are constant, more fixed and chronic There are more systemic manifestations, as fever, tachycardia, lowered blood pressure and loss of weight in atrophic arthritis than in fibrositis Fatigue and nervous exhaustion because of continued activity are marked in proportion to the objective evidence of disease in fibrositis Sixty-two per cent of Slocumb's patients with arthritis lost weight, 47 per cent lost more than 10 pounds (4.5 Kg), only 7 per cent of those with fibrositis lost more than 10 pounds Of the 100 patients who had fibrositis, seventy-eight who had suffered a total of 284 years of their disease presented no intra articular roentgenographic alterations, although thirty-seven patients were 45 years of age or older Hypertrophic arthritis was coincident in 22 per cent of the cases Even after twenty-five years of periarticular fibrositis, the roentgenograms were negative. In contrast, in 84 per cent of cases with atrophic arthritis there were definite roentgenographic alterations Although half of the 100 patients had had their disease less than a year, only 14 per cent of the entire group gave negative roentgenograms The greatest laboratory differences were observed in the sedimentation rate In fibrositis it was normal in 73 per cent, slightly altered (from 16 to 25 mm) in 16 per cent, significantly altered (from 25 to 32.5 mm) in only 11 per cent It was never more than 32.5 mm.

In atrophic arthritis the average rate was 71.5 mm Although 25 per cent of the arthritic patients had had their disease less than six months, only 3 per cent had normal rates Only 6 per cent had rates between 16 and 25 mm 91 per cent had rates more than 25 mm In 67 per cent the rate was more than 50 mm and in 23 per cent it was between 100 and 150 mm High rates were noted early in atrophic arthritis Blood counts were of differential value only in the concentration of hemoglobin in fibrositis Five per cent were less than 13 Gm in atrophic arthritis Forty-two per cent were less and 19 per cent less than 12 Gm

The differential diagnosis between fibrositis and atrophic arthritis depends then on finding synovial hydrops and roentgenographic changes with inflammation in the joint in arthritis

Fibrositis is extra-articular, characterized by arthralgia, stiffness and periarticular thickening Indirect evidence is afforded by the sedimentation rates of erythrocytes, and the estimation of hemoglobin and the weight curve is significant The differential diagnosis in favor of periarticular fibrositis is made on the persistence with which evidence of intra-articular disease remains absent

DISCUSSION

DR PHILIP S HENCH, Rochester, Minn. If gout in America is a forgotten disease, fibrositis is an unknown disease, at least it is not known by that name The disease is widespread in England and America, but little is written about it in this country and the term "fibrositis" is practically unrecognized here. In the three F volumes of the Surgeon General's *Index Catalogue*, fibrositis is unlisted as such in two of them, in the other volume (volume 5, third series) there are only fourteen articles on the subject Appearing between 1912 and 1922, all but two of these reports came from England What, then, is "fibrositis"—a new disease or a new name for an old disease? The term was introduced in 1904 by Gowers and by Stockman to indicate an inflammatory hyperplasia of white fibrous tissue anywhere in the body The several anatomic forms of this disease have been wandering around, separate and unclaimed, hunting for their common parent Some of these anatomic forms have long been called by Osler and others "indurative headaches," "cephalalgia," "capsular rheumatism" or "pleurodynia" A newer term is Albee's "myofascitis," which condition so commonly affects the lumbar and lumbosacral areas The intramuscular form is the layman's "muscular rheumatism," the general practitioners "myositis" But these are poor terms and less accurate than "fibrositis" because the disease does not primarily affect muscle cells themselves but is an interstitial, not a parenchymatous, disease of muscles The obvious outward evidence of this is the lack of significant muscle atrophy in primary fibrositis At first the clinical features of periarticular fibrositis (the jelling phenomenon, pain in stretching the capsule, the seasonable and weather effects, the vagrancy and variability in the pain, and other features) may seem vague and indefinite, but careful attention to the oft repeated story will show the features to be consistent and sufficiently distinctive so that the disease can be differentiated from "arthritis" which the uninitiated call it, and from "nervous exhaustion," which the unsympathetic are apt to call it Varying degrees of chronic nervous exhaustion and fatigue are practically always present, but the exhaustion is part of the disease—a symptom of fibrositis, just as another type of chronic nervous exhaustion is a symptom of hyperthyroidism The patient with periarticular fibrositis at first usually gets little sympathy He may complain bitterly but he looks well, his physical examination, laboratory tests and roentgenograms are generally quite normal, and his joints are undeformed and freely movable. It is then that his condition is apt to be called just *neuromuscular pain* or *psychalgia* These anxious, unhappy patients continue on their aching but undeformed way, almost more annoyed than pleased that the 'deforming arthritis' which they so fully anticipate forever seems to be postponed If the expected deformities would only appear, if they could "only get it over with," they would be almost more satisfied than to have this 'sword of Damocles' forever hanging over their heads But it is this persistent negativity of their examination that should convince one that arthritis cannot be present This negativity is relative however, for there may be some periarticular thickening, and in about 50 per cent of the cases definite subcutaneous nodules are palpable, most commonly in the region of the sacro-iliac or iliac crest When nodules are absent, some believe the diffuse muscular pains to be a neuralgia or sensory nerves of muscles Thus, the weakness of my presentation and that of others is the meager data available on the pathology of the disease as it affects muscles, but particularly joints Our studies on pathology to date seem to give histologic evidence that a true arthritis is not present in periarticular fibrositis and that the integrity of interarticular tissues is indeed maintained

DR JAMES R TILLOSON, Lima, Ohio What relation has occupation to this condition?

DR. WILLIAM J. KERR, San Francisco In the hospital is a man, aged 32, who for ten years has had some rigidity of the spine and in recent weeks some involvement of the muscles of the face, arms, thighs and calves. When one examines the lower extremities in the region of the gastrocnemius muscle, he may find rather elongated areas that are somewhat firm. The patient can find them more rapidly than the physician at first. In one instance the firm area was about 4 inches in length and one-half inch in thickness. In attempting to secure a biopsy of this nodule in the gastrocnemius muscle I had a great deal of difficulty. I thought it was just beneath the external surface of the muscle but had to go very deeply to get any tissue that seemed to be abnormal in appearance. This tissue showed the same characteristics as have been mentioned here. I believe five or six nodules were found. In Great Britain it seems to be the practice among some physicians to break up these nodules forcibly.

DR. M. HENRY DAWSON, New York The nodules in fibrositis are painful, while the nodules in rheumatoid arthritis are rarely if ever painful. I am of the opinion that the histologic structure of the rheumatoid nodules is quite distinctive.

DR. RUSSELL L. CECIL, New York The disease spoken of as fibrositis is much in need of a more substantial pathologic background. Take the condition commonly known as acute lumbago, which often follows a strain or some unusual movement, some of these attacks are caused by wrenching a joint that is already affected by arthritic changes, as shown in the roentgenogram. There are other instances in which congenital anomalies of the spine produce the same sort of attacks. Then there is a condition often spoken of as myositis or fibrositis in which the x-rays failed to reveal any change in the back except some defect in posture. A great many of these posture cases are quickly cured and relieved of future attacks by improvement of the posture. All orthopedic men are familiar with this type of case. I wonder how many of these cases should be spoken of as "fibrositis." I wonder whether most cases of myositis or fibrositis of the lumbar region cannot be classified as mechanical maladjustments of weak backs due to the posture of the patient.

DR. CHARLES H. SLOCUMB, Rochester, Minn. Regarding occupation, in England, as will be seen in the chart reproduced from Buxton, 55 per cent had fibrositis. The people that came to Buxton were miners and workers in factories, where they got cold and damp. I believe from those figures that patients with fibrositis are definitely made worse in cold, damp places. The reference to the breaking up of the nodules is a good one. Stockman and others use a firmer massage for patients with fibrositis than for patients with arthritis. Dr. Dawson commented about the nodules. The nodules in infectious arthritis and fibrositis are practically the same. Many of the nodules in fibrositis are not tender. In connection with Dr. Cecil's question regarding whether or not attacks of lumbago and muscle soreness are actually myositis or fibrositis, I cannot answer. There is a need for considerably more pathologic work in some of these cases. However, there is a large group that clinically and pathologically are fibrositis rather than myositis or arthritis. As far as the effect of the endocrines is concerned I cannot link definitely any endocrine deficiency with primary fibrositis.

Differential Diagnostic Points of Conditions Mistaken for Arthritis

DR. WILLIAM J. KERR, San Francisco Because the terms rheumatism and neuritis are loosely used many less common conditions in medicine must be discussed.

Syphilis Arthritis occurs early and late and even in congenital syphilis. The lesions are bilateral, not painful and of long duration. In congenital syphilis dactylitis of the fingers rarely of the toes is common. Chronic bursitis and myositis of the calf and sternomastoid muscles are observed. Periostitis, meningeal generalized aches and pain occur. Later the central nervous system and sensory roots cause peripheral pain. Charcot joints are present. Spondylitis is common with radicular symptoms. The history, other lesions, serologic tests and the x-ray examination establish the diagnosis.

Hemophilia Bleeding from the synovial membrane is common and arthritis and deformity occur, especially in the elbow and knees. It occurs in the male before puberty with the history of a "bleeder." The clotting time is prolonged greatly and the platelets are normal in number. The bleeding is normal and the clot retracts normally.

Scurvy Joint bleeding occurs in the general tendency to bleed. The periosteum near the joint may be elevated in the roentgenogram. Hemorrhages are general. The gums are spongy. There is a tendency to purpura. The remarkable effects following the use of vitamin C will support the diagnosis of scurvy.

Beriberi The dry or polyneuritic form due to the deficiency of the antineuritic vitamin may confuse with its pain and weakness of the extremities. Paresthesias, impaired sensations, weakness and tenderness of the muscles occur. Suspected deficiency and response to treatment help in the diagnosis. The cardiac complications may be striking.

Rickets Wasting of muscles, pallor and swollen epiphyseal line with the costochondral nodes (rosary) are diagnostic in children. The calcium loss is general.

Raynaud's Syndrome, Scleroderma and Arthritis These are frequently associated, probably through poor circulation. Scleroderma of the fingers impedes circulation progressively. Raynaud's always causes thickened skin and swollen, flexed joints of the fingers. Roentgenograms generally show demineralization of the bones and acral destruction as in leprosy.

Leprosy Paresthesias and loss of tissue in the digits occur late, but early the mixed nerve symptoms resemble Raynaud's syndrome and scleroderma. Enlargements and biopsy are diagnostic.

Cervical Rib and the Scalenus Anticus Syndrome This causes circulatory disturbances and radicular symptoms. Changes in color, swelling of the joints and necrosis of the digits may be striking. The shape of the thorax and neck is suggestive. The onset in middle life with increasing weight, stooping and pulmonary emphysema contributes to the symptoms. Arthritis or scoliosis in the lower cervical spine causes changes in the hands through the nerve roots.

Erythralgia Formerly erythromelalgia, erythralgia is pain and burning, discolorations and swelling with the feeling of warmth in the extremities. The arteries pulsate. Stasis causes the burning. The joints are secondary with fixation from disuse and contractures following.

Peripheral Neuritis This condition from alcoholism or toxic conditions is common. Arsenic poisoning, primary anemia and diabetes cause sensory or motor symptoms. Trichinosis and dermatomyositis are mistaken for arthritis at times. Intermittent claudication, fallen arches and Paget's disease are confused also. Periarteritis nodosa may resemble the activities of rheumatic fever. The history and complete examination usually give the diagnosis.

DISCUSSION

DR. JOHN H. MUSSEY, New Orleans There are several conditions which are frequently associated with pains in the joints. The first of these is anemia. The pains may be due not to the deficiency in vitamin diet to which Dr. Kerr referred but to the anemia. The pain in the joints is common without any roentgenologic evidence of arthritis. Stiff and painful shoulder, for which there were some sixteen causes is a condition in which it is hard to make an etiologic diagnosis. In a child who develops arthritis following an injection of serum in the first twenty-four hours it becomes quite a problem to determine whether that pain is the result of the injection of serum some seven to ten days previously or whether it is part of the complications of say the associated meningitis. I have noted quite a few people with angina whose referred pain confined itself to the elbow. I was particularly fortunate some time ago in having a man who complained of pain in his left elbow after he had taken exercise. An electrocardiogram was made and the curve was that associated with coronary disease. On treatment of the coronary disease the pain in the elbow disappeared. I think that the important lesson Dr. Kerr points out is that one must not be satisfied to diagnose arthritis without a thorough survey of the patient.

Current Medical Literature

AMERICAN

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American Journal of Surgery, New York

32 391 556 (June) 1936

- Tumors of Head and Neck A F Holding Albany N Y—p 393
Modern Treatment of Carcinoma of Uterus A M Dickinson Albany N Y—p 395
Cancer of Rectum W F Preusser Albany N Y—p 399
Tumor Clinic and Pathologist J J Clemmer Albany N Y—p 401
Alternative Methods for Restoring Gastro-Intestinal Continuity After Gastric Resection for Carcinoma D C Balfour Rochester Minn.—p 405
Rectal Administration of Evipal Soluble Safe Reversible and Controllable Preanesthetic Medication Preliminary Report J T Gwathmey New York—p 411
*Electrosurgical Obliteration of Gallbladder Without Drainage as a Means of Reducing Mortality Report of 201 Consecutive Unselected Cases M Thorek Chicago—p 417
Operative Mortality of Inoperable Carcinoma of Colon and Rectum J M Lynch and G J Hamilton New York—p 435
Organization of Transfusion Service and Blood Donors Bureau for Average Hospital H E Mortin and Ruthe Whyte, New York—p 439
*Glove Flap Method of Dorsal Hand Repair G B O'Connor San Francisco—p 445
Skull Fractures Study of 100 Consecutive Cases E G Ramsdell, White Plains N Y—p 448
Descriptive Terms for Abdominal Electrosurgery L R Whitaker Boston—p 452
Effect of Head Injury on Hearing and Orientation M J Gottlieb, New York—p 455
Edema of Upper Extremity in Carcinoma of Mammary Gland Its Prevention in Some Cases J J Gilbride Philadelphia—p 463
Treatment of Carbuncle with Short Wave Diathermy and Cautery Puncture M. Fellman Jersey City N J—p 467
Acute Appendicitis Report of 757 Operated Cases R M Pool, Fairfield Ala—p 469
Adequate Surgical Masking Problem and Solution E G Waters Jersey City N J—p 474
Strangulated Inguinal Hernias in Premature Infants S L Goldberg and A C Rambar, Chicago—p 478
Biopsy in Proctology R V Gorsch New York—p 483
Treatment of Acute Pancreatic Necrosis I F Smead Toledo Ohio—p 487

Electrosurgical Obliteration of Gallbladder Without Drainage—Experimental studies for a number of years have convinced Thorek that, if one could substitute a dry, nonleaking surface for the discharging cavity as the gallbladder bed represents following cholecystectomy, it would be a great step in the right direction. This thought has been brought to fruition by electrocoagulation. If a flat electrode of bipolar current is firmly applied to a tissue surface and a current of proper voltage and sufficient amperage is permitted to pass through it, dehydration and coagulation of the tissue proteins results in a few seconds. On the other hand, if the same electrode is not applied firmly or, if used as a unipolar or even bipolar instrument a small air space (dielectric) intervenes between the electrode and the tissue, sparking fulguration and carbonization with black discoloration of the tissues result. A reapplication of the electrode to such fulgurated or carbonized surface will stop further current penetration and prevent coagulation from taking place. The author evolved his method of cholecystelectrocoagulation on the basis of his experimental researches and clinical studies, the underlying principles of which consist of (1) biterminal electrosurgical obliteration of the posterior wall and bed of the gallbladder by electrocoagulation, (2) because of the great tendency of electrocoagulated surfaces to become agglutinated with serous surfaces, muzzling of the falciform ligament into service by completely detaching it from the anterior abdominal wall and (3) strict avoidance of drainage. Up to April 1936 he has performed this operation

in 181 consecutive, unselected cases of gallbladder disease including gangrenous, empyematous, sclerosed and other forms of pathologic disorders of the gallbladder. There was one death. Postmortem examination showed that the patient died from causes unrelated to the operation. Kellogg used the method in sixteen cases without a death, while Finlayson operated on four patients with good results. This brings the total number of operations performed to 201 cases.

Glove Flap Method of Dorsal Hand Repair—Following a burn from gasoline, O'Connor used a glove flap replacement on a hand of which the dorsum and fingers as far as the distal phalangeal joints were covered with a thick, heavy, red, painful, nonelastic keloid scar that prevented finger, thumb and wrist flexion. The entire scar on the dorsum of the hand and fingers was excised. A surgical glove was placed on the hand and sutured along the denuded edges. The portion of the glove covering the defect was cut out, a pattern of the hand defect was made on the right side of the abdomen and the donor flap and seven pedicles, one for each finger and one for the ulnar and the radial side were elevated by sharp dissection. The center flap and pedicle were made as thin as possible. The abdominal bed was skin grafted and then the injured hand was placed in the abdominal pocket and the flap pattern sutured to the hand. The digital pedicles were amputated in seven days, the ulnar pedicle in five days more, and the radial pedicle in one week more. The flaps were cut off under local anesthesia and sutured into their respective places and at the time of freeing from the abdominal wall complete take of the abdominal skin grafts was observed. The entire dorsum of the hand and fingers was covered in nineteen days, with a hospital stay of twenty-two days. By using elastic traction seven days after the last operation, a complete range of active finger motion was quickly obtained. At the present writing sensory nerve return has taken place.

Archives of Neurology and Psychiatry, Chicago

35 1175 1402 (June) 1936

- Catalepsy Experimental Study W R Ingram R W Barris and S W Ranson Chicago—p 1175
Oxygen Saturation of Arterial Blood in Epilepsy W G Lennox and Erna L. Gibbs Boston—p 1198
*Effect of Cervicothoracic Sympathectomy on Headaches J G Love and A W Adson Rochester Minn—p 1203
Postural Reflexes in Patients with Lesions of Frontal Lobe I S Wechsler I Bieber and B H Balser New York—p 1208
Effect of Alteration in Posture on Intra Arterial Blood Pressure in Man I Pressure in Carotid Brachial and Femoral Arteries in Normal Subjects J Loman W Dameshek, A Myerson and D Goldman, Boston—p 1216
Id. Pressure in Carotid Artery in Arteriosclerosis During Syncope and After Use of Vasodilator Drugs J Loman, W Dameshek, A Myerson and D Goldman Boston—p 1225
*Functional and Histologic Studies of Somatic and Autonomic Nerves of Man P Heinbecker G H Bishop and J L O'Leary St Louis—p 1233
Relationship of Systolic to Diastolic Blood Pressure in Schizophrenia Effect of Environmental Temperature J S Gottlieb, Worcester Mass—p 1256
Disseminated Spinal Arachnoiditis Its Diagnosis and Treatment with Roentgen Rays H Selinsky New York—p 1262
Vascular Changes Following Experimental Lesions in Cerebral Cortex Y C Tsang Chicago—p 1280
Studies in Multiple Sclerosis VII Similarities Between Some Forms of Encephalomyelitis and Multiple Sclerosis T J Putnam Boston—p 1289

Effect of Cervicothoracic Sympathectomy on Headaches—Love and Adson reexamined patients on whom operations on the cervical and cervicothoracic portions of the sympathetic nervous system had been performed for conditions other than headache in order to determine the effects of such operations on patients who complained of headaches in addition to the primary disease. They found that 75 per cent of eighteen patients who complained secondarily of headache were either partially or completely relieved of the headaches when bilateral cervicothoracic sympathectomy (according to Adson's technic) was performed for some other condition. Sympathectomy was most effectual in relieving headache when it occurred in association with Raynaud's disease. The relief of headache coincident with relief of a known vasomotor disturbance (Raynaud's disease) lends support to the view that severe headache occasionally, and migraine frequently, is the expression of a vascular

crisis related in some way to a disturbance of the sympathetic nervous system. It is apparent as a result of this study that cervicothoracic sympathectomy is effective in relieving a certain number of patients of periodic attacks of migraine. When a patient with migraine presents other symptoms indicating disturbance of the sympathetic nervous system, such as Raynaud's disease, cervicothoracic sympathectomy gives relief in about 75 per cent of cases. Cervicothoracic sympathectomy is justified in carefully selected cases of severe migraine.

Studies of Somatic and Autonomic Nerves—Heinbecker and his associates found that the physiologic properties of human nerve fibers, of corresponding size and type, are practically identical with those of the ordinary laboratory animals, such as the monkey, cat, dog and rabbit. Certain differences exist between the various animals, including man, as to which type of fiber (for instance, the myelinated or the nonmyelinated post-ganglionic fibers in the cervical portion of the sympathetic trunk) is utilized to subserve a given function in the body. A certain degree of variation also exists in the distribution of fibers into the various branches of a nerve trunk innervating a given region. Owing to these complications and to the further possibility that the treatment of a nerve at operation without proper precautions is liable to affect its function on subsequent examination, the investigation of nerves as a means of diagnosis should include histologic, physiologic and functional studies, and the results should be interpreted in the light of the circumstances, pathologic and manipulatory, under which the material was obtained.

Archives of Ophthalmology, Chicago

15 975 1176 (June) 1936

- Primary Tuberculosis of Conjunctiva A Samuelson Stockholm Sweden—p 975
Ciliary Margin of Dilator Muscles of Pupil with Reference to Some Melanomas of Iris of Epithelial Origin Bertha A Klein Chicago—p 985
Cicatricial Ectropion as Result of Mucocele of Frontal Sinus Plastic Repair J McLeod and P Lux Kansas City Mo—p 994
Cyclopia in a New Born Kitten Anatomical Findings H D Lamb St Louis—p 998
Dark Adaptation as Clinical Test Technique and Results J B Feldman Philadelphia—p 1004
Changes in Refraction Following Operation for Strabismus D Marshall Ann Arbor Mich—p 1020
Congenital Head Nodding and Nystagmus Report of Case R A Cox Washington D C—p 1032
Is Ocular Proprioceptive Sense Concerned in Vision? S R. Irvine and E J Ludvig, Boston—p 1037
Twinning and Ocular Pathology Report of Bilateral Macular Coloboma in Monozygotic Twins A Gesell and E M Blake New Haven Conn—p 1050
Instrument for Measuring Dynamic Speed of Vision Speed of Accommodation and Ocular Fatigue C E Ferree and G Rand Baltimore—p 1072
Panophthalmitis Due to Clostridium Welchii H C Kluever and C S O'Brien Iowa City—p 1085

Archives of Otolaryngology, Chicago

22 617 736 (June) 1936

- *Performance Characteristics of Electrical Hearing Aids for the Deaf H E Hartig and H Newhart Minneapolis—p 617
Cytologic Study of Effects of Drugs on Cochlea W P Covell San Francisco—p 633
Anomalous Vascular Lesion in Cerebellopontile Angle Severe Neuralgic Pain in Ear and Profound Nervous Disturbance Operation and Recovery H I Little and W M Craig Rochester Minn—p 642
Vestibular Tests Their Practical Application B H Shuster Philadelphia—p 646
Threshold of Feeling in Ear in Relation to Sound Pressures D M Little and S N Reger Iowa City—p 643
Bacteriologic Studies in Acute and Chronic Maxillary Sinusitis Ella M A Entwies and S A Alexander Washington D C—p 665
Pearlman's Stapedius Reflex to Hearing Sensation in Man J R Little and H Kellack and H B Perlman Chicago—p 671
Comparison of Intracutaneous and Intranasal Tests in Cases of Allergic Rhinitis L D Little and S Lewis—p 679
Hemangioma of the Larynx Report of Three Cases I F Weidlein Cleveland—p 682

Electrical Hearing Aids for the Deaf—In investigating the differences of the various hearing aids Hartig and Newhart found that in the devices having as components a carbon microphone, a carbon amplifier and an ear fitting receiver there are important differences in the amount of amplification produced

and tremendous differences in the intelligibility ratings. The differences in performance do not depend measurably on the observed nonuniformity of response. Furnishing frequency response curves to the otologist with each hearing aid would be of no value. Of greater importance is a wide range of response, freedom from singular peaks of amplification and sufficient amplification. Of paramount importance is the actual aid that the user obtains in interpreting speech sounds and sentences correctly. Hearing aids having a low intelligibility rating were found to produce the greatest volume of noise by products (principal cause of the poor intelligibility), owing to nonlinear distortion. Portable hearing aids consisting only of a carbon microphone and receiver are largely ineffective because of insufficient amplification. The best means of determining the personal usefulness of a carbon microphone hearing aid of known merit for a given person is the discrete sentence intelligibility test. The authors employed the following method. An exponential horn with an opening of 22 inches (55.8 cm.) was provided at the throat with a tapered fitting so as to match the holes in the receivers of the hearing aids. The microphone of the hearing aid and a speaker were placed in one room, and a number of observers were placed in an adjoining room, with a door between, tests of sentence intelligibility and of syllable articulation were then performed. The method permits hearing aids of different performance characteristics to be differentiated.

Arkansas Medical Society Journal, Fort Smith

33:134 (June) 1936

- The General Practitioner M E McCaskill Little Rock—p 1
Fusospirochetal Infections of Lower Respiratory Tract L E King Hot Springs National Park—p 6

California and Western Medicine, San Francisco

44:353-456 (May) 1936

- Operative Results in Cataracts Coincident with Dinitrophenol Therapy H Barkan W E Borley M Fine and J Bettman San Francisco—p 360
Spinal Anesthesia and the Anesthetist W L Garth, San Diego—p 364
Malignant Tumors of the Testis G D Maner Los Angeles—p 369
Subhyoid Chord E J Lamb Santa Barbara—p 371
*Menstrual Hypoglycemia and Functional Dysmenorrhea Their Relationship M A Tedstrom and L E Wilson Santa Ana—p 375
Heart Disease in Physicians R T Langley Los Angeles—p 381
The Frequency of Botulism K F Meyer San Francisco—p 385
Thyroid Gland Toxic Adenoma with Normal or Lowered Basal Metabolic Rate H H Searls San Francisco—p 389
Uremia of Circulatory Failure A A Alexander, Oakland—p 391

Menstrual Hypoglycemia and Functional Dysmenorrhea—Tedstrom and Wilson discuss further the relationship of menstrual hypoglycemia and functional dysmenorrhea. They tabulate the results of their blood sugar studies during menstruation and the results of extra carbohydrate feeding in thirty-eight cases. In every case in which the fasting blood sugar was low, that is, below 80 mg per hundred cubic centimeters the individual had either menstrual pains of varying severity or complained of marked nervousness, irritability, weakness, extreme hunger or excessive desire for sweets two or three days preceding menstruation. The treatment of the patients with functional dysmenorrhea associated with a low fasting blood sugar or a low sugar curve during menstruation consisted of extra carbohydrate feedings beginning about three days before the onset of the menses and continuing through the first three days of the period. It was observed that better results were obtained if the extra feedings were taken at intervals of two or three hours during the day rather than larger amounts at longer intervals. Orange juice was the usual form of carbohydrate taken. Karo syrup, dextrose and cane sugar worked equally well. These extra carbohydrate feedings have relieved the premenstrual tension and the menstrual pain in about 80 per cent of the cases in which they have been tried. Eight patients have been given 25 cc. of a 50 per cent solution of dextrose intravenously with immediate relief of menstrual pain. If the pain returns it is usually slight and easily controlled by extra carbohydrate feedings. Since relief of the menstrual discomfort was also obtained by several patients with a normal blood sugar it seems wise to try this form of therapy in every case of functional dysmenorrhea.

Colorado Medicine, Denver

33: 377 448 (June) 1936

- Hematuria Introductory Remarks J B Davis Denver—p 390
Hematuria Due to Infections T L Howard Denver—p 391
Hematuria Due to Urinary Calculi G M Myers Pueblo—p 395
Tumors of Urinary Tract Their Relation to Hematuria H H Wear, Denver—p 398
The Medical Witness P Work, Denver—p 402
Diagnosis and Treatment of Tuberculosis of Abdominal Cavity and Viscera. L. E. Likes Lamar—p 405
Organization of the Nursing Service in the General Hospital Louise Kieninger Denver—p 422

Indiana State Medical Assn Journal, Indianapolis

29 265 310 (June) 1936

- Clinical Classification of Tumors of the Breast E. T. Bell Rochester, Minn—p 265
Anatomic Anomaly of Patella Mistaken for Fracture H G Cole Hammond—p 267
Some Obstetric Aphorisms C. O. McCormick Indianapolis—p 268
*Relation of Sinusitis to Arthritis J J Littell Indianapolis—p 270
Pathology of Tympanic Membrane B D Ravdin Evansville—p 273
Paranoid Deviation Its Causes and Development H S Hulbert, Chicago—p 276
Torsion of the Spermatic Cord H D Cogswell Indianapolis—p 281

Relation of Sinusitis to Arthritis—Littell believes that (1) sinusitis often serves as a most important and frequently unrecognized focus in the cause of rheumatoid arthritis, (2) the systemic disease may often be markedly alleviated or entirely arrested by its proper care and (3) the area involved in these cases is usually the ethmoid. Sinusitis of some degree is common in temperate climates. His chief interest in it as a source of systemic disease is less in the amount of sinusitis than it is in the degree of absorption. Since he has approached it in this way, he has had much less disappointment in the care of the condition. Absorption takes place largely from the ethmoid-sphenoid region. A few cases have shown systemic improvement following treatment of chronic maxillary sinusitis. The greatest benefits, however, have accrued from attention to the upper sinuses. Of the twenty cases of arthritis cared for in the last few years, the author has had only two serious disappointments. In one of these, antral hyperplasia alone was removed. The patient showed no improvement and progressed unfavorably. The second, a severe case with fever, has now cleared up, but only after a stormy three years in Arizona. Three have shown only slight improvement. The remainder have improved from approximately 75 to 100 per cent.

Iowa State Medical Society Journal, Des Moines

26 279 330 (June) 1936

- Hernia Its Cure by Injection of Irritating Solutions C. O. Rice Minneapolis—p 279
Treatment of Strangulated External Hernia W E. Cody Sioux City—p 283
Sequels of Head Injuries A L. Saks Iowa City—p 286
Differential Diagnosis of Lesions in Right Side of Abdomen with Especial Reference to Urology A G Fleischman Des Moines—p 288
Treatment of Asymptomatic Neurosyphilis R N Larimer Sioux City—p 292
Indications for Surgery in Pulmonary Tuberculosis J C Painter Dubuque—p 294
Tumors of the Breast B J Dierker Fort Madison—p 296
Abdominal Drainage Its Use and Abuse. E. J. Harnagel Des Moines—p 299
*Continuous Subarachnoid Drainage for Influenzal Meningitis by Means of a Ureteral Catheter and an Antigenous Vaccine H A Stribley Dubuque—p 300
Hypertension and Brain Tumor Case Report W D Abbott E. W. Anderson Des Moines C. Van Epps and A E. Walker Iowa City—p 303

Subarachnoid Drainage for Influenzal Meningitis—Stribley reports a case of influenzal (Haemophilus influenzae) meningitis in which complete recovery was made during treatment with continuous subarachnoid drainage, by means of a ureteral catheter and intramuscular injections of an autogenous vaccine. Almost daily spinal punctures were being made until he read Love's report of continuous spinal drainage. The catheter was inserted on three different occasions. The first time it remained in place four days. In about two days it was reinserted and remained in place five days. After its third insertion it remained in place for thirteen days. The catheter drained directly into a bottle pinned to the side of the bed. The patient was cooperative and the tube did not have to be

cut off short. When the patient complained of too severe a headache, the end of the ureteral catheter was clamped off for a few hours with a small hemostat. The drainage of the spinal fluid always decreased in amount after the catheter had been in place forty-eight hours. Autogenous vaccine was administered intramuscularly on four occasions. 0.1 cc of a 400 million autogenous vaccine per cubic centimeter was given on the thirteenth day of drainage, 0.1 cc on the fifteenth, 0.15 cc on the seventeenth, 0.2 cc on the eighteenth and 0.25 cc on the nineteenth. Forced fluids and physiologic solution of sodium chloride, as well as dextrose, were administered on several occasions during drainage. Methenamine was given by mouth empirically. The organism was morphologically and culturally Haemophilus influenzae. The organism grew extensively on a blood agar medium but not on the ordinary mediums.

Journal of Allergy, St. Louis

7: 319-442 (May) 1936

- Desensitization of Skin Sites Passively Sensitized with Serum of Patients with Hay Fever Crossed Reactions of Different Pollens Variations in Recipient F M Rackemann and H C. Wagner, Boston—p 319
Protein Content of Human Serums Analyses of Serums Before and After Pollen Injections A Stull Mary Glidden and Mary Loveless New York—p 333
Chemical Standardization of Pollen Extracts A. F. Coca and E. L. Milford Pearl River N Y—p 337
*Studies in Contact Dermatitis I Adhesive Plaster Dermatitis Techniques for Surface Testing on Patients Sensitive to Adhesive Plaster M Grolnick Brooklyn—p 341
*The Mechanism of Migraine A M Goltman Memphis Tenn—p 351
*Leukopenic Index in Allergic Diseases H J Rinkel Kansas City Mo—p 356
Bronchial Asthma Results of Treatment in 207 Patients Under Observation for Period Varying From One to Thirteen Years L. Unger, Chicago—p 364
Severe Allergic Reaction Following Wasp Stings with Subsequent Relief of Chronic Arthritis Miriam Lincoln Clifton Springs N Y—p 372
Contact Dermatitis Due to Goat Hair Report of Case. R L Kile St Louis—p 376

Studies in Contact Dermatitis—In principle, Grolnick's method for surface testing of patients who are sensitive to adhesive plaster consists in stamping out, by means of a glass tube, a ring of some liquid adhesive or fixing agent around the test substance and sealing this over by a disk membrane cut from some impermeable or nearly impermeable material. The materials suggested are plain cellophane and collodion (experimental), scrim cellophane and collodion (experimental), tracing paper and collodion (experimental), white single-faced rubberized cloth and duo liquid adhesive, rubber tissue and frisket type rubber cement. There exists a distinct need for a number of such substitute techniques for patch testing, as a combination suitable in one subject may be unsuitable in another. The author has obtained the best results with rubberized cloth and duo adhesive and suggests this as a starting point when the problem of adhesive irritation arises. In fact, he has found it entirely satisfactory to use this procedure in a routine way in testing for contact dermatitis. Cellophane, which is used extensively in the patch test as a constituent part of it, may be of the moisture-proof kind the surface coating of which contains a natural resin. This variety of cellophane may thus produce misleading positive reactions in selected instances.

The Mechanism of Migraine—For the last five years, Goltman has had a young woman under his care who has suffered with typical migrainous attacks for as long as she can remember. Her case is singular in that she has had her brain explored through a burr opening over the left frontal region. The observations made suggest the following points for consideration. 1 There is at first a vasomotor spasm, as evidenced by blanching of the face and persistence of the depression in her skull. Other features of the aura observed by others such as numbness and tingling, and eye symptoms, may be due to vascular spasm with subsequent temporary ischemia of the brain or parts of the brain. 2 There was secondary vascular dilatation with resulting edema of the brain, the severity and extent of which depend on the degree and duration of vasomotor stimulation. This swelling of the brain probably produces a temporary disproportion between the size of the cranial cavity and its contents, a condition in accordance with Auerbach's theory. Vascular dilatation and a wet brain were found on exploration. This evidences itself postoperatively by a bulging

in the left frontal region during a migrainous attack in the case reported. There is a temporary hypersecretion of cerebrospinal fluid, and hyperabsorption of cerebrospinal fluid occurs simultaneously with or immediately following hypersecretion. The cerebrospinal fluid is rapidly produced and is absorbed just as rapidly. According to Weed the passage of the cerebrospinal fluid into the large venous sinuses of the brain through the arachnoidal villi is purely a matter of filtration from a point of higher pressure to one of lower pressure. If this is so, with increased pressure within the subarachnoid space there must be a more rapid absorption of fluid. This hyperabsorption tends to equalize the pressure within the subarachnoid space.

Leukopenic Index in Allergic Diseases—Rinkel performed 537 leukopenic index tests in fifty-six different patients whose symptoms included hay fever, perennial vasomotor rhinitis, asthma, eczema, urticaria and migraine. He found that a postmeal leukocytosis was usually associated with foods not producing allergy, whereas leukopenia or an indeterminate count was associated with those producing symptoms. The accuracy of a single forty-minute count is about 80 per cent that of the three postmeal counts. Several cases of intractable asthma were cleared up promptly when the leukopenic index was used as an adjunct to other tests. The count was of especial value in these cases because clinical observations were misleading. In one case only two foods agreed according to the leukopenic indexes, and this was corroborated by having the patient live on these foods for two weeks and remain absolutely free from symptoms during this time. In one case of extreme asthma it was found possible to relieve cough and wheezing commonly thought to be due to emphysema. Asthmatic patients whose symptoms could not be controlled either showed a positive leukopenic index to all foods or were unable to maintain a negative leukopenic index to a food regularly used in the diet.

Journal of General Physiology, New York

10 693 893 (May 20) 1936 Partial Index

Effect of Proteins on Electrophoretic Mobility and Sedimentation Velocity of Red Cells. B. R. Monaghan and H. L. White. St. Louis—p. 715.
Structure of Ultraviolet Absorption Spectra of Certain Proteins and Amino Acids. C. B. Coulter, Florence M. Stone and E. A. Kabat. New York—p. 739.

Bactericidal Effect of Ultraviolet Radiation on *Escherichia Coli* in Liquid Suspensions. A. Hollander and W. D. Claus. Madison Wis.—p. 753.

Individual Characteristics of Animal Amylases in Relation to Enzyme Source. W. R. Thompson and I. Friedman. New Haven Conn.—p. 807.

Formation of Milk Sugar. The In Vitro Synthesis of Lactose by Active Mammary Gland Preparations. A. P. Weinbach. Columbia, Mo.—p. 829.

Kansas Medical Society Journal, Topeka

37 221 264 (June) 1936

*Remissions in Progressive Muscular Dystrophy. D. V. Conwell. Halstead—p. 221.

Some Modern Concepts of Cancer. E. C. Padgett. Kansas City Mo.—p. 225.

Report of 4511 Tuberculin Tests Using Intermediate Dilution of Tuberculin PPD. C. Hall. Topeka—p. 230.

Action Currents in Schizophrenia. R. W. Robb. Osawatimie—p. 234.

Remissions in Progressive Muscular Dystrophy—Conwell points out that in 1930, after four months of viosterol therapy for rickets a coexisting far advanced, progressive muscular dystrophy showed unexpected improvement. A search of the literature failed to reveal viosterol as a treatment for muscular dystrophy but considering his past failures with the disease he mentioned the incident to subsequent muscular dystrophy patients. Five or six patients elected to follow this regimen and in this group remissions have occurred. A history of a hereditary factor was unobtainable. The four children had been on faulty diets of their own selection. One adult had followed a low protein diet for a year and the other adult employed a well balanced diet but had been exposed to the sun very little for thirteen years. There was no uniformity in the dietary faults. Three months of treatment (from 6 to 30 minims [0.4 to 2 cc.] of viosterol daily) was usually necessary before improvement could be observed. No untoward reactions were noted. The return of motor power was incom-

plete in three and complete in three patients. Of the former one has relapsed, one is still disabled and one carries on about normal activity. The latter three patients have returned to normal activity and two have discontinued treatment, one for about two and one for four years, without signs of relapse.

Kentucky Medical Journal, Bowling Green

34 225 276 (June) 1936

Medical Aspects of Ophthalmology. H. D. Abell. Paducah—p. 273.
The Heart in Hypertension. W. B. Troutman. Louisville—p. 234.
The Kidney in Hypertension. F. M. Stutes. Louisville—p. 236.
The Eye in Hypertension. F. Pirkey. Louisville—p. 239.
Medical Aspect of Hypertension. F. G. Speidel. Louisville—p. 240.
Hypertension in Pregnancy. H. M. Rubel. Louisville—p. 241.
Changing Views on Cystic Diseases of the Breast. F. W. Rankin and A. E. Grimes. Lexington—p. 245.
Advantageous Neurotic Reactions. W. E. Gardner. Louisville—p. 248.
Removal of Piece of Steel from Vitreous. C. T. Wolfe. Louisville—p. 255.
Neurologic Examination and Interpretation of Findings. J. J. Morris. Louisville—p. 258.
Concerning the Common Traumatic Lesions of the Brain. F. Jelsma. Louisville—p. 264.
Some Unorthodox Comments on Duodenal Ulcer. C. D. Enfield. Louisville—p. 270.

Missouri State Medical Assn Journal, St. Louis

33:209 250 (June) 1936

Uterine Prolapse. E. L. Dorsett. St. Louis—p. 209.
Protamine Insulin. D. R. Black. Kansas City—p. 212.
Diagnosis and Treatment of Ocular Complications of Syphilis. W. M. James. St. Louis—p. 215.
Pathogenesis and Prevention of Complications in Hematogenous Pyogenic Osteomyelitis. J. Kulowski. St. Joseph—p. 218.
Etiology of Mesenteric Thrombosis. J. R. Green. Independence—p. 223.
Polyneuritis in Pregnancy. Case Report. D. T. Vandel. Kansas City—p. 223.
Management of Squint. C. S. Smith. Springfield—p. 225.

New England Journal of Medicine, Boston

214 1123 1172 (June 4) 1936

*Spray X-Ray Therapy in Polycythemia Vera and in Erythroblastic Anemia. F. T. Hunter. Boston—p. 1123.
Certain Relations Between Parathyroids, Hypophysis and Pancreas. B. A. Houssay. Buenos Aires. Argentina. South America—p. 1124.
*Hypophysis and Resistance to Infections. Infections and Tumors. B. A. Houssay. Buenos Aires. Argentina. South America—p. 113.
Menorrhagia Occurring at Onset of Catamenia in Patient with Thrombopenic Purpura. Report of Case. A. Stern. Worcester, Mass.—p. 1147.

The Hypophysis and Resistance to Infections and Tumors—Houssay points out that the existence of a direct antitoxic or anti-infectious action of the pituitary gland or its secretions has not been proved but that the gland can modify the resistance of the animal by its metabolic action, its regulating action on the thyroid or adrenal and on the vascular or nervous system. It has been thought that the increased growth in typhoid convalescents or sexual retardation and amenorrhea in adolescent tuberculous patients may be due to functional changes in the gland, but as yet there is no proof of this. Anesthetics and hypnotics are not tolerated well by hypophysectomized animals, and after operation some species are more susceptible to infections, poisons of the nervous system (cobra venom, morphine, chloralose), blood pressure and blood sugar lowering agents (insulin, phlorhizin). Hypophysectomy, because it produces hypothyroidism, provokes a decrease in phagocytosis and accelerated formation of antitoxins (in dogs), the agglutinin production not being changed. The thyrotrophic hormone of the anterior pituitary by stimulating thyroid activity causes hypersensitiveness to anoxemia in rodents in the mouse an increased resistance to acetonitrile and in the dog a slightly increased resistance to chloralose occur. The pituitary can be the site of benign or malignant new growths also of metastases. The structure of the pituitary is modified in patients suffering from cancer. Hypophysectomy retards but does not prevent the growth of tumors and diminishes the number of implantations which take probably this is due to a metabolic action which should be studied. The urine of cancerous patients has a powerful gonadotropic activity. Pituitary extracts can accelerate the growth of certain tumors. In some cases the follicle stimulating factor has an inhibitory action but its specificity and its practical importance are doubtful.

Oklahoma State Medical Assn Journal, McAlester

29: 191 238 (June) 1936

- Mortality of Acute Appendicitis Consideration of Preventive Measures
H Reed Oklahoma City—p 191
Traumatic Shock G E Stanbro Oklahoma City—p 199
Gonorrheal Ophthalmia Treatment W A Cook Tulsa—p 202
Cyclopropane in Comparison with Other Anesthetic Agents G S
Meebling and J A Moffitt Oklahoma City—p 204
*Rheumatic Heart Disease in Children H A Ruprecht Tulsa—p 207

Rheumatic Heart Disease in Children—Ruprecht points out that when the pediatrician thinks of heart disease he thinks first and foremost of rheumatism, which contributes from 80 to 90 per cent of all the organic heart ailments of childhood. It must be thought of as a generalized systemic infection, chronic in nature, characterized by periods of quiescence and exacerbations but exerting its most serious and ravaging effects on the heart. The initial infection of the rheumatic state occurs principally in childhood. About 0.5 per cent of the school population are affected by it. Of this number 64 per cent develop heart disease. The average age at which the primary rheumatic infection was acquired is 7 years. According to Stroud, at the end of ten years 40 per cent are either dead or totally disabled. Kaiser, however, found that only 8.2 per cent were dead at the age of 10 years. Davis and Weiss state that 5 per cent of all deaths due to rheumatic heart disease occur in the age period between 0 and 9 years, and 20 per cent between 10 and 19 years of age. Morse, in a follow-up study of 100 children seen during their first attack of "endocarditis" from ten to thirty years previously, found that thirty-six were dead, three were cardiac invalids and sixty-one were normal, alive and well. Of the sixty-one, thirty-seven had apparently normal hearts. He stated that death occurred early in a large proportion of the fatal cases. Rheumatic fever occurs most frequently among the lower economic class. The relationship between rheumatic fever and the streptococci is highly suggestive but still unproved. Prophylactic measures are limited to general hygienic measures, change of climate and possibly tonsillectomy, if done prior to the onset of the disease. Actual treatment still remains largely symptomatic and rest is the most important factor of all. Fever therapy is a promising addition to the older methods of treatment.

Radiology, Syracuse, N Y

26: 651 780 (June) 1936

- Studies of Small Intestine II Effect of Foods and Various Pathologic States on Gastric Emptying and Small Intestinal Pattern E P Pendergrass I S Ravdin C G Johnston and P J Hodes Philadelphia—p 651
*Skeletal Changes in Disturbances of Parathyroid Glands P C Hodges Chicago—p 663
Ray Treatment in Hyperparathyroidism E A Merritt and I Lattman Washington D C—p 673
Review of Early Scientific Aspects of Pituitary Hormones and Significant Facts in Regard to Their Influence on Bone Growth J B Collip Montreal—p 680
Study of Series of Menopausal Cases After Irradiation of Pituitary Gland C G Collins L J Menville and E P Thomas New Orleans—p 682
Importance of Roentgenographic Studies of Osseous Development in Endocrine Diagnosis H C Shepardson San Francisco—p 685
Radiation Castration in Treatment of Malignancy of the Breast D Steel Cleveland—p 700
High versus Low Intensity Irradiation in Treatment of Carcinoma Experimental Study on Non-Neoplastic Epithelium and Mesoblastic Tissue A Brunschwig and S P Perry Chicago—p 706
Acute Painful Ankylosing Arthritis with Especial Reference to Non-suppurative Type H A Olin Chicago—p 717
Roentgenologic Aid in Acute Abdomen with Especial Reference to Intestinal Obstruction W R Stecher Easton Pa.—p 729
Cleidocranial Dysostosis (Mutational Dysostosis) Case Report B A Rhinehart Little Rock Ark.—p 741
Radiation from an Oil-Immersed Therapy Tube M M D Williams Peiping China—p 749

Skeletal Changes in Disturbances of Parathyroids—Hodges sketches briefly the phases of parathyroid function and dysfunction by discussing the state of calcium in the blood, normal parathyroid control of calcium, calcium regulation in hyperparathyroidism, calcium regulation in hypoparathyroidism, roentgen diagnosis of skeletal lesions in hyperparathyroidism and differential diagnosis. From clinical and laboratory studies on material of this sort, it is now generally believed that hyperparathyroidism, either spontaneous or induced, causes an

excessive amount of calcium and phosphate to pass from the bones into the blood, resulting eventually in the generalized skeletal condition known as osteitis fibrosa cystica or von Recklinghausen's disease. The removal of an abnormal gland or the cessation of extract injection slows up the outward calcium and phosphate tide, following which normal processes, only dimly understood, slowly return calcium phosphate to the bones until calcium ion concentration in the plasma falls to normal levels.

Southwestern Medicine, Phoenix, Ariz

20 205 246 (June) 1936

- Inguinal Trigon Industrial Considerations R F Palmer Phoenix Ariz—p 205
Treatment of Hernia by Injection Method F R Girard San Francisco—p 209
Leukemia Case Report F D Vickers Deming N M—p 216
Scorpion Stings Case Reports E J Gangle Morenci Ariz—p 218
Nonconvulsive Toxemias of Pregnancy D Fournier Phoenix Ariz—p 222
Unusual Lithiasis H C Bumpus Pasadena Calif—p 223

Virginia Medical Monthly, Richmond

63 131 196 (June) 1936

- Effects on Virginia of Medical Provisions in the Federal Social Security Act I C Riggan Richmond—p 131
*Suppurative Condition of Lung Treated by Artificial Pneumothorax C L Harrell Norfolk—p 134
Observations on History Taking in Allergy O Swineford University—p 139
Diathermy Electrically and Clinically J O Fitzgerald Jr Richmond—p 148
External Version in the Eighth Month for Breech Presentations P E Thornhill Norfolk—p 153
Essential Hypertension and Bright's Disease Their Differential Diagnosis and Treatment P D Camp Richmond—p 157
Circutrial Stenosis of Esophagus Report of Cases C C Cooley, Norfolk—p 162
Our Challenge and Answer A M Burfoot Fentress—p 166
Gunshot Wounds of the Ear Report of Two Cases E U Wallerstein Richmond—p 171
Foreign Bodies in Abdomen Report of Case O T Amory, Newport News—p 173
Method of Treating Severe Acidosis Developed in the St. Louis Children's Hospital W E Kenter Kinston N C—p 175

Lung Abscess Treated by Artificial Pneumothorax—Harrell adds seven cases of abscess of the lung to the sixteen that he reported four years ago as treated by artificial pneumothorax. Nine of the group were cured by this method alone, one patient died, while three came to operation, two of whom got well. In producing pneumothorax for a tuberculous lung, an endeavor is made to collapse the lung completely and hold it at rest until it heals. In acute abscess or suppurative conditions of the lung the objective is to promote and facilitate drainage, as it is through the process of drainage that pyogenic infections are thrown off and healing takes place. As soon as a diagnosis of lung abscess is made, small quantities of air should be injected in the pleural cavity to act as a buffer and prevent the lung from sticking. The wavelike motion through inspiration and expiration will continue and the lung will be in a better position to empty itself, and a larger percentage will recover in a shorter time. In his first series of sixteen cases, the shortest period under treatment was one month, the longest six months. In the second series of seven cases, one patient died of abscess of the brain, although from all appearances the lung was healing satisfactorily. Two died while under treatment, one from pulmonary hemorrhage and the other from lack of cooperation. Both of these were chronic cases and were refused by the surgeon. One came to operation and went on to recovery, the remaining three patients recovered, with an average of three months under collapse therapy. Two of three patients developed abscess following tonsillectomy under general anesthesia, one following operation on the stomach, one following the extraction of an infected tooth and one following pneumonia. Another had a very marked case of oral sepsis while the cause of the last was undetermined. In conclusion, complete recovery occurred in twelve cases, or 52.1 per cent under collapse therapy combined with rest, the highest percentage of recoveries given under any other form of treatment. The author claims that collapse therapy is the easiest, quickest and safest form of treatment that can be used in acute lung abscess.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

48 221 280 (May) 1936

Poikiloderma Congenitale. M. S. Thomson—p. 221

Etiology of Eczema. Note. J. M. H. MacLeod and I. Muende—p. 234

*Polymyositis with Eosinophilia. Case. D. McAlpine—p. 238

Polymyositis with Eosinophilia—McAlpine cites a case of polymyositis that resembles dermatomyositis. The case is remarkable because of the high grade eosinophilia. A man aged 36, after malaise had pains in the lower limbs, followed later by swelling and hardening of the muscles. Weeks later the upper limbs were similarly affected with impaired movements of the fingers and wrists. The veins of the upper and lower limbs became prominent and pulsation developed in the cephalic veins. Six months after the onset the disease was still active, as was shown by pains in the trunk muscles usually associated with gastro-intestinal symptoms. Movements of the fingers and wrists were much restricted and the muscles, especially of the forearms, felt abnormally hard. No lesion of the skin was apparent except a diffuse brownish pigmentation over the forearms and legs. A leukocytosis and high grade eosinophilia (eosinophils 37 per cent) were present six months from the onset, these gradually became less marked as clinical improvement took place. Repeated examination of the feces failed to show a helminthiasis. Apart from an excess of streptococci in the feces no toxic focus was found. A small piece of muscle removed from the forearm showed mild inflammatory changes. Subsequently considerable improvement took place, so that the patient was able to return to work a year after the onset. A point of significance in considering the association between myositis and eosinophilia is the gradual diminution in the number of eosinophils corresponding with the clinical improvement; this suggests that the eosinophilia did not exist prior to his illness and therefore it can have been caused only by the infective agent or by some product of the myositis. It is suggested that the subcutaneous tissues and muscles became hypersensitive to some infective agent; it is possible that the infective agent was a streptococcus. This case may serve the purpose of drawing attention to the occasional association of myositis and eosinophilia in the absence of helminthiasis.

British Medical Journal, London

1 979 1032 (May 16) 1936

Surgery of Jaundice. J. Walton—p. 979

Protein in Nephritis. C. S. D. Don—p. 985

Renal Function in Disease. R. Platt—p. 987

Value of Negative Subcutaneous Tuberculin Test. R. Carswell—p. 990

Pregnancy Diagnosis Laboratory (1935) Notes. F. A. E. Crew—p. 993

Edinburgh Medical Journal

43 281 348 (May) 1936

Clinical Recollections and Reflections. II. Notes on the Diagnosis of Some Febrile Conditions. G. L. Culland—p. 281

*Acid Ammonium Phosphate as Urinary Acidifier. S. Alstead—p. 292

*Leuko-Erythroblastosis. J. McMichael and J. W. McNee—p. 303

*Parenteral Administration of Vitamin B₁ in Treatment of Polyneuritis and Other Conditions. W. R. Riddell—p. 315

Effect of Constitutional Vitality on Prognosis as Illustrated by Acute Appendicitis. W. O. Kerrack and A. G. M. Kendrick—p. 324

*Don't Treatment of Pernicious Anemia. Note. R. M. Murray Lyon—p. 329

Acid Ammonium Phosphate as Urinary Acidifier—Alstead states that acid sodium phosphate is of negligible value as an acidifier of the urine and that its use should be abandoned. Frequently it actually alkalinizes the urine and cannot be regarded as a suitable standard by which to assess the value of ammonium acid phosphate. Acid ammonium phosphate in doses of approximately 2 Gm. three times a day markedly diminishes the pH of the urine, and no further increase in the hydrogen ion concentration occurs with greater doses. Despite the administration of large doses of acid ammonium phosphate the pH of the urine never fell below 4.7 and the maximal acidity of the urine in the great majority of the patients was represented by a pH of about 5.5. Considerable elevation in pH was frequently seen, notably in three cases in which the ranges were pH 8.7 to

5.7, pH 8.5 to 5.8 and pH 7.8 to 5.2, respectively. In these cases the urine was already alkaline when the administration of ammonium acid phosphate was begun. In patients whose urine was previously fairly acid (about pH 6) the use of the ammonium salt produced comparatively little change in the hydrogen ion concentration. The saline cathartic action of acid ammonium phosphate appeared when the daily dose amounted to 17 Gm., i.e., about three times the effective dose for acidifying the urine.

Leuko-Erythroblastosis—McMichael and McNee discuss three patients, presenting themselves as examples of "splenomegaly of unknown origin" under the term "leuko-erythroblastosis." The blood picture in each showed the constant presence in the circulating blood of numerous immature red and white cells. The term seems more accurate than leuko-erythroblastemia (Vaughan 1934), since anemia may be absent and even polycythemia exist at a stage when the diagnosis may still be made. All three patients were women. All are dead, but a postmortem examination could be carried out only in one instance, in which death followed splenectomy. In the other two patients the disease ran its natural course and in both terminated with features of a hemorrhagic diathesis. These three cases have a common pathologic basis in the presence of myeloid metaplasia as the predominating feature of the microscopic appearance of the spleen. Associated with this extramedullary hematopoiesis is the occurrence of erythroblasts and myelocytes in the circulating blood. The disease appears to be uniformly fatal and its course is relatively uninfluenced by roentgen treatment, liver therapy and splenectomy. In the postmortem examination one striking feature was the apparent absence of much active marrow in the long bones. This disappearance of marrow tissue was not due to any serious sclerosis or fibrosis in the marrow cavity, for there was ample room among the fat spaces of the marrow for local increase of hematopoietic tissue. Why such extensive extramedullary hematopoiesis should be found in the presence of a bone marrow which in places was almost aplastic it is impossible to say. In the clinical diagnosis of a leuko-erythroblastosis, leukemia is the most difficult condition to exclude. Chronic myelogenous leukemia nearly always shows some degree of erythroblastosis as a hematologic feature, but it is found that the number of erythroblasts seldom reaches 5 per cent of the number of myelocytes and is usually much less. In leuko-erythroblastosis the proportion of nucleated red cells is usually much higher than this and may range from 5 per cent of the myelocyte figure to a number far exceeding the myelocytes. The leukocyte count does not reach the high figures so common in myelogenous leukemia, 58,000 being the highest encountered and figures exceeding 40,000 being unusual. In early cases the differential diagnosis may be extremely difficult. Failure of the spleen to diminish appreciably in size to roentgen treatment is a helpful diagnostic point. When a tentative diagnosis has been made it is then time to search for a cause, especially in the bones and bone marrow. Failing that, no etiologic factor is known.

Vitamin B₁ in Treatment of Polyneuritis—Russell has treated cases of chronic progressive polyneuritis, alcoholic neuritis, subacute combined degeneration of the spinal cord and patients suffering from anorexia with parenteral injections of vitamin B₁ with good results. In cases showing peripheral nerve degeneration the shorter nerves, to the proximal parts or the extremities, are least severely damaged and show rapid recovery following the administration of the vitamin. Parenteral administration of the vitamin is of advantage as thereby any risk of destruction of the vitamin in the alimentary canal is obviated. It is of advantage also for purposes of diagnosis as the response when deficiency is present is strikingly rapid.

International Journal of Psycho-Analysis, London

17 143 268 (April) 1936

Contribution to Study of Schizophrenia. R. Laferriere—p. 147

Sexual Determinants in Feminine Development. Marjorie Pryor—p. 163

Contribution to Subject of Transference Resistance. Grete Lerner—p. 181

Contribution to Theory of Schizophrenia. Edith Weisberg Novak—p. 197

Psychanalysis and Psychiatry. S. Rado—p. 212

Final Goal of Psychoanalytic Treatment. M. Folin—p. 2

Lancet, London

1 1101 1160 (May 16) 1936

- Carcinoma of the Stomach J Walton—p 1101
 *Hypertension Produced with Benzedrine Its Psychologic Accompaniments S A Peoples and E Guttman—p 1107
 *Puerperal Surgical Scarlet Fever A H G Burton and J H Weir—p 1110
 Treatment of Vesicovaginal Fistula with Especial Reference to Implantation of Ureters G S Woodman—p 1112
 Significance in Certain Cases of Systematized Interlobular (Portal) Infiltration of Liver with Lymphocyte-like Cells F P Weber and A Schuller—p 1115
 Intermittent Diarrhea Associated with Bacillus Asiaticus G Slot and D Blomfield—p 1116

Hypertension Produced with Benzedrine—Peoples and Guttman wished to find what mental changes will take place in normal or mentally abnormal persons when their blood pressure is altered artificially. They made experiments with benzedrine on twenty-five persons. The drug was given orally in doses between 10 and 80 mg. In each subject the normal daily fluctuation of blood pressure was recorded and the mental state was carefully considered. There were only two persons who did not show any reaction to the doses used. The lowest dose to which any one reacted appreciably was 20 mg., twenty-two patients reacted to 30 mg. There was no blushing or pallor and no alteration of the size of the pupil, gastro-intestinal motility, perspiration or genito-urinary function. In the seven cases in which blood sugar readings were made during the experiment there was no fluctuation beyond the normal limits. Respiration was unaffected. In some cases the appetite was less during the action of the drug, and about one fourth of the subjects reported dryness of the mouth. The latent period after the administration of the drug generally lay between forty-five minutes and two hours. Once the action on the blood pressure had become apparent, the maximal point was reached in about an hour. The decrease was gradual, the normal pressure was reached between two and five hours after the peak, according to the dose given. The blood pressure always became normal within twenty-four hours after the administration of the drug. The intensity of the reaction apparently depends on several factors, the most important of which was the amount of the drug administered. Persons with low and labile pressure reached more than those with higher and more stable pressures. The pressure changes were chiefly systolic, the diastolic showing little or no increase, so that there was an increase of the pulse pressure. The acceleration of the pulse usually lasted longer than the increase of the blood pressure. The majority of the subjects found difficulty in going to sleep and woke much earlier than usual. The first psychic symptom after the administration of the drug was talkativeness especially in depressive patients, they overcame their retardation, and several of them talked spontaneously to other people for the first time since their admission. Improvement was also visible in the patients' movements. Some of the normal subjects showed a motor restlessness. The most interesting feature was a change of mood, experienced in nearly every case. In no instance was anxiety produced or a depression deepened. The change was generally in the direction of euphoria. To demonstrate some features of the complex mental changes, sixteen patients were given the Kraepelin continuous addition test before and during the intoxication, and in some cases control experiments were made at various times. Nine showed an increase in the number of additions far beyond the probable error and the normal increase by practice, and the rest had only slight increases or none. This drug is promising, but it cannot be used until it is known whether permanent administration produces anything like adaptation habituation or addiction.

Puerperal Surgical Scarlet Fever—Burton and Weir report three cases of puerperal scarlet fever none of which showed hemolytic streptococci in the throat, but all harbored them in the cervix. The organisms were all inagglutinable with the ordinary scarlet fever type scrums. The nose and throat of the doctor concerned and of those in attendance who were different in each case, were negative for hemolytic streptococci indicating that the disease was not a droplet infection. Puerperal fever without a rash when due to a hemolytic streptococcus, does not differ from puerperal surgical scarlet fever, except in the type of organisms in some cases and in the susceptibility of the patient in others. Definite benefit accrued

in each case from the administration of scarlet fever antitoxin. Although they do not admit of definite proof, the authors believe that the results would not have been so favorable had the cases been treated by any means other than with serum. Despite recently adduced evidence to the contrary, they are of the opinion that all such cases—and many others of puerperal sepsis, even when no scarlatinal rash is manifested—would be benefited by the early administration of an adequate amount of scarlet fever antitoxin.

Quart Bull., Health Org., League of Nations, Geneva

5 1210 (March) 1936

- Recent Extensions of Knowledge of Yellow Fever F L Soper—p 19
 Yellow Fever in West Africa P S Selwyn Clarke—p 69
 Insects in Airplanes C B Symes—p 79
 Position of India in Regard to Yellow Fever Question C A Sprawson—p 87
 Position in Regard to Plague in the Union of South Africa E N Thornton—p 96
 Plague in Madagascar and New Knowledge Gained from Research During Last Three Years G A P Ross—p 103
 Developments in Endemic Plague in Angola from 1932 Onward L Ribeiro—p 108
 Insecticide as Major Measure in Control of Malaria Being an Account of Methods and Organization Put in Force in Natal and Zululand During Past Six Years G A P Ross—p 114
 Control of Malaria in South Africa by Measures Directed Against Adult Mosquitoes in Habitations B De Meillon—p 134
 Malaria Control by Planting of Swamps H S de Boer—p 138
 Typhus and Typhus like Diseases in South Africa E H Cluver—p 142
 Typhus Fever in Uganda and Its Control H S de Boer—p 149
 The Typhoid Carrier Problem in the Union of South Africa E H Cluver—p 153
 Dangers of Locust Campaign to Human Beings E N Thornton—p 158
 Dangers of Locust Campaign to Stock P J Du Toit—p 159
 Wild Carnivora as Carriers of Rabies P J Du Toit—p 162
 Bovine Tuberculosis P J Du Toit—p 166
 Trypanosomiasis of Domestic Animals P J Du Toit—p 170
 Trypanosomiasis Notes Maclean—p 179
 Internal Parasites in Relation to Meat Supplies P J Du Toit—p 182
 Malta Fever in South Africa E N Thornton—p 185
 Brucella Infections from the Public Health Point of View P J Du Toit—p 187
 Virus Diseases of Animals Communicable to Man P J Du Toit—p 191
 Hygiene and Medical Services in Rural Areas E N Thornton and A J Orenstein—p 200
 One Aspect of Medical Assistance to Natives L Ribeiro—p 205
 Coordination of Health Work in Africa E N Thornton and A J Orenstein—p 208

Journal of Oriental Medicine, Dairen, South Manchuria

24 6378 (May) 1936

- Innervation of Human Gums and Morphology of Nerve Endings in Normal and Pathologic Conditions Confirmed by Experimental Studies on Animals T Hosaka—p 63
 *Influence of Cod Liver Oil on Bacteria and Infected Wounds S Hayashi—p 65
 Investigations of Amelbic Dysentery VIII Formation of Antibodies by Amelbic Dysentery Y Yamamoto—p 66
 Influence of Water Soluble and Alcohol Insoluble Components and of Etheral Oil of Allium Scolodoprasum on Blood Sugar T Miyamoto—p 69
 Clinical Observations of Kaschin Beck's Disease Found in Fushun Manchukuo S Ryo—p 70
 Acute Lymphatic Leukemia Case U Takei—p 71
 Influence of Metallic Salts on Tubercle and Nonpathogenic Acid Fast Bacilli Being Cultivated in Kirchner's Mediums Plus Ajinomoto K. Fukumoto—p 72
 Dog Bitten Patients in Hsinking and Its Neighborhood (from 1929 to 1934) K. Toki—p 74
 Verification of Virus (Rickettsia) in Urine of Patients and Guinea Pigs Infected with Typhus Fever in a Broad Sense K. Kawamura—p 75
 Amount of Effective Component Which Passes into Smoke When Heroin Is Smoked Part I Biologic and Chemical Determination R. Ito—p 76
 Id Part II Biologic Determination R. Ito—p 78

Influence of Cod Liver Oil on Infected Wounds—Hayashi believes that the accelerated healing power of cod liver oil when applied to infected wounds is mainly due to the effect of vitamins A and D and the lipid contained in the oil. The effect should be attributed chiefly to the action of the lipid. The effect of vitamins, which has heretofore been regarded as the chief efficacious property, is not really as remarkable as that of lipid. The continuous application of cod liver oil for clinical treatment of wounds and bruises does not seem to cause any reactions.

Marseille Médical

73 329 376 (March 15) 1936

- Colitis Due to Lamblia in Patient Intolerant to Arsenic Mineral Water Therapy Enault—p 329
- Chronic Diarrhea of Nine Years Duration with Presence of Trichomonas in Stools Rapid Cure by Essence of Terebenthene Case J Brahic and M Sardou—p 333
- Typho Exanthematic Fever Observed in Marseille H Mercier Fabre and Soulage—p 339
- Attenuated Evolution Form of Human Trypanosomiasis A Sicé C Robin and H Mercier—p 345
- Melitococcus Infection Appearing at Onset as Typhoid Fever Case L A Bordes and J Soulage—p 352
- *Utilization of Iron Peptonate Serum Reaction in Diagnosis of Internal Leishmaniasis P Giraud P Claudio and R Bernard—p 355

Serum Reaction in Diagnosis of Leishmaniasis—Giraud and his co-workers carried out investigations on iron peptonate as a reactive for serum. The action of solutions of these substances on normal serums and serums from leishmaniasis patients furnished serologic reactions already known in kala-azar, but with increased intensity. The authors noted especially the specificity, constancy and sensitivity of the reactions obtained by various solutions. Two reactives were found superior to others. These were the iron peptonate powder of Merck and the iron peptonate solution of Robin. The preferable dilutions of these substances were respectively 1/600 and 1/320. They concluded that the reaction was definitely valuable in the diagnosis of leishmaniasis. Its consistency was remarkable and it was quite sensitive. When compared with other reactions that have been employed in the diagnosis of kala-azar, they believe that this method is superior.

Paris Médical

1 477 508 (June 6) 1936

- Infectious Diseases in 1936 Annual Review C Dopfer—p 477
- *Staphylococic Anatoxin R Debre H Bonnet and S Thieffry—p 494
- *Detection of Yellow Fever by Histologic Examination of Liver J Babelt—p 500
- Septicemias from Bacillus Faecalis Alkaligenes G Andrieu R Crosnier and P Montier—p 506

Staphylococcus Toxoid—Debre and his collaborators discuss the use of anatoxin (toxoid) in staphylococic infections. The toxoid, like the staphylococic toxin flocculates in the presence of antistaphylococcus serum. This enables the accurate titration of various toxoids. The toxin injected in progressive doses into a horse produces in the serum of that animal a specific antitoxin from which an antistaphylococcus serum can be prepared. It is this serum which placed with the toxin, neutralizes its triple hemolytic, escharotic and lethal properties. They have by this means been able to produce a serum reaching a titer of 250 international antitoxin units per cubic centimeter. This serum when used in various staphylococic infections, was in many instances quite successful. They conclude that therapeutics with toxoid should be tried in the presence of any serious infection due to the staphylococcus. General reactions characterized by fever and profound malaise do sometimes occur but in their experience have never taken alarming proportions. Local reactions are almost the rule but in only a few instances are severe enough to indicate cessation of treatment. Focal reactions are impressive and can sometimes be noted by the patient. In view of these occasionally disturbing possibilities they believe it a good rule to give a preliminary intradermal injection of 0.1 cc. in most staphylococic infections. The results are good but are at present uncertain in severe infections and pyonephrosis and are unfavorable in osteomyelitis. The interpretation of the results remains difficult especially in view of the fact that many spontaneous recoveries occur.

Detection of Yellow Fever by Examination of Liver—It has been recognized for some time that histologic examination of the liver might reveal the evidence of latent yellow fever. Thus Hoffmann has insisted since 1928 that the degenerative lesions of the liver are an extraordinary and so specific that they allow a positive and certain diagnosis. Babelt believes that the histologic examination of a fragment of liver fixed in 15 per cent maldehyde and stained will give an entirely characteristic picture. The characteristic degeneration and the necrosis

are especially characteristic. Practically, the elective distribution of the cellular degenerative lesions in certain regions of the lobule carries a positive diagnosis of toxic hepatitis due to yellow fever. In the absence of a serologic method allowing the positive diagnosis of yellow fever and the failure of experimental inoculations, postmortem viscerotomy and histologic examination of the liver must be considered the most effective measures of reaching a positive diagnosis.

Schweizerische medizinische Wochenschrift, Basel

66: 565 584 (June 13) 1936

- Epidemic Poliomyelitis H Meuli—p 565
- Lipoid Nephrosis Tailens—p 569
- Acute Intoxication After Intra Uterine Injection of Soap Lysoform at Alcohol G Gander—p 570
- *Apoplectic Hemorrhage in Uvula A Schoenlank—p 571
- Experimental Studies on Biologic Actions of So-Called Earth Rays E Jenny A Ochler and H Stauffer—p 572
- Efficiency of Fluid Culture Mediums for First Culture of Tubercle Bacilli F Lowenstein—p 577

Hemorrhage in Uvula—Schoenlank reports the history of a man, aged 49, who always had an attack of coughing in the morning (chronic pharyngitis). One morning he had an unpleasant foreign body sensation. The retching caused lancinating pains radiating backward and upward in the throat. The feeling of discomfort increased to severe dyspnea and the patient tasted blood on the tongue. When after about thirty minutes he came up for examination, the uvula showed a balloon-like enlargement, so that it touched the pharyngeal wall, left only a small opening between the tonsils and the palatine arches and rested on the tongue. The uvula was violet-blue-red. In the upper third, on the left side, it had two small tears and there were lighter spots from which blood had escaped. The portion of the uvula resting on the tongue was edematous. The enlargement of the uvula was caused by a hematoma, which was punctured and suctioned off. In order to decrease the edema, 10 cc. of a 20 per cent solution of calcium gluconate was injected and ice packs were prescribed. These measures counteracted the dyspnea and gradually also the difficulties in swallowing. This type of disorder was first described in 1853. It has been mistakenly referred to as Rosvies's disease, for when that author described a case in 1911 he believed his report to be the first.

Archivio Italiano di Chirurgia, Bologna

43 237 314 (May) 1936

- Surgical Importance of Anatomopathologic Alterations of Wall of Inferior Vena Cava S Soleri and G Bazzocchi—p 237
- Technic for Performing Sigmoidostomy G Cavina—p 252
- *Osteochondritis Dissecans of Elbow A Pezcoller—p 257
- Influence of Operations on Acid Base Equilibrium of Arterial Blood C Colombo—p 283
- Primary Carcinoma of Gallbladder Cases E Savarese—p 297

Osteochondritis Dissecans of Elbow—Pezcoller reports a case of osteochondritis dissecans of the elbow in which the osteochondritic fragment removed was formed by two parts which were slightly united. The portion which was separated from the epiphysis was necrotic and that which was united to the epiphysis retained vitality and vascularization. Connective and fibrocartilaginous cells were newly formed near the epiphysis and a process of regeneration of the necrotic spongy substance of the fragment which was united to the epiphysis was evident. It is obvious that the detached portion of the fragment passed through the same process of attempted regeneration before its separation from the living parts of the epiphysis had taken place. In connection with his case the author discusses the several pathogenic theories of osteochondritis dissecans which he believes originates in necrosis of the epiphysis that first involves the spongy substance of the joint then the bone marrow and lastly the articular cartilage. The formation of new cells may result in regeneration of the spongy substance early during evolution of the disease but connection of the surrounding structures acting as local trauma produces first a fracture with partial detachment of the involved part from the epiphysis and then as the pathologic process evolves complete detachment of the fragment which turns into an intra-articular body. Prognosis of osteochondritis dissecans in regard to functional and anatomic recovery is

the involved joint, is good provided operation is performed early and before complete detachment of the fragment takes place. Once the latter is formed, arthritis deformans is the next complication. It is advisable not to scrape the joint during the operation, because this may cause local alterations, which may result in development of articular malformations. The route of approach for performing the operation is selected according to the seat of the osteochondritis focus.

Minerva Medica, Turin

1 561 584 (June 16) 1936

Chronic and Subacute Anterior Poliomyelitis. Clinical and Anatomopathologic Study of Case. G Canali.—p 564

*Persistence of Tubercle Bacilli in Urine After Nephrectomy in Renal Tuberculosis. G Ravasini.—p 570

Tubercle Bacilli After Nephrectomy in Renal Tuberculosis—Ravasini investigated the presence of tubercle bacilli in the urine of fifty-six persons who had undergone nephrectomy for unilateral renal tuberculosis. No tubercle bacilli were found in the urine of the twenty-two patients in whom nephrectomy had been performed more than four years previously. Tubercle bacilli were found in the urine of sixteen (47 per cent of the cases) of the group of thirty-four patients who had had nephrectomy performed less than four years previously, and in 66 per cent of the cases in the group of patients who had had nephrectomy performed less than one year and a half previously. The presence of tubercle bacilli in the urine after nephrectomy is more frequent in men than in women in a proportion of twenty to one.

Policlinico, Rome

43:257 308 (June 1) 1936 Medical Section

Megalakaryocytic Aleukemic Myelosis. V Chini.—p 257

*Intravenous Alcohol Therapy and Bactericidal Power of Blood. A Pozzi and D Belleli.—p 279

Arteriosclerosis Considered as Cirrhotic Dystrophy of Arterial System. S De Candia.—p 285

Water Metabolism in Neurosympathetic Hyperthermia. E Puxeddu and E Manuella.—p 295

Intravenous Alcohol and Bactericidal Power of Blood—Pozzi and Belleli made determinations of the bactericidal power of the blood against *Streptococcus viridans* and Eberth's bacillus, after an intravenous injection of 10 cc of a solution of 33 per cent alcohol in a 45 per cent solution of dextrose in normal persons and in several pathologic conditions. In all cases the bactericidal power of the blood increased.

43 1099 1142 (June 15) 1936 Practical Section

*Insulin Resistance and Roentgen Irradiations of Hypophyseal Region. Case. L Cannavò.—p 1099

Accessory Large Pancreas in Wall of Duodenal Diverticulum. Case. L Ugelli.—p 1106

Influence of Artificial Pneumothorax on Cervicothoracic Sympathetic. Report of Case. F Vicentini.—p 1111

Insulin Resistance and Irradiations of Hypophysis—Cannavò reports two cases of diabetes mellitus with resistance to large doses of insulin. A series of six roentgen irradiations of the hypophyseal region in the second case resulted in controlling the resistance to insulin. The evolution of diabetes in this case proved to be the same after the roentgen treatment as before, but the resistance to insulin having been controlled by the irradiations made the utilization of insulin by the organism possible, which eventually resulted in the patient's recovery.

Rivista di Chirurgia, Naples

2:229 280 (May) 1936

Anorectal Melanosarcoma. Clinical and Histologic Study of Case. D Divella.—p 229

Rare Complication of Osseous Whillow. Gangrenous Fusospirillary Infection. Case. C Carone.—p 242

III Effects of Carbon Suspensions Intravenously Injected. Results of Experiments. A A Martella.—p 249

III Effects of Carbon Suspensions Injected Intravenously—For a few years, satisfactory results have been reported by some writers from the use of intravenous injections of animal carbon suspensions in the treatment of various infections. Martella made experiments on dogs to verify the changes produced by the animal carbon. The doses used were proportional to those used in the treatment of human subjects. The results of microscopic study showed that carbon particles

accumulate in the lung, liver, brain and, in smaller quantity, in the spleen and in the kidney. The largest quantity of carbon accumulates in the lung, causing occlusion of capillaries, precapillaries and small blood and lymph vessels, carbon is also found in a free state in the pulmonary cells and the lumen of the alveoli. It accumulates in Kupffer's cells and in the leptomeningeal capillaries and small blood vessels of the choroidal plexus in smaller amount than in the lung. Vascular lesions and inflammatory processes, hemorrhages, neoformation and degeneration of tissues are the most frequent alterations produced, especially in the lung and the brain. The author considers the treatment harmful.

Archivos de Fac. de Med de Zaragoza

3:391-466 (Nos 5 6) 1934 1935

Technic for Preservation of Anatomopathologic Specimens. A Muniesa Belenguier.—p 391

*Differential Diagnosis Between Ascites and Ovarian Cyst. J Sancho Castellano.—p 411

Popular Venereal Chancere. Case. E de Gregorio and A Muniesa Belenguier.—p 429

Congenital Deformities of Limbs. F Garcia Dñinx.—p 439

Diagnosis of Ascites and Ovarian Cyst—Sancho Castellano says that in some cases metrosalpingography gives sufficient data to establish a differential diagnosis between ascites and ovarian cyst. By mechanical action ovarian cysts, the uterus and sometimes the fallopian tube of the side on which the cyst is located caused dilatation of the efferent urinary organs, displacement of the ureter and of the uterus and sometimes of the tube of the cystic side to the opposite side of the cyst. Ascites, regardless of its quantity and etiology does not exert any mechanical action on those structures. The author performs a functional test of the kidney by the parenteral injection of indigo carmine. Delay in the time of appearance of the stain in the urine points to probable obstruction of the urinary tract and to the immediate performance of metrosalpingography in which a quantity of from 7 to 12 cc. of 40 per cent iodized oil is used. The injection is made slowly and with the minimal pressure. Once the uterus is filled, the oil passes to the tubes. The typical metrosalpingographic picture of ovarian cyst shows displacement of the body of the uterus and sometimes of the tube of the involved side to the opposite side. The displacement of the uterus in malignant ovarian tumors associated with ascites is slight and there is an upward deflection of the tubes. Bilateralism of the uterus in tuberculosis of internal genital organs associated with ascites is a retraction to either side rather than a displacement, and the uterus is fixed. In these cases the tubes are obstructed by the inflammatory process. In cases of parovarian cyst the uterus is displaced to the opposite side of the cyst. The metrosalpingographic picture of parovarian cyst is identical with that of tuberculosis of the internal genitals. The differentiation of these two conditions is made by the immobility (retraction) of the uterus in tuberculosis and propulsion of the cyst in the lateral culdesac in cases of cysts. The diagnosis made in the author's cases was verified by operation.

Clínica y Laboratorio, Zaragoza

28 423 512 (June) 1936

Infrequent Pelvic Cellulitis. F Botin.—p 423

Autointoxication in Pregnancy. Cases. M V Carceller.—p 428

Acute Leukemia with Hemorrhages and Fatal Septicemia. Case. S Albasanz Echevarria and G De La Rosa.—p 445

Blastocystus. Nature and Significance. D Guevara Pozo.—p 457

Indications of Insulin Treatment in Nondiabetic Conditions. F Gutierrez Muro.—p 466

*Autohemotherapy in Cerebral Hemorrhage. A Salameo Castellón.—p 479

Autohemotherapy in Cerebral Hemorrhage—Salameo Castellón discusses the value of autohemotherapy in prevention and treatment of cerebral hemorrhage, which he believes has been exaggerated. He treated by autohemotherapy patients suffering with arterial hypertension whom he placed in two groups: those with clinically typical cerebral hemorrhage and those reporting sensations of formication, vertigo and paresthesia symptoms which have been considered to indicate the near approach of cerebral hemorrhage. The treatment failed to give satisfactory results in the patients of both groups.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

98 371 512 (May 12) 1936 Partial Index

- Experimental Studies on Action of Ultraviolet Rays on Reticulo-Endothelial Cells of Liver and Spleen. Eugenia Patsouri.—p. 371
- Influence of Injection of Equimolecular Quantities of Calcium Chloride and Calcium Gluconate on Blood Coagulation. A. Kormos.—p. 383
- Sodium Chloride Requirements of Human Subjects. Sodium Chloride and Carbohydrate Exchange in Liver. J. Frey and H. Glatzel.—p. 409
- Fate of Carbohydrates in Intestine. H. Steudel and O. Flossner.—p. 451
- *Vitamin C and Gastro-Enteritis. M. Einhauser.—p. 461
- *Calcium Therapy and Calcium Prophylaxis in Lead Poisoning. A. Schretzenmayr and G. Bauer.—p. 479

Vitamin C and Gastro-Enteritis—Einhauser points out that vitamin C is stored in the wall of the small intestine, in the liver, in the adrenals and in the anterior lobe of the hypophysis. In the wall of the small intestine it seems not merely to be a question of storage, but it is probable that vitamin C has a particular function to perform. The author cites observations which indicate that vitamin C fulfils a detoxicating and a protecting function in the gastro-intestinal tract. The author studied the vitamin C metabolism in persons with gastro-intestinal disturbances. He made tolerance tests with cevitic acid. To patients with gastro-intestinal catarrh who received a diet with constant vitamin content he gave daily 30 mg. of pure vitamin C either in the form of tablets by mouth or by intravenous injection. In nearly all patients this tolerance test revealed deviations from the behavior that is observed in normal persons. Moreover, there were differences in the vitamin C elimination according to whether the vitamin C was administered enterally or parenterally and whether the patient had an anacid or a hyperacid form of gastric disturbance. The utilization of vitamin C was most noticeably disturbed in patients with anacidity. The cause for this is to be found in the more rapid oxidative decomposition of vitamin C in the more alkaline intestine of the patients with anacidity and in the capacity of their pathologic intestinal flora to destroy vitamin C. The vitamin C requirements of the organism are, as a rule, inadequately supplied in patients with gastro-intestinal catarrh. It is possible to counteract this deficiency in from one to two weeks by administering cevitic acid in the usual therapeutic doses (300 mg. daily).

Calcium Therapy in Lead Poisoning—Schretzenmayr and Bauer observed in animals with lead intoxication with the characteristic symptoms of severe anemia and loss of weight that the intravenous administration of large doses of calcium improves or cures the otherwise fatal disorder. They observed that the symptoms of lead poisoning are suppressed and the animals are practically protected against lead poisoning if simultaneously with the dose of lead they are given large doses of calcium. On the basis of these experiments the authors discuss the possibility of the therapeutic and prophylactic use of calcium in human lead poisoning.

Wiener klinische Wochenschrift, Vienna

49 705 736 (June 5) 1936 Partial Index

- Significance of Medicohistorical Considerations in Gynecologic Clinical Instruction. H. Kahr.—p. 705
- *Micromethod of Weltmann's Reaction of Serum Coagulation. A. Havas.—p. 710
- Therapy and Criticism of Its Efficacy in Dysbasia (Clandicatio) Intermittens. F. Kisch.—p. 712
- Physical Therapy of Gastritis. Martha Brünner Ornstein.—p. 716
- Specific Cancerous Cell. M. M. Newlandomski.—p. 718
- Clinical and Biologic Significance of Singer's Reactions for Demonstration of Castle's Principle in Gastric Juice. M. Fejgin and N. Plonskier.—p. 723

Micromethod for Weltmann's Reactions—Havas shows that the customary technic of Weltmann's coagulation reaction requires comparatively large quantities of blood which have to be obtained by venesection. The author has devised a micromethod which works with one tenth of the quantities. From 11 to 12 drops of blood that is approximately 0.5 cc. is withdrawn from the tip of the finger and following coagulation is centrifugated. Then 0.15 cc. of serum is carefully drawn off so that there is no admixture of erythrocytes. The serum is put in a small test tube and 1.35 cc. of distilled water is added.

After serum and water have been thoroughly mixed, they are distributed into twelve test tubes (0.1 cc. each). Then 0.4 cc. of the electrolyte solution is added to each tube, beginning with the twelfth and going up to the first. After shaking the tubes are placed into the boiling water bath and fifteen minutes later are withdrawn again. The reading is taken either at once or, at the latest, after one hour and the coagulation band is recorded. It is advisable to make five or ten tests simultaneously, for this greatly simplifies matters. The author points out that, because tuberculous patients usually do not show extreme variation, the method can be further simplified by setting up a series of only nine test tubes instead of the usual twelve, omitting numbers 1, 2 and 12. However, if complications are suspected (pneumonia, new, exudative pleurisy, peritonitis and so on), the full series of twelve should be set up. The author thinks that in other disorders the series may likewise be shortened. He says that the test was made on approximately 500 patients with tuberculosis and that the coagulation band proved a helpful aid in the clinical evaluation of these cases. He admits, however, that the reaction is of value only in connection with other clinical methods and after several repetitions.

Norsk Magasin for Lægevidenskapen, Oslo

97 561 664 (June) 1936

- Criminobiologic Investigations. G. Langfeldt.—p. 561
- *Hemorrhages in Posterior Portion of Brain Stem in Intoxications and Inflammation Compared with Hemorrhages After Trauma. O. Berner.—p. 584
- Quantitative Urobilin Determination. Second Report. E. Wang.—p. 591
- *Stricture of Splenic Vein. Splenic Pylephlebotomy. J. Rø.—p. 601
- Pseudotumors in Abdomen. F. Harbitz.—p. 615
- Postappendicitic Peritonitis Complicated by Intestinal Obstruction with Recovery After Jejunocolostomy and Cecostomy. K. Haugseth.—p. 624

Hemorrhages in Brain in Wood Alcohol Poisoning—Berner says that in the five fatal cases of intoxication from wood alcohol here reported and one earlier case he established hemorrhages at the base of the fourth ventricle, in one case macroscopically visible. The arteries in this localization thus seem especially sensitive to the irritation produced by wood alcohol. Hemorrhages at the base of the fourth ventricle in a case of intoxication from illuminating gas are also described. Attention is called to the characteristic extent of these hemorrhages, before the acoustic striae and close to the medial sulcus analogous to traumatic hemorrhages, and to the fact that his examinations of the brain fixed in solution of formaldehyde afford favorable conditions for close observation. The observations are seen to agree with the clinical picture in intoxications in which respiratory paralysis usually occurs directly after blindness. In a case of poliomyelitis, hemorrhages similar to those in traumas and intoxications were found.

Stricture of Splenic Vein—Rø describes the case of a girl suffering from violent periodic vomiting of blood usually with out warning, following trauma of the epigastrium at the age of 10. In the course of six years, marked secondary anemia appeared, improvement resulted from iron medication but blood transfusions seemed to have an unfavorable or only temporarily favorable effect. There was a varying enlargement of the spleen more marked during the quiet intervals. Roentgen examination showed probable varices in stomach and esophagus. Splenectomy was advised but refused. Death occurred from hemorrhage. This instance gives a characteristic picture of splenic pylephlebotomy, the designation used by Wallgren for all obstacles in the portal system expressed by enlargement of the spleen, periodic hematemeses and anemia. The disease occurs mainly in children. The stenosis occurs as the result of obstacles of different anatomopathologic kind and with varying localization in the portal system and is classified as intrahepatic, truncular or radicular as in the case discussed. Common to all is a secondary formation of thrombi which aggravates the unfortunate circulatory condition. The importance of trauma as an etiologic factor is emphasized. Treatment is either medicinal or operative. The results of treatment are best in children. Prognosis is grave without an operation. The patient may live upward of ten years.

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RECENT ADVANCES IN GASTRO- ENTEROLOGY

CHAIRMAN'S ADDRESS

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BALTIMORE

A wide diversity of opinion exists among the members of the American Medical Association as to what disease or group of diseases may constitute a specialty, this nonagreement is particularly marked in the case of diseases of the abdominal organs.

In any field it is essential that there should be a number of men thoroughly trained in every detail and keen not only to keep abreast of all advances in research but also to make original contributions in clinical and laboratory studies. A body of such specialists whose advice is available to practitioners lacking opportunity for comprehensive study in that line of work is not only invaluable but indispensable.

It is my intention to set forth in this paper my own considered opinion as to what gastro-enterology as a distinct specialty involves, together with my ideals as to preparation for the handling of this branch of our profession, and progress during the past decade. In the future as in the past, I shall actively oppose narrow specialism in any branch of medicine, there can be no doubt that such an unfortunate state has arisen and continues to exist, to the inevitable detriment not only of specialism but also of medicine as a whole.

The term "stomach specialist" is of course anathema, I myself dislike "gastro-enterologist" as well, it is at once too narrow and too vague. I prefer to be considered a properly trained internist who is devoting himself especially to diseases of the abdomen having both direct and indirect relationship with the digestive organs. By what properly descriptive term this specialty shall be called is as yet a moot point.

There are manifested in various parts of the abdomen, on many occasions, troublesome symptoms that are not caused by intra-abdominal disease but by extrinsic lesions in tissues, a single organ or a group of organs, in such cases a man untrained in the special study necessary to a diagnostician of diseases of the digestive tract and the abdomen as a whole will find himself woefully inadequate, and an improper diagnosis may easily result in dire consequences to the unfortunate patient.

I feel very strongly in regard to this, considering it essential that a man be required to give proof of adequate and comprehensive training in internal medicine, and of thorough study in the domain of abdominal disease before he may declare himself a specialist in this

vital subject, he should by all means be submitted to tests by those best fitted to pass on his qualifications before he dare assume a title so hardly earned and so highly esteemed by men who have devoted themselves to research in this field.

RECENT WORK

One of the most stimulating recent publications is the monograph by Faber, in which he clearly sets forth his own views and those of other eminent authorities as to proofs of the presence and frequency of both acute and chronic gastritis. His report on the method of preparing the tissues in order to prevent postmortem changes, his statements as to the effect of acute infectious diseases on the gastric membranes, the relation of acute and chronic gastritis to superficial and deep erosions (the latter finally leading to chronic ulcer), the relation of acute gastritis to hyperacidity, the chronic stage to anacidity and later pernicious anemia, the fact that chronic gastritis may and often does precede ulcer and carcinoma—all his points are most interesting and worthy of consideration, no matter what our opinions may be with regard to these vital problems.

He makes the arresting statement that in his researches he found a large percentage of anacidity among the relatives of patients suffering with pernicious anemia. He believes that one always finds very pronounced signs of chronic inflammation in patients with chronic anacidity, also that in pernicious anemia there is an advanced gastritis with or without severe atrophy of the mucous membrane, further, that pernicious anemia can exist without anacidity, finally, that it is possible to see acid secretion start again in certain cases under treatment. He quotes Hurst as stating that in no less than four cases he has seen the acid secretion come back in pernicious anemia while the stomach was under lavage treatment, and the anemia thereafter disappeared. He develops many other interesting theories on this subject.

It now seems opportune to call attention to the studies of Bloomfield and Pollard on the secretory function of the stomach, these studies are convincingly presented in the monograph "Gastric Anacidity." These authors have made innumerable researches, and I feel it important to quote the summary of Bloomfield's study on clinical aspects of gastric secretion.

Because of the wide variations in gastric secretion which are found in healthy people, it is difficult to draw conclusions of diagnostic value in patients. In practice, measurement of gastric secretion is helpful in the diagnosis of pernicious anemia and perhaps certain types of hypochromic anemia—of gastric and duodenal ulcer, and of cancer of the stomach. The routine employment of test meals even in the case of patients with indigestion, is useless, whereas an occasional well conducted measurement of gastric secretion performed to aid in solving a special diagnostic perplexity is sometimes of the greatest value.

Undoubtedly one of the most brilliant contributions of recent years is Castle's demonstration that pernicious anemia is usually due to the absence of an essential gastric secretory substance commonly associated with achlorhydria.

Hollander has lately conducted a splendid piece of research regarding the composition of pure gastric juice, in this connection should be mentioned the thorough and excellent studies by Martin, Granturco, Quigley, Lehrman and Nelson have also made outstanding additions to the literature on the physiology of digestion.

Greengard, Maison and Ivy have isolated a substance from the intestinal mucosa which is free from objectively detectable toxic factors, it inhibits gastric secretion and motility in the dog and is known as enterogastrone. The authors state that it may prove to be of practical value because it possesses the gastric inhibitory attributes of atropine without its undesirable secondary effects and may thus be advantageous in certain cases of peptic ulcer.

Dragstedt and his associates have contributed a valuable article, "The Pathogenesis of Acute Dilatation of the Stomach", this should appeal both to internist and to surgeon.

Rehfuß has done notable work in popularizing and simplifying the fractional study of gastric secretion, he has carried on many other studies, which culminated in the recent publication of his textbook, entitled "Medical Treatment of Gall Bladder Disease". I must emphasize in this connection the work of Lyon on gall-bladder drainage, it is based on the work of Meltzer, an eminent leader in physiology of the digestive tract, and Lyon has lately incorporated his own researches in a monumental treatise, "Atlas on Biliary Drainage Microscopy".

The development of the flexible gastroscope accounts for much progress and is destined to play an increasingly important rôle in diagnosis of diseases of the stomach, Schindler has been a leader in this field and is now making further exhaustive studies. Many investigators are following in his footsteps, and it is to be predicted that within the next few years our knowledge of gastric pathology will be vastly expanded.

As to syphilis of the stomach, the original works of Clasen and of Eusterman, published not long ago, present the subject in the ablest possible manner and are to be heartily recommended, as are also the excellent papers by O'Leary, Moore and Aurelius, Biscoe issued last year a thorough study of this lesion of the stomach, and Pusch gave an interesting review of thirty-five selected cases. While the contributions to the literature in this field have not been extensive, they are too numerous to be included in full in this limited paper.

Pain is an old, old subject yet ever new, and while much of real value has been written, I may refer especially to Christensen's fine monograph 'Pathophysiology of Hunger Pains' and to the recent publications of Boyden, Rigler and Rivers dealing with localization, genesis and probable pathways of pain, certain it is that much remains to be learned concerning the details of pain mechanism in visceral disease.

The relation of allergy to gastro-intestinal changes and symptoms continues to make splendid progress under Rowe, Duke, Vaughan and other investigators and all this work promises to be most helpful in diagnosis and therapy.

The question of the etiology of peptic ulcer still baffles and intrigues us all. Nothing of a definite con-

clusive nature is as yet forthcoming, and no less eminent an investigator than Ivy has discontinued studies on the subject. In a late issue of the *American Journal of Digestive Diseases and Nutrition*, Smithies gives a comprehensive review of the various current theories concerning the etiology of peptic ulcer.

With regard to the treatment of peptic ulcer, the early work of Sippy and Smithies must be considered while their views and methods differed greatly, both were true pioneers, and on a basis of their efforts much useful knowledge has been gained. Smithies has been a prolific contributor to the advancement of gastroenterology in all its aspects, and his latest achievement has been the publication of the review to which I have referred.

The capacious cup of literature is brimming with productions having to do with the parenteral treatment of peptic ulcer. The various remedies proposed are legion, the most popular at this time are those containing histidine and nonspecific protein. Many workers are extremely enthusiastic over the results obtained, but I feel that we should postpone final evaluation until a far greater number of cases have been treated, over a longer period.

Sara Jordan and her associates have produced what seems to me incontrovertible evidence for the efficacy of conservative or orthodox therapy for the healing of a large majority of peptic ulcers, the contribution is a splendid piece of clinical research. However, a continuation of comparative studies by both methods should be encouraged.

The inaccessibility of the small intestine has greatly handicapped morphologic, secretory, chemical and bacteriologic study of this part of the digestive tract; hence comparatively little work has been available to students in this field, however, certain methods of investigation have recently been adopted, and these will undoubtedly lead to more rapid progress in research.

Certainly the excellent studies and methods being perfected by Grier Miller and his associates relative to the intubation of the small intestine will be of the greatest aid in the study of secretion, absorption, motility, bacteriology and chemistry of this portion of the digestive tract. Gray has lately presented the results of an elaborate research, "The Influence of Some Organic and Inorganic Acids on the Motility of the Small Intestine". A very fine study, "A Symposium Concerned with the Duodenal Factors in the Neutralization of Acid Chyme," has been made by Mann, Imes, Stevens, McRoberts and Hoerner, this forms an admirable addition to the data on physiology of the small intestine, and the relation of pancreatic secretion. A valuable clinical study by Barger and Guthrie is "The Effects of Drugs on the Motility of Isolated Segments of the Intestine of Man". In the category of works on the small intestine should be mentioned the article by Alvarez and Hosoi, "Conduction in Different Parts of the Small Intestine". Mackie and Pound, and Ravdin and his associates, must also be congratulated on their important studies in this subject.

Crohn presents a splendid piece of work, "Regional Ileitis," claiming the discovery of a new disease entity. As in all such cases, speculation is rife as to whether this is really a new disease or the ultimate outcome of a specific or nonspecific infection with changes of an ulcerative nature. Bockus has also written an exceptionally fine paper on this subject. An extended period of experimentation in a larger number of cases will be needed before a final decision can be reached.

Thoughtful consideration must be given to Felsen's assertion, based on exhaustive clinical research, that chronic idiopathic ulcerative colitis, and regional ileitis, represent the end result of bacillary dysentery.

Bargen has done a colossal piece of clinical and laboratory work on ulcerative colitis, he asserts that this disease is due to a specific organism and reports remarkable success following treatment by vaccines and serum, in conjunction with proper hygiene and diet, and a certain amount of drug therapy.

In direct opposition to the claims of Bargen are the views expressed in the equally excellent studies of Paulson, who believes that ulcerative colitis is not due to the specific organism described by Bargen but is caused by a variety of organisms, as well as other factors. Now appears Sullivan with a paper which merits consideration because it attacks a question which is in the minds of many at this time, namely, the effect of psychogenic factors in the production of somatic diseases, the title of this provocative work is "Psychogenic Factors in Ulcerative Colitis."

Hurst of London, an honorary member of the American Gastro-Enterological Association is a prolific contributor of extremely valuable work referable to the digestive tract, and his "Constipation and Allied Intestinal Diseases," written some years ago, remains an outstanding classic.

Study of the colon has been intensively followed, and so many have been the splendid publications that a complete list would require all my allotted space.

The various phases of liver activity continue to provide an alluring array of problems to the solution of which many eminent scholars are devoting time and study, the number of publications showing encouraging results is so great as to preclude specific mention. I must note, however, Ivy's achievement in isolating a new hormone, cholecystokinin which exhibits a specific action on the gallbladder, such a substance should offer great therapeutic possibilities and may ultimately prove helpful in diagnosis.

I shall touch briefly on the progress of liver function tests. On the liver devolves so wide a range of duties that as yet no single really dependable procedure, diagnostic of function as a whole, has been perfected. Yet, thanks to our indefatigable explorers, we have available methods which are useful under varying conditions and in certain diseases, and the application of two or more of these will in many instances furnish us with well grounded diagnostic information. The tests now in greatest favor are the van den Bergh coagulation time, sedimentation, galactose tolerance, brom-sulfalein, rose bengal and Takata-Ara.

Snell and Plunkett made a detailed clinical research in order to determine the diagnostic value of the hippuric acid test, they concluded that the rate of synthesis of hippuric acid is a reasonably accurate and satisfactory test for the determination of parenchymatous hepatic damage, particularly in the "surgical types" of jaundice. Excellent progress is being made in this domain and the caliber of the men exploring this subject is an assurance of ultimate success.

In regard to studies of the pancreas stimulating achievements can be reported. The names of Ivy, Mann McClure Gamble, McIver, McCaughan Martin, Silverman Liman, Le Sage, Dragstedt and Babbitt loom large as untiring investigators, that many other valuable workers must be omitted from the list is due to limited space, not to a lack of appreciation of their notable contributions.

Various accepted reliable methods of estimating enzymatic activity were comprehensively presented in the June 1934 issue of the *American Journal of Digestive Diseases and Nutrition* by the Enzyme Committee of the American Gastro-Enterological Association, this committee is of the opinion that further comparative studies of methods, especially for the determination of activity of the proteolytic enzymes, seem indicated, and the number of normal individuals tested should be increased until statistically accurate curves can be drawn.

Briefly, the committee concludes that enormous variations in enzymic activity occur normally, that the presence of amylase in duodenal juices does not prove its pancreatic origin, and that the activity of the specific enzyme should be recorded in percentage of substrate converted to simple building stones, namely, sugar, amino acids and fatty acids. In the case of amylase the question of substrate (soluble starch) is relatively simple, but for protease and lipase the question of substrate deserves some study, the measure of lipolytic activity of the duodenal juices constitutes the most satisfactory test for pancreatic enzyme so far available, no standardized methods exist even among the authorities in the field, and it is evident that under existing conditions comparative value cannot be obtained. Therefore, if standardization is to be accomplished, study must be undertaken with each enzyme in turn. At present, the only diagnostic significance of enzyme concentration in the duodenal contents is the persistent absence of enzyme indicating obstruction of the pancreatic ducts, such as a malignant growth in the head of the pancreas, this can be revealed by any of the tests, especially that for lipase.

They recommend that outstanding authorities, each with selected co-workers, be appointed to study and prepare simple and more accurate lipase and trypsin tests, these to receive comprehensive application by a large number of observers, in order that a reliable standardization may be achieved.

I should call attention to the work of T. R. Brown on the relationship of migraine to a diet rich in carbohydrate, and the brilliant result often observed when a diet with minimal amounts of starchy food is applied. There is also his excellent presentation of the intimate relationship of hepatobiliary disease to cardiac function and symptoms, showing that many patients had been diagnosed and treated as cardiac cripples and veritable invalids, though later on removal of an infected gallbladder restored cardiac function, eliminated symptoms, and enabled these former chronic sufferers to recover normal health.

Dr Madge T. Macklin presented in 1934 a timely essay relative to heredity in disease, she is of the opinion that a knowledge of inheritance in disease is of utmost importance to any practitioner of medicine or surgery and that to no group is it more essential than those who make a special study of gastro-enterology. This article is most illuminating, and its subject is worthy of continued study by our members. Hurst has definitely committed himself to the idea that the constitutional factor diathesis plays an important role in predisposing an individual to certain diseases of the digestive tract.

It would be a congenial task to dwell at length on the efforts being put forth on behalf of the problems of nutrition and metabolism, of endocrine dysfunction related to the digestive tract, and the splendid progress made along a wide front in the study of sprue and

parasitic disease, indeed, there is no phase of our subject that I would not enjoy traversing in detail, and nothing would gratify me more than a complete roster of our able clinical and laboratory researchers and writers. The fact that my references must cover many years in a few minutes limits not only this survey but my encomiums, and all will sympathize with me in this dilemma.

It is possible to refer only briefly to the achievements of the past few years in roentgenologic study of the abdomen, but I wish to pay tribute to those who have made such inspiring progress in x-ray study of the digestive organs. Among the signal accomplishments are Kantor's "Colon Studies," particularly those studies relating to anatomic abnormalities, they have greatly added to our knowledge of this portion of the tract.

Mucosal relief was first brought to the attention of roentgenologists by Forsell in 1913, but it was not until about a decade ago that technic for its study began to be developed, it was then that Berg started his valuable work on the stomach and duodenum, making use of the compression method. Since that time Albrecht, Chaoul and Schatzki have published excellent papers, Schatzki, working at the Massachusetts General Hospital, has developed an equipment which is of great advantage in the diagnosis of early and small ulcerative lesions as well as the gastritides.

Improvement in the technic of introduction of a combination of barium sulfate and air has been particularly advantageous in studies of the colon and in the diagnosis of polypi.

"Polysography" is a method whereby triple exposures of the stomach are made on the same film, it is thus shown that peristaltic movements are absent in areas of inflammation and neoplastic involvement, this should prove helpful in diagnosis.

Kymography, which has been useful in cardiovascular examinations, is now being applied to the study of gastro-intestinal peristalsis, where it should be equally advantageous. Kirklin's studies of idiopathic pyloric hypertrophy and duodenitis merit consideration and praise.

New thorium-containing colloidal compounds have been introduced, but it is doubtful whether they possess any particular advantage over barium sulfate as a contrast meal.

Cholecystography has been of inestimable worth, at present, oral application of the dye is in greatest favor. Stewart recently introduced a most efficient method of intensified administration of the dye which greatly facilitates the visualization of the gallbladder and is especially effective as regards the density of the shadow.

Roentgenologic contributions to the study of the small intestine have been few as compared with the offerings concerned with other portions of the digestive tract, however, the pioneer work of Walter Mills receives our unflinching homage. Of late, Cole, Mackie, Kantor, Soper and others have furnished us with progressive work of exceptional merit.

Roentgenologists have recently given much attention to anomalies of the esophagus with special reference to the congenital short esophagus, splendid work has been forthcoming from Findlay, Kelly, Clerf and Manges.

COMMENT

Incomplete as this presentation has necessarily been, it must have made clear that the men working in the domain of diseases of the digestive tract are not con-

fining their efforts to a restricted field but are continually reaching out to explore all the areas that may conceivably influence that realm. They are constantly evolving new and useful ideas as to etiology, pathology, symptomatology, diagnosis and therapy, in every ramification of the digestive system, every factor bearing on the digestive tract has been considered, every phase of its manifold functions has been studied, and this great volume of effort furnishes us with not only many stimulating problems but also with clues for their final solution. All signs, indeed, point to ever higher pinnacles of achievement.

The recent advances in gastro-enterology have been of such magnitude and distinction that they engender in us a just pride and renew our determination to press forward toward our goal of perfection.

The fellow human beings who place their health, and thus their lives, in our hands, have the right to expect from us all the security that our high standards can provide. These standards can be maintained only if men who wish to enter the field of abdominal diagnosis are first required to submit their capabilities and accomplishments to the unbiased judgment of a thoroughly competent group of workers in this field, zealous for the welfare of mankind and the ideals of their profession.

12 East Eager Street.

THE SIGNIFICANCE OF NEUTRALIZING SUBSTANCES IN RESISTANCE AND RECOVERY FROM POLIOMYELITIS

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AND
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During the year just past, the attention of both the lay and the medical public has been focused on field vaccination studies aiming to prevent infantile paralysis. Even though these applications followed specific laboratory trial of recognized immunologic procedure, they were forced to an abrupt halt by the suspicion that a few cases were causally connected with the immunizing procedure.¹ At present it is believed that as a result of these experiences, a safer method of prevention should be evolved for clinical trial. At this point it is apropos to review the fundamental tenets on which these trials were based. While there have been reports of successful vaccination against other virus diseases there have been disappointments in both application and interpretation of experiments in this field. For example, while no one denies the advisability of active immunization during the incubation period of rabies, recent experimental studies have denied that such procedures lead to immunity against an infectious dose placed directly in contact with nervous tissue. As will be shown later, a similar question is involved in the interpretation of immunity to poliomyelitis.

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Read before the Section on Pediatrics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

¹ Leake, J. P. Poliomyelitis Following Vaccination Against Disease. J. A. M. A. 105: 2152 (Dec. 28) 1935.
² Galloway, I. A. The Fixed Virus of Rabies. The Antigenic Value of the Virus Inactivated by the Photodynamic Action of Methylene Blue and Iodine. Brit. J. Exper. Path. 15: 97 (April) 1934.

The question might be raised whether man always acquires an effective immunity against poliomyelitis. In the United States and Canada during the past twenty years, seventeen cases have been reported of a second attack occurring years after a first, including two cases that we have seen.³ This is an attack rate of 11 per hundred thousand calculated from the 150,000 reported cases.⁴ While these data are not statistically significant, this is many times the average rate for these years. The rarity of the disease during the first year of life and the low incidence among adults point to a relative immunity enjoyed by these groups. The fact that a large percentage of individual serums of these groups neutralize the virus of poliomyelitis is now well established and is the obvious explanation of these low attack rates. Are the neutralizing substances an accurate expression of immunity in this disease? Can resistance be present in their absence? Can the nervous system be invaded by the virus in the presence of neutralizing antibodies (humoral immunity)? Are there other factors of defense against the virus (mechanical factors and tissue immunity)? The replies to these and similar questions would furnish a complete answer to the moot point of the efficacy of vaccination as it has been practiced, were the entire data known. In the following discussion we shall attempt an answer in the light of recent experimentation.

PATHOGENESIS OF POLIOMYELITIS THE ORIGIN OF INFECTION

The contributions of Fairbrother and Hurst,⁵ Jungeblut and others⁶ have established beyond peradventure that the virus of infantile paralysis travels largely, if not exclusively, in the body by neural pathways (reviewed by Faber⁷). Interruption of a neuron parasitized by the virus, either peripherally or within the central nervous system, blocks passage to the cells of the spinal cord and intervertebral ganglions, the essential site of the disease. The striking resistance to intranasal infection after intracranial section of the olfactory tracts⁸ is a demonstration of this thesis. It is considered that the nasal and pharyngeal areas are the usual if not the only site of entry of the virus. Under the experimental state of increased intestinal pressure and of direct contact with the myenteric nerves infection may occur, but these are conditions that never obtain in natural infection (reviewed by Flexner⁹).

Indeed, it is probable that many persons harbor the virus in the nasopharynx, it being in a more or less stable equilibrium with the host.¹⁰ Such conditions

postulate that traumatic influences or lowered resistance may allow the virus to ascend into the central nervous system. Tonsillectomy¹¹ and extreme muscular exertion¹² have been reported as precipitating an attack of poliomyelitis with the characteristic incubation period. The puzzling epidemiologic fact observed many times a year in the seasonal endemic poliomyelitis of this country, of cases occurring in isolated areas where personal contact can be excluded except through healthy intermediaries, may be explained by parasitization of the nervous system by virus carried in equilibrium with the nasopharynx. This hypothesis has already been confirmed by the isolation of the virus from the nasopharynx¹³ with subsequent development of infection (reviewed by Paul, Trask and Webster¹⁴). Kramer¹⁵ has reported the isolation of the virus from pooled specimens removed by tonsillectomy in a general hospital. Ponderous technical difficulties do not allow the easy multiplication of such observations. The finding of large numbers of adults in the general population who carry neutralizing substances in their blood against the virus of poliomyelitis¹⁶ is indirect evidence of the widespread dissemination of the virus.

Washings of the nasopharyngeal area from certain persons contain virus inactivating property.¹⁷ Whether this is correlated with antiviral properties in the blood is not definitely known but is probable. From the practical point of view there promises to be a method available to increase the normal resistance of the nasopharynx in preventing passage of the virus over the first and thirteenth cranial nerves. Treatment of this area by alum, by tannic acid, by trinitrophenol and by mercurochrome has been signally effective in the hands

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14. Paul, J. R., Trask, J. D. and Webster, L. T. Isolation of Poliomyelitis Virus from the Nasopharynx. *J. Exper. Med.* 62: 245 (Aug.) 1935.

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(i) Kolmer, J. A., Klugh, G. F. and Rink, Anna M. A Successful Method for Vaccination Against Acute Poliomyelitis. *J. A. M. A.* 104: 456 (Feb. 9) 1935.

(j) Brodie, Maurice and Park, W. H. Active Immunization Against Poliomyelitis. *J. A. M. A.* 105: 1089 (Oct. 5) 1935.

(k) Kolmer, J. A. Susceptibility and Immunity in Relation to Vaccination in Acute Anterior Poliomyelitis. *J. A. M. A.* 105: 1956 (Dec. 14) 1935.

17. Amos, H. L. and Taylor, E. Neutralization of the Virus of Poliomyelitis by Nasal Washings. *J. Exper. Med.* 25: 507 (April) 1917. Flexner, Simon and Amos, H. L. Experiments on the Nasal Route of Infection in Poliomyelitis. *ibid.* 31: 123 (Feb.) 1920. Harmon, P. H. Unpublished experiments.

of three groups of investigators¹⁸ of the experimental disease. Application of these measures for prophylaxis in man awaits only the opportunity. While there are other physiologic factors of resistance to this disease (reviewed by Hudson, Lennette and Gordon¹⁹), there are no other practical measures as yet suggested that are likely to be of value in the disease of man except the application of specific therapy.

The question of whether the disease and the infectious agent are entirely confined to the nervous system is of importance in the development of specific immune bodies, the virus neutralizing substances. There is evidence that the virus is encountered in the blood or cerebrospinal fluid only irregularly²⁰. Thus, the barrier that exists between the blood vascular system and the nervous system keeps the virus in the latter area. Lennette and Hudson²¹ have shown that transportation of the virus into the susceptible nervous system can occur after intravenous injection only when the virus is excreted onto the nasopharyngeal mucosa or when a freshly severed nerve is available. That visceral spread of the virus does take place is seen in the finding of the virus in the perfused spleen during convalescence¹⁹. Previous failures²⁰ to detect the virus in extraneural locations are perhaps due to the presence of virus-neutralizing substances in the blood, a point brought out by Lennette and Hudson²¹. Irregular extraneural outflow of the virus during the acute disease accounts for the variable appearance of neutralizing antibodies in convalescence (as already shown), which remains one of the startling peculiarities of this disease.

THE ORIGIN AND SIGNIFICANCE OF THE VIRUS-NEUTRALIZING ANTIBODIES

The blood of a surprising percentage of human and monkey convalescents seems to be devoid of neutralizing substances, a fact that has been masked by the earlier workers, who have made only a few observations in the recovery state. Only recently has the blood of a large number of human convalescents been examined and the full force of this fact become evident. These observations are summarized in table 1. The percentage of convalescents without neutralizing substances in the blood varies from 12.1 to 64.1. The latter group was thought to be exceptional because they were treated in the acute stage with convalescent and antiviral animal serums. Of the total of 183 human convalescents, 39.8 per cent were without antibody. Jungeblut and Smith²² have advanced evidence to show that the ability to form antibody both after an attack of poliomyelitis and in those without history of exposure is linked with blood type, group A having this property in least degree while group B contains the greatest number of individuals with neutralizing properties.

18. Armstrong C and Harrison W T. Prevention of Experimental Intranasal Infection with Certain Neurotropic Viruses by Means of Chemicals Instilled into the Nostrils. *Pub Health Rep* 51: 203 (Feb 24) 1936. Sahin A B, Olitsky P K and Cox H R. Protective Action of Certain Chemicals Against Infection with Poliomyelitis Virus by the Nasal Route. *Proc Thirty-Seventh Ann Meeting Soc Am Bact.* New York, Dec. 26-28, 1935. *J Bact* 31: 35 (Jan.) 1936. Schultz E. W. and Gebhardt L. P. Prevention of Intranasally Inoculated Poliomyelitis in Monkeys by Previous Intranasal Irrigation with Chemical Agents. *Proc Soc Exper Biol & Med* 34: 133 (March) 1936.

19. Hudson N P, Lennette E. H. and Gordon F B. Factors of Resistance in Experimental Poliomyelitis. *J. A. M. A.* 100: 2037 (June 13) 1936.

20. Poliomyelitis: the International Committee for the Study of Infantile Paralysis. Baltimore: Williams & Wilkins Company 1932.

21. Lennette E. H. and Hudson N P. The Blood Central Nervous System Barrier in Experimental Poliomyelitis. *Proc Soc Exper Biol & Med* 34: 470 (May) 1936.

22. (a) Jungeblut C. W. and Smith L. W. Blood Grouping in Poliomyelitis. Its Relation to Susceptibility and the Neutralizing Property of Convalescent Sera. *J Immunol* 23: 35 (July) 1932. (b) Jungeblut C. W. and Smith L. W. Blood Grouping in Poliomyelitis. Its Relation to Susceptibility and the Neutralizing Property of Convalescent Sera. *J Immunol* 23: 35 (July) 1932.

On the other hand, a larger percentage of adults drawn at random from the populace and who have had no obvious exposure to the disease, carry neutralizing substances in the blood stream against the virus. The incidence of antibody in this group ascends with increasing age. This fact led Shaughnessy, Harmon and Gordon^{10a} and Aycock and Kramer^{10b} to draw analogy to diphtheria and to postulate repeated subclinical exposure to the virus. The presence of these neutralizing substances was interpreted by these authors and many others as signifying the immune state. This such a hypothesis will stand in the face of the newer ideas of tissue versus humoral immunity is questionable. As quantitative data accumulate, the analogy to diphtheria may be drawn even more closely, as it is well known that a certain percentage of Schick negative individuals are susceptible to clinical diphtheria. Table 2 gives the number of "normal" persons, by age groups, who have been found to contain virus-neutralizing antibodies in the blood. We have purposely

TABLE 1—Convalescence from Poliomyelitis (Man) Without Neutralizing Antibody in the Blood

| | Serums Tested | Per Cent Negative |
|---|--------------------|-------------------|
| Aycock and Kramer ^{10b} | 41 | 12.1 |
| Schultz and Gebhardt ^{10a} | 4 | 50.0 |
| Shaughnessy, Harmon and Gordon ^{10a} | 14 | 42.9 |
| Howitt Beatrice J. Infect Dis 51 | 41 (untreated) | 51.2* |
| 66a 1932 personal communication | 30 (serum treated) | 64.1* |
| Jungeblut and Smith ^{22a} | 20 | 42.5 |
| Stokes J. Jr, Wolman I. J. Carpenter H. O. and Margollis J. Am J Dis Child 50: 681 1935 | 7 | 23.5 |
| Harmon P. H. and Harkins H. H. Fahey J. J. and Washbotten P. M. Proc Soc Exper Biol & Med 34 68a 1936 | 11 | 72.7 |
| Total | 183 | 39.8 |
| Average | | 39.8 |

* This percentage is slightly greater than the figures given by Howitt by virtue of our including as negative serums those which prolonged the incubation period. Such a phenomenon has been interpreted as partial neutralization by certain authors. We do not favor such an interpretation.

† These data are not suitable for analysis by age group, as they are abnormally weighted with adults.

omitted reference to those who have examined only a few serums, as even the numbers quoted are not of far reaching statistical significance.

No difference has yet been elicited between the virus neutralizing antibodies of "normal" human blood and those of convalescence²³. Although identical, as far as we know, there is a division in opinion as to their origin. Most investigators believe them to be the result of specific contact with subinfective doses of virus, but another group holds that physiologic factors of growth, maturation and menstruation as induced by endocrine activity are responsible for the production of some of the neutralizing substances (reviewed by Jungeblut and Engle²⁴). Hudson, Lennette and King¹⁹ have failed, however, to verify the experimental data on which this

23. (a) Weyer E. R., Park W. H. and Banzhaf E. J. A. T. Antipoliomyelitic Horse Serum Concentrate and Its Experimental Use in Infected Monkeys. *J. Exper. Med.* 53: 553 (April) 1931. (b) Jungeblut C. W. The Immunological Characteristics of the Poliomyelitic Virus in Human Serum. *J. Immunol.* 27: 17 (July) 1934. (c) Engle E. T. W. Gebhardt L. P. and Bullock L. T. Studies on the Antigenic Properties of the Ultraviruses. VII. Nature of the Viral Antigen in Antipoliomyelitic Serum. *ibid.* 21: 171 (Sept.) 1931.

24. Jungeblut C. W. and Engle E. T. Resistance to Poliomyelitis: The Relative Importance of Physiologic and Immunologic Factors. *J. A. M. A.* 99: 2091 (Dec 17) 1932. An investigation into the role of hormonal factors in experimental poliomyelitis. *J. Exper. Med.* 43 (Jan.) 1934.

25. Hudson N. P., Lennette E. H. and King E. O. Failure to Neutralize the Poliomyelitis Virus with Sera of Adult Monkeys and of Young Female Rhesus Treated with Anterior Pituitary Extract. *J. Exper. Med.* 59: 543 (May) 1934.

latter theory rests. In short, they have been unable to find neutralizing substances in mature male or female monkeys or in females rendered artificially mature by treatment with extracts of anterior pituitary. The known slight resistance of adult monkeys to cerebral infection,²⁴ like the resistance of the New World monkey²⁵ and lower species of mammalia,²⁷ remains unexplainable by humoral factors. Epidemiologic facts point to lessened chance for contact infection of adults in poliomyelitis as well as in other infectious diseases (measles and scarlet fever²⁸), since significant numbers of adults contract the disease only after the epidemic is under way.²⁹

That contact with virus is alone the stimulation for antibody production has been largely borrowed by analogy to the experimental disease. Kramer³⁰ and Fairbrother and Brown^{10c} have placed on record actual instances in man in which contact with the disease led to the production of immune substance, while Trask and Paul³¹ have made similar observations on the abortive types of the disease. Whether inflammatory involvement of the nervous system is present in the latter types is not known. If absent, as some believe, there is stimulation of antibody production by extraneural virus. The opposite view that the abortive and nonparalytic types of the disease are a result of an adequate amount of preinfection antibody (for the current attack) is postulated by observations made by Eagles³² on serum pools from these three types of the disease used for treatment in the 1934 epidemic in Denmark, and by our titrations of serum during and after an attack.

The strongest argument against the need of a specific stimulus for production of virus neutralizing antibodies is the finding by Jungeblut^{28b} of their presence in commercial serums of such variable origin as diphtheria antitoxin, antivenoms, antistreptococcus serums and the serums from pregnant mares. Confirmation and extension of these tests are urgently needed. The origin of the virus-neutralizing principle in human placental extracts³³ is not certain.

A peculiarity of the virus of poliomyelitis that requires some comment at this point is its weak antigenicity. While antibodies and solid immunity are readily produced by nasal spraying with other viruses (e.g., St. Louis encephalitis and louping ill³⁴), similar experiments with susceptible monkeys do not even lead to the development of virus-neutralizing substances in the blood.³⁵ Subinfective or modified virus given by

the subcutaneous route seldom leads to immunity against intracerebral or intranasal infective doses, although virus-neutralizing substances are produced, particularly if repeated doses of the immunizing preparation are given (reviewed by Olitsky and Cox³⁶ and Gordon³⁷). Even the vaccines, lately in use, have not yielded experimentally significant quantities of humoral antibody in the hands of all workers.³⁸ The underlying cause of this poor antibody response may be the lack of antigenic mass, it being well known that many viruses remain active in logarithmic dilutions (vaccinia, herpes, St. Louis encephalitis), while the poliomyelitis virus rapidly becomes subinfective on dilution.

TABLE 2—Normal Persons with Neutralizing Antibodies for Passage Strains or Poliomyelitis Virus

| | Age Groups | | | | | | | |
|--|-------------|------|--------------|------|-------------|------|----------|------|
| | 0-4 Years | | 5-9 Years | | 10-14 Years | | 15 Years | |
| | Num | Per | Num | Per | Num | Per | Num | Per |
| | ber | Cent | ber | Cent | ber | Cent | ber | Cent |
| Aycock and Kramer ^{16b} | 16* | 31 | 18* | 44 | 17 | 47 | 45 | 77 |
| Kramer and Aycock ^{16f} | | | 88 | | 44 | | | |
| | | | (5-15 years) | | | | | |
| Shanghnessy, Harmon and Gordon ^{19a} | 5† | 40 | 10 | | 60 | | 10 | 90 |
| | | | (4-11 years) | | | | | |
| Faber ^{18d} | | | | | | | 10 | 77 |
| Weyer, Park and Banzhaf ²² | | | | | | | 9 | 66 |
| Schultz, E. W. J. Pediat. 1:358, 1932 | | | | | | | 53 | 55 |
| Brodie ^{10e} | | | | | | | 29 | 75 |
| Jungeblut ^{28b} | | | | | | | 30 | 57 |
| Hudson and Lifterer quoted by International Committee for the Study of Infantile Paralysis ²⁰ | | | | | | | 25 | 84 |
| Kolmer ^{12a} | 9 | 22 | 20 | | 60 | | | |
| | | | (5-14 years) | | | | | |
| Howitt (quoted by Kolmer ^{12a}) | | | | | | | 24 | 68 |
| Brodie and Park ^{10j} | 50 | 54 | 10 | | 90 | | 34 | 80 |
| | (0-5 years) | | (6-10 years) | | | | | |
| Totals | 60 | | 103 | | | | 209 | |
| Average | | 37 | | | | 58 | | 73 |

* 0-4 year groups included twelve rural children none of which neutralized. Tests on twelve infants also reported by these authors (J. Exper. Med. 52:457, 1930) but not included in the above. Ten (83 per cent) neutralized.

† Including two infants both neutralized.

While other viruses develop complement fixing, precipitating and agglutinating antibodies (review by Rivers³⁹), it has now become well established by reports of exhaustive work from several laboratories⁴⁰ that the neutralizing substance is the only antibody associated with contact or infection with the poliomyelitis virus. Skin tests for susceptibility have likewise been negative in the hands of most workers in this field.⁴¹

36 Olitsky, P. K. and Cox, H. R. Experiments on Active Immunization Against Experimental Poliomyelitis. J. Exper. Med. 63:109 (Jan) 1936.

37 Gordon, F. B. Active and Passive Immunity in Experimental Acute Anterior Poliomyelitis. Thesis, University of Chicago, 1936, to be published.

38 Olitsky and Cox.³⁶ Schnitz, E. W. and Gebhardt, L. P. On the Problem of Immunization Against Poliomyelitis. California & West. Med. 43:111 (Aug.) 1935.

39 Rivers, T. M. Pathological and Immunological Problems in the Virus Field. Am. J. M. Sc. 190:435 (Oct.) 1935. Recent Advances in Study of the Virus Diseases. J. A. M. A. 107:206 (July 18) 1936.

40 Schultz, Gebhardt and Bullock.^{22c} Harrison, J. A. Immunologic Studies in Poliomyelitis. Thesis, University of Chicago, 1935. Kolmer, J. A. and Rule, Anna M. Tests for Immunity to Acute Anterior Poliomyelitis. III. Colloidal Gold, Complement Fixation and Precipitation Tests. J. Immunol. 29:199 (Sept.) 1935.

41 Harmon, P. H., Harrison, J. A. and Kernwein, G. Skin Tests for Sensitivity to Virus of Poliomyelitis. Proc. Soc. Exper. Biol. & Med. 30:1134 (May) 1933. Sabin, A. B., Park, W. H. and Jungeblut, C. W. Nature of Skin Reactions Produced by Heat Inactivated Poliomyelitis Virus. Arch. Int. Med. 51:878 (June) 1933. Kolmer, J. A., Klugh, G., and Rule, Anna M. Tests for Immunity to Acute Anterior Poliomyelitis. II. Skin Reactions to Virus. J. Immunol. 29:191 (Sept.) 1935.

26 MacKay, E. M. and Schroeder, C. R. Resistance of the Spider Monkey (*Ateles Ater*) to Infection with the Virus of Acute Anterior Poliomyelitis. Proc. Soc. Exper. Biol. & Med. 33:373 (Dec.) 1935.

27 Harmon, P. H., Shanghnessy, H. J. and Gordon, F. B. The Effect on Animals of Inoculation with Virus of Poliomyelitis. I. Rabbits. J. Prev. Med. 4:59 (Jan.) 1930. II. Dogs, Cats, Guinea Pigs, Mice and Other Animals. *ibid.* 4:89 (Jan.) 1930.

28 Chapin, C. V. Measles in Providence, R. I. 1858-1923. Am. J. Hyg. 5:635 (Sept.) 1925. Pope, A. S. Studies on the Epidemiology of Scarlet Fever. *ibid.* 6:389 (May) 1926.

29 Jensen, C. The 1934 Epidemic of Poliomyelitis in Denmark. Preliminary Report on the Epidemiology, Clinical Features and Convalescent Serum Therapy. Proc. Roy. Soc. Med. 28:1007 (June) 1935.

30 Kramer, S. D. Immunity to Poliomyelitis in the General Population. J. A. M. A. 99:1048 (Sept. 24) 1932.

31 Trask, J. D. and Paul, J. R. Neutralizing Antibodies in Abortive Poliomyelitis. J. Exper. Med. 58:531 (Nov.) 1933.

32 Eagles, G. H. cited by Jensen.²⁹

33 McKahn, C. F. and Chu, F. T. Antibodies in Placental Extracts. J. Infect. Dis. 52:268 (March-April) 1933. McKahn, C. F., Green, A. A. and Coady, H. Factors Influencing the Effectiveness of Placental Extract in the Prevention and Modification of Measles. J. Pediat. 6:603 (May) 1935.

34 (a) Armstrong, C. The Production of Specific Immunity in White Mice by Intranasal Inoculation with Encephalitis Virus. Pub. Health Rep. 49:959 (Aug. 17) 1934. Burnet.³⁵

35 Jungeblut, C. W., and Hazen, E. L. Failure to Immunize the Monkey Against Poliomyelitis by Prolonged Nasopharyngeal Spraying with Live Virus. Proc. Soc. Exper. Biol. & Med. 28:1004 (June) 1931.

NEUTRALIZING ANTIBODIES DURING THE ACUTE DISEASE AND DURING CONVALESCENCE

From the foregoing account it is clear that neutralizing substances are developed more or less regularly in response to the artificial introduction of virus either into or beneath the skin. Brodie⁴² has already reported that under such conditions the response exceeds that produced by an attack of the experimental disease. The full implication of such facts is not apparent,

TABLE 3—Neutralization of Virus by Serum Early in Poliomyelitis in Comparison to the Convalescent State

| Patient | Age | Blood Group | Clinical Data | Day of Paralysis on Which Blood Was Taken | Ten Paralyzing Doses of Virus Neutralized by Serum in Dilution of | | |
|--|-----|-------------|---|---|---|--------------|-------------|
| | | | | | Initial Sample | Later Sample | Time Months |
| Convalescent | | | | | Serum Given Prior to Taking Blood Sample | | |
| D N | 8 | AB | Initial leg weakness full recovery | 6th | 1 10 | * | |
| J H | 12 | AB | Extensive residual paralysis in both legs and hips | 5th | 1 2 | 1 5 | 5 |
| P J | 2 | A | Paralysis of both legs residual in one leg | 5th | 1 1 | 0† | 4 |
| L P | 8 | AB | Bulbar with palatal paralysis | 5th | 1 5 | * | |
| E S | 10 | O | Paralysis of one arm and both legs residual one hip and quadriceps | 7th | 1 1 | 1 2 | 3 |
| M H | 7 | O | Paralysis of both legs residual both calves | 5th | 1 2 | 1 2 | 3 |
| D R | 14 | O | Paralysis of both legs and one arm residual legs hips and lower spine | 4th | 1 5 | 0 | 3 |
| No Serum or Serum Given After Blood Sample | | | | | | | |
| B W | 9 | AB | Patchy paralysis of both legs and arms residual weakness in legs | 12th | 1 100+ | 1 100+ | 5 |
| D B | 11 | A | Nonparalytic | 5th‡ | 1 100+ | 1 100+ | 5 |
| L S | 3 | O | Paralysis of one leg residual one calf group | 9th | 1 2 | 1 2 | 3 |
| R S | 8 | AB | Loss of knee jerks with paresis no residual paralysis or weakness | 6th‡ | 0 | 0 | 4 |
| B R | 12 | B | Paralysis of one leg residual one foot | 7th | 0 | * | |
| W R C | 4½ | AB | Preparalytic residual paresis in both arms and one leg | § | 1 20 | 1 50 | 3 |
| S S | 6 | AB | Paralysis of one leg residual drop foot | 6th | 1 1 | 1 1 | 4 |

* Second blood sample not obtained.
† 1:1 failed to neutralize 1:5 neutralized latter probably a false positive.

‡ Nonparalytic case; date on which serum was drawn was the number of days after the onset of temperature.

§ Blood obtained one day before the onset of paralysis.

because there has never been an adequate survey made of the behavior of the neutralizing substances after either the experimental disease or the acute disease of man. This author's experiments indicate that neutralizing substances are present in the blood stream ten days after a single injection into the skin but do not reach their height until ten days later. While Kolmer, Klugh and Rule⁴³ have been able to demonstrate neutralizing antibody as early as four days after their first immunizing injection their experience is exceptional in the general field of the viruses since as a rule neutralizing antibodies are not demonstrable until a week after the onset of the acute disease or from ten to fourteen days after experimental inoculation.

It was our opinion that observations should be made on the level of neutralizing antibody as early as possible in the acute disease in man, and again later in the same cases in order to determine the actual effect of an attack of the disease on the level of neutralizing substance. Antibody level should, if possible, be correlated with the outcome of the disease to see whether there is a level that will determine a nonparalytic or mildly paralytic form of the disease. Table 3 summarizes the results of in vitro neutralization tests on the serums of fourteen patients⁴³ during an acute attack of the disease. Only eleven serums were available for testing from three to five months later. One patient⁴⁴ an adult, was observed to have a greater than average amount of neutralizing substance even twenty-four hours before the onset of paralysis. This observation appears to be the first on record of evolution of paralysis in man in the presence of neutralizing antibody. Seven of these cases were purposely selected after convalescent serum had been administered to see what effect, if any, the administration of such low titer serums had on the antibody level during the acute stage. The effects of passive transfer were in unimpressive evidence in only one patient (D R), but he had received 80 cc of serum on two occasions only three days and one day before the first blood sample was drawn. From the fact that three months later he was entirely without neutralizing antibody suggests that none was present prior to the attack. The severity of the disease and the amount of recovery (inversely proportional to the degree of permanent motor nerve cell damage) have no correlation with the level of immune substance either during the attack or during convalescence. It is quite unlikely that the high level of immune substance in patients B W, D B and W R C was the result of the current attack. The series, as a whole, implies that the disease may evolve in the presence of neutralizing antibody. This is quite clear in the instance of W R C, from whom serum was taken a day prior to paralysis. That a disease may occur while circulating antibody is present in the blood stream is not a novel conception, as such observations have been made both within⁴⁵ and without⁴⁶ the virus field. On the other hand, patients P J R S and B R demonstrate very little or no antibody in the blood at any time, yet the severity of the disease and the amount of permanent motor damage is not greater than in other cases of the series.

That the amount of neutralizing substance found in the early samples is the direct effect of the current attack is minimized by the irregular appearance of immune substance following the experimental disease induced by intracerebral inoculation in monkeys. In similar in vitro neutralization tests on monkey serums made in parallel with the foregoing observations in

43 We are indebted to the Illinois State Department of Health (Dr. Frank J. Jirka, director) for early reporting of cases and aid in securing these blood specimens. We also acknowledge the cooperation of the following physicians: Dr. W. G. Wallace, Mattoon, Ill.; Dr. H. D. Carlson, West Frankfort, Ill.; Dr. C. D. Swickard, Charleston, Ill.; Dr. J. S. Terrando, LaSalle, Ill.; Dr. L. C. Harlan, Madison, Ill.; Dr. A. A. Frymire and J. L. Sherrick, Monmouth, Ill.; Dr. E. J. Fawcett, Berwyn, Ill.; Dr. A. G. Everhardt, Bush, Ill.; Dr. A. M. Ferkel, Sheldon, Ill.; and Dr. I. E. Tegmeyer, Millstadt, Ill.

44 For the samples of blood from the preparalytic case we are indebted to Dr. M. A. Gifford of Bakersfield, Calif.

45 Olitsky and Cox, "Gordon's Rivers," *Howell*, H. F., *Fraser*, F., *Encephalomyelitis*, *J. Infect. Dis.* 51:493 (Nov-Dec) 1935.
46 C. H. Landis, F. L. and Smith, W., *Influenza*, *Observations on the Recovery of the Virus from Man and on the Antibody Content of the Sera*, *Bull. J. Exper. Path.* 10: 56 (Dec) 1935. *Fraser*, T. J., and *Magill*, T. I., *Vaccination of Human Subjects with Virus of the Influenza*, *Proc. Soc. Exper. Biol. & Med.* 33:694 (Jan) 1935.
47 Robertson, O. H., *Terrell*, E. E., *Craster*, J. B., *Artificial*, *N. A. The Relation of Natural Humoral Immunity to the Infection of Lobar Pneumonia*, *J. Exper. Med.* 52:431 (Nov) 1933.

human cases we found neutralizing antibody not to occur until the sixth to the fourteenth day after paralysis, and then irregularly. Even after neutralizing substances were once present in a given animal they were absent on a later date in four of six instances. No neutralizing substances were observed at any time during ten days after the onset of paralysis in three of seven animals. One animal acquired these substances between the third and the eighth week after paralysis. Such results were independent of the test dose of virus used (three and ten paralyzing doses). Essentially the same facts were recently reported by Jungeblut⁴⁷ with similar materials. In this investigator's hands, two of three animals had no neutralizing substance two weeks after paralysis, three of six had none after a month, and two of six had none after two months. In spite of the lack of humoral antibody, none were affected by intracerebral reinoculation with a heavy dose of virus (five of eleven having no antibody at the time of retest). It thus appears that resistance to intracerebral reinoculation, which is universal in convalescent monkeys, does not depend on humoral antibody. In this connection, the experiments of Paul and Trask,⁴⁸ who showed monkeys to be susceptible to cerebral reinoculation by a recently adapted human virus when convalescent from an attack conferred by a passage strain and the converse, should be recalled. Some degree of evanescent cross immunity was, however, observed by them.

SIGNIFICANCE OF NEUTRALIZING ANTIBODIES IN SERUM THERAPY

That convalescent or other serum modifies the natural course of human poliomyelitis has yet to be conclusively proved (reviewed by Harmon⁴⁹). Evaluation of the many observations in this field are fraught with difficulty, since the severity and types of the acute disease vary from epidemic to epidemic and even in the same epidemic. Statistical analysis of certain large epidemics has failed to elicit favor for convalescent human serum, except that the earlier the serum is used in the acute stage the less is the incidence of either acute or residual paralysis.⁵⁰ Clinical observations that have been made by almost every group that has applied convalescent human serum of a rapid response by a drop in temperature and improvement in symptoms cannot be disregarded. It is questionable whether treatment of one group of cases with serum, withholding it from others, has been justifiable from either the administrative or the scientific point of view.

Experimental monkeys cannot be used to evaluate a serum to be applied in the human disease, since for reasons as yet poorly understood the disease of these animals is fulminating. The endemic types of the human disease are especially unlike the experimental counterpart, the former having a smoldering and often nonparalytic course. We⁴⁹ have pointed out that from 70 to 80 per cent of cases reported in epidemics before 1933 have been nonparalytic types. In certain recent epidemics,⁵¹ less than 10 per cent of the patients have

been paralyzed at any time. It is entirely probable that the preparalytic cases are seen in this stage because they are mild cases. For example, the general mortality in the epidemic of 1931 in New York City⁵² was 12.2 per cent, while among the preparalytic cases in which no serum was given the mortality rate was only 0.9 per cent. Attempts at evaluation of the effect of convalescent serum in the established disease of monkeys either in the preparalytic stage or in the stage of manifest paralysis have uniformly denied any effect of the serum on the course of the disease,⁵³ even when an exceptionally high titer antiviral horse serum was used.⁵⁴ The later experiments on prophylaxis by Schultz and Gebhardt,⁵⁵ who raised the level of immune substance in recipient monkeys by passive transfer of neutralizing substances to at least the average level of pooled convalescent human serum, demonstrated that such a procedure allowed 30 per cent survival as contrasted with only 7 per cent in untreated controls. They concluded that the extent of paralysis in poliomyelitis was determined by the general level of natural resistance possessed by neurons (tissue immunity) or by the virulence of the infecting virus strain.

In vitro experiments have been performed recently which show that once virus (vaccinia and Shope fibroma)⁵⁶ has combined with living cells it cannot be neutralized by immune serum. Virus within dead cells can be effectively neutralized. This finding is a disappointing paradox, and, if directly applicable to conditions within the body in poliomyelitis, serum is often too late to preserve susceptible cells unless given before virus-cell union occurs. On the other hand, it is possible that intersegmental spread of virus does take place even after the first paralysis appears. Theoretically, then, it is possible that serum is of value in early paralysis, when end results are compared. There are many difficulties in settling such a question practically. End results have not even been adequately determined after serum has been administered in the preparalytic period in conjunction with adequate orthopedic after-care.

Reference should not be omitted to the results of treatment with convalescent human serum to be found in recent reports. Tebbutt and Helms⁵⁰ observed a lower mortality in the cases treated in the preparalytic stage of 3.3 per cent as contrasted with 11.8 per cent in the untreated controls seen after paralysis was present. Again in this report there was evidence that the preparalytic cases presented milder paralysis and a longer preparalytic period. Jensen⁵⁰ thought that the earlier after the onset of symptoms that treatment was applied, the less the incidence of paralysis. If applied three days or more after the onset of symptoms in the preparalytic period, there was little difference in the percentage developing paralysis. Cowie and his co-workers⁵⁷ have reported no residual paralysis in eighty preparalytic cases treated with both human convalescent serum and transfusions from normal adults. There was but one paralytic case observed in

⁵² Park W. H. quoted by Brodie.⁵³

⁵³ Gordon⁵⁷, Brodie, Maurice. The Role of Convalescent Serum in Preparalytic Poliomyelitis. *J. Immunol.* 28: 353 (May) 1935.

⁵⁴ Schultz E. W. and Gebhardt L. P. Observations on the Therapeutic Value of Specific Immune Serum in Experimental Poliomyelitis. *J. Pediatr.* 6: 615 (May) 1935.

⁵⁵ Schultz E. W. and Gebhardt L. P. Observations on the Prophylactic Value of Specific Immune Serum in Experimental Poliomyelitis. *J. Pediatr.* 7: 332 (Sept.) 1935.

⁵⁶ Rous Peyton, McMaster P. D. and Hudack S. S. The Fixation and Protection of Viruses by the Cells of Susceptible Animals. *J. Exper. Med.* 61: 657 (May) 1935.

⁵⁷ Cowie, D. M., Parsons J. P. and Lowenberg K. Clinicopathologic Observations on Infantile Paralysis. Report of 125 Acute Cases with Special Reference to the Therapeutic Use of Convalescent and Adult Blood Transfusions. *Ann. Int. Med.* 8: 521 (Nov.) 1934.

⁴⁷ Jungeblut C. W. On the Mechanism of Immunity in Experimental Poliomyelitis. *J. Infect. Dis.* 58: 150 (March-April) 1936.

⁴⁸ Paul J. R. and Trask J. D. A Comparative Study of Recently Isolated Human Strains and a Passage Strain of Poliomyelitis Virus. *J. Exper. Med.* 58: 513 (Nov.) 1933.

⁴⁹ Harmon P. H. Poliomyelitis. I. Experimental and Theoretical Basis for Serum Therapy. A Review. II. Results of Treatment in the Acute Disease. Analysis of Reports on 4,400 Patients Treated with Serum. *Am. J. Dis. Child.* 47: 1179 (June) 1934.

⁵⁰ Jensen⁵⁰, Tebbutt, A. H. and Helms K. A Report of the Epidemic of Poliomyelitis in New South Wales 1931-1932. *M. J. Australia* 20: 43 (Jan. 14) 1933.

⁵¹ Jensen⁵⁰. Symposium on 1934 Epidemic of Poliomyelitis in California. *Am. J. Pub. Health* 24: 1197 (Dec.) 1934.

this series, this rapidly cleared. Symptomatic improvement was noted even in certain paralytic cases. Lastly, Levinson²⁸ has treated 149 preparalytic cases of the seasonal endemic type of poliomyelitis in Chicago during the past four years. He states that the incidence of paralysis has been negligible and that most of the temporary weakness disappeared later. He too has been impressed by the amelioration of symptoms in both the preparalytic group and the paralytic cases presenting smoldering fever or acute recrudescence.

As specific treatment is continued during the next few years, the efficacy of concentrates from antiviral animal serums having advanced neutralizing potency should be evaluated. Titrations of pools of convalescent serums show only a moderate amount of neutralizing antibody. It is possible that tested human convalescent serum or normal human serum of high antibody content would be more effective in practice. Another source of antipoliomyelitis neutralizing substance that may be available for human therapy is human placental extracts.³³ We have recently determined that these preparations contain more neutralizing antibody than the average of convalescent serum pools.

SUMMARY

The peculiar pathogenesis of poliomyelitis as an exclusive disease of the nasopharynx and nervous system with irregular extraneural outflow of virus explains the variability of production of neutralizing antibody in both the experimental disease and the human disease. Blockage of infection at the port of entry by application of chemicals has been recently demonstrated in three widely separated laboratories. This method may have some value in prophylaxis against the disease of man.

The specific virus-neutralizing substance in poliomyelitis is unique in that greater numbers of adults without history of contact or infection possess these substances than convalescents from the disease. The average concentration of immune substance in normal adults is equal to or greater than that carried by convalescents. The importance of an actual attack of poliomyelitis in the production of these substances is minimized by our serologic studies. The role and mechanism of the tissue immunity that exists in this disease has not been elucidated.

Convalescent and other specific serum therapy should be continued, as there is no evidence that it is not of value. On the other hand, symptomatic improvement following the administration of serum is almost universal. There are indications that preparalytic poliomyelitis in man is a naturally milder type of the disease than the cases seen after paralysis is present.

ABSTRACT OF DISCUSSION

DR. SYDNEY O. LEVINSON, Chicago. This paper discloses a comprehensive analysis of a field in which there is much conflicting evidence and thought. It also presents some disconcerting conclusions. It is a pardonable hope that new evidence will provide an answer to some of the unexplained aspects of the disease. However, even though it does not conform with the accepted view, any sincere study must be taken seriously and the evidence examined critically. The authors raise the question whether man ever acquires an effective immunity from an attack. Shouldn't the wording of this question be "when or how often does man acquire an immunity?" The very fact that only a few cases have been reported in the literature emphasizes the rarity of

second attacks in formerly susceptible individuals and justifies the conclusion that a very high percentage are immune. A conclusion is justified unless it is assumed that they were not reexposed, an unlikely supposition in the face of the widespread dissemination of the virus. This is supported by the resistance to reinfection in the experimental animal recovered from a previous infection. The neutralization studies in various stages of poliomyelitis lead the authors to believe, first, that an attack of the disease does not seem to increase the polioviricidal bodies, and, secondly, that there does not seem to be any relation between the presence of these bodies and resistance to susceptibility to an attack. Before one concurs in these opinions, a few commonly accepted facts must be reviewed: 1. Neutralizing substances in monkey serum are found only after an attack of the disease or some immunizing procedure. 2. The relative immunity in adults is accompanied by the greatest frequency of virus neutralizing substances. 3. Limited observations reveal that most infants possess virucidal substances in their serum—undoubtedly a passive transfer from the mother—and the disease is relatively uncommon in infants. 4. Other studies show that the frequency of the disease in different age groups parallels the frequency of antibody deficient serums in these groups. 5. Passive immunization of monkeys tends to protect the animals against the virus. I should like to know whether I gained the correct impression that those patients showing an appreciable amount of polioviricidal substance had no severe or extensive paralysis. How can these two divergent views be reconciled? The answer may lie in the authors' own conclusion that immunity to the disease resides in many factors, tissue and humoral, specific and nonspecific resistance. I believe it would be a mistake to ignore any single factor. I would stress that in this disease, as in others, the amount of the infecting dose may bear a definite influence on the severity of the infection. Whereas in monkeys the infecting dose can be controlled, in man it is an uncertain and indeterminate quantity. It is a factor that must be given due consideration in the analysis of any small group of human cases. This study is valuable in pointing out that polioviricidal substances in the blood stream cannot be taken as the sole criterion of immunity against the disease. Their significance may have been overemphasized in the past, but I question the wisdom of ignoring them in the future. Further investigation may reveal a quantitative relationship in man between polioviricidal substances and resistance to infection. There is urgent need for further work along these lines, because of their importance in the problems of active immunization.

DR. PAUL H. HARMON, Chicago. In the past ten years at least six groups of investigators have at some time or other in the laboratory at least, had a vaccine ready for human application. The deterring fact which prevented these investigators from applying their results to man was that paralysis was produced by the vaccine in from 10 to 20 per cent of experimental monkeys. Only a few of these monkeys were resistant to intracerebral inoculation. Recently Gordon at the University of Chicago has carried out quite an extensive study on vaccination in monkeys. Although he could induce neutralizing substances by virus absorbed to alumina gel very few of these so-called immunized monkeys were resistant to intranasal application of active virus. In fact more than 80 per cent came down with the typical disease following such a test. I think it can be stated that the serum is of some value in the treatment. While I do not have the opportunity of quoting some of the recent reports of treatment of the disease in man I can mention the recent experiments of Schultz at Stanford University who showed that there is definite protection of a small percentage of monkeys by serum given before the virus test. I didn't want to be so pessimistic as to say that no individual ever becomes immune to poliomyelitis. I simply wanted to show the figures to bring up the question and see what others think about this question. It is questionable whether or not the figures are statistically significant. In going over 300 or 400 of our cases of paralysis at the University of Chicago I found two cases in which there had been two separate and distinct attacks of poliomyelitis several years apart. I imagine that if any large orthopedic clinic were to review its cases similar facts would be found. For example, Calkins at the University of Iowa reported two such cases.

UNDULANT FEVER

FURTHER EPIDEMIOLOGIC AND CLINICAL
OBSERVATIONS IN IOWAA V HARDY, MD
NEW YORKC F JORDAN, MD
DES MOINES, IOWAAND
I H BORTS, MD
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The data comprising this report were accumulated during the period 1930 to 1935 inclusive. The observations include (1) bacteriologic and serologic studies in the Iowa State Hygienic Laboratories, (2) special reports on 705 cases submitted by attending physicians to the Division of Communicable Diseases and Epidemiology, Iowa State Department of Health, (3) personal observations and detailed records of cases presenting unusual clinical features, chiefly patients admitted to the State University Hospitals, and (4) comparative data collected from the different states through the office of the director of the National Institute of Health, Washington, D C. Certain observations in our reported series of 375 cases for the period 1927 to 1929 are also considered. Supplementary information was also drawn from the current literature.

ETIOLOGY

The various strains of *Brucella* isolated from patients in Iowa for the nine years 1927 to 1935 numbered 127 (table 1). All but ten of the organisms were obtained from blood cultures. The other sources were feces (one), urine (two), spinal fluid (two), pleural fluid (one), cervical lymph glands (one), purulent discharge from osteomyelitis (two) and purulent discharge from spondylitis (one). The organism from the spondylitis was a bovine strain, the nine others were porcine. The one melitensis variety was obtained from an infection apparently acquired in Mexico. From this case the bovine variety was simultaneously isolated. In another Iowa case mixed infection with bovine and porcine varieties was demonstrated. In a third individual *Brucella suis* was obtained both from blood culture and from a suppurative osteomyelitis of the wrist. Thus the 127 organisms were obtained from 124 cases.

Comparable cultural studies have been carried out in but few other states. The limited observations clearly indicate markedly different results in different areas. In New York State, for example, a total of fifty-one strains have been isolated and forty-one have been classified. Of the latter, thirty-six (92.7 per cent) were bovine, one (2.4 per cent) was porcine, and two (4.9 per cent) were melitensis. The two melitensis strains were from an imported case and a laboratory infection.

The significance of differences in the prevailing variety of *Brucella* has been more clearly established by the occurrence of two milk-borne epidemics of undulant fever due to the porcine strain. In the Iowa outbreak reported by Beattie and Rice,¹ within a period of three months among approximately 350 regular

patrons of a raw milk dairy there occurred twenty-seven rather severe cases of undulant fever, an attack rate of 7.7 per cent or an annual rate of 30.8 per cent. Similarly, in Connecticut within a period of nine months Horning² observed thirteen cases, with three deaths, in an institution having a population of 386, an annual attack rate of 4.8 per cent. In contrast with these relatively high rates, the average annual attack rate for persons in Iowa using raw milk from dairy herds infected with the bovine strain of *Brucella* has been not over 0.02 per cent. It is apparent that the hazard of exposure to the porcine is far greater than like exposure to the bovine strain. A comparison of the clinical records of the cases giving positive cultures has also shown that those due to the porcine variety almost invariably were particularly protracted and severe. In pathogenicity and infectivity the porcine appears to be similar to the melitensis variety, both differing markedly from the widely disseminated bovine strains. Thus variation in incidence and clinical characteristics, dependent on the distribution of these three strains, is to be expected.

INCIDENCE OF BRUCELLA INFECTIONS

For the United States as a whole the number of reported cases of undulant fever has rather steadily increased from twenty-four in 1925 to 1,897 in 1935 (table 2). According to the data provided by the various state departments of health, reported cases represent about 75 per cent of the number indicated by positive agglutination tests. Thus there have recently been 1.5 reported and about two diagnosed cases of undulant fever per hundred thousand of population annually. The known incidence, however, varies

TABLE 1—The Varieties of *Brucella* Isolated from Cases of Undulant Fever in Iowa

| Variety of <i>Brucella</i> | Number and Percentage of Organisms Isolated | | | | | |
|----------------------------|---|----------|-----------|----------|--------|----------|
| | 1927-1929 | | 1930-1935 | | Total | |
| | Number | Per Cent | Number | Per Cent | Number | Per Cent |
| Porcine | 35 | 71.4 | 53 | 67.9 | 88 | 69.3 |
| Bovine | 14 | 28.6 | 24 | 30.8 | 38 | 29.9 |
| Melitensis | 0 | 0.0 | 1 | 1.3 | 1 | 0.8 |
| Total | 49 | 100.0 | 78 | 100.0 | 127 | 100.0 |

widely. States with two or more officially reported cases per hundred thousand of population are shown in chart 1. It is to be noted that Iowa has the highest attack rate, being closely followed by adjoining states. Judging by the number of cases presenting positive laboratory signs, Iowa actually had a substantially higher rate, 8.7 per hundred thousand of population. Although New York State now has the largest number of reported cases annually, the higher "up-state" attack rate is less than one-half that in Iowa.

For comparative purposes we have calculated the known incidence of undulant fever by regions and have related these to possible determining factors (table 3). The high rate for the West North Central states as compared with other sections is outstanding. It is probable that this difference would be accentuated by more complete reporting of diagnosed cases. The low rates in the largely rural South Central states are also noteworthy.

Data are now available which permit a comparison of the incidence of infection in cattle and in man.

² Horning B. G. Outbreak of Undulant Fever Due to *Brucella* Suis J. A. M. A. 105: 1978-1979 (Dec 14) 1935.

Read before the Section on Practice of Medicine at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

This study was conducted under the joint auspices of the United States Public Health Service, the Iowa State Department of Health, and State Hygienic Laboratories, and the De Lamar Institute of Public Health, Columbia University, New York.

¹ Beattie C. P. and Rice R. M. Undulant Fever Due to *Brucella* of the Porcine Type—*Brucella suis* J. A. M. A. 102: 1670-1674 (May 19) 1934.

July 1 1934 an extensive program for the eradication of bovine infectious abortion was initiated by the federal Department of Agriculture. As a necessary part of this a total of 7400000 agglutination tests have been performed on cattle in nearly a half million herds. The observations should be closely comparable

TABLE 2—*Reported Cases of Undulant Fever (1925-1933)**

| Year | Number of Cases | | | Number of States Reporting Cases |
|-------|-----------------|----------|---------------|----------------------------------|
| | Iowa | New York | United States | |
| 1925 | 0 | 3 | 24 | 5 |
| 1926 | 1 | 16 | 46 | 8 |
| 1927 | 42 | 24 | 217 | 21 |
| 1928 | 120 | 67 | 647 | 41 |
| 1929 | 204 | 104 | 932 | 44 |
| 1930 | 186 | 163 | 1470 | 46 |
| 1931 | 200 | 196 | 1511 | 40 |
| 1932 | 207 | 209 | 1726 | 41 |
| 1933 | 243 | 292 | 1640 | 45 |
| 1934 | 270 | 220 | 1,887 | 43 |
| 1935 | 187 | 24 | 1,897 | 45 |
| Total | 1679 | 1611 | 11426 | |

Data for Iowa based throughout on cases presenting positive agglutination. For 1925 to 1928 the other data were collected by us through special inquiry of all states. For 1929 to 1933 the figures represent cases officially reported to the U. S. Public Health Service as summarized by Ward Glitner (Brucellosis, A Public Health Problem, Memoirs of Agriculture, State College, March 1934) and for 1934 and 1935 the same tabulated from original published reports.

from area to area. The striking feature is the general uniformity in the incidence rather than the differences, as is shown in columns three and four of table 3. Furthermore the highest percentage of positive reactors was in an area (West South Central) with one of the lowest undulant fever rates. In the West North Central states with the highest rate of human infection the incidence of bovine infection was but slightly above the average. Certainly the incidence of Brucella infection in cattle as indicated does not satisfactorily explain the varying rates of attack of undulant fever.

TABLE 3—*Incidence of Undulant Fever in Various Regions of the United States with Factors Possibly Accounting for Variations*

| Region | Cases of Undulant Fever per 100,000 Population Three Year Average | Examination of Cattle | | |
|--------------------|---|---------------------------|--|---|
| | | Rural Population per Cent | Percentage Positive for Brucella Infection | Percentage in Herds with One or More Reactors |
| West North Central | 3.5 | 8.2 | 10.7 | 3.7 |
| Pacific | 2.0 | 22.1 | 7.3 | 43.2 |
| Mountain | 1.7 | 69.6 | 7.5 | 2.5 |
| East North Central | 1.6 | 24.6 | 9.6 | 4.1 |
| Mid Atlantic | 1.5 | 22.3 | 7.3 | 2.9 |
| New England | 1.5 | 22.3 | 10.7 | 0.4 |
| South Atlantic | 1.4 | 6.1 | 7.5 | 49.6 |
| West South Central | 0.7 | 6.1 | 12.2 | 7.6 |
| East South Central | 0.6 | 7.9 | 10.1 | 61.9 |
| Total | 1.6 | 41.5 | 9.5 | 16.6 |

* Total based on what for similarity in the comparison of report for the general average was computed for the three consecutive years 1929 to 1931 with the greatest number of cases. The average for 1925 and 1926 of less than 200 population

The evidence of contagious abortion in hogs is still somewhat uncertain. It is known that the porcine infection is generally distributed as is the bovine. In several European countries, for example, the porcine strain of Brucella has not as yet been encountered in any of our human beings. In the United States the available evidence indicates that infection in hogs is not present in all of the hog-raising areas. In the West North Central states which have the high-

est incidence of undulant fever, over half of the country's hogs are produced. Of all states Iowa has the highest case rate of undulant fever, it also has one-fifth of the country's hogs, and these with a known high incidence of Brucella infection. The porcine strain has been encountered but infrequently in animals other than hogs. Therefore the distribution of porcine Brucella infection coincides with, and probably explains, the disproportionately high incidence of undulant fever in the West North Central states and in Iowa.

The admittedly incomplete evidence derived from animal and human studies seems then to indicate that in the New England, Middle Atlantic, East North Central, South Atlantic and Mountain states the rather uniformly distributed bovine infection is largely responsible for undulant fever. The known case rates in these areas are quite similar. In the West North Central states approximately as many infections are derived from hogs, thus giving a total rate twice that of the aforementioned areas. The low rates of the South Central states may be dependent on less adequate recognition and reporting or on rather widely differing socio-economic and racial factors. The slightly higher than average rate in the Pacific states evidently reflects

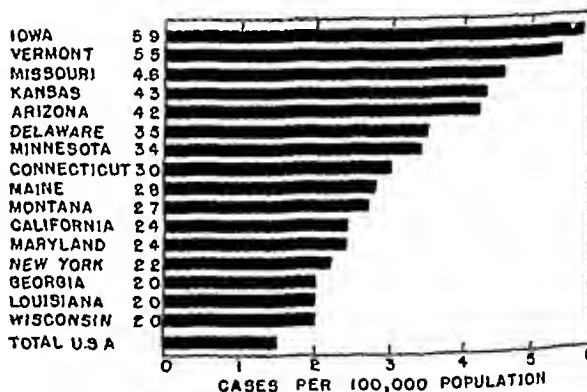


Chart 1—Undulant fever in states with the highest incidence three year average calculated as for table 3

the keen interest in this disease on the part of workers in California, and also the known occurrence of the caprine infection in certain parts of this state.

GENERAL EPIDEMIOLOGIC OBSERVATIONS

The distribution of cases by age and sex as shown in chart 2 again indicates that in Iowa undulant fever involves active adult males most heavily. In this study as in that previously reported, slightly more than 75 per cent of our patients were males. The occupational distribution as far as is known is indicated in table 4. The wide variation in the attack rates in different groups is further shown in table 5. The comparatively high rates for men on the farm and the excessive rates for packing house workers strongly emphasize the risk in occupations involving direct contact with livestock and fresh meats. The similarity in rates among women on farms and among other adults not having occupational contact with livestock is added evidence that farm women acquire infection chiefly through the use of raw dairy products.

That there is a definite though not marked variation in seasonal incidence is indicated in table 6. This finding agrees with the early observations of undulant fever on the island of Malta. It is known that there is an increase in the excretion of organisms from animals following the birth of young. It is suggested that the

seasonal variation is accounted for, at least in part, by the heavier exposures during and following the farrowing and calving seasons

Evidence as to sources of infection in individual cases has in this later study rested chiefly on history rather than on examination of animals. Although data are

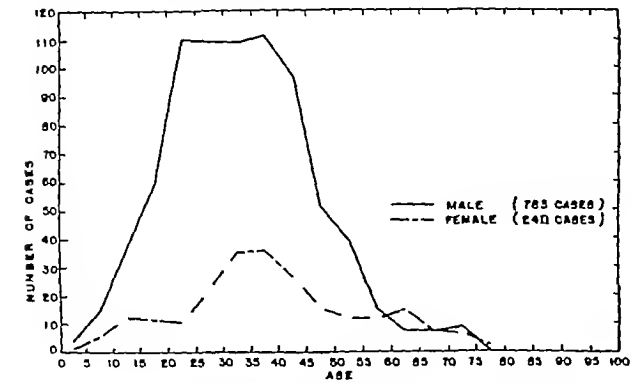


Chart 2—Undulant fever in Iowa by age and sex 1927-1935

not satisfactory for statistical analysis, the records amply confirm the conclusion that in Iowa undulant fever is acquired from hogs about as frequently as from cattle. Support is also given to our contention that inoculation through the skin not infrequently follows direct contact with the discharges of living animals, including the products of abortion, and especially with the tissues of those recently slaughtered.

CLINICAL FEATURES

The earlier clinical observations of undulant fever in Iowa have been described by Woodward,³ Bierring,⁴ and ourselves.⁵ The data on this later series of cases

TABLE 4—Undulant Fever in Iowa by Occupation

| Occupation | Reported Cases | | | | | |
|--|----------------|-------------|------------|-------------|------------|-------------|
| | 1927-1929 | | 1930-1935 | | Total | |
| | Num ber | Per Cent | Num ber | Per Cent | Num ber | Per Cent |
| Farmers including sons and farm laborers | 162 | 44.8 | 260 | 41.3 | 422 | 42.6 |
| Wmme | 24 | 6.6 | 60 | 8.0 | 80 | 8.1 |
| Packtr | 37 | 10.2 | 60 | 16.5 | 103 | 10.4 |
| Stock | 5 | 1.4 | 3 | 0.5 | 8 | 0.8 |
| Butchers | 2 | 0.6 | 11 | 1.7 | 13 | 1.3 |
| Housewives (other than farmers wives) | 37 | 10.2 | 64 | 10.2 | 101 | 10.2 |
| Students | 18 | 5.0 | 35 | 5.6 | 53 | 5.3 |
| Children | 19 | 5.2 | 16 | 2.5 | 35 | 3.5 |
| Professional business persons and laborers | 58 | 16.0 | 118 | 18.8 | 170 | 17.8 |
| Total | 362 | 100.0 | 629 | 100.0 | 991 | 100.0 |

and the reported analyses from other states and countries have established the usual clinical characteristics of this disease. Though varying widely in severity and manifestations, there are usually identifying clinical features. The typical onset is gradual but may be abrupt or very insidious. The most constant features of the illness are weakness and elevation of temperature, the most distinctive is profuse sweating. General aching and headache are frequent, pain, moderate or severe, may be localized in the back, neck, joints or abdomen. Sensations of chilliness are common and true rigors not infrequent. Less prominent complaints

include anorexia, constipation, urinary frequency, irritability, insomnia and cough. On observation the patients often have an appearance of well being quite inconsistent with the height of the afternoon temperature. Positive physical manifestations other than a palpable spleen in about one third of the cases are also strikingly lacking. The temperature is usually intermittent, typical undulations are rarely observed but wavelike fluctuations in daily maximums may be noted. Few patients are strictly bedfast, some are ambulatory throughout, but most are "up and down." A normal or low white blood count with a relative increase in

TABLE 5—Relative Incidence of Undulant Fever in Iowa by Occupational Groups

| Occupation | Popula tion 1930 Census | Reported Undulant Fever 1927- 1935 | Average Annual Cases of Undulant Fever with Known Occupation | Average Annual Cases per 100,000 Popula tion |
|---------------------------|-------------------------------|--|--|--|
| Packing house employees | 8,000 | 103 | 11.4 | 142.5 |
| Men on farms* | 324,000 | 422 | 46.9 | 14.5 |
| Women on farms | 250,000 | 80 | 8.0 | 3.6 |
| Others 10 years and above | 1,376,000 | 371 | 41.2 | 3.0 |
| Children under 10 years | 464,000 | 15 | 1.7 | 0.4 |
| Total | 2,471,000 | 991 | 110.1 | 4.5 |

* Includes farm laborers estimated number 74,000

mononuclears is usually found. The diagnosis is ordinarily confirmed by the specific agglutination test, but in a small percentage of cases this test remains negative. Spontaneous and complete recovery in from one to three months is the rule, but one or more relapses are not infrequent. Stubbornly chronic disease occasionally ensues. From 2 to 3 per cent of all cases terminate fatally, usually with manifest complications.

The clinical character and course of generalized Brucella infection are now rather widely known. Recent studies of this disease have emphasized the occurrence of localized Brucella infections, commonly suppurative in character. Their study represents the major recent addition to the clinical knowledge of

TABLE 6—The Seasonal Incidence of Undulant Fever

| Month | Cases Reported to Public Health Service by Month of Report 1927-1935 | | Iowa Cases by Month of Onset 1928-1935 | | Iowa Cases by Month of First Positive Agglu tination Test 1930-1933 | |
|-----------|---|-------------|--|-------------|---|-------------|
| | Num ber | Per Cent | Num ber | Per Cent | Num ber | Per Cent |
| | Per Cent | | Per Cent | | Per Cent | |
| January | 589 | 5.6 | 64 | 6.0 | 57 | 6.8 |
| February | 62 | 0.6 | 74 | 6.9 | 44 | 5.3 |
| March | 676 | 6.4 | 115 | 10.8 | 50 | 6.0 |
| April | 769 | 7.3 | 91 | 8.5 | 62 | 7.4 |
| May | 932 | 8.9 | 109 | 10.2 | 82 | 9.8 |
| June | 1,122 | 10.7 | 102 | 9.6 | 83 | 10.5 |
| July | 1,087 | 10.4 | 110 | 10.3 | 102 | 12.2 |
| August | 1,052 | 10.0 | 117 | 11.0 | 88 | 10.5 |
| September | 1,036 | 9.9 | 78 | 7.3 | 69 | 7.1 |
| October | 934 | 8.9 | 59 | 5.5 | 63 | 6.9 |
| November | 842 | 8.0 | 85 | 8.0 | 82 | 9.8 |
| December | 928 | 7.9 | 63 | 5.9 | 64 | 7.7 |
| Total | 10,492 | 100.0 | 1,067 | 100.0 | 836 | 100.0 |

undulant fever. Attention is therefore directed to manifestations which have hitherto offered such difficult diagnostic problems.

LOCALIZED BRUCELLA INFECTION

Localization has long been recognized as characteristic of Brucella infection of animals. In guinea-pigs, especially those inoculated with the porcine strain, we have repeatedly observed suppurative lesions, notably arthritis, osteomyelitis, spondylitis, meningitis, orchitis

³ Woodward L. R. J. Iowa State M. Soc. 17:312-317 (Sept.) 1927.
⁴ Bierring W. L. Undulant Fever J. A. M. A. 93:897-901 (Sept. 21) 1929.
⁵ Hardy A. V. Jordan C. F. Borts J. H. and Hardy Grace C. D. 158 National Institute of Health 1931.

and abscesses of the spleen, liver, lymph nodes and other soft tissues. In cattle brucellosis is typically a localized infection, involving the udder, the pregnant uterus and occasionally the joints. In hogs, according to the observations of Thomsen⁶ in Denmark, and Feldman and Olson⁷ in this country, focal lesions are not unusual. The pregnant uterus may be affected. Suppurative or nonsuppurative epididymitis is relatively frequent. Occasionally the testes or seminal vesicles are involved. Destructive bone and joint lesions, meningitis, soft tissue abscesses and tenosynovitis are also encountered. In horses, according to Fitch,⁸ certain rather common suppurative lesions (poll evil and fistulous withers) may be due to *Brucella*.

With such local lesions in animals, the recognition of similar conditions in human beings has not been unexpected. From inflammatory lesions in various sites *Brucella* has been isolated. In many instances the finding of no other organism than this tends to support its etiologic role, in others the causal relationship is still uncertain. In order that bacteriologic procedures effective for the isolation of *Brucella* may be employed more generally in the study of certain medical and surgical conditions we shall enumerate the more common local lesions attributed to *Brucella* infection. Except as indicated, the conditions listed have been observed in Iowa. These localized lesions are as follows:

Skeletal System—Spondylitis. As observed and reported, this has simulated Pott's disease.

Arthritis. This has included relatively acute as well as chronic septic processes, also nonsuppurative lesions.

Osteomyelitis. Various long bones and, in one instance the small bones of the wrist have been involved.

Nervous System—Meningitis and Meningo-Encephalitis. One case closely simulated brain tumor.

Digestive System—Cholecystitis. Amoss⁹ likewise Gilbert and Coleman¹⁰ has isolated *Brucella* from bile aspirated by the duodenal tube or obtained at operation. The organisms have also been obtained in cultures from subacutely and chronically inflamed gallbladders.

Respiratory Organs—Pleurisy with Effusion. In one case *Brucella* was isolated from the pleural fluid by guinea-pig inoculation.

Cardio-vascular System—Endocarditis. This has been a not infrequent observation in undulant fever with complications.

Pericarditis. This occurred in association with endocarditis in one case.

Mycotic Aneurysm. Involvement of the basilar artery was discovered in two cases at autopsy.

Lymphatic System—Adenitis. One case of suppurative cervical adenitis suggesting a tuberculous condition yielded a pure culture of *Brucella*.

Urogenital System—Urinary Tract Involvement. Cases with initial symptoms of cystitis and renal tuberculosis have been diagnosed as undulant fever through isolation of the organism from the urine and positive agglutination test.

Endometritis. The bacteriologic study of aborted fetuses and postabortion uterine discharges has indicated occasional involvement of the pregnant uterus.¹¹

Glandular System—Mastitis. The not infrequent occurrence of this complication in undulant fever gives reason for assuming that the specific infection localizes in breast tissue.

Cutaneous and Subcutaneous Tissues—In several reported cases, chronic subcutaneous abscesses have yielded pure culture of *Brucella*.

In addition to the foregoing, the organisms under consideration have been isolated by different workers also from such places as a pancreatic abscess, an infected dermoid, peritoneal lesions suggestive of miliary tuberculosis, removed tonsils, a pathological appendix and an infected fallopian tube. On the basis of conditions found in animals and clinical observation in human beings, the occurrence of other focal lesions may be suspected, as for example in the lungs or spleen.

There has been wide variation in the clinical types of cases in which these local lesions have occurred but they have been discovered most frequently in chronic infections. In course and character the focal process itself often simulates tuberculosis. Occasionally the local manifestation so overshadows the general symptoms that undulant fever is not suspected. The wide distribution of *Brucella* and the frequency of subclinical infections indicates a more frequent examination for these organisms. Bacteriologic studies of inflammatory processes must be regarded as incomplete if adequate search for *Brucella* is not included.

The prevalence of these localized infections has not yet been determined. Limited observations with a substantial number of positive observations demand that they be more commonly considered in differential diagnosis. Thus far they have been observed more frequently in Iowa than elsewhere, owing, according to present bacteriologic evidence, to their greater frequency in infections with the porcine than with the bovine strains of *Brucella*.

DIAGNOSIS AND THERAPY

With the more general appreciation that the agglutination test remains negative in some cases, other diagnostic aids are receiving more attention. The skin test and the opsonocytaphagic reaction (Huddleson) are being more widely used and accurately interpreted. We feel that the importance of cultural studies must be persistently emphasized. More general adoption of bacteriologic procedures required for the isolation of *Brucella* would increase materially the clinical and epidemiologic knowledge of this disease.

The difficulties in diagnosis of the mild and more chronic forms have repeatedly come to our attention. Evans¹² has recently presented strong evidence that calls for consideration of brucellosis before a too ready acceptance of such diagnoses as neurasthenia or psychoneurosis. The frequency of occurrence of such atypical infections is now being intensively studied in selected localities by the United States Public Health Service.

The difficulty in evaluating any therapeutic procedure in a variable self-limiting disease caused by three different strains of organism is apparent. In our studies we have sought to appraise the specific value of vaccines and brucellin. Large quantities of these preparations have been distributed, but the number and nature of the reports concerning their value permit no definite conclusions. Thus far we can only say that most of the physicians who supplied information spoke approvingly of the response to brucellin therapy. We have not been able to obtain, however, an adequate and controlled series of therapeutic tests. In our opinion the most important therapeutic considerations are early diagnosis, continuous bed rest and general supportive measures.

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7. Feldman, W. H. and Olson, C. L., Jr. Spondylitis of Swine Associated with Lesions of the *Brucella* Group. Arch. Path. 10:195, 210 (Apr.) 1933.

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9. Amoss, H. L. Infect. Clin. 4: 930 (Dec.) 1931.

10. Gilbert, E. H., and Coleman, Martin P. J. Infect. Dis. 54: 300-311 (Mar.) 1934.

11. Carver, C. M., and Pak, F. L. J. Am. Med. Assoc. 103: 1216-1217 (Apr. 11) 1931.

12. Evans, H. H. J. Am. Med. Assoc. 103: 1216-1217 (Apr. 11) 1931.

12. Evans, H. H. Chronic Brucella. J. A. M. A. 103: 1216-1217 (Apr. 11) 1931.

COMMENT

Epidemiologically, undulant fever is not one disease but a group of three closely related diseases. These are caused by three varieties of *Brucella* which differ as to animal host, mode of dissemination, pathogenicity and probably infectivity for man. Geographically in this country the bovine variety of *Brucella* is widely and rather uniformly distributed, while the porcine and caprine varieties are largely confined to specific localities. On these bases the epidemiologic variations in undulant fever are explainable.

Clinically *Brucella* infection of man presents also a combined picture, that of a generalized infection and of a variety of localized inflammatory lesions. The latter may occur as complications or sequelae of the generalized infection or may appear to be independent processes. The sites of localization are known to be numerous, but the frequency of their occurrence must yet be determined.

CONCLUSIONS

1 During the period 1930 to 1935 inclusive, data were collected on 705 additional cases of undulant fever, giving a total series of 1,080 Iowa cases. This number, according to laboratory observations, represents about two thirds of all cases diagnosed in this state.

2 The porcine variety of *Brucella* was found in a total of eighty-seven, or 70 per cent, of the 124 cases from which the organism was isolated from the blood stream or local lesions.

3 Iowa and the surrounding states have a demonstrably higher incidence of undulant fever than do other areas. Limited evidence indicates that the porcine type of infection is largely limited to these states and accounts for the unusual incidence.

4 The significance of direct contact with livestock and carcasses has been further demonstrated.

5 Recent clinical studies have called attention to a wide variety of localized *Brucella* infections.

6 Blood cultures, skin tests and the opsonocytaphagic reaction are of epidemiologic and clinical importance.

7 Conclusive evidence as to the value of specific therapy has not been obtained.

College of Physicians and Surgeons, New York—Iowa State Department of Health and State Hygienic Laboratories

ABSTRACT OF DISCUSSION

DR. FRED E. ANGLE, Kansas City, Kan. We have just heard a report of the most complete epidemiologic surgery of undulant fever thus far reported in the United States. Dr. Hardy and his co-workers have made a major contribution to medical progress in this study. Their description of the varied symptomatology and the numerous complications immediately places this disease in the category of tuberculosis, syphilis and malignant diseases, in that *Brucella* is capable of attacking any organ. The figures presented would suggest that clinical undulant fever is a comparatively rare condition. This is only partially true because the figures do not include a large number of patients who belong in the subclinical and ambulatory groups. From my experience I am convinced that these are the larger groups. In 2,000 Wassermann serums studied for *Brucella* agglutinins, 26 per cent yielded positive results. Other observers have recorded even higher percentages. Then again, about 6 per cent of acutely ill patients have no agglutinins in the blood but possess either positive *Brucella* cultures, skin tests or cytophagic reactions. May I ask the authors their experience concerning this group? Clinicians are much concerned with the management of these patients. The interpretation of the end results of treatment of patients with brucellosis is most difficult. My experience, and the experience

of many observers both in this country and in Europe, has been most favorable with vaccine therapy. I am convinced that it is the best single therapeutic agent now available. At the Atlantic City session I outlined the treatment of 100 cases observed over a period of seven years. In those patients who do not respond to treatment a careful search may reveal a complicating chronic focal infection. I have had a number of patients who, after the removal of these foci, have promptly recovered. *Brucella* is apparently very toxic to the nervous system. Hence there remains in many patients a residual manifestation usually in the form of neurasthenia or psychoneurosis. I have encountered considerable difficulty in handling this particular phase. No discussion on undulant fever would be complete which did not mention the fact that pasteurization or sterilization of milk and milk products eradicates this source of the disease.

DR. WALTER L. BIERRING, Des Moines, Iowa. This comprehensive study not only represents pioneer investigation of undulant fever but illustrates the value of the correlation of the public health worker and the clinician in furnishing interesting and significant clinical facts. Ten years ago this was regarded a comparatively rare disease and now we have a report of more than 1,000 cases occurring in one state alone. At least three distinct sources of infection exist. Its origin in different animal species, often producing different symptoms, with varying localization, produces a rather unusual clinical picture. Its infection by contact through the unbroken skin is well established and is a contribution by one of the authors. The fact that the porcine type of infection predominates in the series reported is rather significant, although Iowa furnishes one fifth of the hogs of the country, and in this middle section one third of the hogs for the entire country are produced. It is the localization of the inflammations and infections that distinctly complicate the clinical picture. The characteristic clinical syndrome is a weakness, a continuous fever which has an undulating course and a primary sweating period. I believe there is no other form of perspiration that resembles this particular clinical phenomenon. The water just rolls off the patient, the night clothing and bedding requiring changing many times during the night. That it occurs nocturnally is also characteristic. In many respects it resembles the sweating incident to the malarial paroxysm, but it is really more striking. The localization of the disease in the different tissues has brought it prominently under clinical observation. A confusing diagnostic feature is the apparent sense of well being on the part of the patient. The illness can continue for months without the patient appearing very sick. The fact that we are having more milk-borne epidemics is significant, and as these are frequently due to the porcine strain of the *Brucella* organism it becomes difficult to determine to what extent the dairy industry is involved. This offers a further illustration of the danger of contact with diseased tissues, and thus undulant fever is coming to be regarded as an industrial hazard. A specific treatment has not yet been generally accepted, although some virtue is accorded to vaccine therapy. It is interesting to contemplate that practically a new disease has come under observation in this section during the past ten years which taxes our diagnostic ability and thus far has not been very responsive to therapeutic endeavors.

DR. WILLIAM J. KERR, San Francisco. In California we have all three strains of *Brucella* organisms. The porcine strain is found among the hogs from the Middle West brought there for slaughter and consumption. The melitensis strain is brought to us from the Southwestern part of the country and Mexico, seen chiefly in the herds of goats and infecting man through the great consumption of goats' milk in that part of the country. We also have the bovine strain in the cattle. The porcine strain is limited more or less to the workers in slaughterhouses, and the melitensis strain is limited to some extent to the laboratory workers in the institutions where bacteriologic studies are going on.

DR. A. V. HARDY, New York. Dr. Angle asked concerning our experience with the less typical cases not diagnosed by a positive agglutination test. In our study we have given our attention chiefly to those cases in which we were satisfied that there was no question as to the diagnosis of undulant fever and hence we have had but little experience with cases which failed to yield a positive agglutination test. Such as we have had

warrant our emphasizing the diagnostic value of the phagocytic test as described by Huddleson and the skin test. Dr. Angle has also wisely called attention to prevention. The one feature which disturbs us, particularly in Iowa, is that attention is being given at present to the source of infection which gives a less severe type of disease. We feel that before this problem is solved there must be a program of eradication of *Brucella* infection of hogs, such as is now taking place for the eradication of the bovine infection.

THE BLOOD CHANGES IN NORMAL PREGNANCY

AND THEIR RELATION TO THE IRON AND PROTEIN SUPPLIED BY THE DIET

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Within recent years much has been learned of the physiology of the blood-making organs from the study of the circulating red blood cells. By determinations

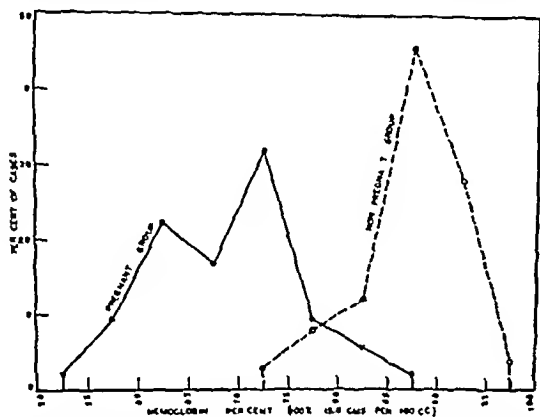


Chart 1—A comparison of the frequency distribution of the hemoglobin values obtained on sixty six pregnant women in the last trimester of gestation and on fifty nonpregnant women of the same age range from 18 to 22 years.

of the number of erythrocytes and their size, form and relative content of hemoglobin in the presence of anemia it is often possible to recognize a specific defect in their development and in some instances to supply the deficient factor. Those anemias characterized by small red blood cells and a low color index are generally attributed to a lack of iron, whereas large erythrocytes, carrying more than the usual complement of hemoglobin, are considered to denote anemia of the pernicious group dependent on interference with the maturation of the erythrocytes and due to the lack of a substance found in liver.¹ Although deficiencies other than iron and the factors which make up the liver principle have been suggested as possible causes of impaired blood formation, with the exception of vitamin C² no other dietary lack has been definitely shown to cause anemia in adult human beings.

From the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

Jean Ayer and Ellen Schenk Reitschaefer gave technical assistance. Appreciation is expressed especially of the cooperation of Dr. Richard H. Freyberg of the Department of Clinical Investigation and Dr. Clair E. Fennell and Richard D. Reckie of the Department of Obstetrics and Gynecology.

1. Wintrobe, M. M. Anemia: Classification and Treatment on the Basis of Differences in the Average Volume and Hemoglobin Content of the Red Corpuscles. *Arch. Int. Med.* 54: 216 (Aug.) 1934.
2. Mettler, S. R., Mies, G. R., and Tower, V. C. Surgery in Anemia: The Effect of Food Rich in Vitamin C on Blood Formation. *J. A. M. A.* 85: 1672 (Oct. 11) 1935.

It is intended in this communication to report the results of blood studies on a group of young women with uncomplicated pregnancies and to discuss some aspects of the relation of diet to the blood in pregnancy. Sixty-six subjects, of whom fifty-four were primiparae, were examined at intervals throughout the last three weeks of gestation. The subjects were unselected except that those with concomitant disease were excluded. During this period they were maintained within an institution and their health and diet were under constant supervision. Among the members of such a group one would not expect to find instances of grave anemia and no such cases were encountered. However, it was thought that analysis of the alterations in the blood commonly found in healthy pregnant women might throw additional light on the etiology of the anemias of pregnancy and provide a basis both for their prevention and for their effective therapy. Erythrocyte counts were made with instruments certified by the U. S. Bureau of Standards. Hemoglobin estimations were carried out by a modified Sahli technique in which 100 per cent is equivalent to 15.8 Gm of hemoglobin per hundred cubic centimeters of blood as determined by the oxygen capacity method. For the hematocrit determinations the Wintrobe tube was used. As an anticoagulant a mixture of 6 parts of ammonium oxalate and 4 parts of potassium oxalate was employed. Two milligrams of the combined dry salts was allowed for each cubic centimeter of blood. In this solution the volume of the erythrocytes is unaltered.³

In such a study, in which deviations from the normal may be slight, the value of a control group is apparent. For this purpose blood examinations were made on fifty nonpregnant young women. The group was made up of student nurses, from 18 to 22 years of age, without evidence of dietary deficiency. It was found that in an appreciable number there occurred a definite decrease in average erythrocyte volume. In some instances in which there existed such a tendency to microcytosis, a history was obtained of excessive menstrual bleeding, and in the others also unrecognized menorrhagia may well have been the cause.⁴ If those nonpregnant subjects with an average erythrocyte volume of less than 85 cubic microns, comprising fourteen

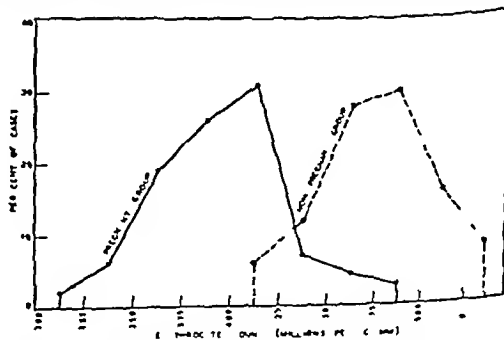


Chart 2—A comparison of the erythrocyte counts obtained from the same subjects as provided in the data shown on chart 1.

members 28 per cent of the total are excluded the values for the control group are: red blood cells range 4,050,000 to 5,280,000; average 4,660,000; hemoglobin range 78 per cent (12.4 Gm) to 97 per cent (15.4 Gm); average 87.5 per cent (13.8 Gm); mean corpuscular

3. Heller, A. G., and Paul Henry. Changes in Cell Volume by Varying Concentrations of Different Anticoagulants. *J. Lab. Med.* 10: 777 (April) 1934.

4. Barker, A. I., Fowler, W. M., and Palfrey, C. W. *J. Clin. Med.* 22: 1 (June) 1935.

volume, range 85 cubic microns to 96 cubic microns, average 89.1 cubic microns, color index,⁵ range 0.85 to 1.04, average 0.94

Of the pregnant group, sixty, or 90 per cent, showed blood values below the minimum figures for the red blood cell count and hemoglobin as given. The increase in plasma volume known to occur during the latter half of pregnancy accounts in part for the reduction of erythrocytes and hemoglobin. Blood and plasma volume determinations on fifteen of these subjects confirm the conclusions of Dieckmann and Wegner⁶ that, in the

TABLE 1—Blood Values Obtained on Fifty Healthy Non-pregnant Young Women

| Cases | Erythrocyte Count Millions per Cu Mm | Hemo globin per Cent (100% = 15.6 Gm) | Hematocrit | Average Erythrocyte Volume Cubic Microns | Color Index (Uncorrected) |
|--|--------------------------------------|---------------------------------------|------------|--|---------------------------|
| Average Erythrocyte Volume (M O V) Greater Than 85 Cubic Microns | | | | | |
| 1 | 4.50 | 79 | 39.0 | 86 | 0.87 |
| 2 | 4.50 | 85 | 44.5 | 92 | 0.83 |
| 3 | 5.23 | 93 | 45.0 | 87 | 0.83 |
| 4 | 4.63 | 87 | 41.5 | 90 | 0.86 |
| 5 | 4.44 | 83 | 43.0 | 97 | 0.93 |
| 6 | 4.65 | 88 | 42.0 | 90 | 0.95 |
| 7 | 5.00 | 87 | 43.5 | 86 | 0.86 |
| 8 | 4.43 | 85 | 40.5 | 90 | 0.95 |
| 9 | 4.60 | 85 | 40.5 | 88 | 0.92 |
| 10 | 4.30 | 78 | 37.0 | 85 | 0.90 |
| 11 | 4.64 | 78 | 40.5 | 87 | 0.85 |
| 12 | 5.01 | 87 | 42.5 | 85 | 0.87 |
| 13 | 4.82 | 93 | 44.0 | 91 | 0.97 |
| 14 | 4.31 | 85 | 38.0 | 88 | 0.99 |
| 15 | 4.21 | 81 | 40.0 | 95 | 0.96 |
| 16 | 4.14 | 85 | 39.5 | 95 | 1.04 |
| 17 | 4.84 | 97 | 44.5 | 91 | 1.01 |
| 18 | 4.70 | 92 | 42.0 | 89 | 0.98 |
| 19 | 4.37 | 87 | 40.5 | 93 | 1.00 |
| 20 | 4.53 | 89 | 40.5 | 89 | 0.98 |
| 21 | 4.80 | 91 | 41.5 | 86 | 0.95 |
| 22 | 4.95 | 82 | 39.0 | 96 | 1.01 |
| 23 | 4.80 | 92 | 42.0 | 87 | 0.96 |
| 24 | 4.22 | 82 | 38.0 | 90 | 0.98 |
| 25 | 4.66 | 87 | 40.0 | 88 | 0.98 |
| 26 | 4.58 | 80 | 39.0 | 85 | 0.95 |
| 27 | 5.17 | 97 | 47.0 | 91 | 0.94 |
| 28 | 4.77 | 86 | 41.0 | 86 | 0.90 |
| 29 | 4.84 | 88 | 42.0 | 87 | 0.91 |
| 30 | 4.80 | 94 | 43.5 | 90 | 0.96 |
| 31 | 4.69 | 91 | 43.5 | 95 | 1.00 |
| 32 | 4.72 | 88 | 41.0 | 87 | 0.91 |
| 33 | 4.96 | 93 | 45.5 | 92 | 0.93 |
| 34 | 4.95 | 89 | 45.5 | 92 | 0.87 |
| 35 | 4.87 | 93 | 41.5 | 85 | 0.93 |
| 36 | 4.79 | 91 | 42.0 | 88 | 0.93 |
| Average | 4.66 | 87.5 | 41.7 | 89.1 | 0.941 |
| Average Erythrocyte Volume Less Than 85 Cubic Microns | | | | | |
| *37 | 5.08 | 78 | 39.0 | 77 | 0.77 |
| *38 | 4.55 | 76 | 38.0 | 84 | 0.83 |
| *39 | 5.51 | 68 | 40.5 | 74 | 0.79 |
| 40 | 4.96 | 90 | 39.5 | 80 | 0.90 |
| *41 | 5.05 | 90 | 38.5 | 76 | 0.90 |
| 42 | 4.67 | 88 | 38.0 | 81 | 0.92 |
| *43 | 5.57 | 93 | 42.0 | 75 | 0.85 |
| *44 | 5.07 | 88 | 41.5 | 83 | 0.87 |
| 45 | 4.56 | 86 | 41.0 | 84 | 0.89 |
| 46 | 4.83 | 84 | 39.0 | 81 | 0.87 |
| *47 | 4.91 | 87 | 40.5 | 82 | 0.89 |
| 48 | 5.11 | 84 | 41.5 | 81 | 0.82 |
| 49 | 4.62 | 88 | 41.0 | 84 | 0.90 |
| *50 | 5.09 | 94 | 39.5 | 78 | 0.92 |
| Average | 4.99 | 86.6 | 39.0 | 79.2 | 0.869 |
| Average of both groups | 4.75 | 87.2 | 41.2 | 80.3 | 0.921 |
| * Subjects Reexamined After Two Months | | | | | |
| 37 | 4.63 | 75 | 39.0 | 84 | 0.81 |
| 38 | 4.42 | 74 | 36.5 | 83 | 0.84 |
| 39 | 4.84 | 88 | 42.5 | 88 | 0.91 |
| 41 | 4.77 | 88 | 42.5 | 89 | 0.92 |
| 43 | 4.13 | 60 | 33.5 | 81 | 0.78 |
| 44 | 4.09 | 78 | 41.0 | 87 | 0.83 |
| 47 | 4.30 | 67 | 35.0 | 81 | 0.78 |
| 50 | 5.37 | 88 | 45.5 | 85 | 0.82 |

mented by about 25 per cent. With the hematocrit values as a basis for calculation, and on the assumption that there occurs no compensatory output of red blood

TABLE 2—Blood Values Obtained on Sixty-Six Healthy Pregnant Women

| Oases | Erythrocyte Count Millions per Cu Mm | Hemo globin per Cent (100% = 15.6 Gm) | Hematocrit | Average Erythrocyte Volume Cubic Microns | Color Index (Uncorrected) |
|--|--------------------------------------|---------------------------------------|------------|--|---------------------------|
| Normal Blood Values Reduction Accounted for by Plasma Dilution | | | | | |
| 1 | 4.25 | 75 | 37.0 | 87 | 0.88 |
| 2 | 3.94 | 74 | 39.0 | 101 | 0.95 |
| 3 | 3.90 | 71 | 38.0 | 96 | 0.90 |
| 4 | 4.01 | 71 | 40.0 | 100 | 0.90 |
| 5 | 4.19 | 74 | 37.5 | 90 | 0.88 |
| 6 | 3.75 | 70 | 34.0 | 91 | 0.93 |
| 7 | 3.87 | 76 | 36.0 | 93 | 0.99 |
| 8 | 4.47 | 83 | 42.5 | 95 | 0.93 |
| 9 | 3.98 | 72 | 37.5 | 94 | 0.90 |
| 10 | 4.28 | 73 | 39.0 | 91 | 0.80 |
| 11 | 5.00 | 85 | 44.5 | 88 | 0.84 |
| 12 | 3.78 | 71 | 37.0 | 88 | 0.91 |
| 13 | 4.14 | 73 | 36.5 | 88 | 0.89 |
| 14 | 4.14 | 70 | 40.0 | 97 | 0.85 |
| 15 | 4.14 | 72 | 37.0 | 90 | 0.88 |
| 16 | 4.20 | 70 | 37.0 | 88 | 0.83 |
| 17 | 3.91 | 70 | 34.0 | 86 | 0.90 |
| 18 | 4.09 | 70 | 36.5 | 89 | 0.85 |
| 19 | 4.23 | 70 | 38.0 | 90 | 0.83 |
| 20 | 4.58 | 82 | 40.0 | 87 | 0.90 |
| 21 | 3.79 | 70 | 34.0 | 90 | 0.92 |
| 22 | 3.89 | 75 | 36.0 | 92 | 0.96 |
| 23 | 4.02 | 82 | 38.5 | 96 | 1.00 |
| 24 | 4.19 | 70 | 38.5 | 92 | 0.83 |
| 25 | 4.09 | 73 | 38.0 | 93 | 0.88 |
| 26 | 4.17 | 71 | 36.5 | 88 | 0.86 |
| 27 | 4.15 | 61 | 40.0 | 96 | 0.98 |
| 28 | 4.00 | 79 | 38.0 | 94 | 0.97 |
| Average | 4.12 | 75 | 38.0 | 92 | 0.896 |
| Iron Deficiency Anemia Reactive Bone Marrow | | | | | |
| 29 | 4.31 | 65 | 36.5 | 85 | 0.75 |
| 30 | 4.12 | 60 | 34.0 | 83 | 0.73 |
| 31 | 3.04 | 61 | 32.5 | 84 | 0.78 |
| 32 | 4.22 | 64 | 33.5 | 79 | 0.76 |
| 33 | 4.30 | 67 | 34.0 | 80 | 0.78 |
| 34 | 4.13 | 64 | 31.5 | 76 | 0.77 |
| 35 | 4.75 | 66 | 38.5 | 81 | 0.63 |
| 36 | 5.00 | 64 | 38.5 | 77 | 0.64 |
| 37 | 3.86 | 47 | 29.0 | 75 | 0.61 |
| 38 | 4.24 | 62 | 35.0 | 82 | 0.75 |
| 39 | 3.77 | 59 | 31.0 | 82 | 0.77 |
| 40 | 3.97 | 60 | 33.0 | 83 | 0.75 |
| 41 | 4.00 | 61 | 34.0 | 85 | 0.76 |
| 42 | 4.19 | 66 | 35.0 | 83 | 0.78 |
| 43 | 3.97 | 60 | 30.5 | 74 | 0.75 |
| 44 | 4.10 | 65 | 34.0 | 83 | 0.80 |
| 45 | 3.97 | 64 | 33.5 | 85 | 0.80 |
| 46 | 4.55 | 66 | 36.0 | 79 | 0.72 |
| 47 | 3.83 | 61 | 32.5 | 85 | 0.79 |
| 48 | 3.93 | 60 | 32.5 | 83 | 0.76 |
| Average | 4.16 | 62 | 33.7 | 81 | 0.747 |
| Protein Deficiency Anemia Inactive Bone Marrow | | | | | |
| 49 | 3.49 | 58 | 33.5 | 96 | 0.83 |
| 50 | 3.04 | 69 | 37.5 | 103 | 0.90 |
| 51 | 3.63 | 65 | 35.5 | 98 | 0.90 |
| 52 | 3.54 | 70 | 37.0 | 103 | 0.99 |
| 53 | 3.22 | 57 | 34.0 | 106 | 0.90 |
| 54 | 3.37 | 61 | 33.0 | 98 | 0.91 |
| 55 | 3.59 | 64 | 35.0 | 97 | 0.84 |
| 56 | 3.39 | 67 | 32.0 | 94 | 0.84 |
| 57 | 3.54 | 69 | 37.5 | 106 | 0.97 |
| 58 | 3.52 | 68 | 33.0 | 94 | 0.83 |
| 59 | 3.50 | 70 | 36.0 | 103 | 1.00 |
| 60 | 3.66 | 65 | 37.0 | 99 | 0.90 |
| 61 | 3.69 | 67 | 36.5 | 99 | 0.90 |
| 62 | 3.61 | 75 | 36.0 | 100 | 1.04 |
| 63 | 3.68 | 78 | 34.0 | 92 | 1.01 |
| 64 | 3.41 | 68 | 33.0 | 97 | 0.97 |
| 65 | 3.60 | 70 | 38.5 | 105 | 0.96 |
| 66 | 3.57 | 64 | 35.5 | 100 | 0.90 |
| Average | 3.54 | 65 | 35.2 | 100 | 0.924 |

cells, the lowest erythrocyte count that may be explained solely by hydremia is approximately 3,700,000 per cubic millimeter, the minimum hemoglobin is about 70 per cent (11.3 Gm). Values lower than these were found in 70 per cent of the subjects. In table 1 are given the hematologic data obtained from the nonpregnant group and in table 2 are shown the observations in the series of pregnant women. On charts 1, 2 and 3 are plotted the comparative frequency of the hemoglobin values, erythrocyte counts and average erythrocyte volumes of the pregnant and nonpregnant groups. Those cases of

last trimester of pregnancy, an increase in blood volume with relative reduction of red blood cells ordinarily is present and that the volume of the plasma is aug-

⁵ Uncorrected. Corrected color index values may be obtained on data presented in this paper by multiplying by the factor 1.1.
⁶ Dieckmann W. J., and Wegner C. R. The Blood in Normal Pregnancy. Blood and Plasma Volumes. Arch. Int. Med. 53: 71 (Jan) 1934.

pregnancy in which definite anemia existed fell into two distinct groups, approximately equal in number. One, characterized by lowered color index, small red blood cells and an increased percentage of reticulocytes, is readily accounted for by a lack of iron. In the presence of such anemia the bone marrow is reactive, its content of normoblasts is greater than that of the nonanemic person, and through enhancing the availability of iron these nucleated cells will rapidly mature into functional

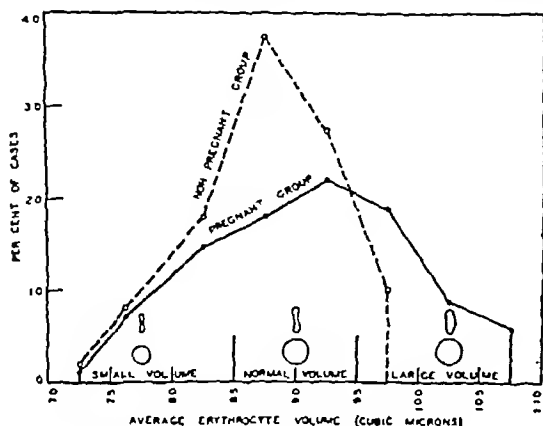


Chart 3—A comparison of the average erythrocyte volumes obtained from the same subjects as provided in the data shown on charts 1 and 2

erythrocytes. The second group is differentiated by an approximately equivalent reduction of red blood cells and hemoglobin, resulting in a color index nearer unity, by high normal or increased volume of the erythrocytes, and by a reticulocyte percentage below the average normal range. This blood picture is in many respects similar in its distinguishing features to hypoplastic anemia in nonpregnant persons, in whom bone marrow studies reveal an inactive marrow with little evidence of regeneration. Chart 4 illustrates the differentiation of the blood observations in pregnancy into three groups, the first, in which the values are within normal limits or are explainable solely on the basis of increased plasma volume, the second characterized by anemia with low color index and small red blood cells, and the third, in which anemia with normal color index and red blood cells of high normal or definitely increased volume is found.

In the subsequent discussion of these types of blood change in pregnancy data will be presented which, it is felt will place in question a recent contention that the anemias of pregnancy, excepting those due to concomitant disease or loss of blood are limited to a hypochromic type dependent on lack of iron and a pernicious form resulting from interference with the assimilation or utilization of the factors composing the liver principle.

The view that a diet poor in iron and a relative reduction of the capacity of the stomach to secrete hydrochloric acid may together or independently lead during pregnancy to iron deficiency anemia is based on the fact that the infant is dependent on the mother

for the materials required for growth and blood formation before birth as well for a large part of its requirement during the first months of extra-uterine life. It is, however, fallacious to assume that iron is necessarily obtained from the maternal diet at the time it is stored by the fetus.⁹ The total iron content of the new-born child approximates 350 to 400 mg.,¹⁰ or no more than the quantity contained in 1 liter of blood. Considering that the pregnant woman saves from the absence of menstruation over ten percent from one third to one half of this amount of blood the net iron loss is no more than would be removed through serving as donor for a single moderate sized blood transfusion. The reserves of blood and of blood

TABLE 3—Lack of Correlation Between the Gastric Secretion of Free Acid and the Blood Values in Pregnancy

| Cases | Free Acid Concentration per Cent N/10 Acid in Gastric Contents | Red Blood Cells Millions | Hemoglobin per Cent | Hematocrit | Mean Corpuscular Volume Cubic Microns | Color Index |
|-------|--|--------------------------|---------------------|------------|---------------------------------------|-------------|
| 1 | 0 | 4.60 | 88 | 42.0 | 93 | 0.6 |
| 2 | 33 | 4.12 | 60 | 34.0 | 83 | 0.3 |
| 3 | 2 | 3.75 | 70 | 34.0 | 91 | 0.5 |
| 4 | 0 | 4.10 | 74 | 37.5 | 93 | 0.59 |
| 5 | 20 | 3.87 | 70 | 35.0 | 79 | 0.4 |
| 6 | 10 | 4.22 | 64 | 33.5 | 91 | 0.6 |
| 7 | 18 | 3.08 | 72 | 37.5 | 80 | 0.41 |
| 8 | 30 | 3.79 | 61 | 33.0 | 83 | 0.4 |
| 9 | 14 | 3.93 | 60 | 32.5 | 83 | 0.4 |
| 10 | 22 | 5.03 | 85 | 44.5 | 76 | 0.4 |
| 11 | 28 | 4.13 | 64 | 31.5 | 100 | 0.51 |
| 12 | 4 | 4.01 | 77 | 40.5 | 80 | 0.43 |
| 13 | 12 | 3.84 | 61 | 33.0 | 103 | 0.55 |
| 14 | 20 | 3.64 | 60 | 37.5 | 101 | 0.91 |
| 15 | 8 | 3.94 | 74 | 37.0 | | |

building materials possessed by the healthy person without a tendency toward anemia are adequate to replace such a loss without demonstrable effect on the blood level.

In order to check the validity of this reasoning, a continuous determination of the iron exchange was carried out in the hospital on a healthy young woman throughout the last sixty-three days of her pregnancy

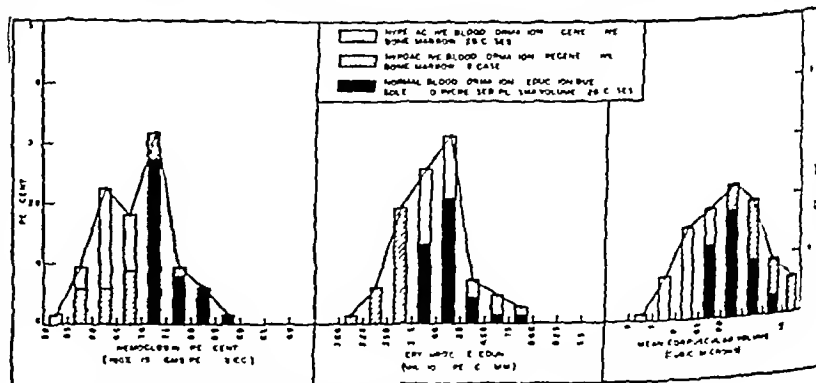


Chart 4—Classification of the blood values of sixty-six pregnant women according to the type of bone marrow reaction to the demands of pregnancy

and the first twelve days after delivery.¹¹ A number of significant iron balance studies on pregnant women have been reported by Coons¹² but her conclusions based on short period observations are open to objection that even though the diet is constant the

⁹ Coons, Calix May, Studies in Metabolism, D. M. Bull. 23 Agricultural Experiment Station, Oklahoma State University, 1928.
¹⁰ Bethe, F. H. and Eyer, Jan. The Iron Content of the Blood and the Influence of Diet on Hemoglobin Formation, J. Biol. Chem. 100, 1931.
¹¹ Coons, Calix May, Iron Balance in Pregnancy, J. Biol. Chem. 100, 1931.
¹² Coons, Calix May, Iron Balance in Pregnancy, J. Biol. Chem. 100, 1931.

put of iron fluctuates widely from week to week. Moreover, since the subjects of her investigations were not proved to have normal blood values in respect to hemoglobin level, erythrocyte count and average erythrocyte size, their dietary requirements for blood formation were not necessarily physiologic.

The subject of the present study received a uniform diet supplying 7.1 mg of iron daily. Supplementary vitamins A, B, D and C were given, and the total daily

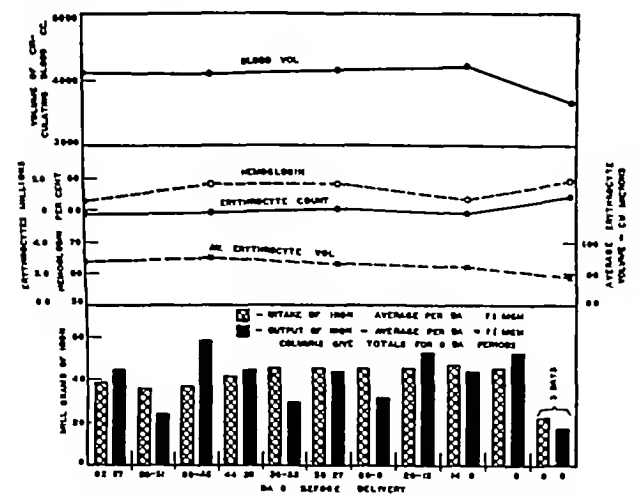


Chart 5—The iron exchange and the blood values of a healthy woman during the latter months of pregnancy

protein approximated 80 Gm supplied chiefly by milk, eggs and canned salmon. The combined urine and stool daily iron output, averaged for the total time of observation, equaled exactly the intake, although marked variations occurred in successive six day periods. The average daily intake and output of copper were respectively 2.20 and 2.15 mg daily. In spite of a relatively low iron and copper content of the diet and practically no retention of either element during the last months of gestation, the blood values were maintained at levels distinctly above the average in pregnancy (chart 5). The blood of the infant likewise showed high normal values. It is significant that the habitual diet of this subject, before coming under observation, lacked meat and eggs with a consequent low iron and copper content. She was, however, accustomed to drinking a generous quantity of milk. It is also of interest that gastric analysis performed on two occasions revealed absence of free acid after alcohol stimulation, although hydrochloric acid was present in considerable amount after the subcutaneous injection of histamine.

During pregnancy there commonly occurs a reduction in the quantity of hydrochloric acid secreted by the stomach in response to physiologic stimuli.¹² Such relative hypochlorhydria has been considered an important factor in the development of the iron deficiency anemia of pregnant women,¹³ since it has been shown that iron is more readily absorbed from an acid than from an alkaline medium.¹⁴ However, the data presented in table 3 demonstrate no relationship between the amount of gastric hydrochloric acid secreted in

response to alcohol stimulation and the level of the blood count. Although limited in number, these observations suggest that temporary reduction of the gastric acidity is not a direct cause of lowered blood values in pregnancy.

The explanation of the occurrence of hypochromic anemia in pregnant women is not to be found primarily in the circumstances incident to gestation but should be sought in the status of the hematopoietic mechanism prior to conception. In the series of cases under discussion the percentage of pregnant women developing definite anemia of the iron deficiency type equals almost exactly that of the nonpregnant subjects showing a tendency to such anemia as evidenced by small red blood cells. These results may be presumed to indicate depletion of the iron reserves, whether caused by excessive blood loss, repeated childbirths or defective assimilation of the metal, thus rendering such a woman less able to meet the moderate demands of pregnancy. Consequently, the routine administration of iron during gestation serves less of a prophylactic purpose than as a corrective measure and is effective in those cases in which predisposition to hypochromic anemia already exists. Although no disadvantage is known to attend the indiscriminate use of iron in pregnancy, many instances are encountered in which its administration fails either to correct or to prevent anemia. Illustrations of such failure of response to iron therapy are provided in chart 6. Such anemia is not of the iron deficiency type and it may be differentiated from it by simple diagnostic procedures. It would seem to be distinctly advisable to give effective doses of an inorganic

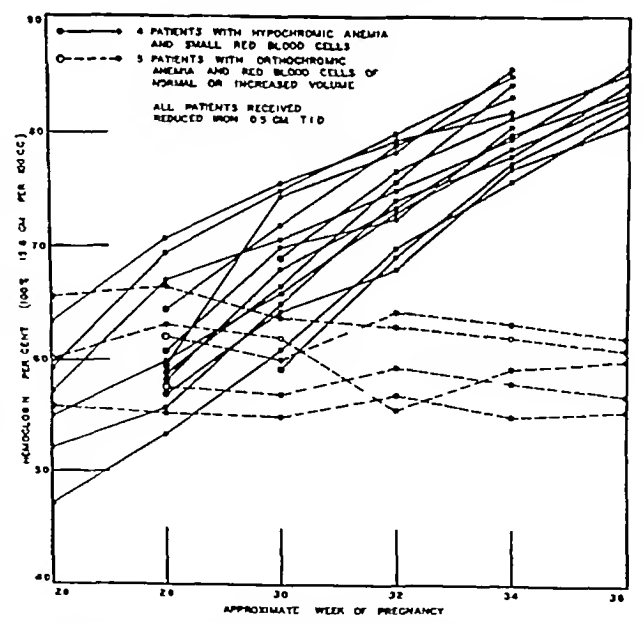


Chart 6—The effect of the administration of reduced iron on the hemoglobin level of pregnant women with hypochromic anemia and its lack of effect in cases of anemia with normal color index and normal or increased average erythrocyte volume

iron preparation to all pregnant women regardless of the actual level of the hemoglobin, if an accurate erythrocyte count and hemoglobin determination by a standardized method reveal a low color index or if the erythrocyte count and hematocrit determination give an average red blood cell volume of less than 85 cubic microns.

Those subjects comprising the second group, in whom the anemia fails to respond to iron, were frequently

12 Strauss M B and Castle, W B. Studies of Anemia in Pregnancy. Gastric Secretion in Pregnancy and the Puerperium. Am. J. M. Sc. 184: 655 (Nov.) 1932.
13 Strauss M B and Castle, W B. Studies of Anemia in Pregnancy. The Relationship of Dietary Deficiency and Gastric Secretion to Blood Formation During Pregnancy. Am. J. M. Sc. 184: 663 (Nov.) 1932.
14 Mettler S R. and Minot, G R. The Effect of Iron on Blood Formation as Influenced by Changing the Acidity of the Gastrointestinal Contents in Certain Cases of Anemia. Am. J. M. Sc. 181: 25 (Jan.) 1931.

found to possess red blood cells of relatively large volume. However, unlike the macrocytes of pernicious anemia, their average diameter approximates the normal value. It may be inferred that these erythrocytes were less biconcave than the normal cell, and consequently the phenomenon may more accurately be defined as spherocytosis than as macrocytosis.¹⁵ Recent studies, summarized on chart 7, have shown that there is an

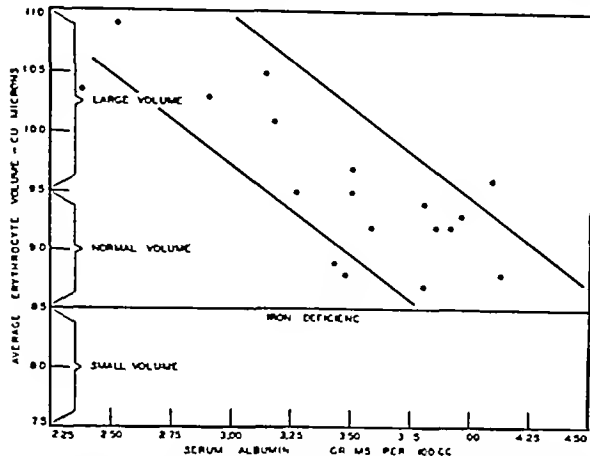


Chart 7—The inverse relation between the level of the serum albumin and the average volume of the erythrocytes observed on pregnant women without iron deficiency anemia.

inverse relation between the average volume of the erythrocytes and the level of the serum albumin in pregnancy, except in cases of iron deficiency anemia in which true microcytosis occurs. Since the relation between the cell volume and the colloid osmotic pressure was found to be less definite it is probable that the swelling of the erythrocytes cannot be explained solely on an osmotic basis.¹⁶

It was observed that patients with this type of blood change and anemia of hypoplastic nature frequently underwent improvement after admission to the hospital, where they received a better diet than that to which they had been accustomed, particularly in respect to the protein supplied. The protein content of the University Hospital general diet averages approximately 65 Gm daily. Supplementing this diet by 1,000 cc of milk daily has led to correction of the anemia, restoration of the average erythrocyte volume to normal, and increase in the serum albumin. It is believed that the beneficial effects of the milk supplement may be attributed to its supply of about 33 Gm additional protein daily of high biologic value. Charts 8 and 9 depict the responses of the blood to iron and protein, respectively, on the part of two pregnant women with contrasting types of anemia.

With the collaboration of Miss Jean Kyer, studies have been made of the effects of pregnancy on the blood of albino rats maintained on diets supplying variable amounts of iron and protein. The details of this work will be published in a separate communication. Rats receiving a diet low in iron developed a slight degree of anemia characterized by hypochromia and microcytosis, but in this connection it should be emphasized that the iron requirement of rats during pregnancy is relatively much greater than that of human beings

because of the large size of the litter and the rapid course of gestation. On the other hand, a low protein diet, containing an excess of iron, led to severe anemia with red blood cells of increased volume. Rats receiving an abundance of protein and a moderate supply of iron showed an actual increase during pregnancy of the erythrocyte count and hemoglobin value, without alteration of erythrocyte size.

CONCLUSIONS

1 Studies were made of the blood of sixty-six healthy young women during the last trimester of pregnancy, and similar observations were obtained from fifty healthy nonpregnant women of the same age group. In 70 per cent of the pregnant subjects the blood values were too low to be accounted for solely by increased plasma volume with consequent blood dilution.

2 Anemia in pregnancy is commonly due either to preexisting iron depletion or to an inadequate intake of protein of high biologic value during gestation. Rarely it is of the pernicious type amenable to liver or stomach therapy.

3 A lack of iron may be recognized before the development of actual anemia by the presence of a lowered color index or of red blood cells of less than normal size. In such cases the administration of an inorganic iron preparation in adequate dosage is indicated.

4 Anemia dependent on protein deficiency, characterized by a normal color index and by red blood cells of normal or increased volume, may be prevented or corrected by a suitable diet.

ABSTRACT OF DISCUSSION

DR R. B. SCHUTZ, Kansas City, Mo. A study of deficiency diseases in pregnancy is of extraordinary interest, but in searching for etiology one is easily driven to philosophy. Why is it that the so-called physiologic changes in pregnancy so often become exaggerated and produce vicious types of disease? Or

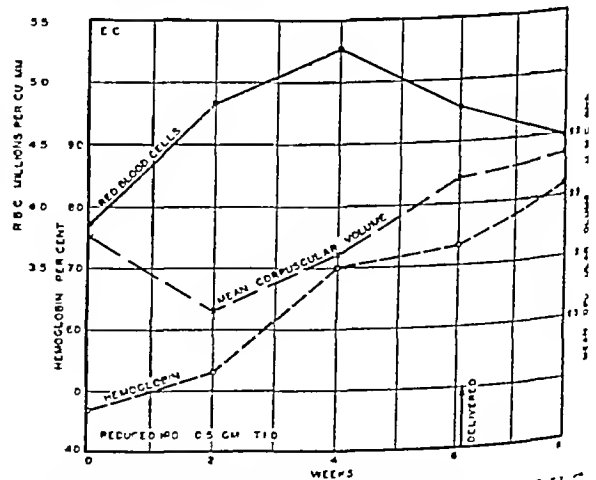


Chart 8—The effect of the administration of reduced iron to a patient with hypochromic and microcytic anemia of pregnancy.

wonders whether primitive women suffered the deficiencies that modern women have. Are we proving that after all the food is a parasite taking to itself what it will regardless of the source? It is important in the problem of the anemia of pregnancy to consider their possible relation to disorders of the endocrine system. As yet too little is understood of the relationship of the endocrine glands and the bone marrow. There is no doubt of the profound endocrine changes associated with pregnancy, and as a common source for study it might be well to study the bone marrow in pregnancy.

¹⁵ H. J. R. L., The Mechanism of the Increased Fragility of the Erythrocytes in Pernicious Anemia. *J. Clin. Invest.* 13: 441 (1934).
¹⁶ F. C. P., L. E. S., and P. H. S., Similarities in the Changes of the Blood in the First Half of Pregnancy and in Erythrocytosis in the First Half of Pregnancy. *Am. J. Clin. Chem.* March 1934.

Dr Bethell mentioned bone marrow studies in his paper but did not specify whether they were made in cases of anemia of pregnancy or in nonpregnant women. I should like to make the suggestion, although I shudder when I think of the implications, that in order to obtain a better understanding of this problem we begin to do marrow biopsies in pregnancy. I, for one, would hesitate to start, but I hope there is some one sufficiently courageous. The progressive nature of these anemias to an almost typical pernicious type suggests that studies in pregnancy might have far reaching effects. There have been a number of papers written on the subject, and each seems to bring us a little closer to the solution. I am particularly interested today in what was said about protein in the diet in its relationship to anemia.

DR. ADOLPH SACHS, Omaha. I made a rather exhaustive study of the copper and iron in twenty-five normal pregnant women taken at random. As is well known, there is a reciprocal relationship between copper and iron in the whole blood. The copper probably acts as a catalyzer. In normal women—nonpregnant women—there is an average of 45 mg of iron per hundred cubic centimeters of whole blood and an average of 131 micrograms of copper. As the iron goes down the copper goes up. I at no time have found a copper deficiency. The pregnant woman has below the average of iron in her blood. She will average 40 mg of iron per hundred cubic centimeters instead of 45 mg. She will average 195 micrograms of copper, whereas the normal woman averages 131. Half of this copper is to be carried over to the fetal liver for future

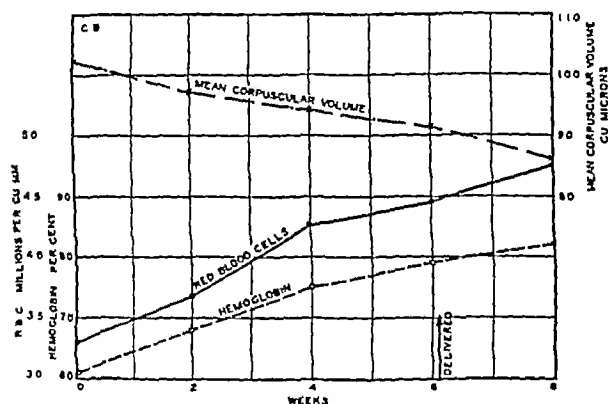


Chart 9—The effect of a high protein diet (95 Gm daily) given to a patient with anemia characterized by normal color index and increased average erythrocyte volume.

supply, because in the fetus there is only 82 micrograms per hundred cubic centimeters of cord blood, and there is an excess of iron averaging about 50 mg per hundred cubic centimeters of cord blood. So it is the mother who is carrying the copper over to the fetal storehouse. In the anemia of pregnancy there are two types, the physiologic type and the true anemia. Whenever there is any anemia, the copper will rise and the iron will go down. The same occurs with a pregnant woman, but she has a double purpose for carrying this copper. The true anemia will produce a hypoferronemia and in addition she has her hypercupremia not only to supply the fetal storage but to mobilize copper for the mother's anemia. I have found that the polycythemia of the infant is not due to anoxemia, as was once thought, because the work has been done on cesarean sections under local anesthesia and rapid delivery; however, the polycythemia still exists with a low copper and a high cord blood iron.

DR. FRANK H. BETHELL, Ann Arbor, Mich. The nature of the interference with blood formation in pregnancy occasioned by deficient protein is not well understood. In the presence of lowered plasma albumin the red blood cells tend to become more spherical, with coincident reduction of their number. The possible bearing on hematopoiesis of derangements of function of the endocrine glands is a subject on which little information exists in either the pregnant or the nonpregnant state. Also worthy of further investigation is the relationship of other mineral constituents of the diet, particularly calcium, both to the assimilation and to the utilization of iron. The work of Dr

Sachs and his colleagues on the reciprocal relationship of the iron and copper content of the blood has provided an explanation of our failure to obtain better results from the administration of copper as a supplement to iron than from iron medication alone in the treatment of the iron deficiency anemias.

DISAPPEARANCE OF THE PHYSICAL SIGNS OF RHEUMATIC HEART DISEASE

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AND

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We are presenting in this report observations on the disappearance of certain physical signs considered characteristic of rheumatic involvement of the heart. The appearance of so-called organic murmurs during the course of rheumatic fever or chorea is generally accepted as evidence of valve injury. Cardiac enlargement when present lends further support to the clinical impression of extensive involvement of the heart. It has been shown recently that dilatation alone may be an important factor during severe rheumatic infection responsible in some instances for cardiac murmurs, especially for a mid-diastolic rumbling sound at the cardiac apex previously considered indicative of mitral stenosis¹. It is evident, however, from both clinical observation and postmortem study that with demonstrable involvement of the heart during rheumatic fever the mitral valve rarely escapes and, furthermore, the aortic cusps are injured in over half the cases. The persistence of characteristic murmurs after subsidence of the infection constitutes, therefore, our most reliable indication of residual valve injury.

It is well known that the signs of valvular disease which appear during rheumatic fever or later usually persist throughout life and often progress during subsequent years. It is less well known, however, that these signs of cardiac involvement may occasionally regress and ultimately disappear. Isolated instances have been observed and commented on by numerous clinicians but accurate data on the incidence and subsequent course of this fortunate group have not been recorded. Coombs² has expressed the opinion that in as many as 31 per cent the signs of rheumatic heart disease once present may later disappear. To us this figure appears too high and his published data as to both the original condition and the subsequent observations are inadequate for critical analysis. A comprehensive study of rheumatic infection and heart disease in progress now for a number of years has presented an opportunity to investigate further this occasionally observed but imperfectly understood aspect of the course of rheumatic heart disease in young people.

CLINICAL MATERIAL

The material dealt with in this report has been assembled from two sources. Since 1920 approximately 1,500 children and adolescents with rheumatic

From the House of the Good Samaritan and the Massachusetts General Hospital.

The expenses of this study have been defrayed by a grant from the Commonwealth Fund.

Read before the Section on Practice of Medicine at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

¹ Bland E. F., White P. D. and Jones T. D. The Development of Mitral Stenosis in Young People, *Am Heart J* 10:995 (Dec.) 1935.
² Coombs C. F. Rheumatic Heart Disease. New York, William Wood & Company 1924.

fever or chorea have received prolonged bed care and intensive study at the House of the Good Samaritan during the active stage of their disease. The average period of hospitalization has been from three to four months, and not infrequently as long as from one to two years. Furthermore, a unique aspect of the study has been the subsequent observation at frequent

18 years, and hence the decade during which rheumatic infection is most prevalent and most damaging to the heart. Only that portion of this extensive study relevant to the regression and disappearance of the physical signs of rheumatic heart disease has been included in this communication.

In table 2 we have indicated the general course of events for the group of 1,000 patients with clinical evidence of heart disease during the first ten year period. It is to be noted first that 272 (27 per cent) are dead. A recrudescence of rheumatic infection was directly responsible for the fatal issue in the majority. We are interested primarily, however, in the group of eighty-three patients in whom all evidence of valvular disease subsided.

DIAGNOSTIC CRITERIA

For the purpose of this and comparable future studies we believe it essential to define clearly the diagnostic criteria accepted in this report as clinical evidence of rheumatic valvular disease of the heart. A number of borderline cases have been excluded.

I Etiology—All patients in this group of eighty-three in whom the physical signs of rheumatic heart disease later subsided had at the time of hospitalization, or within the recent past, clinical manifestation generally considered rheumatic in origin. Frequent among these were joint pains, chorea, nodules, nose bleeds, erythema multiforme associated with unexplained poor health, fever and laboratory evidence of low grade infection.

II Structure—A. The diagnosis of valve defects is based on the following physical signs and the clinical impression of a staff of experienced observers especially interested in cardiovascular disease.

1 Organic mitral regurgitation was considered present if after the subsidence of active infection and without other important cause of ill health there remained

| | House of Good Samaritan Group | Massachusetts General Hospital Group | Combined Series |
|---|-------------------------------|--------------------------------------|----------------------|
| Number of patients (rheumatic fever or chorea) | 1,184 | 269 | 1,393 |
| Rheumatic heart disease (clinically demonstrable) | 803 (71%) | 147 (70%) | 1,000 (70%) |
| Duration follow up (rheumatic heart disease group) Living | 10.5 yrs (619 cases) | 9.6 yrs (109 cases) | 10.3 yrs (728 cases) |
| Dead | 5.6 yrs (234 cases) | 5.2 yrs (38 cases) | 5.5 yrs (272 cases) |

TABLE 2—Present Status A Ten-Year Study of Rheumatic Heart Disease Group

| Total Patients | Dead | Disappearance of Physical Signs | Remainder |
|----------------|------|---------------------------------|-----------|
| 1,000 | 272 | 83 | 645 |

intervals of the majority of this large group. We ourselves have done the greater portion of this follow-up study. Invaluable aid has been rendered by the medical and social service departments of the general hospitals in Boston. From this large group of 1,500 only those patients have been included (1,184 in number) in whom the subsequent follow up has been sufficiently long to yield useful data. The average duration of this subsequent observation from the onset

TABLE 3—Disappearance of Physical Signs of Rheumatic Heart Disease (Eighty-Three Cases)

| Murmurs | Original Condition | | | | | | Duration of Physical Signs of Rheumatic Heart Disease | Present Status | | | | | Total Years Observed |
|--|---------------------|-----|-----|-------|-----|-----|---|----------------|---------------------|---------------------|--------|--------|----------------------|
| | Cardiac Enlargement | | | | | | | Murmurs | | Cardiac Enlargement | | | |
| | Clinical | | | X Ray | | | | Absent | Functional Systolic | Clinical Absent | X Ray | | |
| | N E | S E | M E | N E | S E | M E | | | | | Absent | Slight | |
| Mitral systolic (26 cases) | 12 | 13 | 1 | 8 | 7 | 1 | 4.5 yrs | 16 | 10 | 26 | 12 | 3 | 16.5 |
| Mitral systolic and diastolic (3 cases) | 10 | 26 | 8 | 3 | 13 | 7 | 4.5 yrs | 34 | 10 | 53 | 10 | 3 | 9 |
| Mitral systolic and diastolic and aortic diastolic (3 cases) | 0 | 2 | 1 | 0 | 1 | 0 | 3.3 yrs | 2 | 1 | 3 | 1 | 0 | 4.3 |
| Mitral systolic and aortic diastolic (1 case) | 1 | 0 | 0 | 0 | 0 | 0 | 4.0 yrs | 1 | 0 | 1 | 0 | 0 | 11.0 |
| Totals (83 cases) | 32 | 41 | 10 | 11 | 20 | 8 | 4.4 yrs | 53 | 30 | 83 | 32 | 6 | 59 |

N.E., No enlargement
S.E., slight enlargement
M.E., Moderate to marked enlargement

of rheumatic infection to the present time has been approximately ten years. A smaller and similar age group from the Massachusetts General Hospital also followed by us has been included primarily for comparison but for our purpose the two groups are in all respects comparable. Pertinent details relating to these two groups are summarized in table 1. It is to be emphasized that the data represent observations on the course of rheumatic infection and its cardiac complication during the first decade after the onset in young people only and is not necessarily indicative of the course of rheumatic heart disease in later life. The average age for the group at the time of onset of rheumatic infection or chorea was 8 years, so that the study embraces essentially the period from 8 to

a loud systolic murmur heard with maximal intensity at the cardiac apex which was uninfluenced significantly by respiration or change in position of the patient. We recognize that this represents perhaps a controversial group and that the loud and persistent murmur present in these patients may be due occasionally to other unrecognized factors. However we are convinced from clinical and postmortem study that structural alteration in the mitral cusps is directly responsible for the cardiac murmur in the majority of this group.

2 Mitral regurgitation and stenosis were diagnosed clinically in the presence of a blowing systolic and low pitched murmur or rumble in mid or late diastole at the cardiac apex. Attention has been called to the frequent discrepancy between the clinical diagnosis

the extent of structural alteration found post mortem in many of these patients, especially as regards the interpretation of the diastolic rumbling sound as indicative of actual narrowing of the mitral orifice. With this reservation we have retained the term "mitral regurgitation and stenosis" for this group. No instance of "pure" mitral stenosis of the so-called adult type with a harsh late diastolic murmur ending with crescendo in a slapping first sound with subsequent disappearance was encountered in these children.

3 Aortic regurgitation was considered present if there was audible an early diastolic murmur best heard either at the aortic or at the pulmonic area or down the left side of the sternum. In each of the relatively few instances with subsequent regression in which this valve defect was diagnosed, the murmur was soft and



Fig 1—Teleroentgenogram (at 7 feet) showing marked cardiac enlargement (dilatation) during severe rheumatic fever in a boy aged 7 years. A loud apical systolic murmur was present at this time.

of slight intensity. No instance of free aortic regurgitation with subsequent disappearance has been encountered.

B Cardiac size is considered arbitrarily under three divisions:

1 No enlargement is considered present if the point of maximal intensity of the cardiac apex and the left border of dullness are located either in or within the midclavicular line in the fourth or fifth interspace.

2 Slight enlargement is considered present if the apex impulse and the left border of cardiac dullness are from 1 to 2 cm outside the midclavicular line in the fifth intercostal space.

3 Moderate to marked enlargement is diagnosed if the apex impulse and the left border of cardiac dullness are more than 2 cm beyond the midclavicular line.

Many of the patients have been examined by x-ray both at the time when rheumatic heart disease was considered present and later when the physical signs of valvular disease had subsided. Discrepancy between the estimate of cardiac size made in this way and that made from physical examination has been infrequent.

DISAPPEARANCE OF PHYSICAL SIGNS

In table 3 we have assembled and summarized the pertinent data relating to the subsequent disappearance of physical signs considered indicative of rheumatic heart disease in this group of eighty-three patients. We have arranged these patients in four major groups according to the cardiac murmurs on which the diagnosis of valvular disease was based. In the second section of the table we have indicated the clinical estimate of the size of the heart together with the results of x-ray examinations when such were available. Finally, in the division of the table on the right we have summarized the present status of this group, all of whom on physical examination show no clinical evidence of residual cardiac disease. A review of the physical signs at the time rheumatic heart disease was

originally diagnosed reveals that uncomplicated mitral regurgitation was present in twenty-six patients. In approximately half of these (fourteen) there was enlargement of the heart. In fifty-three patients mitral stenosis and regurgitation were considered present and in two thirds of these there was cardiac enlargement. In addition to mitral regurgitation and stenosis there was also slight aortic regurgitation in three others, all of whom had enlargement of the heart. Finally, in one additional patient without cardiac enlargement there were present the murmurs of mitral regurgitation and slight aortic regurgitation.

It is to be noted that of the total group of eighty-three patients previously considered to have rheumatic valvular disease no murmurs now can be elicited in any position or after exercise in fifty-three patients. In thirty instances, however, there is still audible a faint and inconstant systolic blow best heard in the majority in the pulmonary area and considered functional in origin. There remain no diastolic murmurs in any instance. The size of the heart on physical examination is now within the normal range in each patient, but, as indicated in the table, fluoroscopic examination reveals a borderline and suspicious prominence in the vicinity of the pulmonary conus in four patients of the group of thirty-eight who have recently had x-ray examinations. In two others the heart remains at full size in the region of the left ventricle. Reproductions of the x-ray films of one of the latter patients is shown in the accompanying illustrations and show in figure 1 well marked enlargement of the heart during active rheumatic infection. Figure 2, taken one year later after all clinical evidence of heart disease had subsided, shows the heart to be considerably smaller but still full sized. A loud apical systolic murmur previously present has completely disappeared. No attempt has been made in this study to apply the "angle of clearance" tests during fluoroscopy recently discussed by Wilson³ and her associates.

Some indication of the course of events and the manner of disappearance of these murmurs is shown in table 4. In those patients who were considered to have mitral valve involvement on the basis of apical systolic and diastolic murmurs, the diastolic murmur was invariably the first to disappear. Occasionally this apical diastolic rumble subsided within a few months after the onset of rheumatic infection, during the period while the patient was convalescing and was still under observation in the hospital. This further supports our previously expressed opinion that cardiac dilatation during active rheumatic infection is often a significant factor responsible for this murmur as well as for a blowing systolic murmur at the cardiac

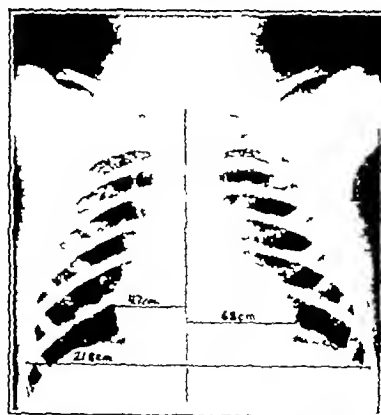


Fig 2—Teleroentgenogram (at 7 feet) showing a remarkable diminution in size of the cardiac shadow in the same patient as in figure 1 one year later after all evidence of active infection had subsided. The heart is now clinically normal and no murmurs are audible.

apex Therefore in those instances, of which there were sixteen, in which the physical signs of apparent valvular disease subsided within the first year, we suspect that in the majority cardiac dilatation alone was primarily responsible for the murmurs. The usual sequence of events, however, has been a more gradual regression over a period of years. The ultimate disappearance has occurred most frequently during the first five years, as is shown in table 4. An unexpected

TABLE 4—Duration of Physical Signs of Rheumatic Heart Disease (Eighty-Three Cases)

| Years Cases | 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 10+ | ? |
|----------------|-----|-----|-----|-----|------|-----|---|
| | 18 | 2 | 17 | 11 | 5 | 1 | 6 |

accident provided us a unique opportunity to study post mortem the valve cusps in a single patient of this group in whom we had observed the gradual and complete disappearance of the physical signs of rheumatic valvular disease known to have been present six years before subsidence. We record herewith pertinent details of this important case.

REPORT OF CASE

C. C., a girl, aged 13 years, had scarlet fever, which was followed promptly by rheumatic fever in 1927. At the Boston City Hospital a diagnosis of rheumatic heart disease was made and she was transferred to the House of the Good Samaritan for convalescence. Physical examination on entry and throughout her four months stay showed the heart to be slightly enlarged with the apex impulse and the left border of cardiac dullness in the fifth interspace 1 cm. outside the midclavicular line. Maximal at the apex were audible a loud blowing systolic murmur and a low pitched mid-diastolic murmur. Along the left sternal border was also heard a definite soft blowing diastolic murmur immediately after the second sound. A diagnosis of mitral regurgitation and stenosis and slight aortic regurgitation was made. She remained well after leaving the hospital and reported at frequent intervals for follow-up examination. In 1930 (three years after the onset) the aortic diastolic murmur had disappeared. In 1933 (six years after the onset) the mitral diastolic rumble subsided, leaving a moderately loud apical systolic murmur and third sound. In 1934 and 1935 there remained only an insignificant and distant apical systolic murmur which disappeared completely with inspiration. Fluoroscopic examination at this time showed the heart to be normal in size, in shape and in pulsations with no evidence of abnormal auricular or pulmonary conus prominence in the oblique view. She continued well, but in October 1935, four months after the last examination the patient died unexpectedly in a dentist's chair immediately after the extraction of a tooth under gas-oxygen anesthesia. Post-mortem examination (medicolegal) revealed slight but definite scarring of the mitral cusps of sufficient degree to warrant the pathologic diagnosis on macroscopic examination of a 'healed' rheumatic endocarditis. There remained, however, no important deformity and furthermore, there was no detectable scarring of the aortic cusps. The heart weighed 275 Gm., a figure within the normal range for this age (20 years). The cause of the sudden death remains obscure.

The explanation for the early blowing basal diastolic murmur originally present in this patient is not clear. It is possible that a healed scar on the aortic cusps may have been so slight as to escape notice post mortem. The previous injury to the mitral cusps had healed in such a fashion that the residual scar was of slight degree and insufficient to produce characteristic murmurs of mitral valve disease during the two years prior to this patient's death.

CONCLUSION

In this series of 1,000 young patients with the physical signs of valvular disease of the heart who have been examined at frequent intervals during the first

decade after the onset of rheumatic infection, we have observed a regression in these physical signs in a considerable number and the total disappearance of all clinical evidence of heart disease in eighty-three instances. In a few, cardiac dilatation during the stage of active rheumatism may have been responsible for the murmurs usually considered characteristic of valvular disease. If this is true, it is the probable explanation for the relatively rapid disappearance of the cardiac murmurs in a small number during the first year.

It is our belief, however, that the majority of this group of eighty-three patients had injury of the valve cusps (usually the mitral) at the time of rheumatic fever. That it was of minimal degree in each instance seems most likely, so that the residual scarring has produced no significant deformity or characteristic murmurs. It is of interest that, although cardiac enlargement (dilatation and possibly pericarditis) was in some cases of extreme degree, it has in each instance subsided. Six borderline cases (by x-ray examination) remain questionable.

It is to be noted that we have not observed in a single instance in these children the disappearance of either (1) a very loud diastolic murmur ending in a loud crescendo presystolic roll or (2) a loud aortic diastolic murmur and the peripheral circulatory signs of free aortic regurgitation.

It will be of considerable interest and importance to follow further this group of eighty-three patients (one is now dead) to determine whether in some at least the signs of valvular disease (especially mitral stenosis) may later and insidiously reappear without the recurrence of clinically recognizable rheumatic infection. Although as yet the data are inconclusive, we have evidence from a group of patients with so-called potential rheumatic heart disease which suggests that later mitral stenosis may slowly develop in a few instances.

CONCLUSIONS

From a follow-up study of 1,000 children and adolescents with rheumatic heart disease it has been shown that

1. Certain physical signs considered characteristic of valvular disease may occasionally regress and ultimately disappear.

2. This favorable sequence of events was observed during the course of ten years in eighty-three instances (83 per cent).

3. Postmortem observations following an unexpected accident have been recorded in one case.

4. It is probable that in the majority minimal scarring without significant valve deformity remains notwithstanding the absence of characteristic murmurs. Cardiac dilatation alone is occasionally responsible for the physical signs of valvular disease during active rheumatic infection.

25 Binney Street

ABSTRACT OF DISCUSSION

DR. FRED M. SMITH, Iowa City. Regression of cardiac signs in rheumatic heart disease, particularly cardiac enlargement, is rather common and occasionally a striking change in this respect is noted. The disappearance of what appears to be a well established murmur, however, is a feature that has not been emphasized. I am inclined to believe that the murmur disappears far more often than is suspected in the case in which there is a minimal involvement of the heart. It is worth bearing in mind that there are two factors primarily responsible for the cardiac disability in this form of heart disease: the invasion of the myocardium by the rheumatic process

second, the mechanical handicap imposed by the diseased valves. These observations bring up an important point with reference to the pathology. Prior to a few years ago attention was focused on the endocardial lesions. It is now known that this is one of the expressions of a valvulitis and that all structures of the heart may be involved to a varying extent by the infection. In those who die within a few months or a few years from rheumatic heart disease, the damage to the myocardium is the outstanding feature. In those who live twenty or thirty years, however, the damage to the myocardium may be minimal, whereas the involvement of the valve structures is the conspicuous feature. Between these extremes the two factors involvement of the myocardium and the mechanical handicap imposed by the damaged valve structures participate to a varying extent in the production of the cardiac disability. It is doubtful that the murmur ever completely disappears following a significant involvement of the valves. In most of the cases cited by the authors it is probable that the disappearance of the infection from the myocardium was for the most part responsible for the changes observed in the physical signs.

DR. P. T. BOHAN, Kansas City, Mo. The interesting question brought up in this paper is why patients develop a diastolic murmur at the apex without any definite narrowing of the mitral orifice. The suggestion made by the authors that this murmur may be due to a loss of tone or disturbed function of the myocardium seems plausible to me. A patient seen recently has a direct bearing on this point. A girl of 16, suffering from a very high grade gonorrheal arthritis, two months before her death developed a very distinct middiastolic murmur at the apex, and the diagnosis of mitral stenosis was made. At autopsy we were very much surprised to find there was not the slightest sign of stenosis of the mitral valves, nothing but some vegetations along the valve margins, rather typical of rheumatic endocarditis, and in the aorta there was an ulcer about 1 cm. in diameter. Direct smears from this ulcer showed gonococci. There was only moderate dilatation of the heart in this case. At the time of the autopsy it was thought that a probable cause for the apical diastolic murmur was a relative stenosis of the orifice due to an edema, but histologic studies of the myocardium showed granulomatous foci, interpreted by the pathologist Dr. F. C. Helwig as probably fibrosing Aschoff bodies. The autopsy in this case tended to support the suggestion made by the authors that a diastolic murmur at the apex may be due to disturbed function of the myocardium. Another point I should like to emphasize is that the authors made the diagnosis of mitral regurgitation rather frequently in these children. This reminds us of the fact that we should not get too scientific in minimizing the importance of a systolic murmur at the apex. For a number of years following an attack of endocarditis the only evidence, if any, of mitral disease may be a systolic murmur at the apex with or without demonstrable cardiac hypertrophy. The sclerosing process that gives rise to a stenosis is very slow. I have often felt that many of the patients seen at middle life or older with a pure mitral stenosis suffered in their youth from a mild attack of endocarditis that had gone unrecognized. It is to be hoped that few, if any, of the eighty-three cases that the authors observed for ten years with negative results will show up later in life with a pure mitral stenosis.

DR. WILLIAM J. KERR, San Francisco. I would suggest that there may be a type of murmur which has not, up to this time, been recognized. I believe that the diastolic murmur which the authors have discussed this morning, occurring in the acute stages of rheumatic fever and found in a number of other conditions such as severe anemias and leukemias, is due to relative insufficiency of the pulmonary valve. In these patients, if one listens very carefully near the apex of the heart, one may be able to recognize frequently a presystolic element, if the rate is not too fast, as well as a middiastolic element. It is my opinion that this murmur is analogous to the Austin Flint murmur in aortic insufficiency but in this instance is associated with pulmonary insufficiency. It is a murmur of low intensity because of the low pressure in the pulmonary circuit, which is further reduced during the failure of the heart. If one listens over the base of the heart in these patients, one will find on the pulmonary side a very early short diastolic

murmur, which is like the Graham Steell murmur of pulmonary valvular insufficiency. I would suggest, therefore, that in those patients with a systolic murmur at the apex due to relative mitral insufficiency one should expect evidence of failure of the right side of the heart also. The enlargement of the right side of the heart shown in the illustrations by the authors is to be expected in these patients. Clinical experience suggests that the ventricular myocardium is generally involved. Further study will, I am sure, confirm my opinion that dilatation of the pulmonary valve is the origin of the diastolic and presystolic murmurs arising early in rheumatic fever.

DR. T. DUCKETT JONES, Boston. It is to be regretted that so considerable an amount of the reported study is concerned with murmurs and their interpretation. This is especially true since one may with relative ease care for rheumatic fever and heart disease subjects without many of the older ideas of the significance of murmurs being considered. In this connection I should like to stress one point. In caring for patients with rheumatic fever and heart disease the important pertinent features are relative to whether or not there is active rheumatic fever or active carditis in progress. The determination of this is important from the point of view of prognosis as well as of therapy. As pointed out in this study, the first five or six years of the life cycle of rheumatic fever in the young subject will usually determine his prognosis. If he escapes repeated recurrences of the disease or the development of severe heart disease there is every chance of his remaining well physically. It is heartening that such an experience is true so often in a large series of patients followed for a period of years. I wish therefore to make the plea to physicians that the important factors in determining the therapy and prognosis in subjects with rheumatic fever and heart disease is the determination of the active disease process rather than the presence or absence of any particular cardiac murmurs.

EFFECTS OF STANDARD, PROTAMINE AND CRYSTALLINE INSULIN ON BLOOD SUGAR LEVELS

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AND

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DETROIT

During the past few months there have been several reports on the use of protamine insulin in the treatment of diabetes mellitus. The first reports were those of Hagedorn and his co-workers¹ from Copenhagen, who combined insulin with a monoproamine which was buffered at pH 7.3, approximating that of blood serum. Root, White, Marble and Stotz² reported their clinical results at the same time. More recently Lawrence and Archer,³ Kerr, Best, Campbell and Fletcher⁴ and Sprague and Blum and their associates⁵ have reported essentially the same results.

Previously cited investigators stated that the chief advantages of protamine insulin lie in the following observations:

- 1 The rate of absorption was slower than with regular insulin.
- 2 Its action on reducing the blood sugar level was more prolonged than the action of standard insulin.

Studies carried out by grant from A. Wineman Fund.

From the Department of Internal Medicine, Harper Hospital.

1 Hagedorn H. C., Jensen B. N., Krarup N. B. and Wodstrup I. Protamine Insulinate J. A. M. A. 106: 177-180 (Jan. 18) 1936.

2 Root, H. F., White, Priscilla, Marble, Alexander and Stotz, E. H. Clinical Experience with Protamine Insulinate J. A. M. A. 106: 180-183 (Jan. 18) 1936.

3 Lawrence, R. D. and Archer, Nora. Some Experiments with Protamine Insulinate, Brit. M. J. 1: 747-751 (April 11) 1936.

4 Kerr, R. B., Best, C. H., Campbell, W. R. and Fletcher, H. A. Protamine Insulin Canad. M. A. J. 34: 400-401 (April) 1936.

5 Sprague, R. G., Blum, B. B., Osterberg, A. E., Kepler, E. J. and Wilder, R. M. Clinical Observations with Insulin Protamine Compound J. A. M. A. 106: 1701-1705 (May 16) 1936.

3 Hypoglycemic reactions occurred less frequently and were milder in character when they did occur

4 Marked fluctuations of the blood sugar level commonly obtained with the use of standard insulin were diminished

5 Reduction in the number of doses could be made with most patients by using protamine insulin as the evening dose

6 A single or double dose of protamine insulin administered daily could be used in some cases to replace two or three doses of standard insulin

The noted disadvantages of protamine insulin were

1 The instability of the compound, in that it loses potency within from three to four weeks after the solutions have been mixed

2 The use of two different types of insulin daily, with its attendant responsibility on the patient.

3 Difficulties encountered by the less dexterous patient in handling the substance properly

Several months ago an improved insulin compound, technically called crystalline insulin, was submitted to us for clinical investigation by Dr. Melville Sahyun of Detroit. This insulin is a crystalline extract prepared from the pancreas. It is claimed that its action is more prolonged than standard insulin. It has the advantage of being as stable as standard insulin and is dispensed in a single solution.

A preliminary clinical report of the actions of standard, protamine and crystalline insulin on blood sugar levels is presented.⁶ Two normal subjects and fifteen diabetic patients studied over a period of four months form the basis of this report.

These patients were in the hospital on controlled weighed diets during each period of study. The available dextrose of the diets is divided equally between the three meals, as contrasted to the methods previously described.⁷ The meals were served at 8 a. m., noon, and 5 p. m. All patients were observed on each of the three types of insulin for a period of from ten to fourteen days before the blood sugar determinations presented in the accompanying charts were used as the basis for comparison.

In calculating the amount of insulin necessary for the patients in this study it was deemed advisable to keep the total number of units essentially the same as previously required in standard insulin. Thus, in

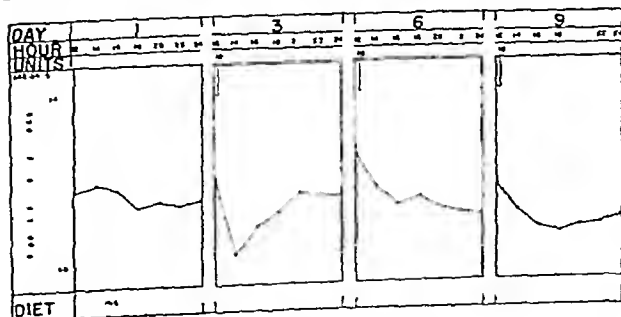


Chart 1—Comparative action of the different types of insulin on the blood sugar curve in a normal healthy fasting individual

patients who were receiving three doses of standard insulin daily the total number of units was redistributed into two doses daily, with the total amount increased or decreased according to the previous

twenty-four hour blood sugar curve. An attempt was made to keep the total number of units nearly constant rather than attempt to determine the minimal amounts of protamine and crystalline insulin required. However, in several patients it was necessary to reduce the amount of insulin administered because of the severe hypoglycemic reactions.

To determine the comparative action of the different types of insulin in the normal healthy person, a well

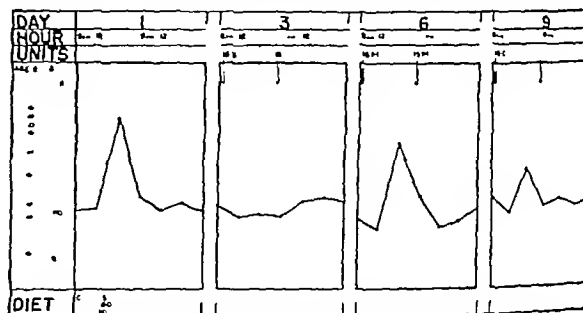


Chart 2—Comparative action of the different types of insulin on the blood sugar curve in a normal healthy individual on a controlled weight diet

balanced diet was given previous to the experiment. The individual was fasted for twenty-four hours and blood sugar determinations were taken every two hours over the last twelve hours of the fasting period. This was done to rule out the influence of the previously ingested food on the blood sugar curve. After the normal curve had been established for the subject, the effect of each type of insulin was determined every third day to rule out any possibility of the cumulative effect of previously administered insulin. After twelve hours of fasting, 10 units of each type of insulin was injected subcutaneously.

It will be noted in chart 1 that protamine insulin and crystalline insulin had somewhat similar effects on the blood sugar curve of a normal, healthy subject. The onset of the action of crystalline insulin is more rapid than that of protamine insulin, but its duration is not quite as long. In spite of the lack of a marked hypoglycemic level the subject complained of nervousness, inability to concentrate while reading and insomnia, which might be interpreted as symptoms indicative of a mild insulin reaction. This occurred with both protamine insulin and crystalline insulin and lasted for approximately one and a half hours. The hypoglycemic level produced by standard insulin was more marked but shorter in its duration.

The next study was the determination of the action of the "insulins" on a healthy subject who was on a normal controlled weighed diet. Blood sugar determinations were made every four hours throughout the twenty-four hour period. After the normal blood sugar level had been determined without insulin the patient was given 15 units of one kind of insulin at 7 a. m. and 7 p. m. on the days of the blood sugar determinations, and this routine was followed with each type of insulin. These studies were made at intervals of three days because of the reasons cited in the previous experiment. In chart 2 it is seen that standard insulin had a tendency to flatten the entire twenty-four hour curve whereas protamine insulin and crystalline insulin had only slight effects on the curve. It is interesting to note that following the administration of either protamine or crystalline insulin the subject's

6. Protamine Insulin supplied by Eli Lilly Company, Indianapolis. Crystalline Insulin Compound supplied by Frederick Stearns & Co., Detroit.
7. Hagedorn, Jensen, Krarup and Wedrup. *Acta Med. Scand.* 1932.

mild symptoms of hyperinsulinism between 1 and 2 a m. However, the blood sugar determinations made at that time were normal, even though nervousness, insomnia and perspiration of the hands were present.

These curves confirm the observations of previous investigators on the effect of standard insulin and protamine insulin. Crystalline insulin affects the curve more slowly than standard insulin but more rapidly than protamine insulin, and the duration of its action on the blood sugar level is not as long.

CLINICAL STUDIES OF DIABETIC PATIENTS

The diabetic patients in the report were for the most part taken from the diabetic clinic of the outpatient department of Harper Hospital. They were selected for study because of (1) the completeness of the previous records, in that all these patients had been observed in the clinic since the onset of their disease, (2) the difficulty of their being controlled on three daily doses of standard insulin, and (3) the marked fluctuation of blood sugar levels and the reactions accompanying these changes. The ages of these patients varied between 4 and 53 years. The duration of their disease (onset of symptoms) varied between one and twelve years, with a

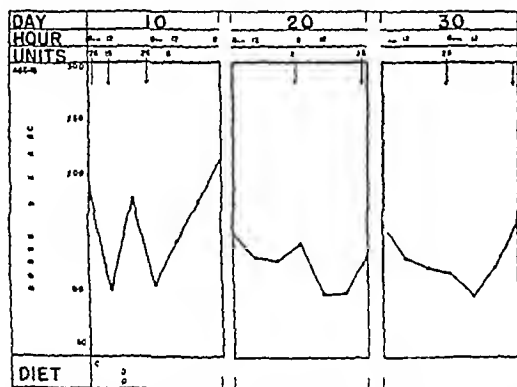


Chart 3—Action on patient with severe diabetes exhibiting marked hypoglycemia and hyperglycemia with standard insulin.

general average of four and one-half years. All patients presented in this study were diabetic without other disease complications. Physical and laboratory examinations failed to reveal any condition, such as foci of infection, that would in any way alter the blood sugar curves.

The diets used were of two main types, i. e., the high carbohydrate low calory diet and the moderate carbohydrate maintenance diet.

In calculating the insulin dosage of the diabetic patient, no attempt was made to reduce the total number of units of insulin administered unless reactions occurred. Thus a standard of comparison was maintained throughout the study. The time of injection of protamine and crystalline insulin was kept constant in that it was administered at intervals of twelve hours.

Chart 3 shows the effects of protamine and crystalline insulin in reducing the marked fluctuations in the blood sugar levels throughout the twenty-four hour period. The "peaks and valleys" associated with the use of standard insulin were eliminated. The glycosuria was greatly reduced.

The case described in chart 4 exhibited the single "dip" type of blood sugar curve with standard insulin. The blood sugars were usually normal or somewhat

lower, at times associated with reactions, between midnight and 2 a m. The patient's fasting blood sugar level on the following morning invariably returned to the hyperglycemic level. Several attempts to eliminate the fluctuations of the blood sugar level were made by first giving the third dose of standard insulin later in the evening. This resulted only in a change in the time at which the hyperglycemia occurred. The addi-

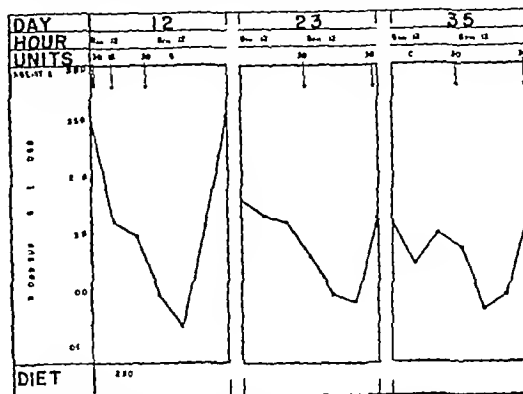


Chart 4—Action on patient with severe diabetes exhibiting single dip hypoglycemia curve with standard insulin controlled by protamine insulin and crystalline insulin.

tion of a fourth dose of standard insulin reduced the fluctuations in the curve. However, the latter regimen was difficult for the patient to carry out because of his plan of living. When protamine or crystalline insulin was substituted, the flattening of the entire blood sugar curve resulted. Although there was a marked lowering of the blood sugar during the early hours of the morning, below the levels obtained with use of standard insulin, no severe reactions occurred and the fasting blood sugar did not return to its previous hyperglycemic level.

The effects of the various types of insulin are shown in chart 5. Here, as in several other patients observed, it was noted that crystalline insulin was more rapid in the onset of its action than protamine insulin. The duration of its effect on the blood sugar curve seems to be from two to four hours shorter.

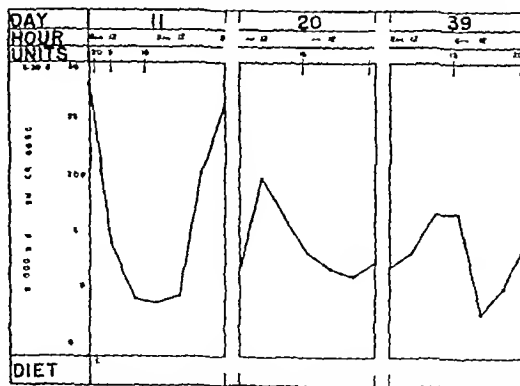


Chart 5—Action on patient with moderately severe diabetes. Rate of onset of crystalline insulin is more rapid than protamine insulin.

The case described in chart 6 was extremely difficult to control with three or four doses of standard insulin. On the same diet and insulin regimen the patient would have a marked hypoglycemic reaction one day, but on the following day at the same hour hyperglycemia would be noted. This patient was extremely

sensitive to standard insulin and 2 or 3 additional units would precipitate a hypoglycemic reaction. Because of the lack of cooperation and illiteracy of the family it was impossible to establish an insulin regimen outside the hospital. However, with the use of two doses of either protamine insulin or crystalline insulin daily, the fluctuations in the blood sugar level disappeared. The

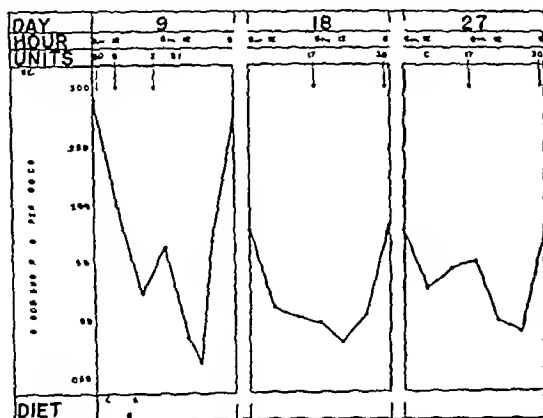


Chart 6—Action on patient with diabetes complicated by gangrene of foot.

severe hypoglycemic reactions were eliminated and the patient stated that she felt better.

The next step in this study was to determine the comparative action of standard, protamine and crystalline insulin when only one type of insulin was given twice daily, as contrasted with the administration of standard insulin as the morning dose and protamine or crystalline insulin as the evening dose (chart 7). As has been previously cited, it was possible to lower the blood sugar curve during the period of food with protamine and crystalline insulin. However, the use of standard insulin in the morning and either protamine or crystalline insulin in the evening produced the best results, as evidenced by the flattening of the entire twenty-four hour blood sugar curve. Lawrence³ has recently stated that protamine insulin does not adequately cope with the carbohydrate ingested during the entire day and does not prevent the increase in the blood sugar levels after meals, especially in cases of severe diabetes. It reacts remarkably well on the blood sugar curve during the latter period of the twenty-four hours. He found very little difference in the ability of protamine insulin to deal with the ingested carbohydrate regardless of the time the insulin was injected. This may be attributed to the slowness of its action or the time of administration. It was noted that a fasting hyperglycemia prevents the best results with the use of protamine or crystalline insulin as the morning dose, whereas, if the blood sugar level was within normal limits the rest of the twenty-four hour curve was lower. In general, crystalline insulin is more efficacious than protamine insulin in dealing with the blood sugar level during the period of ingestion of food.

BLOOD SUGAR LEVEL AND INSULIN ACTION

It would seem that the disturbance in the mechanism of the regulation of the blood sugar level in the diabetic patient is dependent on the change in the carbohydrate metabolism primarily in the liver. The blood

sugar curve may be altered by the rate of intestinal absorption of dextrose and also by the rate at which the tissues utilize dextrose. The latter change is affected by the amount of insulin in the blood and tissues.

Macleod⁸ points out that normally glycogenolysis proceeds more slowly than glycogenesis, whereas in the diabetic patient these processes proceed at an equal rate and hence little glycogen is stored. In the uncontrolled diabetic patient there is a continuous formation of dextrose and a decreased ability to store glycogen in the liver. Insulin injected in the diabetic patient restores the disturbed carbohydrate metabolism to normal by increasing glycogen formation and regulating the production of dextrose in the liver. Insulin injected in the normal subject disturbs the carbohydrate balance by overstimulating some phase in the previously described processes, with a resultant retardation in glycogen formation and storage.

Recent investigations⁹ have proved that the liver is more than a storehouse for glycogen, its function is controlling the blood sugar level and its role in the production of dextrose need clarification. Hyperglycemia may be due to the rapid release of dextrose from the liver owing to a change in glycogen storage to dextrose formation or utilization in the liver, or to the rate at which sugar is removed from the blood by the tissues. This imbalance in the glycogen-dextrose metabolism may be restored to normal by the use of insulin. Conversely, hypoglycemia in the diabetic patient would be interpreted as an increased formation of glycogen, a decrease in the rate of production of dextrose in the liver or an increased rate of dextrose utilization by the tissues.

Normally the body responds to hyperinsulinism in diabetic and normal subjects by release of glycogen which is aided by the increase of secretion of the adrenal glands. In uncontrolled diabetes the glycogen

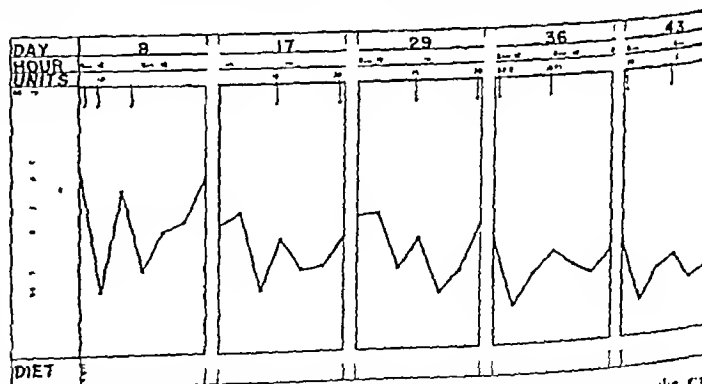


Chart 7—Effect of standard insulin, protamine insulin and crystalline insulin given individually, as compared with effect of standard insulin as morning injection with protamine insulin and crystalline insulin as the evening dose.

stores of the liver and muscle are markedly depleted, the body being unable to deal with any emergency requirement for dextrose. The controlled diabetic and the normal subject who have greater stores of glycogen are better

8 Macleod J J R. Lectures on the Physiology of Glycogen. *Arch. Metab.* 1927; 2: 17 (July 6) 55-60 (July 13) 107-113 (July 27) 1927.
9 Mann F C and Magath T L. Studies in the Physiology of the Liver. *Arch. Int. Med.* 30: 73-84 (July) 171-181 (Aug) 1931.
31 797-806 (June) 1923. Best C H and Dale H H. *J. Biol. Chem.* 100: 55 (1926-1927). Best C H. *Proc. Roy. Soc. London B* 100: 32 (1926-1927). Soskin Samuel. *Aliment. Pharmacol.* 1: 1-10 (1927).
J. P. *ibid.* 100: 32 (1926-1927). Soskin Samuel. *Aliment. Pharmacol.* 1: 1-10 (1927).
Minsky I A. In: *Interpretation of Abnormal Dextrose Tolerance Tests*. Occurring in Tolerance in Terms of Liver Function. *Arch. Metab.* 30: 927 (Nov) 1935.

able to cope with this demand. Can this in part be the explanation for the difference in the type and severity of the hypoglycemic reactions observed?

It is agreed that dextrose is essential to the fundamental physiologic metabolism of body cells. When this energy in the form of dextrose is markedly diminished, as in the case of hyperinsulinism in diabetic and normal subjects, certain irritative symptoms occur which are usually associated with low blood sugar levels. However, there have been reports of diabetic patients who had the clinical symptoms of hypoglycemia without the usual accompaniment of a low blood sugar level. Are these clinical observations to be explained on the rate of fall in the blood sugar content, or on the depletion of dextrose from the central nervous system in such a way as to impair the metabolism of the nerve cells regardless of the level of the blood sugar? Since protamine and crystalline insulin are slower in their action, the body is able to adjust itself to this dextrose demand. This is probably done in the uncontrolled diabetic patient by the production of dextrose from the intermediary metabolism of protein and possibly fat. The body cells are supplied dextrose in amounts sufficient to carry out their fundamental basal metabolism and prevent irritative symptoms (hypoglycemia). Could the severe reactions seen after the injection of standard insulin, and the comparatively mild symptoms observed after the injection of protamine or crystalline insulin, even though the blood sugar was markedly lowered, be explained in this way?

COMMENT

All diabetic subjects vary in their response to standard insulin therapy. Some are "insulin sensitive," in that insulin produces a marked effect on the blood sugar level. Others are "insulin resistant," in that insulin has only a slight effect on the blood sugar level. The same phenomenon has been observed with the use of protamine and crystalline insulin and may be the explanation of the varying response of diabetic patients to the types of insulin studies in this report.

Though no attempt was made to determine the minimum dosage of protamine, in some instances the twenty-four hour blood sugar curve could be controlled by the use of protamine insulin twice daily. Crystalline insulin seemed more effective in this regard. However, the best results in the cases of very severe diabetes were obtained with the administration of standard insulin as the morning dose and protamine or crystalline insulin as the evening dose. It is important to reemphasize that when the use of two doses of standard insulin gives the best results the use of protamine or crystalline insulin is of no special value.

The treatment of diabetic coma with protamine or crystalline insulin has thus far been unsatisfactory; standard insulin is to be preferred because of its more rapid action. However, by supplementing standard insulin with protamine or crystalline insulin, a more constant and prolonged effect on the lowering of the blood sugar level and the disappearance of the ketosis was observed.

SUMMARY

This study confirms the observations of previous investigators with regard to the action of protamine insulin. The crystalline insulin compound used in this study has an action similar to protamine insulin. It diminishes the fluctuations in the blood sugar level and also decreases the severity and frequency of the hypoglycemic reactions commonly seen with the use of

standard insulin. Crystalline insulin is more rapid in the onset of action and shorter in the duration of its effect on the blood sugar level, in contrast with protamine insulin. Its action on the blood sugar level lasts for a period of from eight to nine hours and returns slowly to its normal level. The number of doses and amount of insulin required to control the blood sugar level is reduced as compared to the use of standard insulin. It is similar to standard insulin in that it is a stable compound and is dispensed in a single solution.

62 Kirby Avenue, West—3825 Brush Street.

Clinical Notes, Suggestions and New Instruments

TULAREMIA AND PREGNANCY REPORT OF A CASE

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There is an abundance of literature on tularemia, but there has been no careful study of the disease occurring as a complication of pregnancy. Kavanaugh¹ presents an excellent review of 123 cases, stating that "three patients contracted tularemia during pregnancy and were delivered of babies during the height of the infection. In one case labor was premature. The disease did not differ from its usual trend." The following case, occurring in midpregnancy, is presented because of the lack of available data on the disease as a complication of the gravid state, its effect on the maternal organism, and the effect on the fetus.

REPORT OF CASE

Mrs. I. A., a white woman, aged 40, seen in the accident room of the St. Agnes Hospital, Baltimore, Jan. 15, 1935, complained of ulcers on the fingers and a painful swelling on the left arm. She stated that while dressing a rabbit twelve days before (Dec. 24, 1934) she had scratched her left thumb with a splinter of bone. Three days later she noticed a little redness and swelling of the injured thumb. Then a small ulcer developed and in rapid succession there appeared ulcers on the fingers of both hands. At the same time she began having anorexia, fever, frequent chills and sweats and general malaise. December 29 she noticed a painful swelling on the medial surface of the left arm at about the middle third of the humerus.

There was no family history of tuberculosis, diabetes, malignancy or hemorrhagic diseases. The patient's health had always been good except for childhood measles and whooping cough, and there had been nine pregnancies without complications, terminating in full term normal deliveries, all children living and well at the present time. The menses started at the age of 12 and had always been regular and normal except for interruptions during pregnancies. The last menstrual period was in August 1934 and she first felt life early in December. The review of systems revealed nothing except bad teeth, with frequent attacks of toothache.

On physical examination the patient was well nourished, with noticeable pallor of the face and mucous membranes, and a temperature of 100 F. The pupils were regular and equal and reacted to light and in accommodation; the conjunctivae were clear, and the external ocular muscles were normal. The nasal septum was intact and the nares were patent. The hearing was good. The tongue and buccal mucosa were pale; many teeth were discolored and contained cavities, and the gums were retracted. The pharynx was normal. There was no cervical glandular enlargement and the thyroid was not palpable. The chest was symmetrical; expansion was free and equal, resonance, fremitus and breath sounds were normal, and there were no adventitious sounds. The heart was not enlarged or displaced and there were no murmurs. The rhythm was regular, the blood pressure was 135 systolic, 80 diastolic, peripheral vessels

¹ Kavanaugh, C. M. Tularemia. A Consideration of 123 Cases with Autopsy in One Arch. Int. Med. 65: 61 (Jan.) 1935.

were soft and the rate was 100 per minute. There was an abdominal mass, apparently the uterus, which was symmetrical, smooth and reaching to the umbilicus, fetal parts could be palpated, and the fetal heart was audible in the left lower quadrant. The liver, kidneys and spleen were not palpable. There were no abnormalities of the spine. Vaginal examination revealed a relaxed perineum with moderate rectocele and cystocele, the cervix was soft in consistency and the uterus enlarged, the adnexa were not palpable. On the palmar surfaces of both thumbs and on the second, third and fourth fingers of the left hand there were pustular ulcers varying in size from 4 mm to 1 cm in diameter, with grayish white bases surrounded by elevated reddened areas. On the medial surface of the left arm, at the middle of the humerus, was a firm red, indurated, tender, elevated area 3 cm wide with a crusted surface, apparently a subcutaneous nodule. The glands of both axillae were enlarged and tender. When she was admitted to the hospital she gave the impression of tularemia of the ulceroglandular type and pregnancy.

Examination of the blood showed erythrocytes 3,500,000, white blood cells 5,250 per cubic millimeter hemoglobin 70 per cent, color index 0.83, polymorphonuclears 66 per cent, lymphocytes 24 per cent, and large monocytes 10 per cent. The blood Wassermann reaction was negative, the urine contained one plus albumin and a few pus cells, and agglutination tests² proved the diagnosis of tularemia, with agglutination in a dilution of 1:640.

She remained in the hospital for fourteen days and after the day of admission her temperature was at no time above normal. Because of this, the Foshay serum was not used and treatment consisted of local application of moist heat to the ulcers, with ice bags to the enlarged glands and general nursing care. The fetal heart was observed carefully and remained unaffected. She was sent home after the disappearance of the ulcers, the subcutaneous nodule, and the enlarged axillary glands and returned to the antepartum clinic at intervals for antepartum routine and repeated agglutination tests. The antepartum course was uneventful until April 4, 1935, at which time she complained of painless bleeding for eight hours, passing clots and using a total of fourteen pads. On rectal examination the cervix was felt to be dilated 3 cm and was very soft, but no placental

TABLE 1—Agglutination Titer of Mother's Serum for *Bacterium Tularensis*

| Date | 20 | 40 | 80 | 160 | 320 | 640 | 1,280 |
|-------------------|----|----|----|-----|-----|-----|-------|
| 1/8/35 | 2+ | 4+ | 4+ | 4+ | 4+ | 3+ | 0 |
| 1/15/35 | 2+ | 4+ | 4+ | 4+ | 4+ | 4+ | 0 |
| 1/24/35 | + | + | 4+ | 4+ | 4+ | 4+ | 4+ |
| 2/6/35 | 3+ | 4+ | 4+ | 4+ | 4+ | 4+ | + |
| 3/20/35 | + | 4+ | 4+ | 4+ | 4+ | 3+ | 0 |
| 4/4/35 (delivery) | 3+ | 4+ | 4+ | 4+ | 4+ | 3+ | 0 |

tissue could be palpated. The head was floating. A sterile pelvic examination definitely excluded the possibility of placenta praevia. The bleeding continued for another eight hours without pains. The blood contained 3,180,000 red blood cells, 7,400 white blood cells, 58 per cent hemoglobin, 82 per cent polymorphonuclears, 13 per cent lymphocytes, 5 per cent large monocytes, and 133,500 platelets per cubic millimeter. There was slight anisocytosis, the coagulation time was three minutes (Lee and White) and the bleeding time was one and one-half minutes. Urinalysis was essentially negative. Because of the continued bleeding and anemia it was decided that it would be advisable to induce labor which was done by artificial rupture of the membranes slowly draining about 1,000 cc of amniotic fluid. Two hours later after deep engagement of the head and a few slight pains 2 minims (0.12 cc.) of solution of posterior pituitary was administered hypodermically and the child delivered spontaneously after about a dozen pains. The placenta was easily expressed and there was loss of only about 150 cc. postpartum blood.

The male infant breathed spontaneously, weighed 6 pounds 12 ounces (3,090 Gm.) and was apparently mature. The head

diameters were bitemporal 8 cm., biparietal 9 cm., suboccipitobregmatic circumference 33 cm., the occipitofrontal 31.5 cm. and the shoulders 33.4 cm. A thorough examination of the child revealed no abnormalities. The blood counts at birth were 6,000,000 red blood cells, 5,500 white blood cells, 115 per cent hemoglobin, 80 per cent polymorphonuclears, 10 per cent lymphocytes, 2 per cent transitional cells, and 8 per cent monocytes. In six days there were 4,630,000 red blood cells, 10,500 white blood cells, 100 per cent hemoglobin, 70 per cent polymorphonuclears, 28 per cent lymphocytes and 2 per cent transitional cells. Blood drawn from the infant two hours after birth contained agglutinins for *Bacterium tularensis* in low dilutions. The child was circumcised on the eighth day of life and weighed

TABLE 2—Agglutination Titer of Child's Serum for *Bacterium Tularensis*

| Date | 20 | 40 | 80 | 160 | 320 | 640 | 1,280 |
|----------------|----|----|----|-----|-----|-----|-------|
| 4/4/35 (birth) | 4+ | + | 0 | 0 | 0 | 0 | 0 |
| 4/23/35 | 4+ | 3+ | ± | 0 | 0 | 0 | 0 |
| 5/21/35 | 4+ | 3+ | ± | 0 | 0 | 0 | 0 |

7 pounds 7 ounces (3,374 Gm.) on the tenth day, 11 ounces (313 Gm.) above birth weight after a neonatal loss of 4 ounces (114 Gm.). It was breast fed.

The pathologist's report, by Dr. H. S. Everett, was as follows: The placenta was about 18 by 15 by 4 cm. The cord was centrally inserted. On the maternal surface were numerous opaque white spots from 5 mm to 1 cm. in diameter which on section showed white hyalinized nodules, some of which showed hemorrhagic centers.

Microscopic sections showed white infarcts with necrosis and replacement of tissues by fibrin. Villi were well formed and the decidua was partly hyalinized, but there was no evidence of inflammatory reaction. The diagnosis was multiple white infarcts of placenta.

The mother had an uneventful postpartum course and blood counts on alternate days showed a slight increase in erythrocytes and hemoglobin with liver and iron therapy.

COMMENT

The apparent effects on the course of the pregnancy and parturition were the moderate anemia of the hypochromic type and uterine bleeding before the onset of labor. The bleeding probably can be attributed to extensive placental infarction, since there was no evidence of a disturbance of blood coagulation. The infant showed no evidence of disease except for the presence of agglutinins in low dilutions (1:80) but this is more than one would expect to be due to the so called normal agglutinins which may cause agglutination in dilutions of 1 to 5.³ This may represent antibody formation by the fetus as the result of bacterial invasion through the placental villi or placental transmission of maternally produced agglutinins. Many of the acute infectious diseases have been demonstrated in the fetus. The increase in the titer of the child's blood indicates that the mother's milk may have also transmitted antibodies as the child started breast feeding twelve hours after birth. De Lee⁴ suggests that this may occur with diphtheria and tetanus toxins and typhoid. In this case the disease was mild in the acute stage was of short duration, and the pregnancy was apparently not endangered by the infection.

2 West Read Street—1035 Jackson Street.

3 Park, W. H. Williams, Anna W. and Krumboltz, Chas. Pathogenic Micro-Organisms. Philadelphia: Lea & Febiger, 1929.
4 De Lee, J. B. Principles and Practice of Obstetrics. Philadelphia: W. B. Saunders Company, 1930.

An Ample Supply of Vitamin B—If half of the food calories are taken as fruits, vegetables, milk and eggs and if half of whatever breadstuffs and cereals are taken in the whole grain or dark or unrefined form, there will almost certainly be provided an ample supply of vitamin B—and of many other important nutritional factors as well—Sherman H. C. Food and Health. New York: Macmillan Company, 1934.

² Agglutination tests were done by the Baltimore City Public Health Laboratory.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, MD
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed the series will be published in book form.—ED

THE THERAPY OF PSYCHONEUROSES

IN COLLABORATION WITH S. H. KRAINES, MD

"Functional disorders" are just as real disorders as are "organic disorders." Patients with neurotic manifestations are not simply "imagining." The pain that the querulous woman complains of is just as real to her as if it were of organic etiology. The paralysis of the hysterical patient defies voluntary movement as greatly as does that of the hemiplegic individual. These symptoms are not only real to the patient, they hurt and incapacitate him even more than when there is an organic basis, because of the associated mental attitude.

Functional and organic disorders are neither independent, antagonistic nor mutually exclusive of each other. They interact in the most complex patterns. Organic disease is often accompanied by psychoneurotic disturbance, the two may coexist independently of each other, and the latter may eventuate in organic disease. As examples of this correlation may be cited certain forms of hyperthyroidism, so-called pseudo-angina pectoris, "essential" hypertension, and the "gastro-intestinal neuroses" which by indefinable stages merge into peptic ulcer, or colon spasm and mucous colitis. A person with a tendency to diabetes may not develop the clinical disease until after he has gone through an emotional crisis. Many of these conditions can be temporarily relieved by other means, but their obstinate tendency to recurrence can be cured only by discovering and remedying the psychoneurotic disturbance underlying them.

Therefore, successful treatment of all excepting purely physical diseases demands that every patient, whether evidently psychoneurotic or not, be given, in addition to a thorough physical and clinical examination, a social analysis and a personality study—a total analysis.

THE DIAGNOSTIC ANALYSIS

A thorough understanding of the patient's physical condition is, of course, of paramount importance, and it goes without saying that every psychoneurotic individual should have an exceedingly careful physical examination at the beginning of the treatment rather than continuously or frequently repeated. The suggestive influence of a thorough diagnostic "work-up" is inestimable. For, if one can assure the patient after such an ordeal that nothing abnormal has been found, it will go a long way toward relieving his fears with their evil consequences. The objection to frequently repeated reexaminations is that these may carry with them the unfavorable suggestions that the physician is not sure of his ground.

It will help in the understanding of the dynamics of the psychoneuroses to fix our attention on emotion as

the motor mechanism—emotion, be it understood, differing from intellectual processes precisely by the degree to which the "intero-effective" division (the autonomic nervous system and the endocrines) enter into the process.

That, in point of fact, many of the symptoms found in psychoneurotic individuals are due to exaggerated activity of the autonomic nervous system and of the endocrines may be illustrated by the dilated pupil, the tendency to sweating (especially of the hands) and the tachycardia occurring in cases that cannot be classified as exophthalmic goiter or by the cases of blood pressure elevation occurring independently of arteriosclerosis and responding so readily to the proper treatment that they cannot well be considered instances of the condition known as essential arterial hypertension. Finally, what better example of this relation could be found than the amenorrhea that occurs in pseudocyesis as well as in women who greatly fear pregnancy?

A large number of the phenomena of psychoneuroses are due to vicious circles set up by these autonomic and endocrine disturbances. The emotionally induced disturbance of secretions and motility of the gastrointestinal tract reflects itself in the symptoms of anorexia, indigestion, constipation and colon spasm. This disturbance of the digestive system is followed by malnutrition, which in turn increases the weakness and irritability of the nervous system. To the anorexia and constipation we might add insomnia, the third most common presenting symptom of psychoneuroses—a trio which forms a syndrome so characteristic of this kind of disturbance that it may be called the "psychoneurotic triad." The insomnia, due to such emotional disturbances as worry and fear, results in excessive fatigability the next day, which in turn increases the insomnia, for, once fatigue exceeds the physiologic limit, it hinders rather than favors sleep. No less important is the fact that fatigue and weakness breed pessimism, which in turn results in unconquerable worry and fear.

From what has just been said it is obvious that the degree to which emotion enters in the clinical picture must be determined, for, until organic disease results, emotional reactions persist only so long as the emotion persists. Emotion should be visualized as the zone of contact between the "intellect" and the somatic processes with the diencephalon as the "switchboard," the autonomic nervous system as the connecting link, the viscera as the keyboard and the endocrine glands as substations that reinforce and continue the somatic commotion once it is started. Such commotion in turn aggravates the emotional storm so that, unless something is done to allay it, the condition goes from bad to worse. Therapeutically one may break in on the vicious circle at any one of several points, but, unless one succeeds in removing the causative emotion, the results are generally but temporary.

Striking at the root of these disturbances is greatly helped by the understanding that pathogenic emotional reactions are largely due to unresolved conflicts. To discover these unresolved conflicts the patient must be subjected to a personality study.

In the interpretation of the symptoms of psychoneuroses and of suppressed unresolved complexes, the concept of symbolism is of great importance. A symbol is something that stands for a certain idea or group of ideas. Thus the flag is a symbol. The soldier or the patriot does not fight for the bit of bunting carried on the end of a stick. It is the loyalty, the devotion to home, the opinion of his fellow men and many other

factors that are behind the devotion to the symbol, the "flag." It should be stressed that symbols have meanings only to the individual person or group, the German flag may arouse no emotion in the French, nor the Japanese flag in the Chinese, except possibly that of antagonism.

The word "symbol" is employed in psychiatry in the same sense. The patient who has a hysterically paralyzed arm is merely using the paralysis of the arm as a symbol for certain ideas. The pains that so many middle-aged neurotic women feel in the abdomen, the heart or the head are in large part symbolic, expressing certain repressed ideas. To the affected individual the "neurotic" pain is real, and the fact that the pain is a symbol carries all the more weight because there is an emotional upset associated with it. If one always keeps in mind that in psychoneurotic persons many symptoms are symbols, an important advance in the understanding of the patient will be made.

In order to find out wherein these repressions lie, one of the most important things is to establish a rapport between the patient and the physician. The patient must have sufficient confidence in the physician to reveal the innermost secrets of his heart, to reveal those very things that he has never told any one else. In psychiatric hospitals, one often comes across patients who, even though devout Catholics, have never told their secret to the priest but who, in the proper setting, unburden themselves to the physician. The exact technique varies greatly with the individual but, generally speaking, if the patient is allowed to talk with but few interruptions, he will bring forth many of his so-called subconscious ideas. A gentle hunt dropped here and there which shows that the physician does not become shocked because a person does not subscribe to all the conventional tabus of the day goes a long way toward releasing the inhibitions of the individual to the telling of his story. Sometimes a pointed question brings tears to the patient's eyes, an indication that a sore point has been touched. It is then the physician's duty to proceed with his probing as he would in case of a sinus to discover what is at the bottom of it that keeps it from healing. As the physician palpates an abscess, even though it is painful, to determine the best place for an incision to let out the pus, so must he persevere in following up the painful thoughts to discover the best means of relieving the patient of their baneful effects. If these means are not sufficient, one must resort to the analysis of dreams, to the "free association" method and occasionally to hypnosis. Many patients can be relieved of their long enduring fears by several interviews, but in some cases many months may have to be spent in digging out the repressed ideas.

One illustration may suffice.

A girl complained of terrifying obsessions. For months she dreamed of killing little children. Her fears prevented her from sleeping in a home where a small nephew was present. The obsession grew on her to the point that she thought of suicide. In this case it was found that a few weeks before the onset of her obsessions she had submitted to an abortion. As she was unmarried there were many complications. She grieved over the crime of killing an unborn child. She read the newspaper story of a couple killing a child and then the obsessions came on. The obsessive ideas of killing children was her method of symbolizing the killing of her own unborn child. She repressed the memory of the incident, but it lived on in this symbolic form. In two interviews the patient understood the connection and her obsessions disappeared. Since she understood what idea she was trying to express (the reproach

over the abortion) she had no need to symbolize it, therefore the disappearance of the obsession. The reproach itself was simply handled.

It is in this field that the psychoanalysts have done their greatest good. They have encouraged the patient to talk and in this manner have brought out the repressions. Unfortunately, psychoanalysts have permitted themselves to raise fanciful superstructures of theory on the basis of these simple facts and to draw wild conclusions from them. In spite of these excrescences of the system, the psychoanalysts at times do get beneficial results. This is due, it seems, mainly to the fact that the patients talk themselves out and learn to appreciate the psychic phenomena at their true worth. The patients also get much benefit from the reassurance that springs from the indomitable and irrepressible faith that the psychoanalyst has in his own treatment. Even if the patients go away with their heads filled with all sorts of unproved speculation and theory, it matters little as long as they have improved.

With these concepts in mind, the treatment of the psychoneurotic patient may possibly be begun, with the feeling that one practices rationally. If one discovers what the repressed ideas are for which the symbols are used and teaches the patient to face the facts, the symbol will no longer be necessary, for, when the individual can be made to understand what the thoughts are that cause him to have symbols, the thoughts can be consciously expressed and consequently there will be no need for their symbolic expression. While matters are not always as simple as this, one not infrequently at least, secures a therapeutic triumph from the application of these principles.

THE THERAPEUTIC SYNTHESIS

The treatment of psychoneuroses may be resolved into the following indications:

- 1 Proper care of physical defects
- 2 Changing the patient's personality
- 3 Lessening environmental strain as much as possible.

1 Remedying physical defects should, of course be attended to primarily, but only so far as necessary to make the patient more adequate to meet the strains of his life.

(a) Surgery. One must be particularly conservative in advising surgery in the psychoneurotic. An operation should be advised only if one feels sure, first that the patient's physical condition will be so greatly improved by the operation as to give him a new start in life and, secondly, that he will submit to the operation. One occasionally sees patients unimproved by operations because these did not strike the root of the disturbance. Individuals who have had thyroidectomies simply because they were nervous and had a slightly elevated metabolic rate, parous women who have had repairs of lacerated perineum and cervix, and persons who have had nephropexy or appendectomy, that did not relieve them for more than a short time if at all. Such patients may thereafter make it their life's business to discredit surgery and keep others, who need an operation from securing its benefits. It is also a fact that merely advising operation constitutes a potential psychic trauma. The patient who has been advised to have an operation and rejects it has been harmed by the advice. He is liable to brood over the terrible doubt within him and the dreaded operation he does not have the courage to undergo. He may lose sleep and the joy of living. Such a patient may shut himself out after, all "regular physicians" in fear that the

give him the same advice. If he then fortunately happens to be cured by some quackery or other, such a person becomes an ardent propagandist for this form of treatment, which in turn may wreck the chances for cure of many another sick fellow man.

One may be more generous about advising diet or medication than surgery, but these too must be prescribed with discrimination.

(b) Diet. Many of these patients are diet cranks and faddists. They crave having special diets prescribed for them, and yet such dieting may be harmful to them by acting as a constant suggestion that they are sick. The dietary of the psychoneurotic should, as far as possible, include everything that goes to make up a normal general diet and the importance of "eating everything" be impressed on the patient. The very multiplicity and bizarre of the dietary tabus of these individuals are often directly diagnostic of the psychoneurotic foundation for them. By continually refusing certain articles of food, the patient may have gotten himself into a condition of malnutrition or hypovitaminosis. Indeed, the patient may have to favor the very food that he has been in the habit of avoiding. Thus, some of these individuals have been starving themselves of carbohydrate to acquire the stylish sylph-like shape and they may require an abundance of bread and butter prescribed for them to acquire the euphoric embonpoint. Anemia is common in those who refuse to eat eggs, and these most iron-rich of foods may be the important reconstructive tonic. Allergy must, of course, have been excluded when giving orders for diet.

(c) Medicinal treatment directed toward improving the patient's physical condition properly furnishes the medicine so much desired by most of these patients, but one should ever beware of routine placeboing. The very fact that a medicine is prescribed serves as a potent suggestion that something physical is wrong. It may "fix" the disease on the patient instead of curing it. Indeed, the psychoneurotic patient is not really cured until he is free from medicine taking.

For the temporary relief of insomnia a sedative may be desirable. For instance, bromide (prescription 1) to lessen excessive nervous irritability. If bromide is not sufficiently powerful, carbromal (prescription 2) may be of value. In patients who have acne, some other sedative may be desirable, e. g., barbitol (prescription 3) or phenobarbital (prescription 4). It is best, in general, to give these in subhypnotic divided doses—after meals and at bedtime—rather than to force sleep by means of a large dose of the more powerful hypnotic taken at bedtime only, as there is great danger of narcotic habit formation in these individuals. It is also of great importance for the patient to realize that the sedative is merely an adjunct, to break in on a vicious circle, that it is merely a crutch that must soon be abandoned as otherwise it weakens instead of strengthens. The same principles govern the use of cathartics. (See therapy of Colon Stasis.)

(d) Hydrotherapy in the form of prolonged warm baths, which can be taken in any average home, has a very soothing effect. Soaking in warm water (about 92 to 98 F) for at least an hour will often bring blissful relaxation. Cold showers in the morning are to be recommended at times as a physical stimulant and a training in subjecting oneself to unpleasant experiences for the benefit to be derived in consequence. They also increase resistance to the unfavorable effects of chilling.

2 Changing the patient's personality must be the focal point of therapy of the psychoneuroses. This

indication is so difficult to carry out as to make its accomplishment almost a miracle, but the results are no less miraculous.

This change may be accomplished at times by acquainting the patient with his/our basic multiple personality. To simplify the presentation to the patient, it may be presented in somewhat the following manner: "We all have living within us, as our direct and most intimate heritage from our ancestors, a savage, a veritable beast, call it the "id" with Freud or the "anima" with Jung. This is overlaid by a more or less efficient veneer of culture, the result of civilization which makes us socially acceptable and which Jung calls the "persona," the self we want to be and do our best to imagine ourselves to be. The well balanced, happy individual is he whose "anima" and "persona" are in friendly relation with each other, whose persona frankly recog-

PRESCRIPTION 1—Bromide

| | | |
|---|----------------------|--|
| R | Potassium bromide | 30.00 Gm |
| | Anise water | 30.00 cc. |
| | Syrup of glycyrrhiza | to make 120.00 cc. |
| M | Label | Teaspoonful in milk after meals and at bedtime |

PRESCRIPTION 2—Carbromal

| | | |
|-------|---------------------------------|----------|
| R | 25 carbromal tablets | 0.30 Gm. |
| Label | One after meals and at bedtime. | |

PRESCRIPTION 3—Barbitol

| | | |
|-------|------------------------------------|---------|
| R | Barbitol | 3.00 Gm |
| | Divide into 30 capsules | |
| Label | One after meals and two at bedtime | |

PRESCRIPTION 4—Phenobarbital

| | | |
|---|---------------|--|
| R | Phenobarbital | 0.80 Gm |
| | Iso-elixir | 100.00 cc. |
| M | Label | Teaspoonful in a little water after meals and at bedtime |

NOTE.—This is an example of prescribing of a "magistral formula in contradistinction to ordering of an official or a proprietary formula. The advantage of taking the slight trouble to prescribe medicines as a magistral formula rather than otherwise lies in the possibility of readily adjusting the size of the dose to the effect desired. If one prescribes the N F Elixir of Phenobarbital or what is more expensive, a proprietary elixir of this kind, one gets only 0.02 Gm. per 5 cc. teaspoonful. The foregoing prescription carries twice as much. If the patient gets too drowsy from such medication the dose can readily be reduced or it can be increased if he does not get sufficient sedative effect without having to order two or more teaspoonfuls which greatly increases the expense of the medicine to the patient. The "iso-elixir" employed in this prescription is now official in the National Formulary. It is a device by which the physician may secure the cooperation of the pharmacist in the adjustment of the proper alcoholic strength of the vehicle. The N F VI recognizes two basic elixirs, a Low Alcoholic Elixir and a High Alcoholic Elixir. These two are miscible with each other in all proportions and the following note is appended to the monograph.

Iso-Alcoholic Elixir (Iso-elixir) is intended to serve as a general vehicle for various medicaments that require solvents of different alcoholic strengths. When therefore, Iso-Alcoholic Elixir is specified in a prescription that proportion of its two ingredients is to be used that will produce a perfect solution.

As phenobarbital is alcohol soluble and water insoluble the pharmacist will employ the High Alcoholic Elixir in preparing this solution.

nizes the insistent demands of self preservation (fear, hunger, acquisitiveness, ambition) and of race preservation (sex, parental love, altruism, patriotism) which strives conscientiously to gratify these in a socially acceptable manner. The individual whose two selves are not on speaking terms with each other is essentially unhappy and dissatisfied. These are the ones whose repressions may result in pathogenic symbolism. By making the patient self tolerant and self understanding, one may be able to effect the necessary personality change.

The frank acceptance of ourselves as we are is therefore an important goal in the treatment. It is an important remedy for an inferiority complex. Thus an individual who has a deformed limb, strabismus, blindness or deafness is liable to develop such a feeling of inferiority because of his handicap. Such a person must be trained to accept his defect as a matter of course and to compensate for his deficiency by excelling in some other direction. These deficiencies constitute no real handicap to the person who is determined to

get on. The inferiority complex resulting from social or sex maladjustment or financial difficulties may be frankly accepted and compensated for in the same way.

Substitution therapy is based on the fact that the desires within us have a drive or energy behind them that continues in spite of the fact that the desires cannot be fulfilled and are liable to result in untoward manifestations unless they are diverted into other channels. Substitution may be employed also in the breaking of bad habits. The inveterate smoker continues to wish to smoke after his pledge to give it up. There is still the energy present urging the person to fulfil his wish. Therefore, to break the habit, one must deal with this drive or energy. One of the best ways is to substitute some other means of utilizing this energy so that it will be less troublesome. Thus, the chewing of gum to the smoker, the providing of active and dressy boy scout group activities to the adolescent gangster, the use of play groups and toys in the case of the infant indulging in masturbation, all represent the substitution of some method of releasing and utilizing the energy otherwise directed into undesirable channels.

To all of us, the presence of some goal in life acts to give zest to living. There are two types of goals, one that is unattainable and ever receding, as exemplified by the admonition to "hitch your wagon to a star." The other type is a series of goals, each of which can be attained relatively easily and in a reasonably short time steps, as it were, in the attainment of a greater goal. Surmounting each such step gives satisfaction and it is the satisfaction of attainment that is the important thing.

Sex hygiene is vital. The presence of erotic disturbances in so many patients warrants the formulation of the sexual problem to each individual. Patients are often helped by removal of the feeling of guilt over their natural sex urge or over undesirable results to which it has driven them. Once a mistake has been made, it may be condoned if the socially more acceptable and hygienically safer form of life is adopted for the future. Much of the difficulty and infelicity of married life is due to remediable sexual maladjustment and much good can often be accomplished by a frank discussion of the difficulties.

Proper habit formation is one of the great functions of hygiene habits not only in the daily way of doing things but in emotional response as well. Children may develop habits of emotion instability that are often carried through life. Whereas it is true that the fundamental constitution of the individual so often determines what type of affect is present, nevertheless it is also true that these fundamental emotional drives can be greatly ameliorated and changed. Persons who are subject to violent outbursts of temper may be helped by pointing out to them methods of control. Thus, the patient may be urged the next time he becomes excited to turn around and walk into another room until his anger blows over. The fact is stressed that he is too excitable and that he can in time by continued practice, learn to "thicken his skin" so that he is not so easily aroused. When this is combined with readjustment of the personality in other ways, surprising results can often be obtained.

Socialization is of extreme importance to many patients, who sitting alone in their homes, brooding over their aches and pains and fears miss the wholesome companionship of the "other fellow." Many examples can be cited of "neurotic women" whose aches

and pains were greatly helped by becoming active members of benevolent or reform organizations. They did not have time to think of their own ailments, in the interest of what others were doing.

Occupation Therapy. A program of daily activities should be outlined for the patient with his cooperation and in consultation with his desires. The day should be so arranged that there is something being done all the time, the purpose being to allow little opportunity for brooding, and to instil new and stimulating ideas for some, walking, for others listening to the radio or seeing the movies, or doing some special work. The type of program depends entirely on the individual. It is at this point that hobbies have a significant role. Often the daily work of the individual is a compulsory matter, his life's vocation being merely a necessary evil by means of which he can subsist. To such persons the development of avocations, of hobbies, brings great relief. The doing of something other than one's work, the getting of pleasure out of accomplishing things that do not have to be done, are of great value in relieving the tedium of life and making the patient happy. Right here it might be well to note that concrete realities are the best type of hobbies. By this it is meant that individuals who tend to be day dreamers should not develop the reading of books as their hobby. This is too abstract, they need much more concrete and real things. The development of a carpentry shop where they can make and feel and see their own creations, the collection of stamps, photography, the care of a garden or the raising of pets is better for this purpose. "Fancy work" has a curative tendency for many a neurotic woman.

Diversion and fun are the only way in which we can secure a vacation from our accustomed thoughts during waking hours. The more the thoughts are inclined to be morbid, the more are we in need of such diversion. Movies, the theater, concerts, parties and picnics, travel, all have a therapeutic value, most especially for those who have been largely denied them. Of the requirements for a proper mode of living—a sufficient amount of work, a sufficient amount of rest, a sufficient amount of food and a sufficient amount of fun—the last is not the least.

Often it is necessary to desensitize a person to some painful memory. The case of the girl who developed obsessive thoughts as a result of the "painful memory" of the abortion illustrates the need of making this "memory" less painful. This is carried out almost in the same fashion as desensitization for an allergen. The topic of such emotion is discussed a little at a time and at frequent intervals, until finally the patient is no longer so sensitive about it. It should be noted that it is not the obsession or the "peculiar idea" that is discussed but the etiologic factor, the "painful memory." When, on the other hand, a patient borders on the psychotic and presents fixed delusions, he should never be argued with as to his delusion. Controversy often tends to fix and harden ideas of fancy that disappear if not touched on.

Suggestion, or the implanting of a dominant idea in the mind of another individual without process of reasoning or persuasion, is ever present in all forms of therapeutic endeavor. The very fact that a patient submits to any kind of treatment with faith that it will help him carries with it a potent suggestion that it will do so. This is indirect suggestion, in contrast to direct suggestion which is exerted by the therapist.

expresses in words the idea one wishes to implant in the mind of the other individual. Thus, the statement "I will cure you" is a direct suggestion, the curative potency of which is in proportion to the faith the patient has in the one who makes the statement. Suggestion is the chief stock in trade of the quack, who promises a cure regardless of his ability to perform it and by that act alone often cures those curable by suggestion. Scientific physicians, on the other hand, do not resort to this potent measure often because they are harassed by honest doubts as to the completeness of their understanding of the case. While we cannot afford to sacrifice honesty—the distinguishing feature between the quack and the physician—we should employ such direct suggestion as "You will get well" whenever we have no reasonable doubt of the truth of this statement. We often neglect to do so because it seems so obvious to us. It may not be to the patient.

Suggestion by itself is capable of removing all those symptoms due to suggestion, but it is merely of symptomatic value. It does not cure the psychoneurosis itself. Suggestion is therefore of much less importance than training the patient to understand himself and to deal effectively with his problems. It is, nevertheless, true that the credulous are influenced more readily by suggestion than by persuasion, also, that suggestion is of importance in every case. The very manner, words and look of the physician have a suggestive influence of profound importance. The physician who can make his patient feel that he is his friend and can carry the conviction that he will do his best to help has a healing potency within himself. The physician to whom the patient can tell his troubles with certainty of sympathy and understanding and the expectancy of relief can give much help. It should be the aim of every physician to treat his patient so that he feels better for having had the consultation. Some patients feel better even the moment they lay eyes on the physician.

In many cases in which the individual is of inferior intelligence or the time available is short, hypnosis is of value. It must, however, be realized that hypnosis (a form of suggestion) is similar to medication in that it is only a temporary measure, that lasting results are not likely to be obtained unless a personality readjustment is accomplished. One finds many hysterical persons cleared of their symptoms by hypnosis, only to return at some future time with a different type of symptom, brought on by the same factors that caused the first symptom.

3 Lessening environmental stress is often possible by adjustments in the patient's surroundings. Such adjustment will go a long way toward helping in stabilization of the patient. Often one can accomplish much by treatment of the relative (husband, wife or parent) who is the irritating factor. For instance, a husband too "busy" to give his wife the companionship she craves may be made to see the error of his ways. A patient who developed a marked change in personality following a head trauma, with symptoms of great sexual drive and of explosive irritability, was nicely handled by making the wife more understanding, sympathetic and accommodating.

Change of environment may generally be secured most easily by a "vacation," and the physician who does not have it among his *materia therapeutica* misses a powerful weapon in his armamentarium. By advising

a temporary change of environment one can often discover to what extent the accustomed environment is detrimental to the patient.

A changed environment may do more than anything else toward promptly relieving the symptoms of maladjustment. It is often surprising to see how a child that has been living in a "temperamental home" and is afflicted with temper tantrums with hypochondriacal aches or pains or with enuresis, will improve in a relatively short period in more stable surroundings. For many a "nervous" child, its mother—herself "nervous"—is its worst enemy. Adults, being merely "children grown up," react in the same way.

Whenever an individual improves on going away from "home" and relapses on returning to it, his habitual surroundings are thereby revealed as pathogenic and the exact nature of the pathogen may then become discoverable. The patient may have to be permanently removed from the unfavorable influence, unless it is possible, by methods previously described, to immunize him to its evil effects.

Securing an abundance of rest as well as a sufficient amount of work is a *sine qua non* with psychoneurotic patients. Excessive fatigue as well as excessive leisure are toxic factors that must be resolutely eliminated, for fatigue breeds pessimism and it may be pessimism that makes the conflict unresolvable, the situation unbearable. An after dinner nap is often a better sedative than any medicine that may be prescribed. A partial rest cure for a month or more should be insisted on for patients who are much underweight as well as for those who, on account of overwork with tension and insomnia, are in danger of the narcotic habit. Just as excessive fatigue begets restlessness and insomnia, so rest begets rest in these individuals. For example, a partial rest cure for an overworked housewife requires hiring of help so that the amount of work required of the individual may be sufficiently reduced to permit increasing the amount of time spent in rest and relaxation, e g, breakfast in bed and one or two hours' rest afterward, an after dinner nap of an hour or two, and going to bed right after supper. As the patient improves, the time in bed is progressively diminished.

Physicians must, however, beware of diagnosing overfatigue and prescribing a rest cure merely because the patient declares himself tired. The work may be so uncongenial as to "make the patient tired" without actually overfatiguing him. Or the individual may be of the self-indulgent type and suffer from a premature sense of fatigue. Such patients need to be strongly encouraged to continue at their occupation until they can exchange it for more congenial work and it is desirable to discover what the patient "would love to do" and try to point out ways and means of arriving at a practical solution of his problem. For instance, a person who had started on the study of medicine and who, because of family demands, has to make his living by "piece work" tailoring may have pointed out to him that his fatigue is really due to his dissatisfaction because of frustrated ambition. This individual's ambition may be guided into directions that are realizable and that will better satisfy his ego, as salesmanship or craftsmanship, most especially in a field akin to his ambition, such as the surgical instrument business.

Of course, a person who has been indolent and who, owing to lack of outside interests, has become largely

preoccupied with self is in need of the opposite kind of treatment, which has been pointed out under "occupation therapy"

SUMMARY

Psychoneuroses are due to the patient's inability to meet the situation of his life in an adequate manner. This inability is due to excess of external stress or a defect in the patient's constitution or, most commonly, the combination of the two. Treatment is therefore directed at (1) relieving the stress as much as possible and (2) remedying the patient's deficiency. The temporary removal of the symptoms of psychoneuroses is relatively easy. Permanent cure can be accomplished only by a change in the patient's personality by means of training to more adequate mental attitudes and habits.

The only excuse for inflicting this lengthy article on a literature-overburdened medical profession is that psychoneuroses are curable much more often than they are cured and that every doctor, no matter what his special line of work, has these cases and either helps or harms them in accordance with his understanding of their needs.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORTS

HOWARD A. CARTER, Secretary

REPORT OF THE COMMITTEE ON THE PRESENT STATUS OF PHYSICAL THERAPY

The original report of the Committee was written ten years ago,¹ at the time of the organization of the Council on Physical Therapy of the American Medical Association. At that time there were certain conditions in the realm of physical therapy that threatened its ethical standing with the profession as a whole. Many new pieces of apparatus had been introduced and many overenthusiastic statements had been made and published by those who were becoming addicted to an untried machine therapy. The original report sounded a warning concerning the abuses of physical therapy and then presented the Council's suggestions for an ideal relationship between physical therapy and other branches of medicine. The Council's predictions have been so nearly achieved and the status of physical therapy in the field of medicine today is so much improved and so firmly established on a sound basis that the Council now feels that a new report on the present status of physical therapy is necessary.

"Physical therapy" is the term employed to define the treatment of disease by various physical means. It comprises the use of heat, massage, exercise, light, water, electricity, and mechanical and other physical agents.

The use of these physical agents has become thoroughly established as an integral part of medical practice. However, knowledge concerning the exact physiologic effects, therapeutic usefulness and technic of application of many of them is still limited. Physical agents should not be used by the physician unless he is thoroughly familiar with the source of the physical

energy he is using and with the effects which it will produce. The use of these therapeutic devices empirically, simply to produce psychologic effects, is to be strongly condemned.

As in its previous report, the Committee desires to warn the profession as a whole against the acceptance of enthusiastic statements by manufacturers' agents—salesmen absolutely untrained in medical science. While the Committee feels that, for the most part, the sales agents of manufacturers of physical therapeutic equipment are no less trained and no more overenthusiastic than the representatives of many drug and surgical supply houses, nevertheless physicians are warned particularly against the high pressure type of salesman of physical therapy equipment who extols his device in terms of its earning ability. Choice of such devices should be based solely on the decision as to their therapeutic efficacy.

In its previous report the Committee pointed out that although physical therapy came into its legitimate place in medicine during the World War, it is one of the most ancient methods of therapy. At the time of this previous report, now several years ago, the Committee stated that physical therapy was gradually taking its place with the usual medical and surgical procedure. Today we may say that it has assumed its correct position in ethical medical practice and has become a definite part of modern medicine. The Committee desires to reiterate, however, that unless we guard against bad habits in its usage, against allowing it to replace careful diagnostic measures followed by well defined but less spectacular methods of treatment, and, especially, unless we guard against its insidious tendency to make its master an easy living, physical therapy may lead into dishonest practice or quackery.

The solution to the development of legitimate physical therapeutic practice has been found in the organization of the numerous departments of physical therapy in the hospitals of this country. Just as the physician, while he may do some of the simpler laboratory tests in his office, uses the clinical laboratory for more difficult tests, so does he utilize the hospital's physical therapy department for many of the more elaborate physical therapeutic methods of treating disease, even though he may desire to use some of the simpler physical therapy measures in his own office.

Among the physical measures that have been found both by clinical experience and by laboratory research to have certain therapeutic value when appropriately prescribed may be included (1) heat, in the form either of hot packs, hot water bottles, electric pads, radiant heat lamps, diathermy and short wave diathermy, hot baths, hot compresses, hot sprays and a number of combinations of electrical, radiant and hydrotherapeutic measures for producing heat or of artificial fever produced by hot air, hot water, high frequency currents and other physical means, (2) massage, such as stroking, kneading, percussion, friction and vibration, as well as stretching, pulling and corrective movements, (3) therapeutic exercise, including passive or relaxed movement, assistive movement, active movement, active resistive movement, corrective and therapeutic games and training in correct body mechanics, (4) hydrotherapy, including thermal packs, douches, sprays, baths, contrast baths, whirlpool and other special baths, under water exercise tanks and therapeutic pools, (5) radiant energy.

¹ Report of Committee on Present Status of Physical Therapy. J. A. M. A. 87: 1122 (Oct. 16) 1916.

either natural such as in heliotherapy or sunlight therapy, or artificial, such as is produced by air and water cooled mercury arc lamps, carbon arc lamps, radiant heat lamps, infra-red generators and other special devices for the production of various forms of artificial irradiation including radium and roentgen rays, (6) electricity in the form of galvanic, faradic and sinusoidal currents and high frequency currents (conventional and short wave diathermy), (7) mechanical measures utilizing pressure and suction machines and mechanical hydrotherapeutic and electrical devices, and (8) occupational therapy, both functional and nonfunctional forms, giving exercise by both diversional and purposeful types of work.

In its previous report the Committee stated that physical therapy was in a transitional stage and that it was "still violently condemned in toto by some physicians." Probably the best indication of the progress of physical therapy within the past few years lies in the fact that such a statement can no longer apply. There are few, if any, physicians who condemn physical therapy in toto in these days. The physician should no more condemn physical therapy in toto than he should condemn internal medicine, surgery, orthopedics or roentgenology in toto. While physical therapy is still in a transitional stage as far as its establishment as a recognized field of regular medical practice is concerned, nevertheless this transition has progressed within the past five years toward the point of complete consummation.

The Committee previously suggested that physical therapy should be considered as an adjunct to other forms of treatment, both medical and surgical. The Committee now wishes to suggest that, whereas physical therapy is a smaller and less developed field than either medicine or surgery, and whereas frequently the use of physical measures is merely an adjunct to other forms of treatment, it is possible to conceive of instances in which the use of some physical measure will be the primary method of treatment and medical agents or surgical procedures may be the adjunct. In other words, physical measures should be used only when and as indicated either primarily or secondarily in relation to other methods of treatment.

The previous report also dealt rather extensively with the use of physical therapy by charlatans and quacks. Our present report need not take so much cognizance of this angle. Nevertheless there are charlatans who practice in all fields of medicine and the idea should be abandoned that scientific physical therapy bears a stronger relationship to quackery than do other branches of medicine. The Committee feels that it must still sound a warning against overenthusiasm and exaggerated claims for the value of newly developed physical methods of treatment of disease. The present hyperenthusiasm concerning short wave diathermy and concerning positive and negative pressure machines is a case in point. At the present moment there is a trend toward overenthusiasm for the use of short wave diathermy and there is a similar wave of hyperenthusiasm for the use of positive and negative pressure machines in the treatment of circulatory diseases. Each of these measures appears to have a definite, though limited, field of usefulness, and each is being threatened with extinction because of the danger of a reaction against unwarranted claims. The

Committee desires to sound a plea for carefully controlled clinical studies on the use of such devices before results are published in the literature. Ethical manufacturers, it is hoped, will heed this warning and develop their devices on the substantial ground of scientific fact rather than haste to compete with a myriad of fly-by-night concerns.

At the time of the organization of the Council, overenthusiasm on the part of certain physicians concerning ultraviolet therapy, combined with the high pressure salesmanship of certain manufacturers, had literally swamped physicians' offices, hospitals and many private homes with all kinds of ultraviolet lamps, some effective and some worthless. It took the Council at least four years to clear up the ultraviolet situation. Finally, by rejecting many of these ultraviolet lamps and by listing the few diseases really benefited by ultraviolet, and by developing standards for advertising ultraviolet lights, this form of physical therapy was brought into its present ethical position. We must avoid overenthusiasm for all new physical therapy apparatus, lest we have a duplication of the ultraviolet fiasco.

In its previous report the Committee pointed out that "The Council on Physical Therapy feels that the following points must receive the most careful consideration of the medical profession: (1) Physics, physiology and biochemistry must be called on to dispel the empiricism of the past and to demonstrate scientifically the value of various physical agencies." The present committee is aware that there has been a great deal of work done in these fields during the past five years which has aided in dispelling the empiricism of the past but is still of the opinion that this point should be stressed. "(2) Physical therapy must be recognized as a definite part of medicine, to be practiced and controlled by graduate physicians. It should be used only as one of the triad of medicine, surgery and physical therapy. It should be prescribed only after careful physical and laboratory examinations of the patient have been made. It should never be prescribed except by a physician thoroughly trained in the use of physical agencies."

The present committee desires to elaborate this statement by suggesting that, according to present day conceptions, rather than occupying one corner of a triad, physical therapy is situated at one corner of a many sided geometrical figure bearing a relationship to all the medical specialties both major and minor which appear at the other corners of this figure. Further, the very fact that it does bear a relationship to so many of the medical specialties emphasizes its value to medicine as a whole. According to our present ideas the statement that adequate physical and laboratory examinations should be made prior to the administration of this form of therapy should be accepted by every modern physician and applies equally to all phases of medicine. Emphasis has been previously made that physicians should be thoroughly trained in the use of physical agencies. There is need, however, for further education in this field, not alone through the medium of the undergraduate medical schools, but also through postgraduate education at medical centers and through various medical societies and medical journals.

In its previous report the Committee stated "The treatment of disease, whether by drugs, surgery or

physical agents, belongs solely in the realm of medicine. A physician would not refer a patient to a non-medically trained technician for treatment through drugs or surgery, yet many physicians refer patients to technicians—masseurs, gymnasts or nurses who have not received training in physical therapy, or even to members of various cults for physical therapeutic treatment.

Therefore physical therapy must be recognized as a component part of medicine and patients requiring this type of treatment should be referred only to physicians trained in this specialty. In this way the use of these methods by charlatans will be largely eliminated."

The present committee desires to elaborate on this portion of the previous report by commenting that there are ethical technicians in the field who work in various hospitals and institutional departments under the direction of physicians, and occasionally as technical assistants to physicians specializing in the field. The Committee feels that just as ethical nurses work under the supervision of physicians and as laboratory technicians work under the supervision of a physician in charge of the laboratory, so well trained physical therapy technicians thoroughly imbued with medical ethics are logically of value in conducting the mechanical details of the administration of physical therapy under the supervision of a physician.

At this point the Committee desires to urge that all hospital departments of physical therapy be under the direction of a physician, and that the frequent practice of placing a medically untrained technician in charge of such departments be abandoned. The Committee realizes that the supply of well trained physicians in this field is limited, but it nevertheless feels that the rule should be adhered to in principle and that proper steps should be taken to provide the necessary graduate education in physical therapy for physicians. The technicians to serve under these physicians should be either graduate nurses or graduates of recognized schools of physical education, and in either case they should have had an additional year's training in a recognized school of physical therapy. The Council on Medical Education and Hospitals has prepared a list of approved schools for physical therapy technicians. The need for such technicians is manifest and their training should be encouraged, provided it is understood that they are to work under direct medical supervision.

The present committee concurs fully with the last portion of the previous report. "(3) Since physical therapy is a definite part of medicine, every medical school should give a thorough training in this subject. The paucity of postgraduate and undergraduate instruction in physical measures in our medical schools has placed the profession at a disadvantage. Many attempts have been made to remedy this situation. A subject as intricate as physical therapy requires more study than the acceptance of a salesman's assertion that the snapping of a switch or the pressing of a button will definitely assuage any pathologic condition.

"The making of physical therapists by courses of one or two weeks often reeking with commercialism must be condemned. The three to six weeks courses sponsored by reputable medical schools are frankly makeshifts but do serve to show the breadth of the subject at least they effect the realization that such a period suffices only for establishing the purely mechanical details of technique and the broader physiologic

groundwork on which, aided by his medical knowledge and common sense, one may attempt to erect a physiotherapeutic superstructure. The remedy is adequate instruction to undergraduates in the medical schools. Courses starting with biophysics should be given in the last three years. In the postgraduate schools more intensive and prolonged courses should be offered. Medical societies should invite physicians specializing in physical measures to give sane, scientific courses in physical therapy to the members. A fair proportion of the scientific programs of medical societies should be assigned for discussion of physical measures of treatment."

In commenting on this section of the previous report the present committee desires to point out that although the activities of the Council have practically wiped out commercial courses and that there has been considerable increase in the amount of postgraduate and undergraduate instruction in physical measures there is still great need for further development along these lines. The Committee on Education of the Council on Physical Therapy has aided considerably in the postgraduate instruction of physicians through the medium of various medical societies by providing a group of well trained speakers who are available to the chairman of any medical society's program committee. It has further increased the knowledge of the general practitioner by providing a series of monographs on various phases of physical therapy. These are available without charge for use by any ethical group of physicians. The fact that physical therapy is receiving more attention in the medical literature is obvious to any one who glances through the current journals or the *Cumulative Index Medicus* and compares these with a journal or a volume of the *Index* published five years ago. For example, in the April 4, 1936, issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION the words "physical therapy" appear in articles, announcements, committee reports, advertisements and so on no less than seventy-nine times.

In its previous report the Committee announced that the Council would "attempt to keep the profession informed of the extensions and limitations of therapeutic value of old and new methods and of the efficacy and danger of apparatus offered to the profession and the public by the manufacturers." The present committee desires to announce that the second edition of the Handbook of Physical Therapy, a collection of approved articles on various phases of physical therapy previously published under the auspices of the Council, is now available through the American Medical Association. It also wishes to bring to the attention of its readers a booklet listing the apparatus accepted by the Council on Physical Therapy. This will serve as a guide to the practitioner in the purchase of physical therapy equipment and may be obtained by writing the Secretary of the Council on Physical Therapy, 141 North Dearborn Street, Chicago.

The Committee feels that since its previous report the status of physical therapy in its relation to general medicine has improved considerably, that there is a better understanding of the field as a whole by physicians at large, and that the activities of the Council on Physical Therapy in its attempts to disseminate reliable information on this subject have been amply rewarded. There is still a need for even fuller cooperation between investigators and

sicians engaged in clinical fields, on the one hand, and, on the other, the small group of physicians trained in physical therapy who are attempting to place this branch of medicine on a more scientific basis

SANBORN MOTOR-GRATIC MODEL E-I-S METABOLISM TESTER ACCEPTABLE

Manufacturer Sanborn Company, Cambridge, Mass

The Sanborn Motor-Gratic Model E-I-S is a closed circuit motor blower, spirometer type of metabolimeter which weighs 67 pounds. This weight includes the water necessary for the mechanism, weighing 3 pounds, the table with oxygen tank, weighing 29 pounds, and the metabolism unit and all other accessories which go with the unit, weighing 35 pounds. It is 58 cm high, 22 cm wide and 40 cm long at the base. It has an extended size when in use of 86 cm high, 116 cm long and 22 cm wide. The entire machine is mounted on a sturdy base which can be conveniently leveled by two thumb screws at the motor end of the machine.

Oxygen to be breathed is contained in a spirometer 163 cm. in diameter supported in a water seal in the usual way. Soda lime used for absorbing the carbon dioxide from the patient's expired air is in a removable container within the spirometer.

A movable, upright support carries a solid wheel having two grooves of different diameters. One groove has a diameter of 11.2 cm and carries a chain by which the spirometer bell is suspended in the water jacket. The other groove is 8.2 cm in diameter and has attached a chain which lifts the marking carriage, to which the stylus or pen is attached. This solid wheel has an inner spring which counterbalances the weight of the spirometer bell and the marking carriage. The difference in diameter of the two wheels allows the spirometer bell to move 1.366 cm for every centimeter movement of the writing point. This reduction in movement allows the use of a smaller kymograph drum and paper of convenient letter size.

Two types of markers are provided and are interchangeable, one a metal stylus and the other a simple capillary type marking pen with a reservoir containing enough ink for several tests. Ordinary letter size paper may be used with the ink pen, but the metal stylus writes on special stylographic drum paper $8\frac{1}{2}$ by 11 inches in size, convenient for filing.

The kymograph drum is held in place and turned by a spindle projecting from a telechron electric clock mechanism in the base of the machine and is held at the top by a centering set pin which can be displaced to remove the drum. The paper is held in position by small clasps at both ends of the kymograph drum. The same switch is used for starting the clock and motor blower.

A metal encased 'red' alcohol thermometer is situated openly on the base of the machine in such a position that the bulb of the thermometer is in the flow of air going from the spirometer chamber to the patient. The use of colored alcohol makes the thermometer easy to read.

The blower for circulating the oxygen is mounted in a metal container, which with the motor forms a single unit. This is fastened solidly to a valve mechanism which is an integral part of the base, with openings direct to the spirometer chamber and to the outside air.

Two rubber tubes of 2 cm inside diameter lead from the valve openings to the patient. These tubes are held by a metal support of great flexibility, allowing them to be used in any desired position. A quarter turn of a small lever is sufficient to switch the respiration of the patient from the oxygen in the spirometer to the outside air.

When the machine is in use the patient breathes from a closed circuit in which the oxygen from the spirometer is circulated by the motor blower. This blower is placed in the return circuit and therefore draws the expired gas from the patient and drives it through the soda lime back into the spirometer. The negative pressure at the mouthpiece is less than 2 mm of water and the pressure at the outlet of the pump is slightly higher.

An ordinary small sized oxygen tank, an aneroid barometer, three rubber mouthpieces of the usual type, and the customary nose clip are provided with the apparatus.

Accessory rubber valves of the usual design are furnished with the machine to be used in case electric power is not available for driving the motor. These are enclosed in aluminum tubes, which can be inserted in the circuit between the spirometer outlets and the mouthpiece.

Tests of Mechanical Efficiency—The time clock mechanism turns the kymograph drum once in eight minutes. This is accurate to within two seconds and well within that necessary for clinical accuracy.

The spirometer bell volume was tested by the removal of definite amounts of air from the bell. The machine was found to be 99.8 per cent accurate, which is a variation of no clinical importance over such a short test period.

The machine was tested for leakage over several days' time with 175 Kg weight added to the bell and with 175 Kg lift on the spirometer bell. No leakage was found in any parts either with the motor running or stopped.

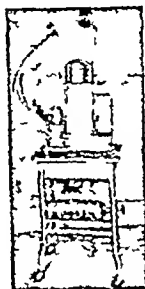
It was found that a pressure equivalent to a water column 3 mm at the top to 15 mm at the bottom was needed to move the spirometer bell from the highest to the lowest positions respectively.

The aneroid barometer furnished with the apparatus was compared with a standard mercury barometer and found accurate within the needed limits.

The apparatus was tested with the valves in place and found free from leakage. With a water manometer placed in the circuit it was found that a pressure change equivalent to 22 mm of water was required to operate the valves, while a change in pressure of 15 mm on each respiration was recorded without the valves and with the motor running.

The patient has a slight negative pressure to breathe against with the motor running while with the motor stopped and the valves in place there is a positive pressure against the lungs.

Basal Metabolism Determinations—This machine was tested by parallel basal metabolism determinations on patients in comparison with a standard machine of proved reliability. The results of a long series of such tests show an agreement of 1.7 per cent between these two machines.



Sanborn Motor
Gratic Model
E-I-S Metabo-
lism Tester

Table and Computations—The tables and charts used in the calculations have been checked and found to be accurate. The method of calculation is simple and time saving and the computation of the basal metabolic rate by these tables gives the same values as those computed by the Roth Metabolimetric Chart when the volume of oxygen is computed as 20.867 cc per millimeter drop of the bell.

Comparative Efficiency of the Valves and Motor Blower—As a result of the tests made with the valves and motor blower on the same individual under identical conditions as has been noted, further investigations of the comparative efficiency of the valves and motor blower on this machine were made.

By disconnecting the motor and inserting valves in the tubes connecting the patient with the spirometer chamber, the machine may be used without the mechanical circulation of oxygen.

The ease of operation as far as the patient is concerned when the valves are used compares favorably with other valve type machines. This is shown by the statements of the patients who used the machines in successive tests and by the comparative volumes of oxygen used during the tests. Patients also stated that the motor blower 'seemed to facilitate respiration' when compared to the Sanborn valve mechanism. The work caused by the valves was found to average 540 gram centimeters for each full respiratory movement of one centimeter by the spirometer bell.

In view of the favorable report, the Council on Physical Therapy voted to include the Sanborn Motor-Gratic Model E-I-S Metabolism Tester in its list of accepted devices.

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SATURDAY, AUGUST 22 1936

RECENT INVESTIGATIONS ON STREPTOCOCCI

The relation of the ubiquitous streptococcus to specific disease processes is one of the most difficult problems in bacteriologic and immunologic research. The essential problem is how to differentiate the pathogenic from the nonpathogenic forms. Various methods have been studied with this aim in view, but thus far no thoroughly adequate method has been described.

A further attempt to advance the solution has recently been reported in a series of studies by Chapman and his co-workers.¹ The strains of streptococci used in their investigations were isolated from suspected foci of infection of patients with chronic diseases. After purified substrains were obtained, certain in vitro tests were applied. One of the earliest tests was the so-called bactericidin reaction, which was an attempt to correlate the resistance of streptococci to the "bactericidal" action of fresh, defibrinated guinea-pig blood. In the investigations reported other substances, notably sodium carbonate sodium bicarbonate, phenol, basic fuchsin, hexylresorcinol and merthiolate, were used in place of guinea-pig blood. Resistance to these chemicals was in many instances similar to that obtained with the blood. Because many of the strains of streptococci examined exhibited maximum resistance to the bicarbonate and hexylresorcinol solutions, attempts were made to measure higher degrees of resistance by including additional tests with stronger solutions of the same chemicals and with longer periods of exposure. A series of 1,898 strains was tested by exposing each strain to 0.3 per cent sodium bicarbonate for one hour and to 0.5 per cent sodium bicarbonate for two hours and testing for viability both immediately after mixing and again after exposure. Each strain was tested also by exposing it to 1:200,000 hexylresorcinol for one hour and to 1:125,000 hexylresorcinol for two hours

and similarly testing for viability. In 83.2 per cent of the strains the results were exactly the same with the two chemicals. In a further attempt to correlate the resistance factor with certain pathogenic factors rabbits were inoculated intravenously with strains of streptococci of differing powers of chemical resistance. A series of rabbits inoculated intravenously with streptococci that reacted negatively to the "bactericidin," hexylresorcinol and bicarbonate tests showed no apparent effects from the inoculation until a dose of at least 15 cc. of a culture had been given them. Those rabbits inoculated with chemically nonresistant strains died when the dose reached from 3.5 to 6 cc.

These results suggest that the types of streptococci studied possessed varying amounts of nonspecific resistance factor, which could be determined by exposure for adequate periods and in appropriate dilutions to a number of different chemical substances. Probably the nonspecific resistance factor may be measured quantitatively by exposure of the strains to certain chemicals. Furthermore, the experiments indicated that strains reacting positively to in vitro tests were able to kill rabbits in much smaller doses than strains reacting negatively to the tests.

A different method of attack has recently been reported by Longcope.² He examined for antistreptolysin 1,716 samples of serum from fifty-five supposedly normal persons and 516 patients suffering from a variety of disorders. From the results of these tests it seems justifiable to conclude, according to Longcope, that the upper limit of antistreptolysin in the serum from the normal adult is 100 units. The lower level in this series of normal adults was 12.5 units. It was also observed that the antistreptolysin varied little from month to month in the same individual. It appeared to be unaffected by severe colds and minor infection not due to hemolytic streptococci. Even a comparatively insignificant infection caused by hemolytic streptococci, however, might result in a significant rise in the antistreptolysin within eighteen days of the infection. In acute infections the number of slightly elevated antistreptolysin titers was somewhat greater than those obtained from normal patients. It is impossible as yet, however, to determine whether infecting organisms such as the meningococcus or pneumococcus are related to these rises. Several forms of hemolytic streptococcus infections also were studied. During the first few weeks of erysipelas there was usually a rapid increase in the antistreptolysin content of the serum. In scarlet fever, though the number of observations was scanty, there was a similar tendency manifested toward an increase in the antistreptolysin titer of the serum in the third week of the disease. High inter-

1 Chapman G. H. and Rawls W. B. Studies of Streptococci. I. Qualitative Differences in Resistance to Various Agents. *J. Bact.* 31:323 (April) 1936. Chapman G. H. and Curtis Lillian. II. Quantitative Differences in Resistance to Sodium Bicarbonate and Hexylresorcinol. *Id.* p. 333. Chapman G. H., Berer Conrad and Nelson Edith L. III. Preliminary Attempt to Correlate Resistance to Chemicals with Pathogenic Effects. *Id.* p. 335.

2 Longcope Warfield. Studies of the Variations in the Antistreptolysin Titer of the Blood Serum from Patients with Hemolytic Streptococcal Infections. I. Control Observations on Healthy Individuals and Patients Suffering from Diseases Other than Streptococcal Infections. *J. Clin. Investigation* 15:269 (May) 1936. II. Observations on Patients Suffering from Streptococcal Infections. Pneumonic Fever and Acute Chronic Hemorrhagic Nephritis. *Id.* p. 27.

were also obtained regularly in one form of acute hemorrhagic nephritis but not in another form of the disease. Some correlation could be noted between the antistreptolysin curves and the course of the disease in patients with acute rheumatic fever and acute hemorrhagic nephritis. This correlation, however, was not close. Longcope advances the highly important comment that the high titers observed during the course of acute rheumatic fever and acute hemorrhagic nephritis indicate only that there has been a recent infection due to hemolytic streptococci and cannot be used as evidence that these diseases are caused by hemolytic streptococci. Finally, his observations indicate that there appears to be a difference of reactivity among persons suffering from different forms of streptococcal infection. This leads to variation in the production of antistreptolysin. Patients suffering from acute rheumatic fever and acute hemorrhagic nephritis appear to be especially prone to the formation of antistreptolysin in comparatively large quantities.

The investigations described indicate graphically the progress that has been made in the study of bacteria and the reaction which they produce since the time when practically all such research was based on morphology and cultural characteristics. Although the complicated problem of the streptococcus in disease is not yet solved, the advance in experimental technique foreshadows a hopeful outcome. Extension of observations along such lines as those carried out by Chapman and Longcope and further refinements in technique should eventually lead to clearer differentiation of this complicated group of organisms.

THE ANTISCORBUTIC FACTOR IN COW'S MILK

Because cow's milk has been relied on as the chief if not the only source of food for infants, and for many children and adults in ill health, the nutritive value of its many known constituents has received wide attention. Twenty-four years ago Frölich¹ demonstrated that cow's milk possesses antiscorbutic properties and his studies stimulated efforts to evaluate the amount of vitamin C contained in milk. Reports of such quantitative investigations have continued unabated since Chick, Hume and Skelton's² first indication that a daily consumption of from 100 to 150 cc of fresh cow's milk is needed to protect the guinea-pig from scurvy. In contrast to these and other similar observations there are reports which have claimed for milk a much higher antiscorbutic potency than was found by the English group. Wide variations in vitamin C values are due to a number of influences, some beyond the control of the consumer and some which he can regulate provided he has interest and knowledge. Partial

or complete loss of cevitamic acid (vitamin C) in milk is due chiefly, if not entirely, to oxidation, which may be induced by standing, by exposure to heat, light and air, and by the presence of metallic catalysts, especially copper. Nevertheless the experiments of King and Waugh³ have shown that the dairy industry may now produce pasteurized milk as rich in cevitamic acid as was the same milk in the raw state before pasteurization.

Milk as it is received by a dairy may vary in its content of cevitamic acid, owing to differences in the breeds of cows constituting the milking herds, their stages of lactation, and the rations which they are fed. Rasmussen and his co-workers⁴ determined the vitamin C in the fresh milk of cows "receiving a typical dairy ration which contained weighed quantities of green feed." They found that the average content of this factor in milk from Ayrshire, Guernsey and Jersey breeds is about the same but that milk from brown Swiss cows is richer in cevitamic acid and has an average value 48 per cent above that for Holstein cows, whose milk has the least potency. In view of the wide variations found in the milk from cows of the same breed, the suggestion was made that the stage of lactation may be a factor causing larger variations in the cevitamic acid content of milk than breed differences. Furthermore, the cow's ration may be an influence in determining the antiscorbutic potency of freshly produced milk. A recent report indicates that summer milk has more vitamin C than milk produced in winter,⁵ but other investigations have shown that a lowered content of cevitamic acid in winter milk is not necessary, for the various rations studied had no significant influence on the amount of this factor present.⁶

Fortunately, the consumer can be assured that the vitamin C content of raw milk supplied by a modern dairy can be practically constant throughout the year. In the interests of high milk production rations fed can be uniform and of good nutritive quality at all times. Pasteurized milk likewise can supply not only uniform amounts but as much of this essential vitamin as fresh milk.³ Hence the amount of cevitamic acid which the consumer may obtain from milk will depend in large measure on the methods of handling this food between the time of its delivery and its consumption. Serious losses in the antiscorbutic factor may occur in the home or hospital as the result of such simple procedures as mixing or decanting. A significant decrease in vitamin C has been reported³ in milk that stood from six to eight hours in the dark, even though it was cold. Reheating milk also lowers its potency, a loss of 20 per cent was observed after five minutes of light boiling,

3 King C G and Waugh W A. The Effect of Pasteurization upon the Vitamin C Content of Milk. *J Dairy Sci.* 17: 489 1934.

4 Rasmussen Russell Gerrant N B Shaw A O Welch R C and Hechdel S I. The Effects of Breed Characteristics and Stages of Lactation on the Vitamin C (Ascorbic Acid) Content of Cow's Milk. *J Nutrition* 11: 425 (May) 1936.

5 Wachholder K. Die Versorgung des Säuglings mit Vitamin C. *Klin. Wchnschr.* 16: 593 (April 25) 1936.

6 Riddell W H Whitnah, C H Hughes J S and Lienhardt H F. Influence of the Ration on the Vitamin C Content of Milk. *J Nutrition* 11: 47 (Jan) 1936.

1 Frölich, T. Experimentelle Untersuchungen über den infantilen Skorbut. *Ztschr f Hyg u Infektionskr.* 72: 155 1912.

2 Chick Harriet Hume E M and Skelton R F. The Antiscorbutic Value of Cow's Milk. *Biochem. J.* 12: 131 1918.

but in heating milk an aluminum pan was as satisfactory as glass in conserving the cevitanic acid present. Nevertheless, the ordinary handling of milk in the home or in the hospital will inevitably cause some deterioration in its vitamin C potency.

The inherent nutritional virtues of milk have been vastly improved by modern contributions to the hygienic production and handling of this valuable food. The recent biochemical studies point the way to still further conservation of the nutritive values of milk.

CARBON TETRACHLORIDE IN INDUSTRY

The applications of chemistry to industry are prolific in creating new problems for physicians and pathologists. Among the earliest of the diseases of chemical origin were those due to lead and to carbon monoxide. Among the substances of wide use and high industrial value, carbon tetrachloride takes a foremost place. This liquid has properties of peculiar advantage. It is not only entirely noncombustible but also an efficient means of extinguishing fire. As a solvent and extractor of fatty substances, it has almost entirely displaced the highly inflammable naphtha and related liquids that formerly caused frequent fires with much loss of property and life in the cleaning industry and in homes. Against this advantage must be set the fact that carbon tetrachloride is a powerful and highly toxic anesthetic, its after-effects resembling those of delayed poisoning by chloroform. Carbon tetrachloride and chloroform differ in fact only in that the former is CCl_4 and the latter CHCl_3 . Like chloroform also carbon tetrachloride, in the presence of a flame or heated metal, forms phosgene, one of the principal toxic gases used in war.

Sanitary experts have for some years past increasingly emphasized the hazard to health and life involved in the use of carbon tetrachloride without measures to prevent inhalation of its vapor. The extensive industries manufacturing and using carbon tetrachloride were for a time resentful of what they regarded as attacks.¹ On this account Surgeon General H. S. Cumming three years ago invited representatives of the industry to meet those sanitarians who had been particularly outspoken in a conference in which the two sides were enabled to present their views. As a result of that conference the industries concerned themselves organized and gave the requisite funds to a committee appointed to study the problem and to report on practical measures for its solution. This committee then engaged Drs. H. F. Smyth, H. F. Smyth Jr. and C. P. Carpenter of Philadelphia to make a thorough experimental investigation and to report their results as a basis for regulations to control the health hazard in all branches of the industries using carbon tetrachloride.

The report of Drs. Smyth and Carpenter was completed a few months ago and its principal results and recommendations have now been published. It shows that no hazard to health is induced by concentration of carbon tetrachloride in the air breathed that do not rise above 100 parts per million, or 0.01 per cent. Now the industry has imposed on its members the requirement that in no plant shall the concentration of carbon tetrachloride to which employees are exposed be allowed to rise above this amount. This is certainly a method of solving a serious health problem which deserves approval by sanitarians and imitation by other industries having similar problems.

Current Comment

VITAMIN PROMOTION

For many years pseudoscientists have projected the idea of a perfect food substance that would contain all the essentials necessary for the diet in a single tablet to be swallowed by the human being three times a day and to obviate the necessity for meals of ordinary food. The idea is of course preposterous, unless the human body changes its anatomy in the near future. The stomach and the intestines require something more to work on than an ounce of pills three times a day. In the atrophy of disuse is not to affect the musculature, the requirement for bulk must be considered in the preparation of the perfect food. Moreover, the sense of taste and all the factors concerned in appetite constitute an important consideration in the selection of food. This, however, has not prevented manufacturers from offering to the public substances alleged to be almost perfect as foods. A new product is a so-called Vitamin Energy Bar, which is claimed to be the equivalent of three loaves of bread in fat, one pound of butter in protein, two and one-half pounds of cheese in carbohydrates, two bunches of celery in calories, two oranges in calcium, one large egg in phosphorus and four quarts of buttermilk in iron. Somehow the promoter overlooked vitamins F and H as well as zinc, manganese and copper. This is a fine example of the fallacy of equivalents as a standard of measurement. Instead of giving the equivalent in fat of the butter, the bread is chosen as the example, instead of giving the equivalent of the milk for calcium, oranges are chosen for that comparison. And the calories are said to equal those of two bunches of celery. 'Whoever picks celery for calories!' Actually the 'Vitamin Energy Bar' seems to provide one-half ounce of fat, one-sixth ounce of protein and less than 2 ounces of carbohydrate with traces of calcium, phosphorus and iron. That are the facts—but they do not sound nearly as impressive as the great quantities of food represented by the advertiser's equivalents. If however you really want to see if one 'Vitamin Energy Bar' is the equivalent of all that food eat the 'energy bar' at one meal and all the food at another. Your digestive system will solve the problem for you—and not mathematical!

1 Hamilton, Alice. Industrial Poison in the United States. New York: Hamilton Company, 1925, pp. 442-443. Industrial Toxicology. New York and London: Harper & Brothers, 1934, p. 9 and 224. Henderson, Yandell, and Hargrave, H. W. Nervous Gases and the Problem of Respiratory Protection. Their Action. New York: Chemical Warfare Commission, 1925, p. 137-138.

2 Smyth, H. F., Smyth, H. F. Jr. and Carpenter, C. P. Chronic Toxicity of Carbon Tetrachloride. *Annals of the New York Academy of Sciences*, 1935, 36, 1-16 (May) 1935.

Medical Economics

STATE EDUCATION AND STATE MEDICINE

The state educates us, why should it not heal us? It protects us against invasion, why not against disease? So runs one of the most frequent arguments for state medicine.

Perhaps the state system of education failed in its effort to teach logic to those who reason thus. Analogy is proverbially a dangerous foundation for a logical premise. Disease and education differ widely even though many exposed to both fail to get either.

For the special comparison, differences are greater than resemblances. Every one needs all the education he can get, especially if he is to be of value to a democratic state. In childhood and youth we all need much the same sort of education and even as adults there are so many who wish to learn the same things that books, lectures, classes and radio can be used effectively for mass educational treatment. It is possible to make fairly accurate diagnoses of ignorance and of progress through educational treatment by mass examinations, although even in education there are some doubts as to the accuracy and efficiency of such mass methods.

Ignorance does not come on suddenly and create an emergency demand for education. The need for education varies slightly with times and conditions. The positive benefits of education are not confined to the individual. Society obtains a direct return for its investment in the education of its members.

Health and ignorance are alike in only a few features and within those limits the state is already active. The value of that activity depends largely on how closely it is limited to the fields for which it is fitted. Whatever can be done for the people as a whole, the state can usually do with fair success. Where individuals must be distinguished and given widely different and suitable treatment, the mass action of government is seldom successful.

The state can establish quarantine to protect the whole people against the invasion of disease, collect and tabulate vital statistics of the whole population, assist in health education, urge widespread general immunization and rally the forces to meet the mass attacks of epidemics. Within those limits and such others as have the same qualities, the medical profession has always aided and encouraged state activity.

When individuals are to be aided in recovery from illness, the analogy with education becomes a contrast. It is seldom that two persons need exactly the same treatment. Medical service is seldom as helpful when given to groups or classes as when administered to individuals. The degree of disease and progress of recovery vary widely, are hard to measure and cannot be standardized in grades.

Medical service does not fit into time tables. Its value depends largely on a personal relation between two individuals—the sick person and his physician. It must be given in widely varying intervals to each individual, and its value depends in a high degree on the way it is suited to each personal situation.

The reasoning that would have medicine follow the educational pattern is further weakened by an increasing apprehension that standardization in education has not been wholly successful. Forcing teachers and pupils into a common mold is held to be destructive of both individual and social values, to injure those of exceptional ability and thereby to deprive the nation of greatly needed intelligent, independent leadership.

Political influence and pressure groups have worked much harm to education, although it is much better suited than medical service to resist or endure such influences. It is charged that supervision by lay boards ignorant of pedagogic methods, has hindered professional progress and tended to cripple the freedom of thought and investigation that is of fundamental importance in education. Again such influences would be much more destructive in the medical field.

In spite of the fact that education is freely offered by the state to every one and that over 26,000,000 pupils were in elementary and high schools in 1931-1932 there were at the same time over 2,700,000 in private and parochial schools. In other words, 10 per cent of the population refused to accept the

free standardized system offered and preferred to pay for the kind of education they considered more suitable to their individual desires.

The total cost of public day schools amounted to over \$2,160,000,000 and the expenditures in universities and colleges was over \$600,000,000 more. It was impossible even with these great expenditures and the enormous extent of standardization to provide employment for those who had been accepted as teachers, so that in 1930 there were nearly 12,000 teachers in the words of the census, "out of a job, able to work and looking for a job." The effect of the depression was widespread, causing reduction in educational services and failure to pay those teachers who still remained at their work.

To the extent that education does resemble medical service, it seems to have suffered under state administration. Only where the contrast is greatest has it been successful. If a comparison is to be made, it would seem to be a warning rather than as an example.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

A Large Malaria Prevention Project—A total area of between 20,000 and 30,000 acres in Greene County will be drained in a WPA project to reduce the prevalence of malaria in the state, newspapers report. In addition, about 2,000 acres of stagnant pools will be emptied. This program, the largest of its kind in the state, is said to be the only one in which the county has given financial assistance. Greene County officials have appropriated \$5,099 to supplement WPA funds of \$41,643.

ARKANSAS

Personal—Dr. Thomas M. Fly, Hot Springs National Park, has been appointed health officer of Little Rock to succeed Dr. Verdo T. Webb, who resigned to devote his time to private practice.—Dr. Thomas T. Ross, Arkadelphia, health officer of Clark County, has been appointed assistant director of the state department of health, in charge of the division of maternal and child health. He has been succeeded as health officer by Dr. Jesse K. Grace, Danville. Present plans call for the organization of a district health department, composed of Clark, Nevada and Hempstead counties, newspapers reported.—Dr. Silas C. Fulmer, professor of medicine, University of Arkansas School of Medicine, Little Rock, has been appointed assistant dean in the medical school.

CALIFORNIA

Society News—Dr. Newton G. Evans was chosen president of the Los Angeles Cancer Society at its first regular meeting, June 17. The next meeting of the society will be September 3.

Plague-Infected Squirrels—One squirrel received at the laboratory of the state department of health, July 7, from a point five miles south of Pine Creek, Modoc County, was found to be plague-infected, according to *Public Health Reports*. Evidence of plague was found in three collections of fleas received at the laboratory, June 25, from places within a few miles of Davis Creek, Modoc County. Plague was also found in five squirrels received at the laboratory July 2 from various places in Santa Cruz County.

COLORADO

Society News—A joint meeting of the Medical Society of the City and County of Denver and the Denver Radiological Club was addressed August 5 by Drs. John D. Camp, Rochester, Minn., on Osteoporosis and Its Importance in Medical Diagnosis, and James M. Martin, Dallas, Texas, on "The Physician's Responsibility to the Cancer Patient."—At a meeting of the Delta County Medical Society, June 26, Dr. John V. Ambler, Denver, discussed treatment of common infections of the skin.

The Colorado Medical Foundation.—At a meeting, July 8, the board of trustees of the Colorado State Medical Society approved the establishment of the Colorado Medical Foundation. The plan to organize the foundation was instituted at the 1935 meeting of the state medical society, when authority for its creation was granted to the board of trustees by the house of delegates. Its objective is to serve as a sound financial background for the membership of the state medical society and its income "shall be used exclusively for charitable or educational purposes and the necessary expenses incident thereto." Although the fund is now small, *Colorado Medicine* points out, it is provided that until the foundation reaches the sum of \$100,000, not more than 10 per cent of its net annual income may be turned over to the treasurer of the state medical society for expenditure. After it reaches \$100,000 and until it reaches \$1,000,000, up to 50 per cent of the net annual income may be utilized. After it reaches the million dollar figure, the portion of the income to be used, and the amount to be left in the fund to accumulate, will be determined by the officers and trustees of the society. The principal of the fund will never be expended. Any donor to the fund, however, may stipulate how his contribution may be expended and whether the principal and income shall be used in full or in part.

CONNECTICUT

Accidental Deaths.—Accidents accounted for 1,255 of 17,355 deaths reported in Connecticut in 1935. Of these, 491 were attributed to motor vehicles. In this group of accidents, collision with pedestrians accounted for 274 deaths. Of the 358 accidental deaths occurring in public places drowning was responsible for the greatest number, with a total of eighty-nine. In fatal accidents in the home, falls led the mortality with a total of 235, accounting for 67 per cent of the total in this group. Deaths due to occupation made up only 4.4 per cent of the total number, according to the state department of health, while accidents in the home accounted for 27.9 per cent and accidental deaths in public places for 28.5. With a rate of 39.2 per cent of all deaths, automobile accidents contributed more deaths than any other classification.

DISTRICT OF COLUMBIA

Personal.—Clarence J. West, Ph.D., for several years director of research information service for the National Research Council, has been appointed technical editor of the *Institute of Paper Chemistry* affiliated with Lawrence College, Appleton, Wis.

University News.—Dr. Henry Laurant Darnier has been promoted to clinical professor of obstetrics and gynecology at George Washington University School of Medicine, Washington, and Dr. John Edward Lind to clinical professor of psychiatry.

FLORIDA

Appointments to Health Positions.—The following appointments as district health officers have recently been announced in the newspapers: Drs. James W. McMurray, with headquarters in Marianna; Rayburn N. Joyner, Jacksonville, and Joseph S. Spoto, Ocala. Dr. Thomas E. Morgan, Jacksonville, has been appointed in charge of the newly organized health unit in Pinellas County, with headquarters in Clearwater, and Dr. Charles A. O'Quinn Perry, appointed in Taylor County.

GEORGIA

Society News.—Dr. James C. Metts was elected president of the First District Medical Society, July 15, and Dr. Charles Usher Savannah, was reelected secretary. The spring meeting of the society will be held in March. At a meeting of the Fulton County Medical Society in Atlanta August 6, Dr. George Hugh Cochran discussed "Brain Injuries" and Dr. James Gaston Gay, "Present Status of Surgery of the Thyroid in Children."

ILLINOIS

Division of Industrial Hygiene Created.—A division of industrial hygiene in the state department of health, Springfield, has been created to study health hazards under which employees work and make recommendations for preventive measures. Headquarters for the new division will be at the University of Illinois College of Medicine, Chicago, with Dr. Milton H. Kronenberg in charge.

Convalescent Polio Blood Serum Needed.—The state health department needs convalescent blood serum to replenish supply on hand for the treatment of new patients with

infantile paralysis. Healthy persons in Springfield and near-by who have recovered from infantile paralysis during the last few years and who wish to contribute blood for this purpose can be compensated. Additional information may be obtained from the state health department at Springfield.

New Building for Trachoma Clinic.—A new two-story building to house the trachoma clinic in Jonesboro was dedicated, July 15, under the auspices of the Union County Board. Speakers included Miss Audrey Hayden, secretary of the Illinois Society for Prevention of Blindness. The building was constructed with materials salvaged from abandoned country buildings, it was financed with WPA funds. Opened in 1934 in the Union County courthouse, the clinic is one of several in southern Illinois where trachoma is prevalent. More than 1,700 positive trachoma patients and 350 suspects attend the five southern clinics, which operate three days each week in Herrin, Harrisburg, Shawneetown, Vienna and Jonesboro, newspapers reported.

CHICAGO

An Eighty-Five Tops the Golf Tournament.—Dr. Frank S. Needham, Oak Park, won the VanDerslice Cup at the annual golf tournament of the Chicago Medical Society August 12 at Olympia Fields with a gross score of 85. First prize for low net score for officers and councilors went to Dr. Richard F. Greening, for branch presidents and secretaries, Dr. Anders J. Weigen. First low gross score for members was made by Dr. John P. Mulcahy, first low net by Dr. Guy V. Pontius. First high gross by Dr. John J. Gill. About 250 physicians and their friends participated in the tournament.

Dr. Visscher Goes to Minnesota.—Dr. Maurice B. Visscher, since 1931 professor of physiology, University of Illinois College of Medicine, has resigned to become head of the department of physiology and physiologic chemistry, University of Minnesota School of Medicine, Minneapolis, effective September 1. His successor at Illinois has not been announced. Dr. Visscher was a member of the teaching faculty at Minnesota from 1922 to 1925, when he took the degree of doctor of philosophy. He received the medical degree at Minnesota in 1931. He was a fellow of the National Research Council at University College, London, 1925-1926, after which he went to the University of Chicago. He served as associate professor of physiology at the University of Tennessee School of Medicine from 1927 to 1929 and of physiology and pharmacology, University of Southern California, 1929 to 1931, when he was appointed at Illinois.

INDIANA

Personal.—Dr. Thurman B. Rice, Indianapolis, has resigned as assistant director of the state department of health and has been succeeded by W. T. Frazier, Bluffton executive engineer of the department, it is the first time a layman has held the position. Dr. Rice will continue to act as director of the health and physical education department, a correlating department of the health and education departments created under the social security act. He will continue as editor of the department's bulletin. Dr. Maurice Joseph Barry was reelected president of the Indianapolis Board of Health and Drs. Clarke Rogers and Herman G. Morgan were reelected vice president and secretary respectively. Dr. Morgan will also continue as city health officer.

Dr. Wishard Retires.—Dr. William N. Wishard, professor and chairman of the department of genito-urinary surgery, Indiana University School of Medicine, Indianapolis, has retired, newspapers report. He has held this position at Indiana since 1887. He occupied a similar position at Purdue School of Medicine, retaining the title when the medical schools of the state merged in 1908 under the name Indiana University School of Medicine. Dr. Wishard, who is 84 years of age in 1879, graduated from Miami Medical College, which later became the department of medicine of the University of Cincinnati College of Medicine. He has been a member of his state and county medical societies since 1875 and served as president of the Marion County Medical Society in 1894. In 1895 he was president of the Mississippi Valley Medical Association and 1905 president of the American Urological Association and in 1918-1919 first vice president of the American Medical Association and member of its House of Delegates from 1912 to 1912. He was president of the Indiana State Medical Association in 1898. He served in various capacities in the association holding the chairmanship of the council from 1913 to 1913. He was chairman of the committee on public health and legislation of the state society from 1895 to 1922 and a member of the state board of health from 1909 to 1911.

president in the latter year Dr Henry O Mertz, clinical professor of genito-urinary surgery, has been named to succeed Dr Wishard. He is 52 years old and a graduate of Indiana, class of 1908.

IOWA

Twin Lakes District Meeting—Dr Thomas L Vineyard, Dow City, was chosen president of the Twin Lakes District Medical Society at the fourteenth annual meeting in Rockwell City, June 11, and Dr Paul W Van Metre was reelected secretary. Crawford County was added to the society this year, making twelve counties in the group. Calhoun, Carroll, Greene, Hamilton, Humboldt, Ida, Kossuth, Pocahontas, Sac, Webster and Wright.

Personal—Dr Tom B Throckmorton, Des Moines, was elected grand master of the Iowa Masonic Grand Lodge in Davenport, June 10-11.—Dr Regnar M Sorensen, Drakesville, has been appointed health officer of the newly opened health unit in Washington County.—Dr Paul Stephen, Cedar Rapids, has been appointed assistant in the division of communicable diseases and assistant epidemiologist, effective July 1. The appointment was made possible by social security funds.—Dr Arthur C. Schach, Burlington, has been appointed director of the reorganized health unit for Des Moines County, with headquarters in Burlington, effective June 1.

Society News—A program of antepartum service has been instituted in Washington County under the auspices of the state board of health and the county medical society, it is said to be the first undertaking of its type in rural Iowa.—Social security funds were used to finance a rural immunization program for children in Polk County, June 22-27, no charge was made regardless of the parents' ability to pay.—Speakers before the Austin Flint-Cedar Valley Medical Society in Waverly, June 11, included Drs Lee Forrest Hill, Des Moines, on "Serotherapy in Infectious Diseases" and Edwin J Kepler, Rochester, Minn., "Modern Treatment of Diabetes, Including the Use of Insulin Protamine." Dr William J McGrath, Elkader, was elected president.—Dr Edward B Hoeven, Ottumwa, was chosen president of the Des Moines Valley Medical Association at the sixty-third annual meeting, June 16.

LOUISIANA

Health at New Orleans—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million for the week ended August 8 indicated that the highest mortality rate (19.9) appeared for New Orleans and the rate for the group of cities as a whole was 9.7. The mortality rate for New Orleans for the corresponding week of 1935 was 17.8 and for the group of cities 9.5. The annual rate for the eighty-six cities was 12.7 for the thirty-two weeks of 1936 as against a rate of 11.8 for the corresponding period of 1935. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area outside the city limits or that it has a large Negro population may tend to increase the death rate.

MASSACHUSETTS

Appointments to State Medical Board—Dr Charles P Sylvester, who was reappointed chairman of the Massachusetts State Board of Registration in Medicine, July 17 has resigned on account of ill health. Dr Royal Phillips Watkins, Worcester, has been named to fill the unexpired term. Dr Watkins was a member of the board from 1922 until the recent meeting when he was succeeded by Dr Harry L Stevens, New Bedford. Under suspension of the rules the council approved the nomination of Dr Watkins to fill Dr Sylvester's unexpired term, according to the *New England Journal of Medicine*.

Springfield's First Physician—A wreath was placed on the grave of Dr John E. Leonard, Springfield's first doctor, during the recent celebration of Springfield's three hundredth anniversary. Accompanied by Dr Henry E. Sigerist, William H Welch professor of the history of medicine, Johns Hopkins University School of Medicine, Baltimore, members of the Hampden District Medical Society visited Dr Leonard's grave in the Agawam Village Cemetery, where a wreath was placed. Dr Leonard died in 1744, aged 69. A wreath was also placed on the grave of Dr Lambert Cooper, who died in 1755, as a tribute to Dr William H Chapin, Springfield, who is Dr Cooper's great-great-grandson. In the evening Dr Sigerist addressed a public meeting on "The History of the Development of Medicine 1636-1936."

MICHIGAN

Society News—Dr William J Butler, Grand Rapids, addressed the Eaton County Medical Society in Charlotte, June 25, on "Office Management of Genito-Urinary Disorders."—At a meeting of the Oakland County Medical Society in the St Joseph Mercy Hospital, Pontiac, June 16, Dr Irving W Potter, Buffalo, spoke on "Elective Version and Extraction."

Payment for Medical Fees Authorized—A monthly sum of \$50,000 is now available to pay physicians' fees for the treatment of crippled and afflicted children, as a result of action taken by the governor and the augmented state administrative board, July 22. All counties in the state have established a county medical society public relations committee in accordance with an agreement between the Michigan State Medical Society, the Michigan Probate Judges Association and the Michigan Hospital Association. Under this system afflicted and crippled children of the state will be examined and their economic status determined. Those able to pay will be "filtered" back to their family physician, physicians caring for children unable to pay will be paid with funds from the appropriation now made available.

MINNESOTA

Northern Minnesota Meeting—The Northern Minnesota Medical Association will hold its annual meeting at Fergus Falls, August 31-September 1, when the following program will be presented:

Dr Harold S Diehl Minneapolis The Medical School and the Practicing Physician
Dr James L McLeod Grand Rapids Acute Abdominal Symptoms Complicating Diagnosis
Dr William G Strobel, Duluth Pilonidal Sinus and Its Treatment.
Dr Virgil J Schwartz Minneapolis Dyspnea and Dysphagia of Unusual Origin.
Dr Owen H Wangersteen Minneapolis Significance of Anatomical Features of the Vermiform Appendix in the Genesis of Acute Appendicitis
Dr Edward B Tuoby, Rochester Recent Developments in Anesthesia
Dr Newton D Smith Rochester Hemorrhoidectomy A Plastic Operation
Dr Manley F Fellows Duluth Eyeground Examinations as an Aid to Prognosis in General Medicine
Drs Clement I Krantz and Thomas O Young Duluth Chronic Hyperthyroidism
Dr William A Stafne, Moorhead Recent Advances in Diabetes Mellitus
Dr Moses Barron Minneapolis Some Fevers Difficult of Diagnosis
Dr Charles S Randquist, Hibbing Sclerosis on the Iron Ranges
Dr Thomas A Peppard Minneapolis Symptomatology of the Various Leukemic States
Dr Maurice A Shillington St. Paul Interpretation of Heart Murmurs
Dr William F Merrill Crookston Missed Abortion

Dr William L Patterson and the staff of the Fergus Falls State Hospital will conduct a clinic on neuropsychiatry. At the banquet Dr Olaf J Hagen, Moorhead, will be toastmaster and William L Strunk Sc.D, professor of biology and chemistry, Luther College, Decorah, Iowa, guest speaker, on "The Vanishing Hosts." Dr Arthur N Collins, Duluth, will deliver his presidential address.

MISSOURI

Personal—Dr Warren H Cole, who has resigned as assistant professor of clinical surgery, Washington University School of Medicine, St. Louis, to become professor and head of the department of surgery, University of Illinois College of Medicine, Chicago, was honored by friends and colleagues at a farewell dinner, July 10. Speakers included Drs Evarts A Graham, James B Costen and Park J White Jr, all of St. Louis.—Dr Charles A. George has been appointed commissioner of health of Springfield.

NEW JERSEY

Death from Spotted Fever—A death from Rocky Mountain spotted fever was reported at Avalon July 18 according to the *New York Times*. The man became ill July 7. It was said that only eight cases have been reported in New Jersey in the past seven years.

NEW YORK

Chautauqua Medical Meeting—The fifth annual interstate medical meeting at Chautauqua under the auspices of the Chautauqua County Medical Society was held July 22. Speakers were Drs Byron D Bowen, Buffalo, on "Diabetes and the Use of a New Insulin," James G Carr, Chicago, "The Heart," William D Johnson, Batavia, "Surgery Now and Then," and Harry E Kleinschmidt, New York, "Progress in the Control of Tuberculosis."

Personal—Dr Edward S. Godfrey Jr., state health commissioner, and Dr Simon Flexner, New York, have been named members of an unofficial commission appointed by Governor Lehman to study Bang's disease and mastitis.—Drs Harry L. Chant, Hornell, and Edwin L. Crosby Jr., Schenectady, have been provisionally appointed assistant district health officers on the staff of the state department of health, assigned to the Hornell and Albany districts respectively. Dr Gordon R. Gray, Gouverneur, has been appointed assistant epidemiologist with headquarters at Amsterdam.—Dr James F. Michel, Farmingdale, celebrated his completion of fifty years of medical practice recently. Dr Michel is village health officer and president of the First National Bank of Farmingdale.—Henry D. Dakin, Sc.D., Scarborough-on-Hudson, received the honorary degree of doctor of laws at the annual degree ceremony of the University of Leeds, England, June 29. Dr Dakin took his doctor of science degree from Leeds in 1907.

State Tuberculosis Hospital Dedicated—The second of three new state hospitals for care of the tuberculous, the Homer Folks Tuberculosis Hospital at Oneonta, was dedicated July 9 with Governor Lehman the chief speaker at the ceremony. Other speakers were Drs Thomas Parran Jr., surgeon general, U. S. Public Health Service, former state health commissioner, Augustus J. Hambrook, Troy, chairman of the public relations committee, Medical Society of the State of New York, and Robert E. Plunkett, Albany, general superintendent of state tuberculosis hospitals, and Mr Folks. Dr Edward S. Godfrey, Albany, state health commissioner, presided. Mr Folks, for whom the hospital was named by special act of the last legislature, has been secretary of the State Charities Aid Association since 1893, with the exception of the two years 1902-1904, and member of the Public Health Council since its organization in 1913. He has also been president of the National Tuberculosis Association. The state legislature in 1931 authorized the establishment of three sanatoriums to serve rural districts. The first to be opened was the Hermann M. Biggs Memorial Hospital at Ithaca and the third will be at Mount Morris. Dr Ralph Horton is superintendent of the new hospital.

New York City

Hospital Moves Patients to New Location—Patients in the Manhattan General Hospital were moved from the old hospital at 161 East Ninetieth Street to its new location in the building of the former Lying-In Hospital at 307 Second Avenue July 26, the New York Times reported. The Lying-In Hospital merged with New York Hospital in 1929 and moved to that institution in 1932 leaving its building vacant. It has been completely renovated and has accommodations for 300 patients.

Hospital Department Official Retires—Dr Mark L. Fleming, general medical superintendent of the city department of hospitals since 1930, will retire October 1, having reached the retirement age. Dr Fleming was graduated from Cornell University Medical College in 1901 and has been associated with the city hospital service since his internship at Bellevue. For several years before he was named to his present post he was superintendent of Bellevue. Dr Sigismund S. Goldwater, commissioner of hospitals, announced that Dr Fleming would be appointed to the department's board of administrative consultants.

Laboratory Dedicated—Dr Isidore W. Held, clinical professor of medicine at New York University College of Medicine, was honored on his sixtieth birthday when the pathology laboratory at Beth Israel Hospital was dedicated in his honor. Dr Held is an attending physician at the hospital. Dr Nathan Ratnoff, medical director of the hospital, presided at the ceremony and speakers were Mr David I. Podell, president of the board of trustees, Justice Aaron J. Levy, a director of the institution, Dr John Wackoff, dean of New York University College of Medicine, Dr Emanuel D. Friedman, professor of neurology at the College, and Dr Meyer R. Robinson, attending gynecologist at Beth Israel.

Dr Lewis Appointed Director of State Psychiatric Hospital—Dr Nolan D. C. Lewis, professor of neurology at Columbia University College of Physicians and Surgeons and associate director of the Neurological Institute, has been appointed director of the New York Psychiatric Institute effective September 1. Dr Lewis is a native of Pennsylvania and took his medical degree at the University of Maryland School of Medicine in 1914. He was director of clinical psychiatry and director of laboratories at St. Elizabeth's Hospital, Washington, D. C., from 1923 to 1935 when he was appointed at Columbia. He was also professor of experimental

pathology at George Washington University School of Medicine from 1920 to 1924 and was appointed clinical professor of psychiatry in 1925. Dr Lewis succeeds Dr Clarence O. Cheney, who was recently made director of Bloomingdale Hospital, White Plains.

NORTH CAROLINA

State Board Meeting—The North Carolina Board of Medical Examiners will hold its next meeting November 1 at the Hotel Carolina, Raleigh. Only candidates for licensure by indorsement of credentials will be considered. Dr Benjamin J. Lawrence, Raleigh, is secretary of the board.

Society News—A group of papers on obstetric subjects was presented at a meeting of the Catawba Valley Medical Society, July 14, at the home of Dr John D. Rudisill, Lenoir, by Drs Williamson Z. Bradford, Charlotte, Abner M. Cornwell, Lincolnton, Glenn S. Edgerton and Henry H. Mennerick, Hickory.—Dr William S. Justice, Asheville, addressed the Buncombe County Medical Society, Asheville, July 13 on "Indications for Exploration of the Common Bile Duct."

Personal—Dr Hamilton W. McKay, Charlotte, has been elected president of the State Board of Medical Examiners.—Herbert C. Tidwell, Ph.D., formerly of Johns Hopkins University, Baltimore, has been appointed Grier research professor of biochemistry at Wake Forest College School of Medicine, Wake Forest.—Dr Thomas G. Faison, Winton, has been appointed health officer of Hertford County's new department of health.—Dr Wiley D. Forbus, head of the department of pathology at Duke University School of Medicine, Durham, has been elected a member of the National Board of Medical Examiners. He succeeds Dr Howard T. Karsner, Cleveland.—Dr William B. Hunter, Lillington, has been named health officer of Harnett County.

PENNSYLVANIA

Society News—The thirtieth annual meeting of the West Branch of the Fifth Council District of the Medical Society of the State of Pennsylvania was held at the York County Club July 16. Dr Francis C. Grant, Philadelphia, made an address on "Head Injuries and Spinal Cord Tumors." Dr Theodore B. Appel, Lancaster, "Maternal Mortality in the Fifth Council District," and Mr Ray Jansen, publicity director of the state society, "The Medical Society and the Press."—Dr Samuel Wolman, Baltimore, conducted a clinic on tuberculosis as guest of the Cambria County Medical Society July 9 at the State Sanatorium for Tuberculosis, Cresson.—Dr George W. Hawk Sayre, was elected president of the Association of Residents and Ex-Residents of the Robert Packer Hospital and Guthrie Clinic at a meeting in Sayre, June 2.—Dr John H. Musser, New Orleans, addressed the Lehigh Valley Medical Association at its fifty-sixth annual meeting at Pocono Manor, July 15, on "Abdominal Pain Due to Extra Abdominal Disorders."

Philadelphia

Medical College News—Sir David P. D. Wilkie, professor of surgery, University of Edinburgh Faculty of Medicine, Edinburgh, Scotland, will give a series of twenty-five lectures at Jefferson Medical College in November and December, the college announces.

TENNESSEE

Medical Society Protests Against Speeding Ambulances—The Memphis and Shelby County Medical Society recently adopted a resolution protesting against unnecessary speed in the driving of ambulances. A letter was sent to all ambulance companies in the city asking them to cooperate with the police department in making the streets safe. It pointed out that fast driving of ambulances was almost invariably unnecessary for the welfare of a patient and altogether unnecessary for both vehicle and pedestrian traffic. The society also tested against loud blowing of horns.

TEXAS

Personal—Dr John T. Moore, Houston, received the honorary degree of doctor of science from Texas Christian University, Fort Worth, at the June commencement.

Society News—The North Texas Medical Association held its annual meeting in McKinney, June 9-10. Addressers were Drs Percy M. Girard, Dallas, on "Prevention and Treatment of Ankylosis Following Trauma," and Tuck Sherman, "Treatment of Lobar Pneumonia by Artificial Pneumothorax." Charles W. Dunn, Dallas, "Management of

VIRGINIA

WASHINGTON

WEST VIRGINIA

WISCONSIN

tional program of the Rogers Memorial Sanitarium, Oconomowoc. Mr. Clifford W. Beers, New York, executive secretary of the National Committee for Mental Hygiene, was the speaker

CANAL ZONE

Lowest Death Rate—The general death rate in the Canal Zone in 1935 was 589 per thousand, the lowest in the history of the zone, it is reported. The decline from 7.52 in 1931 was attributed to absence of epidemic diseases and to the fact that new employees must pass a rigid examination

Society News—At a meeting of the Medical Association of the Isthmian Canal Zone in the Gorgas Memorial Institute, Panama, July 21, speakers were Lieut.-Col. Raymond A. Kelsner, Ph.D., Quarry Heights, on "Equine Osteomalacia", Dr. Mahlon Ashford, Balboa Heights, "Nature of Immunity to Malaria in Its Relation to Antimalarial Therapy," and George R. Callender, Balboa Heights, "Diarrheal Disease in the U. S. Army"

HAWAII

Territorial Election.—Dr. Lyle G. Phillips, Honolulu, was elected president of the Hawaiian Territorial Medical Association at the recent annual meeting. Dr. Douglas B. Bell, Dillingham Building, Honolulu, has been elected secretary

GENERAL

Cruise Postponed—A cruise planned for this month by the Latin-American Congress of Physical Therapy X-Ray and Radium has been postponed to March 1937. Sessions of the congress will be held in the National University of Medicine, Guatemala City, Guatemala. Dr. Norman E. Titus, 730 Fifth Avenue, New York, is president of the congress, Dr. Madge C. L. McGuinness, 1211 Madison Avenue, secretary, and Dr. Cassius L. de Victoria, 1013 Lexington Avenue, executive director

Warning—Fraudulent Salesman.—Two New Jersey physicians have recently reported activities of a man using the name D. A. Thomson and representing himself to be an agent of the "American Diathermy Rubber Co., Ltd., 329 Walnut Street, Philadelphia." He takes orders for goods, offering reductions for cash, and collects the money, but the goods do not arrive. Letters addressed to the firm name given are returned unclaimed and inquiry at the Philadelphia telephone company gave no information.

Society News—The second annual meeting of the Mississippi Valley Medical Society will convene at the Hotel Burlington, Burlington, Iowa, September 30-October 2. Dr. Harold Swanberg, 211-224 W. C. U. Building, Quincy, Ill., is secretary.—The Central Association of Obstetricians and Gynecologists will hold its eighth annual meeting at the Hotel Statler, Detroit, October 15-17.—The Inter-State Postgraduate Medical Association of North America will hold its annual assembly at the Public Auditorium, St. Paul, October 12-16. Dr. Tom B. Throckmorton, Des Moines, Iowa, is secretary

Premedical Honorary Fraternity—Alpha Epsilon Delta, national honorary premedical fraternity, celebrated its tenth anniversary at its annual meeting recently at Baylor University, Waco, Texas. The fraternity voted to use its influence to encourage premedical students to take a four year general course for a bachelor's degree as the best preparation for the study of medicine. It also recommended closer contact with the American Medical Association and other organizations concerned with medical education and adopted as a national project the promotion of general education in preventive medicine among college students. A chapter was installed at the University of Oklahoma after the convention, raising the number of chapters to seventeen. Only universities and colleges approved by the Council on Medical Education and Hospitals of the American Medical Association and members of recognized university associations are eligible to petition for chapters. The fraternity was founded at the University of Alabama in 1926. Emmett B. Carmichael, Ph.D., University, Ala., is grand president and Maurice L. Moore, Ph.D., New Haven, Conn., is grand secretary

Annual Report of Rockefeller Foundation.—During 1935 the Rockefeller Foundation expended \$12,725,439, of which \$2,733,050 was for medical science and \$2,200,000 for public health work. The major portion of the appropriation for the medical sciences was contributed to projects for the advancement of psychiatry. These included grants to the Institute for Psychoanalysis, Chicago, Johns Hopkins University School of

Medicine, Baltimore, Institute of the Pennsylvania Hospital, Philadelphia, Harvard Medical School and Massachusetts General Hospital, University of Michigan Medical School, Ann Arbor, University of Colorado School of Medicine, Denver and the University of Chicago School of Medicine. Fourteen research undertakings in clinical psychiatry and related fields were aided in the United States, England, Holland and Switzerland. Grants were also made to the National Committee for Mental Hygiene, New York, the North Carolina Commission for Study of the Care of the Insane and Mental Defectives, and the Massachusetts Department of Mental Diseases. Seventy-two fellowships in the medical sciences were administered during the year. The International Health Division sponsored studies on yellow fever, malaria, hookworm, tuberculosis, jaws, the common cold, diphtheria, influenza, typhoid, mental hygiene and smallpox vaccine in various parts of the United States and in numerous foreign countries. In addition, government health services were aided in many states and countries and advanced training in public health and public health nursing was made available to 188 persons. In the field of the natural sciences the foundation expended \$2,426,125, with most of the appropriations in experimental biology. These projects included research in universities in many parts of the United States, Canada and Europe on electro-encephalography, biologic effects of heat neurophysiology, cellular physiology, physiology of reproduction, the hormones and vitamins. Fifty-one fellowships in this field were administered during the year.

FOREIGN

Personal—Lord Dawson of Penn, physician in ordinary to King Edward VIII, was made a viscount in the list of honors conferred by the king on his forty-second birthday recently.—Prof. Hans Holfelder, Frankfurt-on-Main, and Prof. Alban Köhler, Wiesbaden, have been appointed honorary members of the American College of Radiology.—Dr. Etienne Burnet, formerly vice director of the Pasteur Institute of Tunis, has been appointed director to succeed the late Dr. Charles Nicolle. Dr. Burnet has recently been a member of the Health Section of the League of Nations.—Dr. Rene Sand, Paris, technical adviser to the League of Red Cross Societies since the World War, has resigned to become secretary general of the Belgian ministry of health. Dr. Sand is a native of Belgium.

French "Medical Days" in 1937—The standing committee of the "Journées médicales de Paris" announces a series of meetings to be held June 26-30, 1937, during the International Exhibition. The committee conducted similar meetings in 1926 and 1929. Physicians, pharmacists, veterinary surgeons, biologists, physicists and chemists of all countries are invited to participate. The subject selected for consideration is "Hormone and Endocrine Therapeutics." Mornings will be devoted to demonstrations in hospitals, schools and institutes of biology. Those who wish to attend are asked to write to Service des Journées médicales, Revue médicale française, 18 Rue de Verneuil, Paris 7.

Government Services

Vacancies in Navy Medical Corps

An examination for commission in the medical corps of the U. S. Navy will be held beginning December 1 to fill about twenty-five vacancies. The examination will be held at the U. S. Naval Hospital, Mare Island, Calif.; U. S. Naval Hospital, Great Lakes, Ill.; and the U. S. Naval Medical School, Washington, D. C., when examining boards will be in session. Candidates for admission must be between the ages of 21 and 32 years at the time of appointment, graduates of class A medical schools, and must have completed an internship of one year in a hospital accredited for interns by the American Medical Association and the American College of Surgeons. Further information may be obtained from the surgeon general, U. S. Navy Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

CORRECTION

"Snyder Products Co."—In THE JOURNAL, August 1, page 371, appeared an item relative to the Snyder Products Co. in which the cooperation of Dr. Louis Fishman with this company was emphasized. It should be pointed out that Dr. Louis Z. Fishman is not the physician concerned in this matter.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 4, 1935.

The British Medical Association and "Umckaloabo"

The council of the British Medical Association has been faced with a request from a lay body known as the Committee of Investigation on Treatments of Tuberculosis to investigate "umckaloabo," a substance also known as "Stevens Consumption Cure." The committee has obtained a sum of \$50,000 and proposes to equip a small home for the purpose of testing the treatment. The council of the Association was asked to advise and assist (1) as to the appointment of a resident medical officer at the home to keep cases under observation and make records; (2) to invite prominent physicians to form a committee to advise as to the types of patients to be admitted and to keep them and the home under observation. The council set up a special committee to consider the matter, and a joint meeting of this committee and the committee mentioned was held. The evidence for and against umckaloabo was summarized at this meeting and the method by which further inquiries might be prosecuted was discussed. The following memorandum was submitted by the council to the lay committee:

General principles are first laid down. It is the duty and desire of the medical profession to regard with attention any method proposed for the treatment of disease, from whatever source, provided there is scientific or empirical evidence which justifies some degree of reasonable expectation that the method may prove beneficial and is not likely to do harm. Every physician is free to use any method he believes to be for the patient's benefit. But the profession ought not to spend valuable time in testing clinically enterprises which have not adequate presumptive evidence in their favor. Many schemes of treatment once greatly vaunted have proved to be useless or even harmful. The medical care of a patient cannot be arranged as a pure scientific experiment; the patient's interest is paramount. But this does not mean that a new drug or method cannot be systematically studied, provided the interest of the patient, not the completeness of the experiment, is the deciding factor.

With regard to the particular proposal, the council of the association says that the financial support lent to it must receive cordial recognition as a humane desire to relieve suffering. Nevertheless any one who spends \$50,000 on an enterprise without reasonable expectation of success acts against the general interest, seeing that so many opportunities for service halt for want of money. The face value of the reports received by the lay committee is impressive, though they would need some expert scrutiny and unexpected recoveries from tuberculosis occasionally occur quite apart from administration of any drug. Existing opportunities for testing new methods are numerous. In the public tuberculosis service of the country under the control of the local health authorities are institutions where many recommended forms of treatment are tested. For example the Tuberculosis Service of Lancashire has recorded many investigations of this order, and if adequate justification can be submitted umckaloabo might be included. As compared with such a service already organized a new home or hospital would have obvious disadvantages. Assuming that not less than twenty beds would be adequate and that the experiment extended over three years the equipment and administration expenses would be considerable.

New Scheme for Research in Tropical Medicine

A new scheme of fellowships and appointments for research in tropical medicine is announced by the Medical Research Council on the advice of the Tropical Medical Research Com-

mittee, recently appointed after consultation with the colonial office. Three junior scholarships are offered immediately for award to physicians wishing to receive training with a view to careers in research work in tropical medicine. Preference will be given to candidates who already have had preliminary experience of research in some branch of medical science. Subject to satisfactory reports, the fellowships will be tenable for three years. The first year will be spent at the School of Tropical Medicine, the second in research work in the same or some other institution at home, and the third largely in work under direction at some center in the tropics. The stipends will be \$1,500, \$2,000 and \$2,500 in the successive years, with an additional allowance during service abroad and necessary expenses. The men who undergo this training will be eligible and well qualified for various appointments, apart from further employment under the scheme. At least one senior fellowship will be available for those who have held the junior fellowship. This will be awarded for three years at a stipend of from \$3,000 to \$3,750, with additional allowance during service abroad and expenses. The time will be spent mainly in research work in the tropics. The council is also prepared to consider applications for senior fellowships from candidates who have had adequate experience in research work, whether already trained in tropical medicine or not.

The council intends to establish in due course, as suitable investigators become available as the result of this scheme, permanent and pensionable appointments for research work in tropical medicine, including senior posts. Members of this research staff will work partly in the tropics and partly in institutions at home. The efforts of the Medical Research Council to this field have the support of the colonial office and the active cooperation of the schools of tropical medicine in Great Britain.

Prehistoric Surgery

At the Wellcome Research Institution Mr J. L. Starkey described the discoveries made by the Wellcome Archaeological Research Expedition at Lachish, about 25 miles southwest of Jerusalem. From the Lachish reliefs, found by Layard in 1854, in which contemporary artists showed the inhabitants of the city in great detail, it appeared that the Hebrews were the rulers of the city when it was attacked by Sennacherib in 701, B. C. After its destruction 1,500 bodies were thrown into a hole in the roof of a tomb chamber. From these bodies no fewer than 700 skulls have been recovered and are now in London awaiting scientific examination. It is hoped that they will give reliable information of the type of people living in Judah during the time of the Jewish monarchy and possibly show whether they were of purely Jewish stock or contained much of the original Canaanitish stock. Two of the skulls showed a remarkable form of trephining. Commonly that operation leaves a circular hole in the skull, but in the Lachish specimens the holes were cut square, a method previously known only in the Inca civilization of America. In one case the operator had begun to work on the right parietal bone but had completed the operation on the left.

The British College of Obstetricians and Gynaecologists

The regulations for admission to the membership of the British College of Obstetricians and Gynaecologists have been revised. When the original regulations were made, on the establishment of the college, the candidates were usually working in recognized hospitals and so were personally known to members of the council. But with the rapid development of the college and increase in application for membership both at home and from overseas, the examination has had to be reorganized. The guiding principle has been that it should be a test of sound clinical training and not, as so many examinations unfortunately are, a proof that the successful candidate is a

good examinee. The oral examination will consist of two parts: (1) a discussion of twenty-five selected obstetric cases attended by the candidate of which he has submitted records, (2) pathology. Applicants must have held resident appointments for six months in general medicine or surgery and for the same period in obstetrics and again in gynecology. Concurrently with this or separately they must have attended for six months at antepartum, postpartum and infant welfare clinics. Case records of ten gynecologic cases are required. The candidate will be asked to describe orally his treatment and his reasons for it. The cases must be vouched for as his own by a superior officer of the hospital. Commentaries—one obstetric and one gynecologic—not exceeding 2,000 words on one of the obstetric and one of the gynecologic cases, or preferably on a group of cases, must be submitted. The clinical examination will include a report on a selected case and an examination of other cases at the discretion of the examiner.

The Tragedy of a Surgeon

On May 22 Mr H. P. Nelson, specialist in surgery of the chest, pricked his finger with a diathermy needle while operating at the Brompton Hospital. The case was a clean one, but he had to do in the evening several dressings of other cases and from one of them his finger became infected. Next morning streptococcal cellulitis was evident and it spread so rapidly that his left arm had to be amputated. Unfortunately this failed to check the disease and he died June 24. He was only 34 and after the usual struggle was just beginning to ascend the ladder of surgical fame. Born in New Zealand, he was educated at Cambridge and at St. Bartholomew's Hospital, where he became demonstrator of anatomy and did research work. He was appointed instructor in thoracic surgery at the University of Michigan Hospital, Ann Arbor. Returning to England, he became chief assistant to Mr J. E. H. Roberts at St. Bartholomew's Hospital and assistant surgeon to the Brompton Hospital for Diseases of the Chest. He helped to found a surgical department at the Papworth Village Settlement and a special hospital for thoracic surgery under the London County Council. With Mr Roberts he published the first complete account in this country of the operation of pulmonary lobectomy. He was recently appointed assistant surgeon to the London Hospital. His abilities and character were greatly esteemed in the profession and there is no doubt that a great career has been cut short. A memorial fund for his widow and two children has been inaugurated by Lord Horder and other leading members of the profession.

The Blood Transfusion Service of the British Red Cross Society

The report of the Blood Transfusion Service of the British Red Cross Society shows that the calls on the London service during 1935 made a record, 4,701 calls were received, compared with 3,855 in 1934 and 3,017 in 1933. The growth of the service has been remarkable, for in 1925, when the British Red Cross Society took it over, there were only 428 calls. Thus in ten years the number has multiplied eleven-fold. On an average each donor serves twice per annum, and in 1935 the resources of the service were strained to the utmost. One factor in the increased calls was the introduction of drip transfusion, originated by Drs. Marriott and Kekwick of the Middlesex Hospital, which allows the introduction of the corpuscular content of from 8 to 10 pints of blood by means of a steady drip, the process taking two or three days. The effects have been so successful that other hospitals are using this method. Though every effort is made to obtain donors from relatives and friends of the patients, a heavy burden has been imposed on the transfusion service. During the year 222 night calls were received, between 11 p. m. and 9 a. m., compared with 174 in 1934. Two donors have now served on more than sixty

occasions while 619 badges have been gained by donors who have given ten or more transfusions. An analysis of the active list shows that the members have on an average 891 transfusions to their credit. The serum agglutinins of every member are carefully checked. At the International Blood Transfusion Conference, held in Rome last September, the Belgian delegate, Dr. Anet, said that the initiative of the British Red Cross Society in its transfusion service had served both as a model and as an inspiration for the creation of similar services throughout the world.

Decline in Syphilis in England

Speaking at a meeting of the British Social Hygiene Council, Sir Kingsley Wood, minister of health, said that any compulsion in the treatment of venereal disease was likely to defeat its own end. Results generally were improving. Efforts made in the last twenty years to educate the public had resulted in a more general realization of the dangers and of the importance of seeking medical advice at an earlier date. The incidence of syphilis was on the decline. Recent infections dealt with at the treatment centers in 1935 were just under 6,000, as compared with over 9,000 in 1925, while the mortality of syphilis in infants in 1934 was less than half what it was in 1924, and about a sixth of the mortality in 1917.

Involuntary Dyeing of the Hair

Two dermatologists, Drs. A. M. H. Gray and R. A. E. Klaber, have described in the *British Journal of Dermatology* a manner in which the hair may become dyed that has received no attention in the textbooks. A woman aged 50, gave much attention to her silver gray hair. She had it cut, washed and water waved at frequent intervals. For some want of profusion after an accident her physician prescribed a lotion, which she used daily and then discontinued as it took the wave out of her hair. During the next three weeks she had the hair shampooed prior to a permanent wave. According to the usual practice the hair was treated with an ammoniacal spirit lotion before being curled and placed in the heating tubes. When the hair was removed from the tubes a striking change was observed. Except for the extreme front and back and the proximal one or two inches of each hair the whole was diffusely dyed. The color was brownish black in front fading gradually to light brown behind. Hydrogen peroxide failed to bleach the color. Microscopic examination of the dyed hair showed a uniform brown coloration with absence of pigment granules. Chemical investigation showed that this pigment was mercuric sulfide. It was found that the lotion prescribed by her physician contained a grain of mercuric bichloride to the ounce.

Mercury is among the metals the salts of which have been used in progressive hair dyes. For this purpose subsequent application of heat or of a sulfur compound is necessary. Thus in the McCall Anderson formula a 1 in 250 solution of the bichloride is followed by a 12.5 per cent solution of sodium thiosulfate. A similar case has been reported by Philipsen (*Ugeskr. f. Læger* 95:746 [June 29] 1933). In both cases it was clear that the dyeing was dependent on combination of the mercuric salt with sulfur, presumably derived from cystine content of the hair keratin and that the reaction required the high temperature used in the permanent waving. A similar case has been reported in America by Dr. C. J. White of Boston (*New England J. Med.* 214:708 [April 2] 1936). A white haired woman who allowed herself one permanent wave a year was annoyed because on the last two occasions her hair turned a slate color and her friends would think she was foolish enough to have her hair dyed. Dr. White adopted the explanation just given though it was not actually proved that she used a mercurial lotion. The dye did not yield to any decolorizer which he dared use on her delicate hair but time restored the normal color.

PARIS

(From Our Regular Correspondent)

July 13, 1934

The Ninth Annual Pediatric Congress

This year's meeting was held May 28 at Bordeaux under the presidency of Prof. Charles Rocaz. Pediatricians from foreign countries, including the United States, took part in the program.

In a discussion of the insulin treatment of infantile diabetes Professor Aubertin of Bordeaux stated that all cases of diabetes in infants and children presented clinically a progressive excretion and that insulin treatment should be begun as early as possible. Since insulin permits the child to metabolize the necessary quantity of food, it is essential that such an amount of nourishment be given as the child requires. A simple rule is to give 1,000 calories for a child 1 year of age and 100 calories for each additional year. The proportion of proteins that is most convenient to order is 15 per cent of the total ration in calories during the first five years, 12 per cent for children between 5 and 10 years of age and 10 per cent between the ages of 10 and 15 years. During the early period of insulin therapy a diet poor in glucides (from 20 to 25 per cent of the total calories) and rich in lipids (from 65 to 70 per cent of this diet) was given. In time, the glucide tolerance gradually lessened. Hence a modified diet is in use at present which is rich in glucides (50 per cent of the total calories) and poor in fats (from 35 to 40 per cent of the total calories). It is more difficult to control the diabetes at the beginning of the treatment, but later an appreciably increased tolerance is observed. The establishment, fractioning, spacing and distribution of the doses of insulin ought to be adjusted according to the reactions in the daily variations and the effect of different foods on the blood sugar content. The regulation of the dosage is governed primarily by the examination of the urine after each dose of insulin and secondarily by the blood sugar content at various intervals of the day. Muscular exercise acts as a valuable aid to insulin. As to the complications of insulin therapy in children, inflammatory reactions are rare and not serious. Complications due to intolerance are seldom observed at present, because of the better technic employed in the preparation of insulin. Diabetes is seldom observed in children less than a year old. Above this age the prognosis is unfavorable in spite of insulin therapy except in certain cases in which the disease is transitory.

The acute infectious diseases do not affect diabetic any more seriously than nondiabetic children of the same age. It is essential to give the same total number of calories with decreasing either the glucides or the doses of insulin. In fact the latter should be increased because of the appearance of a certain degree of insulin resistance. Operative intervention thanks to insulin can be carried out as safely in diabetic as in nondiabetic children. Diabetic coma if treated promptly is less serious in children than in adults, unless complicated by some infective process.

With insulin therapy and an adequate diet growth is not interfered with. Cure of the disease is exceptional but it frequently sees a marked improvement in tolerance especially if a diet rich in glucides is given. In many children treated with amounts of insulin are indicated for two or three years less the diabetes may be subject to inexplicable exacerbations in spite of apparent control of the disease. Such exacerbations occur, however more frequently in children who have been insufficiently treated.

The mortality from infantile diabetes is about 2 per cent in centers in which adequate treatment can be carried out. Forssell has reported a mortality of 67 per cent in Finnish rural districts where proper care was lacking.

Insulin in Nondiabetic Conditions in Children

In discussing the subject of insulin in nondiabetic conditions in children, Marcel Lelong of Paris first took up insulin therapy in nurslings, which renders valuable aid in the treatment of denutrition of the second degree and even in advanced cases, as follows (1) in cases of anorexia if the latter is secondary, i. e., not the result of some organic cause (infectious or other), (2) when the difficulty of water fixation plays an important part in the inability to add weight, (3) when, and this is infrequent, disturbances of glucide metabolism exist.

The contraindications to the use of insulin are 1 A fall in the initial weight of the new born, here the use of insulin is dangerous 2 In denutrition syndromes of definitely organic origin, here it is more important to treat the underlying (infectious, alimentary, digestive) cause than to treat the symptom of denutrition 3 In true denutrition (athrepsia), in which insulin is of no avail 4 In denutrition conditions when edema is present

Accidents due to insulin therapy are not to be underestimated. Fortunately they are mild (sudden pallor, profuse sweats, feeble and rapid pulse) but cases in which convulsions occur have been reported. The important fact to bear in mind is that as the result of the glycemia equilibrium in infants, such accidents cannot be foreseen.

Insulin therapy in nurslings calls for a diet rich in carbohydrates. It is necessary that the insulin hypoglycemia should be counterbalanced by the alimentary hyperglycemia. Only small doses of insulin can be used, a clinical unit per kilogram a day, in one or two subcutaneous injections. Carbohydrates can be given by mouth or by the parenteral route. A good rule is to assure a minimum of 3 Gm of dextrose per unit of insulin. The duration of the treatment is variable. A safe method is to use insulin for two or three weeks and then discontinue it for an equal length of time.

In infants, insulin therapy encounters greater obstacles than in nurslings. The usual dose is from 10 to 15 units a day with each of two feedings, the latter to contain an ample amount of carbohydrates. Insulin therapy does not exclude the necessity of rest and of a good general and alimentary hygiene, as well as open air life.

In general, Lelong considers insulin of secondary importance in nondiabetic conditions in children.

Lereboullet and Gournay of Paris have followed, since 1921, thirty cases of infantile diabetes in the hospital with three deaths and thirty-five cases in private practice with fourteen deaths, the latter being due to the fact that treatment was more difficult to carry out outside the hospital. Fifty-seven per cent were boys and 43 per cent girls. The real influence of both syphilis and tuberculosis have not as yet been sufficiently taken into consideration. In one infant the diabetes appeared two months after an attack of mumps and one month after an acute pancreatic syndrome. In four children the diabetes was of the renal type. When an infantile diabetes is correctly treated, the insulin is well tolerated. Death is usually the result of discontinuation of the insulin therapy, lack of supervision of the diet and intercurrent disease. Education of the parents is essential. The same is true of frequent urinary and blood examinations in order to act as a guide for the doses of insulin.

Professor Fanconi of Zurich, Switzerland, reported fifty cases in which very satisfactory results were obtained with a diet containing little albumin and fat, with a base of fruits and vegetables.

EPIDEMIOLOGY AND PATHOLOGY OF INFANTILE ACRODYNIA

The subject of the second symposium was the epidemiology and pathology of infantile acrodynia. In France the term acrodynia has been adopted to designate the syndrome of an epidemic disease which affects children from 6 months to 7 years of age, rarely later than that period. At times it is

encountered in adults. It begins by irritability, digestive disturbances and a tired feeling. At its height, pains are complained of in the extremities, accompanied by changes in sensation, paresis, psychic disturbances with rapid regression of the intelligence and finally trophic changes involving especially the flexor aspects of the extremities, and the condition may terminate in a mutilating gangrene of the fingers and toes. The duration of the disease is about six months, but complete recovery is the rule.

It seems to have first appeared in northern Germany in 1898 but its existence has been reported in nearly all parts of the world except the Scandinavian countries, the majority of cases being observed in the winter and spring. Whether the disease is contagious or not has not been established, but isolation of the child for a period of several weeks is certainly advisable. The relation to other infections such as influenza, poliomyelitis and encephalitis is not clear at present, but it would appear as though there is little if any connection between these diseases and infantile acrodynia.

In the discussion, Mouriquand of Lyons reported several cases in children living in the same or adjacent houses but in which there had not been any apparent contact. In four necropsies, unquestionable lesions of the neurovegetative system were found especially at the level of the cervical and dorsal sympathetic ganglions. Rabbits inoculated by the cerebral route all died within one or two months after presenting paralytic symptoms.

Beutler of St. Etienne said that he had observed 102 cases since 1925 and in addition, twenty-four cases had been verified by others in adjacent counties. They seemed to bear no relation to other epidemics or to whether the child was living in a large city (fifty-three of the 102 cases had occurred in St. Etienne) or in a rural community. Sequelae such as more or less important mutilations, decalcification of bone and a neuropathic state had followed in some children. Two similar familial examples of contagion were cited, hence physicians should report cases of infantile acrodynia. Béraud of La Rochelle reported twenty-nine cases, of which fifteen were in an area 28 miles in circumference. There seemed to be no true epidemic, but sporadic foci.

BERLIN

(From Our Regular Correspondent)

July 6, 1936

Drastic Changes in Control of Advertising

Numerous attempts to place the advertising of therapeutic aids on a sound basis have been reported from time to time. Now that a decree of the Advertising Council of German Economic Life has been issued, the diverse and unsatisfactory control exercised by the individual German states has been swept away. Specific provisions now cover the material, style, methods and inspection of advertising, and their observance will be enforced by the police. The new laws concern therapeutic aids in the broadest sense of the term, this means not only the advertising of medicaments properly speaking but that of therapeutic procedures and methods as well. All types of advertising are included, even of a relatively private nature. Medicaments are defined according to the new statute as "substances which are designed to prevent, palliate or eradicate sickness, pain or bodily injuries of any kind whatever in man or beast." Further provisions cover agents of local or general anesthesia such as are employed for alleviation of labor pains, diagnostic aids, remedies for senile phenomena, especially somatic and psychic conditions, aids to rejuvenation, aphrodisiacs, aids in overcoming habitual use of alcohol and tobacco and finally foodstuffs, food preparations, cosmetics and disinfectants so far as the definition of medicaments may apply to these. The catalogue of substances of which the new law takes cognizance is inclusive indeed.

The illegality of 'misleading advertisements' is given a prominent place in the law. Deceptions, according to the

wording of the statute, may be of different sorts false statements concerning the composition of a substance or the condition and quality of an appliance, attributing to substances exaggerated and nonexistent virtues, or propaganda calculated to create the false impression that successful results may be regularly, certainly or in all probability anticipated from the use of a substance or that such a substance may be successfully used for a variety of diseases. It is deemed a deception if false statements are made concerning the education, qualifications or professional standing of the advertiser or if the impression is created that testimonial statements are being furnished disinterestedly. Any advertising is held illegal which on investigation is found to involve the treatment of contagious diseases by the patients themselves or by persons other than physicians, this applies also to the treatment of venereal diseases or of dysfunctions of the genitalia. Further prohibited is the offering of absent treatment and any advertisement that creates a fear of impending death or otherwise evokes anxiety and apprehension. No advertisement of a substance for which a prescription is legally necessary shall circulate among the public, and the same applies to any advertising of substances and appliances purported to prevent, palliate or eradicate disease caused by malignant growths or infectious diseases (including tuberculosis) the reporting of which is compulsory. The advertising of substances and appliances designed for the amelioration of venereal disease or for the prevention or interruption of pregnancy is confined to physicians, pharmacists and specially licensed business concerns. For the advertising of medicaments to be used during pregnancy, special approval is required for each substance. The same rule applies to procedures and treatments for pregnant women. Substances listed in the Secret Catalogue of Medicaments must not as a rule be publicly advertised.

Recommendations and testimonials can be used only with the express written consent of the person in question and must take the form of a precise, dated, personal statement. Testimonials for which compensation of any sort is given or promised cannot be published. A recommendation that takes the form of advice may be published or mentioned only if the author is a professionally qualified scientist and specialist, and in such cases a precise personal statement must be obtained. The testimonials of specialists must be clearly separated from those of laymen in the advertisement. Of great significance is the stipulation that, if any passage from the literature is cited in the advertising, there must be no confusion as to whether such citation relates to the general topic or is a specific reference to the substance in question.

A special administrative board has been formed which exercises control over all medical advertising. This board may impose further restrictions on the advertising of certain substances or of the treatment of certain diseases and on the form of propaganda employed with special relation to the display of laymen's testimonials. Any advertisement may be submitted to a competent authority for approval before permission to publish is granted. The board may forbid wholly or in part whatever it considers out of harmony with the law.

All these regulations become effective August 1. Violators are liable to fines not to exceed 150 reichsmarks and to imprisonment. The new legislation certainly represents a great step forward. Many abuses in the field of medical advertising will doubtless be removed. A perusal of the advertisement sections of the professional medical journals will convince any one of the deterioration that medical advertising has undergone in recent years. All too frequently one runs across medical advertisements in which the ingredients of a product are either inadequately described or what is more common not described at all. And this omission is usually accompanied by the most extravagant claims of therapeutic efficacy. The advertising or

certain substances and firms which was formerly a good reason denied space in the columns of reputable journals has somehow obtained entrée and frequently assumes a most obtrusive form. Since it is generally known that doctors may be completely taken in by the psychological use of clever advertising propaganda of medicaments, the new legislation is calculated to effect a drastic purgation of the professional as well as the popular mediums.

Reform of Pharmacy Under the Third Reich

The government has undertaken an incisive intervention in the activities of pharmacists and pharmacies which parallels its attempt to regulate all other fields of public health. Some time ago new legislation with regard to examinations was instituted, by which the course of university training for pharmacists was increased to six semesters. Prospective pharmacists now receive a wider scientific background and a greater opportunity for postgraduate study and accordingly will be better able to meet the more exacting demands of present-day research and practice. These reforms were indeed timely. Large numbers of pharmacists have long been unemployed and two remedial measures had been calculated to aid them: first, admittance to the courses for career pharmacists was temporarily stopped and, second, the employment in pharmacies of so-called women assistants (helferinnen), or at least the performance of pharmaceutical duties by such women, was prohibited. Formerly, while well over a thousand trained pharmacists were unemployed, many female assistants ignorant of pharmacy were able to obtain jobs and these women worked for half the stipend of a pharmaceutically trained employee. But such assistants could act only in purely mechanical capacities and hence were considered as salespersons.

Female assistants can now function only as bookkeepers and cashiers. After the new law went into effect the number of unemployed pharmacists rapidly decreased. The closing of professional study to prospective students was later mitigated by the installation of a numerus clausus, but still only ten pharmacists, some 5 per cent of the total number, have the right to train a praktikant (Praktikanten are pharmacy apprentices, each prospective pharmacist must prior to beginning his university training have worked for a certain time as a praktikant, if he is unable to do so because of the numerus clausus, he will not be permitted to begin his studies). This quota represents specifically the maximal number of the new generation who can hope in the future, in view of the existing demand for approved pharmacists, to find the opportunity to make a living in the profession within a certain time.

Noteworthy innovations also were effected with regard to the licensing of pharmacies, without a permit in due form a new pharmacy can be opened or an existing shop continue to do business. Such licenses are not granted non-Aryan pharmacists and this law applies to the entire Reich. It is no longer possible for any non-Aryan to acquire an apothecary shop. But the provisions of the more recent legislation go even further: there are clauses governing the renting and operation of public pharmacies according to which in case the pharmacist-proprietor is legally prevented from carrying on he must transfer the operation of the shop to a legally qualified pharmacist as lessee. The choice of a lessee is virtually free but is subject to the approval of the board of control. A pharmacist's widow for example can no longer rent a pharmacist-manager who thus would become the employer of an untrained woman. By the new national renting law the lessee is assured an independent status: he may not run a pharmacy must likewise be leased if through the expiration of the incumbent the normal purveyance of pharmacy supplies to the public is in any way endangered.

proprietor is unfit to carry on because of national or moral considerations or is hampered in the conduct of his business by the infirmities of age, insanity, drug addiction or some other permanent disability. Jews are specifically barred from the operation of pharmacies. Pharmacies the proprietors of which are Jews come under the "compulsory leasing clause." Accordingly, a Jew is in any case prevented from the operation of a pharmacy even if it is his own. As an official comment on the new legislation has it, "Jewry's last hold on the German pharmaceutical profession has herewith been broken."

BUDAPEST

(From Our Regular Correspondent)

July 1, 1936

The Program of the Hungarian Cancer Committee

At the annual meeting of the Association of Scientific Societies of Hungarian Physicians, Prof. William Manninger read a paper about the campaign of the Hungarian cancer committee. Unfortunately the committee at present cannot hope to complete its program because the state cannot provide the funds that would be necessary. The financial condition of the state was responsible also for the fact that the state tumor hospital and research institute had to be closed.

The new cancer campaign mapped out by Professor Dollinger is much more modest, and the chief obstacle to its achievement is not the want of money but the want of knowledge of the cause of cancer. According to present knowledge, cancer is not the result of a single cause but the sum of many conditions. The Hungarian Cancer Committee is not prepared to carry forward a campaign of treatment. The aim of the committee is to offer means for the demonstration and criticizing of the individual's work and of the results achieved by various methods.

The Dollinger plan consists of four main points: 1 To keep functioning all those research institutes which are dealing with biologic problems. To build in all parts of the country subsidiary centers where intensive research will be done on the histology and physiology of cancer. The equipping and maintenance of the institute is the duty of the state and municipalities. Finally, to compile cancer statistics based on strictly scientific control. Almost all parish and village doctors have offered their services to fill out the statistical blanks. 2 The committee intends to provide the country hospitals with physicians versed in the treatment of cancer. The use of auxiliary methods of treatment, including radiation therapy, is impossible on account of the lack of radium and of funds to meet the costs. It is the task of the committee to provide funds. The committee will persuade the government to establish a central institute in Budapest equipped with all recognized means of treatment. This institute is to maintain a close link with the university and also with all physicians interested in the cancer problem. The committee will distribute free books to all physicians of the country to aid them in the recognition and treatment of cancer. A further task of the committee will be to arouse the government to establish in every county laboratories equipped for the early diagnosis of cancer and also for the treatment of cancer. A special cancer library, at present consisting of 1,700 volumes, is at the disposal of all those physicians who are interested. 3 The committee will give continuous publicity to the early treatment of cancer through lectures, films, leaflets, radio talks and traveling museums. 4 Industrial plants and factories working with materials known as capable of producing cancer are to be periodically examined by cancer experts. Professor Manninger finished with the statement that the Hungarian government made huge sacrifices to further a campaign against tuberculosis with the result that it has ceased to devastate the population. Cancer mortality approaches the tuberculosis mortality, so that there is cause for the state to make a substantial sacrifice also in this field.

The Treatment of Venereal Patients in Hungary

The treatment of venereal patients is done in Hungary partly in special dispensaries and partly through the general nursing service and the protection of mothers and infants. Cities are provided with special dispensaries, and the villages are allied with the institutions. The latter work is not yet completed. Dispensaries for venereal patients are organized in cooperation with cities, municipalities and the social insurance. Drugs are free. The dispensaries have modern equipment and are provided with specialists and nurses, and are supervised by the ministry of the interior. The ministry contributes to the maintenance and to the establishment of dispensaries. The organization of new dispensaries is done by a committee consisting of representatives of the ministry of the interior, the social insurance institute and the ministerial commissioner for the prevention of venereal diseases. At present there are fifteen dispensaries in the country and there will be twenty by the end of the year. The number in attendances at the dispensaries amounts to 200,000 a year. The dispensaries are entrusted also with the periodic examination of prostitutes.

AUSTRALIA

(From Our Regular Correspondent)

June 30, 1936

The Future of Medical Practice

In his presidential address before the Section of Medical Science and National Health at the last meeting of the Australian and New Zealand Association for the Advancement of Science, held in Melbourne, Dr. J. V. Duhig pointed out in no uncertain terms the weak points in the medicopolitical armor in Australia today. Medicine lays tribute on all the sciences for the promotion of human welfare and the study of human biology in all its manifestations—the structure, development, function and behavior of the body from its primordial conception to maturity and death. The maintenance of health involves a wide view of the human environment, and this view of the functions of medicine necessarily includes a knowledge of man's mental processes and the springs of his behavior. A government which is content to reflect public opinion results in a low state of social culture, and a high one requires a highly advanced, expert, well ordered intelligence ready to lead and to submit to rational restraints and disciplines. In Australia today the tendency of the central government is toward fascism, while in some of the states a thinly veiled communism is enforced. These antidemocratic tendencies are theoretically the trend of the elected representation but in actual fact are the evolved function of the vast bureaucracy of government servants. If science were fully in control of affairs there would be at least a foundation of knowledge and training, a systematic plan and way of approach to an attack on human problems, and above all a spirit of self criticism, moral integrity and the peculiarly refined feeling for truth and accuracy inseparable from good science.

Medicine in the past has failed to have any but a temporary, feeble effect on political theory and practice. Statesmen have seen political possibilities in some features of medical work and used them irrespective of their immediate effect on public development, to bribe the electorate into tranquility now and good will at a future election. The insurance act in Great Britain was of this kind and was typical of Lloyd George's methods—it degraded both people and doctor and completely checked the sound evolution of medicine and social science. This casual empiricism based on a narrow, partial view of the functions of the greatest profession cannot be checked, however, until medicine can control its own destiny, and this control obviously cannot be acquired by mere scientific output but by control of the distribution of its benefits and general application, that is, medicine must eventually include, as must

science generally, training in political methods. By lack of political sense, and for other reasons, medicine has not yet made its full contribution to sociology. The traditional reticence of the profession was manipulated to hide the process of transfer of responsibility from doctor to bureaucrat. What above all the public wants, and should be told, is a statement of medical policy—what doctors are up to and what they are after. Only very childish people are completely satisfied to be told constantly that their doctors are concerned with human welfare and that all is for the best, and to be told nothing more. That sort of empty patronizing paternalism is only exasperating. Nationalization of medicine in the sense understood and practiced in Russia and partially practiced in England will eventually be disastrous—in comparison, that is, with what might be secured.

THE FUTURE OF MEDICAL PRACTICE

Duhig cannot see that any plan of medical service can give the fullest results that leaves out of account the value of private practice, which promotes the growth of a confidential relationship based on mutual trust and sound human interest. The first duty of the doctor is not to treat disease but to cure sick people and to prevent them from falling ill, and the prime requisites in this relationship are care and courtesy on the part of the doctor, and frankness and trust on the patient's part. A relationship of this kind of long standing and extending to all the units of a given family gains enormously in effectiveness, since the doctor works with precision on a very familiar background. No system possible can replace this one of sympathy, trust and understanding. Wherever nationalization has been tried it has failed in two ways—deterioration of the quality of the state-employed doctor, and tendency to development of a purely mechanical relationship. The evils of such a system are obvious. There are more subtle dangers. They are the encroachments made by slow pressure of a fairly enlightened public opinion acting on a profession so preoccupied with immediate tasks that it has been blind to the drift of things. Free or state subsidized services, such as school inspection, maternal and child welfare, dental treatment, diphtheria immunization, vaccination, psychoanalysis, nutrition and regulation of fertility, could and should be part of a private practitioner service but since the profession was unwilling or unable to provide it as part of their system, they can only blame themselves for allowing it to go out of their hands into the control of interested nonmedical sociologists. If this kind of drift becomes general, nationalization will develop automatically, and there are medical men today who find it so hard to maintain the high social standards expected from self-respecting doctors that they would welcome the prospect of a steady, though reduced income from the state. This would end in deterioration. The remedy would be to restore the doctor to a greatly expanded function. The most serious rival to the private doctor is the large public hospital, to some extent greatly overgrown beyond the real demand for such service. A million pounds in bricks, brass and white enamel is a marvelous advertisement for a vote hunter. Half the money now spent in this way might successfully be devoted to an inquiry as to why and how people get sick. The vast propaganda devoted to hospitals encourages the use of them and a slackness of self discipline of the kind that would encourage people to look after themselves and cultivate habits that will avoid illness. There occur many leaks of human beings away from health in a congenial gainful occupation into the indolence and spurious invalidism of a hospital bed or a chronic seat in an outpatient department. A cynical humorist might have some excuse for making hospitals so unattractive that people would want to keep out of them.

The anachronism of honorary medical service to hospitals helps to keep the hospital population high. Charity should

be unnecessary, it presupposes the existence of miserable people who should not exist at all as such.

People must know, though they try to forget that sickness and accident are just as inevitable as death and hunger, thirst, and should be provided for. The fact that medical service was provided free in feudal times to serfs is no argument for doing the same for free men in a democracy. The form of insurance that ought to be envisaged is precisely that which prudent men use today. The sort of insurance favored by Dr Duhig is that which places the insured in possession of money to pay his accounts when he needs it. The plan eventually worth considering is that of free choice of doctor by patient, and payment directly by the patient to the doctor, either out of savings or as a draft on a policy against sickness.

ITALY

(From Our Regular Correspondent)

July 1, 1934

Early Diagnosis of Tuberculosis

The Federazione per la lotta contro la tubercolosi met recently in Palermo, under the chairmanship of Dr Gruber. The topic discussed was the early diagnosis of tuberculosis. Dr Bompiani spoke on tuberculosis of the female genital organs, the diagnosis of which in childhood is rather presumptive. Tuberculous ascites and tuberculosis with impaired intestinal functions are the two forms most frequently found at early ages. The diagnosis of peritoneal localization of the disease is usually made. At puberty, delay in the appearance of menstruation and the presence of oligomenorrhea or dysmenorrhea are frequent. In some cases amenorrhea persists through youth and maturity and there are functional disturbances, pain in the lower part of the abdomen and sterility. Calandra spoke on the early diagnosis of tuberculosis of the neck of the femur, giving the anatomic reasons that account for the frequency of this form of tuberculosis in children from 2 to 10 years of age and for the rare occurrence of the disease in adults. Tuberculosis of the femoral neck may be located at any of the different zones of the neck and may be a form either asymptomatic or painful. The disease frequently extends to the hip joint. The speaker detailed the technique of his surgical treatment, which is based on the perforation of the bone at the tuberculous focus. Pavone spoke on the diagnosis of renal tuberculosis. The speaker regards cystoscopy, meatoscopy and especially the functional test of the kidney of more diagnostic value than the other methods.

Society Reunion

The Latin Section of the Società di Gastroenterologia di Rome met recently at that city under the chairmanship of Cesare Frugoni, professor of clinical medicine. Dr Muro spoke on intestinal trichomoniasis. He said that *Trichomonas hominis* may be found in the stomach of man as well as in the rectum and colon and that in certain cases it is pathogenic. The frequent clinical picture is that of chronic enterocolitis, the main symptom of which is the irregularity of intestinal evacuation. In order to detect the parasite in the feces it is advised to examine the feces immediately after evacuation. If there are a few parasites fecal cultures can be prepared for examination. According to the speaker the treatment of the infection consists in the administration of enemas prepared with chinofon and the administration of vioform by mouth.

Institution for Correction of Facial Deformities

An institution for the correction of facial deformities, congenital or traumatic from war or industrial accidents, recently opened in Milan. There are now thirty beds, forty more beds are in preparation. Persons with facial deformities from war are given the preference over other applicants for admission.

Marriages

HENRY FRANKLIN DE WOLF, Little Rock, Ark., to Miss Helen Lawton Clarke in Estill, S C, recently

ROBERT COOPER BYRNE, Hatfield, Mass., to Miss Ethel Irene Redman of Franklin, N H, August 1

MICHAEL J O'CONNOR, Spokane, Wash., to Miss Chonita Bovet of San Mateo, Calif, June 6

BENJAMIN JOSEPH ROSENTHAL to DR. ELIZABETH WILEN, both of Brooklyn, August 9

WILLIAM M DAVIDSON, Seattle, to Miss Harriet Shipman of Montclair, N J, June 27

THOMAS P FOLTZ, to Miss Eleanor Stuart Albers, both of Fort Smith, Ark, July 15

E ALEXANDER SCOTT, St James, Mo., to Miss Nancy Elaine Honea of Rolla, June 14

DAVID E ENGLE, Martinsville, Ind., to Miss Faith Ritz of Royal Center, June 8

ROSS E MAYNARD to Miss Marjorie Lovejoy, both of Pine Bluff, Ark, June 16

HAROLD SHELLOW to Miss Vivian Inez Van Ronkel, both of Chicago, July 8

Deaths

John Tilden Burrus ☉ High Point, N C, North Carolina Medical College, Davidson, 1898, Chattanooga (Tenn.) Medical College, 1903, past president of the North Carolina State Board of Health and the Medical Society of the State of North Carolina, formerly visiting lecturer in clinical surgery, Duke University School of Medicine, Durham, fellow of the American College of Surgeons, served during the World War, at one time member of the state legislature, chief of staff and head of the department of surgery, Randolph Hospital, Asheboro surgeon to the Davidson Hospital, Lexington, Thomasville (N C) Baptist Orphanage and the North Carolina Public Service Company, chief surgeon to the High Point, Thomasville and Denton Railroad, consulting surgeon to the Southern Railway, formerly member of the governing board of the state hospital for the insane, Morganton, aged 58, owner of the Burrus Clinic and chief of staff of a hospital bearing his name, where he died, June 8, of coronary thrombosis and hypertension

Sidney Kohn Simon ☉ New Orleans, Tulane University of Louisiana Medical Department, New Orleans 1903, specialist in internal medicine with special attention to gastroenterology, in 1922 a member of the House of Delegates of the American Medical Association, and from 1922 to 1924 secretary of the Section on Gastro-Enterology and Proctology, and chairman from 1925 to 1926 assistant professor of clinical medicine at his alma mater and professor of gastro-enterology at the Tulane University Graduate School of Medicine, past president of the American Society of Tropical Medicine, member of the American Gastro-Enterological Association, fellow of the American College of Physicians, chief of the department of gastro-enterology, Touro Infirmary aged 58, died, August 5

Herman Bennett Slotkin ☉ Philadelphia Jefferson Medical College of Philadelphia, 1925, member of the American Academy of Ophthalmology and Oto Laryngology, instructor in neurology at the University of Pennsylvania Graduate School of Medicine, assistant neuro-otologist at the Graduate Hospital of the University of Pennsylvania, served in the Medical Corps chemical warfare division, during the World War, assistant otolaryngologist to the Jewish Hospital aged 37 died August 1 in the Manhattan General Hospital, New York, following a thoracoplasty

Clarence Anderson Patten ☉ Philadelphia Jefferson Medical College of Philadelphia 1916 professor of neurology and vice dean for neurology and psychiatry at the University of Pennsylvania Graduate School of Medicine, member of the American Neurological Association American Psychiatric Association and the Association for Research in Nervous and Mental Disease, served during the World War, neurologist to the Philadelphia General, Lankenau and Orthopedic hospitals, associate editor of *Cyclopedia of Medicine* aged 46, died June 2

Herbert de Grove Sherman, White Plains N Y New York Homeopathic Medical College and Flower Hospital 1915 member of the Connecticut State Medical Society and the

Associated Anesthetists of the United States and Canada, served during the World War, roentgenologist to the Greenwich (Conn) Hospital, aged 46, died, June 18, in the Grasslands Hospital, Valhalla, of subacute bacterial endocarditis and bronchopneumonia

Edward Gilmer Thompson ☉ Memphis, Tenn., University of Pennsylvania School of Medicine Philadelphia, 1911, associate professor of medicine, University of Tennessee College of Medicine, served during the World War, fellow of the American College of Physicians, member of the staffs of the Methodist and John Gaston Memorial hospitals, and the Illinois Central Railway System, aged 51, died, June 21, of acute myocardial insufficiency

Alquin Jay Davis ☉ Farmingdale, N Y, University of Pennsylvania School of Medicine, Philadelphia, 1909, president of the New York State Association of Sanatorium Superintendents and Boards of Managers on the consulting staffs of the Nassau Hospital, Mineola and the Meadowbrook Hospital, Hempstead aged 48, superintendent of the Nassau County Sanatorium, where he died, June 18, of pneumonia

Charles Louis Upton ☉ Greenfield, Mass., University of Pennsylvania Department of Medicine, Philadelphia, 1896 served during the World War, at one time member of the school committee of Shelburne Falls, on the staffs of the Farren Memorial Hospital Montague City, the Franklin County Public Hospital and the Greenfield Isolation Hospital, aged 65, died May 25, of chronic nephritis and myocarditis

Evan Styles Potter, New York University of the City of New York Medical Department 1891, formerly medical expert to the law department of the city and medical examiner to the Civil Service Commission, on the staffs of the Columbus Hospital and the West Side Hospital, aged 66, died, May 26, in the New York Post-Graduate Medical School and Hospital

Jacob Frank ☉ Chicago, University of Buffalo School of Medicine, 1882 past president of the Chicago Medical Society and the Chicago Surgical Society, retired colonel, Illinois National Guard, served during the World War, consulting surgeon to the Grant and Columbus hospitals, formerly surgeon to St. Elizabeths Hospital, aged 80, died, August 11

Walter Monroe Matthews Jr, Little Rock, Ark University of Arkansas School of Medicine, 1915, member of the Arkansas Medical Society, chief medical officer for the Little Rock regional office of the Veterans Administration, served during the World War, aged 47, died, May 2, in the Fitzsimons General Hospital, Denver, of tuberculosis

Earl Henry Lormor ☉ Buffalo, University of Buffalo School of Medicine, 1914, served during the World War, aged 47, served in various capacities on the staffs of the City Hospital, Buffalo State Hospital, Millard Fillmore Hospital and the Buffalo General Hospital, where he died, May 25, of ruptured diverticulitis of the sigmoid

James Finley Bell, Englewood N J University of the City of New York Medical Department, 1883, member of the Medical Society of New Jersey, past president of the Bergen County Medical Society, on the staff of the Englewood Hospital, aged 76, died, June 16, of cardiovascular disease

Frank Eugene Haskins ☉ Boston, Tufts College Medical School, Boston, 1903, professor of pharmacology at his alma mater and formerly secretary of Tufts Medical College and Dental School, member of the Associated Anesthetists of the United States and Canada aged 61 died, May 24

John L Kirkpatrick, Los Angeles, University of Southern California College of Medicine, Los Angeles, 1899, member of the California Medical Association, on the staff of the Queen of Angels Hospital and the Los Angeles General Hospital aged 61, died, May 17, of carcinoma of the liver

Michael Angelo Bailey, Hartford Conn, College of Physicians and Surgeons Baltimore, 1893 member of the Connecticut State Medical Society formerly member of the board of education, was connected with St. Francis Hospital in various capacities, aged 77, died, June 6

Helen Cooley Palmer, San Marino, Calif, New York Medical College and Hospital for Women 1895, at one time professor of ophthalmology and associate professor of gynecology at her alma mater, aged 77, died May 19, of cardiac rupture and coronary sclerosis

John A Roth, Red Hill, Pa, University of Pennsylvania Department of Medicine Philadelphia, 1876 member of the Medical Society of the State of Pennsylvania for many years a member of the board of education, aged 82, died, May 19, of carcinoma of the stomach.

Arthur Charles Dana, Fond du Lac, Wis., Milwaukee Medical College, 1911, served during the World War, formerly city physician and health officer, aged 49, on the associate staff of St. Agnes Hospital, where he died, May 25, of cholecystitis and chronic myocarditis.

James Sherman Mosher, Williamsport, Pa., College of Physicians and Surgeons, Baltimore 1891, member of the Medical Society of the State of Pennsylvania, served during the World War, aged 69, died, May 10, in Pittsburgh of cerebral hemorrhage.

Ward Lafayette King, Muncy, Pa., College of Physicians and Surgeons, Baltimore, 1880, member of the Medical Society of the State of Pennsylvania, aged 80, on the staff of the Muncy Valley Hospital, where he died, May 24, of chronic myocarditis.

Ezra Clark Chase, Plymouth, N. H., Eclectic Medical College of Maine, Lewiston, Maine, 1884, member of the New Hampshire Medical Society, on the staff of the Emily Balch and Soldiers and Sailors Memorial Hospital, aged 78, died, May 25.

Franklin K. Martin, Havana, Ill., Eclectic Medical Institute, Cincinnati 1882, member of the Illinois State Medical Society, aged 74, died, May 17, in the Methodist Hospital, Peoria, of carcinoma of the gallbladder and liver.

James Lewis Lee, Pinehurst, Ga., University of Georgia Medical Department, Augusta, 1899, served during the World War, aged 57, died, May 16, in the Veterans Administration Facility, Atlanta, of cardiorenal vascular disease.

Charles Edward Webb, Natchitoches, La., Tulane University of Louisiana School of Medicine, New Orleans 1930, on the staff of the Natchitoches Hospital, aged 38, died, May 24, in Jennings, of carcinoma of the stomach.

Emerson Augustus Ludden, North Brookfield, Mass., Albany (N. Y.) Medical College, 1888, member of the Massachusetts Medical Society, for many years local health officer and school physician, aged 74, died May 31.

William Chenitz, Newark, N. J., University of Maryland School of Medicine, Baltimore, 1930, member of the Medical Society of New Jersey, aged 32, died, May 17, in the Beth Israel Hospital, of carcinoma of the stomach.

Edward Emery Baumeister, San Francisco, University of California Medical Department, San Francisco, 1904, member of the California Medical Association, fellow of the American College of Surgeons, aged 59, died, May 4.

Alfred Joseph Jackson, Hempstead, N. Y., Howard University College of Medicine, Washington, D. C. 1927, member of the Medical Society of the State of New York, aged 37, died, May 12, of rheumatic heart disease.

Howard Lansing Waldo, Flushing, N. Y., Regents of University of State of New York, 1875, member of the Medical Society of the State of New York, aged 83, died, May 7, of arteriosclerosis and chronic endocarditis.

Stanislas Martel, Boston, School of Medicine and Surgery of Montreal, Que., Canada 1893, member of the Massachusetts Medical Society, on the staff of the Lynn (Mass.) Hospital, aged 65, died, May 16, of pneumonia.

John W. Good, Fordland, Mo., St. Louis College of Physicians and Surgeons, 1897, member of the Missouri State Medical Association, county coroner, local registrar of vital statistics, aged 75, died, May 11.

William E. Royster, Chanute, Kan., Louisville (Ky.) Medical College 1907, member of the Kansas Medical Society, on the staff of the Johnson Hospital, aged 66, died, May 31, of a self-inflicted bullet wound.

Henry B. Golden, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1896, aged 62, died May 20, in the Philadelphia General Hospital, of myocarditis and benign prostatic hypertrophy.

Arthur P. Hunnemann, Chicago, Harvey Medical College, Chicago 1903, formerly on the staff of the Illinois Eye and Ear Infirmary, aged 66, died May 20, of carcinoma of the bladder with metastases.

Frederick Jesse Weld, Rockford, Ill., Rush Medical College, Chicago 1884, member of the Illinois State Medical Society, aged 76, died May 24, in St. Anthony's Hospital, of cerebral hemorrhage.

Joel Grosner, Jersey City, N. J., Cornell University Medical College, New York 1899, aged 58, died, May 23, in the Veterans Administration Facility, Lyons, of chronic myocarditis and arteriosclerosis.

James Martin, Magnolia, Del., Medico-Chirurgical College of Philadelphia, 1893, member of the Medical Society of Delaware, past president of the Kent County Medical Society, aged 69, died, May 24.

William Patrick Kenealy, Washington, D. C., Georgetown University School of Medicine, Washington, 1911, also a druggist, aged 63, died, May 25, in the Sibley Hospital, of brain tumor.

James Harvey Ferguson, Kempton Ind., Medical College of Indiana, Indianapolis, 1902, aged 66, died, May 12, in St. Vincent's Hospital, Indianapolis, of angina pectoris and coronary embolism.

Wilber T. Kennedy, Johnson City, Tenn., Tennessee Medical College, 1905, member of the Tennessee State Medical Association, aged 57, died, April 7, of carcinoma of the prostate.

Harry Bell Nunnally, Monroe, Ga., Atlanta College of Physicians and Surgeons, 1906, on the staff of the Walton County Hospital, aged 53, died, May 13, of cardiac asthma.

Charles L. La Barge, St. Louis, St. Louis Medical College, 1874, for many years diagnostician for the city health department, aged 85, died, May 9, of angina pectoris.

John Ferguson Hope, Drexel Hill, Pa., Jefferson Medical College of Philadelphia, 1904, aged 53, died, May 21, in the Delaware County Hospital, of coronary occlusion.

Bessie James Garver, Los Angeles, State University of Iowa College of Medicine, Iowa City, 1890, aged 82, died May 10, of hypostatic pneumonia and senile dementia.

Raymond Nathaniel Jackson, Brunswick, Ga., Meharry Medical College, Nashville, Tenn., 1905, aged 52, died, May 11, of myocarditis and interstitial nephritis.

Walter Witmore Senn, Williamsport, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1907, aged 55, died suddenly, May 15, acute nephritis.

Malcolm J. Mooney, Quebec, Que., Canada, McGill University Faculty of Medicine, Montreal, 1898, aged 63, died, May 25, in Tokyo, Japan, of pneumonia.

Claude Nicholson Lacey, Demopolis, Ala., University of Alabama Medical Department, Mobile, 1900, aged 57, died, May 17, of a self-inflicted bullet wound.

John Mackenzie & Reese, Mich., Detroit College of Medicine, 1893, aged 73, died, May 19, in St. Mary's Hospital, Sarnaw, of cerebral hemorrhage.

Marshall Dwight Jennings, St. Louis, St. Louis College of Physicians and Surgeons, 1888, aged 75, died, May 18, of carcinoma of the rectum.

Albert Henry Daniel Heppner, Los Angeles, Long Island College Hospital, Brooklyn, 1897, aged 73, died, May 10, of cirrhosis of the liver.

Henry M. Ammond, West Branch, Mich., Jefferson Medical College of Philadelphia, 1882, aged 81, died, May 30, of cerebral hemorrhage.

Orris E. Lett, Montgomery, Ind., Kentucky School of Medicine, Louisville, 1901, formerly county coroner, aged 61, died April 12.

William A. Longanecker, Los Angeles, Jefferson Medical College of Philadelphia, 1876, aged 87, died, April 3, of chronic myocarditis.

Frank Ward Lynch, El Paso, Texas, Medico-Chirurgical College of Philadelphia, 1910, aged 57, died April 1, of cerebral hemorrhage.

Herbert D. Jenckes, Pipestone, Minn., College of Physicians and Surgeons of Chicago, 1884, aged 82, died in May of carcinoma.

Frank Jacob Sofge, Cincinnati, Medical College of Ohio, Cincinnati, 1904, also a pharmacist, aged 67, died suddenly April 21.

Hugh Angus McColl, Milton, Ont., Canada, University of Toronto Faculty of Medicine, 1889, died, May 14, of heart disease.

Joseph L. Mackey, Charleston, Tenn., Hospital College of Medicine, Louisville, Ky., 1890, aged 75, died April 5.

Henry H. Gambill, Blaine, Ky., Atlanta Medical College, 1895, formerly bank president, aged 62, died May 9.

Charles A. Strasburg, Cridersville, Ohio, Pulte Medical College, Cincinnati 1903, aged 74, died in April.

Alfred Edwards, St. Louis, Dallas Medical College, Texas 1904, aged 78, died May 7, in Reno, Nev.

Oscar A. Hubbs, Butler, Ohio, Pulte Medical College, Cincinnati 1879, aged 85, died May 1.

Bureau of Investigation

PARANA MATÉ AND PYLAIDES A South American Tea and a "Pile Cure" Declared Fraudulent

"Parana Mate" was the proprietary name employed by the Rundle-Murphy Company of Westport, Conn., for one of the innumerable brands of verba mate, or Paraguay tea, that have flooded the North American market during the last several years.

Parana Mate was exploited as an invigorating beverage of amazing medicinal value for nervous ailments, convalescents, anemics, and of especial value for tired business men and women.

A romantic historical background was skilfully woven into the advertising of Parana Mate. The tea was alleged to have been discovered several hundred years ago by missionaries to South America. The Spanish grandees, it was said, were 'not slow in becoming acquainted with the almost miraculous powers of the infusion drunk by the Indians.

Mate does not directly affect the nerve system as do coffee and tea, but rather localizes its action in the muscular system and Vital Organs." Yet, paradoxically, it was also claimed to "Regenerate lost Nerve Force! Build up strong, sound nerves through natural methods." The unique process by which mate built up strong nerves without affecting them was left to the imagination.

Among the other amazing accomplishments claimed for Parana Maté was its ability to prevent hunger, which, according to the exploiters, made the tea eligible for combating obesity.

According to the directions, Parana Mate was to be brewed into a tea, one "heaping teaspoonful of Maté for each cup wanted and one extra for the pot." The drinking of "four or five cups a day" was advocated by the promoters.

The government's chemical analysis of Parana Maté, "the Fountain of Youth," showed that the only active ingredient was caffeine, of between $\frac{3}{4}$ and $\frac{3}{4}$ grain per cup which is slightly less than that contained in a cup of tea or coffee. "In addition, small quantities of chlorophyll and tannin were also present in insignificant amounts."

The Post Office authorities held that Parana Mate had no more healing properties than tea or coffee, that the drinking of four or five cups daily as directed might be harmful in the case of children and aged persons, and that the beverage would not afford "relief from tropical fevers and other body, as well as mental ailments." The report further stated that inasmuch as Parana Maté had no value as a food, it would not "prevent hunger" and accordingly would be of no assistance in combating obesity.

In addition, the concern sold through the mails a product, "Pylades," for the cure of hemorrhoids. The exploiters advertised it as a 'soluble suppository,' claiming that 'this formula was prepared by one of America's foremost specialists,' going on to name a former professor of the New York Post Graduate School, who, the records show died as long ago as 1917. The government chemists reported that Pylades consisted essentially of ichthyol, cannabis Americana and the alkaloid hydrastin, in a base of cacao butter. The report pointed out the danger in the absorption of cannabis Americana in the system and the likelihood of its forming 'a pernicious habit causing great injury to the user' although the promoters of Pylades represented the mixture as a safe treatment. The report showed further, that this nostrum would have no remedial effect whatever in the treatment of hemorrhoids.

According to the government report, the promoters were cited in August 1934 to show cause why a fraud order should not be issued against the names then used in the conduct of the enterprise. The concern at that time 'agreed to discontinue the scheme and never to resume it.' However, the resumption of the enterprise brought about the recommendation of Post Office Solicitor Karl A. Crowley that a fraud order be issued against the Rundle-Murphy Company, Importers, the Rundle-Murphy Company, and their officers and agents. On evidence satisfactory to him, the Postmaster General on June 9, 1936 closed the United States mails to the concern and parties above mentioned.

Correspondence

LONG'S CONTRIBUTION TO DISCOVERY OF ETHER

To the Editor—In different papers concerning the discovery of ether anesthesia by Crawford W. Long it has been stated that one of the reasons Long was seeking an anesthetic was to relieve women of the pains of childbirth.

Some time ago Dr. Joseph B. De Lee wrote me asking if I knew the date of Dr. Long's first administration of ether in childbirth. For the past several months I have been investigating this matter with some of the members of Dr. Long's family, and I now find out that on Dec. 27, 1845, Dr. Long used ether in delivering his own second child, born at Jefferson, Ga. This date is attested by the family Bible record now in possession of Mrs. Eugenia Long Harper, Gay, Ga., sole surviving child of Crawford Long. Mrs. Harper tells me that the family often heard their mother say that Dr. Long administered ether to her when this child was born.

We read in the Encyclopedia Britannica that Sir James Y. Simpson used ether in obstetrics in 1846 and was the first to use chloroform in 1847. If these dates are correct, Crawford Long not only used ether anesthesia in the first surgical operation (March 30, 1842) but also was the first to use an anesthetic in obstetrics, Dec. 27, 1845.

F. K. BOLAND, M.D., Atlanta, Ga.
President, Crawford W. Long Memorial Association

HEMOLYTIC SHOCK FOLLOWING BLOOD TRANSFUSION

To the Editor—The subject of hemolytic shock following blood transfusion is again arousing interest, owing partly to the publication of studies by Professor Hesse and his associates in Leningrad, whose work was reviewed editorially in THE JOURNAL, June 27.

The clinical syndrome accompanying and following hemolysis in vivo in man is fairly well known. During or soon after transfusion the recipient becomes acutely ill with severe pains in the lumbar region, dyspnea and cyanosis, chills, fever and collapse. The blood serum contains free hemoglobin and the van den Bergh test gives an atypical biphasic reaction within two hours. If hemolysis is extensive, hemoglobin appears in the urine. Jaundice may be noted as early as eight hours after the transfusion. The acute phase of the reaction lasts only a couple of hours. Then the patient may recover promptly or signs of grave renal insufficiency may appear. In the latter case, anuria or oliguria quickly supervenes. The patient vomits frequently. There is progressive nitrogen retention and death in coma follows about ten days after the transfusion. Pathologic examination of the kidneys reveals necrosis of the tubular epithelium, interstitial polymorphonuclear infiltration, and masses of pigment derived from hemoglobin in the tubular lumens. The glomeruli appear normal. The picture is almost the same as, if not identical with, that seen in blackwater fever and in quinque hemolysis.

The most important phase of this problem is the effect of hemoglobinemia and hemoglobinuria on the kidney, which the Russian group ascribes primarily to the ischemia of the kidneys as the result of the vasoconstrictor action of hemoglobin. They advocate the transfusion of compatible blood or blood serum to treat the anuria. A critical analysis of their experimental work seems indicated.

Mason and Mann (*Am J Physiol* 98:181-185 [Sept] 1931) obtained only transient vasoconstriction in the kidney of the dog and the frog after the intravenous injection of hemoglobin. In one dog 75 cc. of laked blood per kilogram produced only

temporary reduction in renal volume. Permanent anuria has been produced in man with smaller quantities of incompatible blood.

My colleagues and I have reproduced in dogs quite accurately the picture of renal insufficiency by the injection of hemolyzed blood into dogs with acid urines (THE JOURNAL, February 1, p 416). The dogs develop oliguria or anuria and die in coma from the third to the tenth day after transfusion, with blood urea nitrogen values of from 119 to 350 mg per hundred cubic centimeters. The kidneys show the typical nephropathy. This picture cannot be produced in dogs with alkaline urines.

The Russian workers have published similar experiments except that the reaction of the urine was not noted (Iljin *Arch f klin Chir* 181 240-249, 1934). Their dogs died within two days following transfusion, and the highest blood nonprotein nitrogen value obtained was 89 mg per hundred cubic centimeters. No pathologic studies were reported. It is evident that this is not an accurate reproduction of the clinical syndrome of renal insufficiency following hemolysis.

The relation between urinary acidity and renal insufficiency from hemoglobinuria has been established by Yorke and Nauss (*Am Trop Med & Parasitol* 5 287 1911-1912) and Baker and Dodds (*Brit J Exper Path* 6 247, 1925) in the rabbit and by us in the dog. A complete physiologic explanation of the effect of hemoglobin on the kidney ought to account for these facts.

ELMER L. DEGOWIN, M.D., Iowa City

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

TESTS FOR UREA AND RENAL FUNCTION

To the Editor—Please describe the urea clearance test the Van Slyke and Cope technic, also its clinical value and state normal and pathologic percentages also kindly publish the method for carrying out the concentration test for renal function the technic as described by Lashmet and Newburgh also the urea ratio test as employed by Moseenthal stating the range of the normal ratio. Please omit name. M.D. Minnesota

ANSWER—The blood urea clearance test is a test of renal efficiency based on the cubic centimeters of blood cleared of urea by the kidneys per minute.

The technic is usually the following:

- 1 At 8 a.m., breakfast without coffee or tea.
- 2 At 9 a.m., empty the bladder and discard the specimen. Give 100 cc of water to drink.
- 3 At 9:50 a.m., obtain 5 cc. of venous blood for urea estimation.
- 4 At 10 a.m. collect a total specimen of urine. Give 100 cc of water to drink.
- 5 At 11 a.m. collect another total specimen of urine.

Estimate the blood urea in milligrams of urea per hundred cubic centimeters. Measure the amount of each hourly specimen of urine. Calculate the volume excreted per minute for each hour period. Estimate the urine urea in milligrams per hundred cubic centimeters in each. If more than 2 cc is excreted per minute determine the maximum clearance (C_m). If less than 2 cc is excreted per minute estimate the standard clearance (C_s).

The percentage of average normal is $C_m = \frac{133 \times U \times I}{B}$

$$C_s = \frac{133 \times U \times I}{B}$$

C_m is the maximum clearance. C_s the standard clearance. U = milligrams of urea in 100 cc of urine. B = milligrams of urea in 100 cc of blood and I = the volume of urine excreted per minute.

The results are expressed in percentage of the average normal and less than 75 per cent may be considered pathologic. Early acute nephritis may show a normal urea clearance. In most

cases it falls to 50 per cent of normal within the first 6 months. For a good prognosis the urea clearance figure returns to normal in four months. In arteriosclerosis of the disease the urea clearance is usually normal until the terminal state, when it drops with the development of uremia. The blood urea nitrogen does not show an increase until the urea clearance diminishes to about 50 per cent of normal. The prognosis is bad when the urea clearance reaches 20 per cent of normal. Uremic symptoms are present with values less than 5 per cent, and death occurs within a few days.

The test is a procedure requiring extensive and careful examinations and is thus comparatively expensive. When carried out it reveals kidney function with a high degree of accuracy. For practical purposes a carefully conducted urine concentration test, a blood urea determination and examination of the sediment are as sensitive an index of early renal damage as the urea clearance test.

Van Slyke and Cope (*Proc Soc Exper Biol & Med* 29 1169 [May] 1932) have described a simplified colorimetric method for determination of the blood urea clearance.

The urea contents of urine and blood are compared in a colorimeter in such a manner that a single reading gives directly the percentage of average normal renal function in terms of the blood urea clearance. The urine is first diluted to such an extent that, if the clearance, either standard or maximum, is the average for a normal subject, the urea concentrations of blood and dilute urine will be equal. The urea in both blood and urine is converted into ammonia with urease, proteins and other interfering substances are removed, and the ammonia contents of the two filtrates are compared colorimetrically.

No standard solutions are required, because the blood is compared directly with the urine. The technic, with the necessary reagents, treatment of urine and blood, nesslerization and comparison of blood and urine filtrates, and the calculation will be found in the reference mentioned. The details are too lengthy to be given here.

The disproportionate elevation of the blood urea nitrogen may be resorted to as a test for renal function. Moseenthal and Hiller (*The Relation of the Nonprotein Nitrogen to the Urea Nitrogen of the Blood* (*J Urol* 1 75 [Feb] 1917) found that while the percentage of the urea nitrogen of the total nonprotein nitrogen in the blood in the presence of normal renal function is between 40 and 50 per cent, when kidney activity is reduced this rises to 80 or even 90 per cent. This holds true as an index of renal function whether the blood urea nitrogen is high or is reduced by diet. On the other hand when the urea nitrogen of the blood drops because there is improvement of renal function, the percentage of the urea nitrogen of the total nonprotein nitrogen again assumes a normal level.

The urine concentration test is a test of the kidney's power to concentrate waste products removed from the blood. There is no serious renal impairment if the specific gravity of the urine can be elevated to 1.025 or over. If an ordinary specimen shows a specific gravity of 1.025 or higher, no further examination except for sugar and microscopic sediment need be done.

Lashmet and Newburgh described their method of performing the concentration test in THE JOURNAL, Oct 22, 1932 p 1. The technic is as follows:

About 6 p.m. eat the usual supper, avoiding fluids of any kind such as coffee, tea, milk or soup. Empty the bladder and discard the specimen. On waking in the morning empty the bladder and save the urine in bottle 1. An hour later collect specimen 2 and two hours after this one collect specimen 3.

Take the specific gravity carefully of each specimen. Use only a high-grade urinometer. Examine the sediment carefully for casts, red blood cells or pus. If the specific gravity is 1.025 or less give a dry diet for one day, examining the specimen passed on the following morning.

The dry diet should consist of:

| | | |
|-----------|------------------------------|------------------------|
| Breakfast | Cornflakes 1/2 cup | bread (toast) 2 slices |
| | butter 2 squares | rich cream 1/4 cup |
| | 1 tablespoonful | |
| Lunch | Beefsteak 4 by 4 by 1/2 inch | one baked potato |
| | crackers 4 | butter 2 squares |
| Dinner | Baked potato 1 | lettuce, 1/2 head |
| | butter 2 squares | dates 4 |
| | no juice 1/2 | |

In addition to foregoing 1 gm of salt per

Collect the urine from 8 p.m. until 8 a.m. the following morning on which no breakfast is taken. Get a specimen at 10 a.m. and a third at 12 noon.

With this test normal kidneys are able to excrete a urine to a specific gravity of 1.029 to 1.032. A patient with essential hypertension will show 1.025 to 1.029.

nephritis, the maximum concentration decreases to as low as 1010, the low figure occurring in the severe types. The maximum is usually 1020 or less before the phenolsulfonphthalein is diminished. With heart failure the level is around 1020.

SYMPTOMS POSSIBLY ASSOCIATED WITH ARSENICAL POISONING

To the Editor—A white man aged 65, single, worked in a store selling wall paper for twenty-nine years. During the last four years he has done nothing. He is of slender type 6 feet 4 inches (193 cm) tall; is fairly well nourished and weighs 160 pounds (73 Kg). He has lost the sensation of taste and smell. He complains of generalized weakness and insomnia; this is not constant but occurs at indefinite intervals. He feels shaky within has no desire for food and has a slimy taste in his mouth with a disagreeable odor. These complaints have been occurring off and on for the last four years. The past history is essentially negative. The family history is negative. He does not indulge to excess in anything. He smokes and chews tobacco occasionally and drinks one or two glasses of whisky perhaps two or three days a week. The family condition is good without financial worries. The patient never married. The skin is normal and has a pasty color. It was always this color. The eyes are normal. The patient wears glasses. There is no obstruction in the nose and no discharge. He is partly edentulous. The remaining teeth have gold crowns. Roentgen examination has shown no devitalized or abscessed teeth. The tongue is slimy with a brownish coating. The saliva is thick. The tonsils are present. The neck is normal. The chest is well developed and symmetrical. Expansion is equal on the two sides and there is no evidence of a pathologic condition. There are no murmurs. The heart has good tone and regular rhythm with a rate of 74 a minute. There is no palpitation. The abdomen is thin; there are no herniations or tenderness. The marginal lines are normal. The genitalia and the rectum are normal. The prostate is atrophied. Normal reflexes are present in the extremities. The patient has marked strength in the hands, arms and legs. He has a strong grip. There is no evidence of muscle atrophy or dystrophy. A gastro-intestinal and gallbladder study was negative. It showed good function. The urine is amber colored. The specific gravity ranges from 1.016 to 1.22. There are no casts or albumin. It is acid in reaction. Repeated Wassermann tests have been negative. The blood sugar is 95 mm. per hundred cubic centimeters. Red blood cells number 3,800,000; hemoglobin 80 per cent (Tallqvist); white blood cells 6,300 with 74 per cent polymorphonuclears, 22 per cent lymphocytes, 1 per cent basophils, 2 per cent nuclears and 1 per cent eosinophils. He has been treated with various of the herbal groups, valerian and chloral with little or no effect. For stomach stimulants he has received gentian, calumba, nux vomica and hydrochloric acid without effect. I would appreciate any information you may be able to give in the treatment of this patient.

J. A. MARCUSO M.D., Meadville, Pa.

ANSWER—At the age of 65 some of the dysfunctions described conceivably might be attributed to physiologic degenerative changes. In any person with twenty-nine years of exposure in selling wallpaper, a suspicion that arsenic poisoning may have existed is tenable. Arsenic poisoning is still arising from colors used in wallpaper printing. Exposure in a single room lately papered, if occupied before complete drying or under other circumstances of providing considerable moisture in the paper, may lead to arsenic poisoning. In this ex-wallpaper salesman, unexposed for the last four years, it is unlikely that active arsenic poisoning persists, so that any theory contemplating a diagnosis of earlier arsenic poisoning must consider present lesions as sequelae and probably uneradicable results from the earlier action of arsenic. It probably would be quite futile to attempt to recover arsenic from the hair of the head at this late time, or from any other tissues of the body. A more profitable line of endeavor may be found in very careful history taking as to obscure diseases of the past (that is, during the twenty-nine years of contact with wallpaper), seeking evidences of acute arsenic poisoning, such as attacks of headache not accounted for otherwise, eruptions and abnormal coloring of the skin, loss of nails and hair, warty growths on the skin, rhinorrhea, gastro intestinal upsets, vomiting, diarrhea, abdominal pain (none accounted for through a plausible explanation) peripheral neuritis, excessive fatigability or muscular weakness. Further, the history inquiry should seek to establish the extent of contact with wallpaper and particularly exposure under conditions in which wallpaper was stored, in cellars or otherwise, where undue moisture was present. Arsenic is capable of bringing about a great variety of obscure lesions. It is not beyond reason to believe that possibly arsenic may have brought about minute fibrosis within the central nervous system to the point of occasioning the loss of the special senses described.

This one suggested lead should not be investigated to the exclusion of all others. A careful examination at the hands of a highly skilled neurologist might disclose entirely different possibilities. Even though it became possible to accept arsenic poisoning as the proximate cause of the present condition, it is unlikely that any treatment may eradicate the insult to the tissues already established. Symptomatic treatment, such as for the gastro intestinal disturbances, is the line of procedure likely to serve the patient's best interests.

TREATMENT OF SYPHILIS

To the Editor—I should appreciate advice on the following problem. A man, aged 25, came to my office May 17, 1935 complaining that the hair on his legs was coming out. He had had no chancre and felt all right. I made a Wassermann test and it was 4 plus. I have given him a total of nine injections of mapharsen, eighteen of neosarsphenamine and thirty-six of a bismuth compound during a thirteen months period according to the modified continuous system of therapy. May 13, 1936, the Wassermann reaction was negative. A spinal tap revealed 10 cells, globulin negative, Wassermann reaction negative. No differential was done. Will you be good enough to advise me as to future treatment?

FREDERICK B. DEVITT M.D. Oneonta, N. Y.

ANSWER—The cell count of 10 lymphocytes in the spinal fluid reaches the upper limit of normal and warrants further consideration even though the blood Wassermann reaction is negative.

It would seem advisable now to start giving the patient some rest periods from treatment. For example, as he has had no treatment since June 17, he should continue with the rest period until August 1 and then have a course of twelve injections of a bismuth compound at the rate of two a week. This should be followed by a rest period of two months and a repetition of the course of twelve injections of the bismuth compound. A blood Wassermann test should be done at this time and, if negative, two similar courses of a bismuth compound are to be given, with a six months rest interval between them. On the other hand, if the blood Wassermann reaction is found to be positive, a spinal fluid examination should again be made, because it has been shown that a relapse of the blood Wassermann reaction in a patient with early syphilis is usually associated with a positive spinal fluid test. Irrespective of whether or not the Wassermann reaction remains negative, the spinal fluid examination must be repeated because of the cell count of 10 lymphocytes before the patient is placed on observation. When these prescribed courses of bismuth preparations are completed and the serologic reaction is negative, the patient is placed on parole or observation. He should be urged to report for a physical examination and a Wassermann test at intervals of six months for the next two years and then once a year for the next three years. If at the end of this time the Wassermann and spinal fluid reactions are both negative, he is eligible for marriage and may then be classified as "cured." The physical examinations made during the parole period should consist of search not only for cardiovascular disease or signs of central nervous system involvement but also for signs of cutaneous or mucous membrane recurrences. The mucous membranes, genitalia and especially the posterior side of the scrotum should be reexamined at each visit.

EFFECTS OF DICHLOROBENZENE

To the Editor—I am interested in whether or not a person can be harmed by dichlorobenzene. I have a patient who was overcome in a home being treated by a termite destroyer (dichlorobenzene). I saw her two days later when she complained of nausea, shortness of breath and sleepiness. She continually yawned while in the office. Hospital laboratory work showed only a lowered carbon dioxide combining power of blood plasma 43 per cent. One week after being overcome she had a hematuria for two days. Two weeks have elapsed and she still complains of weakness and some shortness of breath and pain in the back between the scapulae. I have read the articles in THE JOURNAL of Oct. 13, 1934 and March 23, 1935. Any further information on this subject that would enable me to treat the patient more scientifically would be appreciated. The method used in destroying the termites is spraying of liquid under pressure into the wood.

JACOB P. NILL, M.D. Pennsylvania.

ANSWER—Chlorobenzenes have been held responsible for a number of poisonings (Kemper H. Paradichlorobenzene, Insecticide Especially for Use in Houses, *Ztschr. f. Gesundheitsh. u. Stadhyg.* 24:291 [July-Dec.] 1932; Wybert, E. Poisoning of a Child Two Years Old by Puran, Cleaning Fluid Containing Monochlorobenzene, *Schweiz. med. Wchnschr.* 64:561 [June 16] 1934). On the other hand, dichlorobenzene has found some use in therapy (Bertucci, E. A. Dichlorobenzene Terpene Compound Vapor in Hemoptysis, *New Orleans M. & S. J.* 84:620 [Feb.] 1932). The chlorination of benzene lessens the toxicity of benzene itself. Although some variations in toxicity may arise, depending on the position of the introduction of the chlorine—that is, ortho, meta or para—the demarcation is not clear. Apparently the para position is associated with a greater toxicity, and it is this product which has enjoyed extensive use as a disinfectant and as a disinfectant. It is believed that the chlorinated benzenes assert a more active narcotic action than benzene and conversely are less destructive of the cellular elements of the blood. Some of the chlorinated benzenes are solids and are insoluble in water. This necessitates in some instances the use of solvents which themselves may be highly

toxic. Much of the literature centering about these compounds does not differentiate between the monochlorobenzene and the dichlorobenzene, nor is the position of the introduction of the chlorine often specified. Furthermore, the literature on this topic is confused through the fact that published articles refer without thorough definition to chlorinated compounds into which the nitro group has also been added. In spite of many opportunities for discrepancy, warrant appears to obtain for mentioning, as the chief manifestation of the action of chlorobenzenes, headache, dizziness, shortness of breath, cyanosis, hematuria and methemoglobinemia. The demonstrable lesions appear to occur chiefly in the blood, along the urinary tract and in the nervous system. In very acute poisoning, unconsciousness is characteristic. No treatment is well established for poisoning by chlorinated benzene. Various statements may be found indicating that the treatment is the same as for benzene poisoning. In the treatment of benzene poisoning, transfusions have been used, as well as heliotherapy, lecithin compounds and liver extracts. In the case of poisoning by chlorinated hydrocarbons in general, high calcium therapy has proved to be of some worth. In the very early stages, abstinence from alcohol is desirable.

REMOVAL OF SKIN STAINS

To the Editor—I would appreciate it if you would give me some information concerning the removal of dark brown stains on the face following contact with some liquid. This patient does not know what it was but it has the appearance of a sulfuric acid stain. The accident occurred March 28 and the stain on the skin did not appear until April 25. Can you give me any information with regard to removing a sulfuric acid stain? What is the likelihood of its being permanent? If this stain can be removed can you give me some idea as to length of time required? A patient's face was burned by an electric flash resulting from a short circuit of a 4600 volt line. Ointment cream was applied to the burn for several days. I understand that this cream contains phenol, camphor and aristol. I saw the patient seven weeks after the accident. At this time the skin was entirely healed and perfectly smooth. One half of the face which came in contact with the flash is stained a light brown. What is the prospect of permanence here and what would you suggest for its removal? Please omit name.

M D Massachusetts.

ANSWER—Pigment formed in the skin may be either (1) iron-free melanin formed by the epithelial cells or (2) iron-containing pigment derived from the blood which has in some way escaped from the blood vessels into the tissues. Other kinds of pigment may be introduced into the skin from without or be carried to it by the blood.

A sulfuric acid burn destroys tissue, which is sloughed off, leaving, if superficial, smooth skin or, if deep, more or less scar. The area may be pigmented in either of the ways mentioned. Pigmentation beginning a month after the injury, however, is almost certainly of the first kind. This can be removed in certain cases, but when it is the result of an inflammatory reaction as in this instance, it is often resistant and apt to recur after removal.

Bleaching may be tried. Perhydrol, a 30 per cent solution of hydrogen peroxide, may be used as follows: perhydrol, 2 cc., wool fat, 12 Gm., petrolatum, sufficient to make 20 Gm. Apply this to a small area once daily until an inflammatory reaction occurs, then stop it and wait for the dermatitis to subside. After this area is somewhat lighter, treat another in the same way. If there is no result, the ointment can be made stronger.

If more vigorous measures are necessary, carbon dioxide snow mixed with acetone may be tried. This allows a slight degree of freezing with less danger of causing a sharply defined spot, so hard to avoid when the pencil of snow is used.

The Jarisch bleach, ammoniated mercury, bismuth subnitrate and barium sulfide of each 1 part, ointment to 30 parts, may be spread on the area and allowed to remain over night. Strong applications are not advisable for fear of adding to the pigmentation. No definite length of time can be given, but cautious work will require several months at least, if the preliminary trial is satisfactory enough to warrant further treatment.

In pigmentation of the second kind the possibility of hematogenous pigment must be considered. If this is the case, nature will slowly remove it. More likely as in case 1, the pigmentation is melanin and it is probable that efforts to remove it will not be successful. A trial of the remedies suggested for case 1 is in order, however. The patient is impatient naturally and the methods mentioned may be tried on a small area and if successful applied to the whole area.

"Obtundia cream" was mentioned in *Queries and Minor Notes* in *THE JOURNAL*, Feb. 11, 1933. It is thought to contain camphor and metacresol which do not cause pigmentation. Its composition is unknown, however, and manufacturers of such nostrums often change the composition without notice.

NEUROPSYCHIATRIC DIAGNOSIS

To the Editor—Two years ago a woman aged 28 developed a diarrheal stool contained blood and mucus. Repeated stool examinations were made for *Amoeba histolytica* but was not found. In several weeks she developed an acute condition of the abdomen and was hospitalized and seen by five consultants who all recommended an exploratory laparotomy. This was done and nothing was found except a slight peritoneal injection extending for about 8 inches from the ileocecal junction. The appendix was removed and found to have some round cell infiltration. She had an uneventful convalescence and the diarrhea stopped three weeks after which it recurred and she noticed moderate sharp pains in the abdomen and also complained of severe pains in the chest. Stool examinations were again done and finally *Amoeba histolytica* was found. Since that time she has had every known treatment for amoebic dysentery and the colitis has cleared up but she has gradually developed a generalized hyperesthesia of the skin which is more pronounced on the left side. This has become so severe that the light pressure of a stethoscope causes an intense pain. The only time she is free from it is when standing on her feet unclothed. The pressure of her body against the bed causes pain that makes it impossible for her to sleep. She has been roentgenographed many times and her basal metabolic rate is 115. She has a daily fever up to 100 F and her pulse is consistently around 120. She has been examined thoroughly by a proctologist, two internists and a leading neurologist. One internist believes that the symptoms are due to the dysentery and the other believes that she has an arthritis of the spine in spite of the negative roentgenograms. The neurologist is of the opinion that there is a visceral nerve imbalance and states that not only has he never seen a similar case but he has never heard of one and offers no suggestions as to a possible cure. The neurologic examination was entirely negative. She has had all the usual sedatives and hypnotics, but even the morphine will not relieve the pain. She has had streptococcus vaccines and tissue extract. Have you any suggestions to offer that could possibly relieve this pain? Please omit name.

M D, Washington.

ANSWER—The absence of any positive neurologic signs and the bilateral nature of the symptom, even though it is worse on the left side, does not fit in with any known neurologic disturbance of an organic nature. The possibility of a thalamic syndrome as described by Head and Holmes must be borne in mind, but the query definitely states that the neurologic examination was entirely negative. If this is true, one must consider the patient to have a functional or psychogenic hyperesthesia. A psychiatric study of the patient should be made and it is suggested that one of the possible methods of attack be hypnosis.

TOLUENE POISONING

To the Editor—What are the symptoms, prognosis and treatment of toluene poisoning? Is it possible for a man working with toluene for two years to develop an acute poisoning or is it always due to an accumulation?

JACOB LEVITT M D Detroit.

ANSWER—Toluene (toluol) poisoning may arise either as an acute or as a chronic disease, and the two may coexist. The symptoms of toluene poisoning are very similar to those from benzene. Given equal exposure, narcosis from toluene is perhaps more likely to arise than from benzene. Acute toluene poisoning has as its chief manifestations those commonly associated with an asphyxiating substance. Dr. Alice Hamilton's description of acute benzene poisoning (*Benzene* [Benzol] Poisoning, *Arch. Path.* 11:434 [March], 601 [April] 1931) extensively applies to its homologue toluene so far as manifestations are concerned. From McCord and others in their brochure "Benzol (Benzene) Poisoning" the following excerpts are derived, which though descriptive of the acute action of benzene indicate the type of acute action of toluene.

High concentrations of benzene may lead to immediate pronounced effect upon the central nervous system culminating in violent convulsions and narcosis.

After death from acute benzene asphyxiation there may be no demonstrable anatomical changes or there may be evidence of hemorrhagic engorged blood vessels, noncoagulability of the blood, particularly if the victim lives several hours after exposure.

At autopsy an odor of benzene may be detected but not invariably. Before death an odor of benzene on the breath is not unusual.

Irregularly benzene may be recovered from tissues through distillation methods. Based upon experimental work methods have been described for the detection of benzene and phenol during acute poisoning.

Phenol or substances chemically similar to phenol have been found in the urine, but there have been instances of failure to find it in the urine.

Toluene and xylene probably are capable of producing acute poisoning more readily than benzene. No difference in manifestations is known to exist.

The prognosis for either acute or chronic toluene poisoning in severe form is not good. If the patient survives severe acute poisoning for one week the prognosis may be better than in the case of severe chronic poisoning because of the damage in the latter instance that is brought about to the liver and tissues. In chronic poisoning a prime hazard to a fatal outcome resides in the marked susceptibility to infection. At times fatalities are produced as a result of infection.

orrhages into the various organs, such as the heart or brain, may lead to permanent abnormality, even though the blood picture may return to normal and even though the marked susceptibility to infectious processes may have disappeared. A good prognosis for either acute or chronic toluene poisoning is not warranted until late in the course of the disorder, when it appears that substantial gains have been made. The treatment of toluene poisoning is the same as for benzene poisoning and is far from satisfactory. Davis sums up the trend of treatment thus:

Elimination aeration treatment of gastric disturbances treatment of anemia, supportive measures for the heart and kidneys stimulation of the blood forming organs by iron compounds x-ray of long bones liver and spleen substances and transfusions nourishing foods with excess of fats increased calcium intake

McCord (*ibid*) furnishes additional procedures as follows

The person suffering from any form or degree of severity of benzene poisoning should not be permitted to continue exposure to that substance. Hospital care is indicated for all systemic poisonings from benzene, but it is not necessary for the more frequently encountered dermatitis. Acute poisoning (asphyxiation) may require artificial respiration supplemented by the Henderson and Haggard inhalator if available. Muscular exertion should be avoided. The rescuer of an unconscious man in enclosed areas such as a tank car apparently is more likely to die than the unconscious man who quietly entered that state. Cardiac and respiratory stimulants may be required. Lecithin emulsion (5 cc. of a 10 per cent strength) has been administered intravenously to advantage. Convalescence should be extended to avoid complications. Chief among these are pneumonia, bronchitis gastritis and cystitis. Acute benzene poisoning may be produced by the oral intake of benzene in error or for suicidal purposes. Emptying of the stomach is indicated. Profound local irritation is prone to take place. The administration of alkaline fluids such as milk is commendable. In the chronic case hemorrhage and proneness to infection largely determine the treatment. Blood coagulants are rarely of value. Prompt transfusions are desirable whenever hemorrhage is present even though the general situation is not grave. Under no circumstances should the severely poisoned victim of benzene be subjected to such procedures as dental extractions tonsillectomies etc. The judicious use of liver preparations is indicated. Those practices that attend the proper use of liver in other severe anemias should govern its administration. Sunlight natural or artificial has proven valuable

BRUCELLA ABORTUS INFECTION

To the Editor—My inquiry concerns *Brucella abortus* infection. A mother of two healthy children with all past history negative, becomes pregnant about the time that a herd of cows from which she received her milk supply is diagnosed as being infected with *Brucella abortus*. She is delivered of a stillbirth of eight months. The mother's antepartum history is negative. What is the method of procedure in determining whether the mother is infected? Is there any particular time that an abortion miscarriage or stillbirth may occur?

LOUIS H. SWETZALITSCH M.D. Coraopolis Pa

ANSWER—In 1917 de Forest (*Am J Obst & Dis Women & Child* 76 221 [Aug.] 1917) reported eleven cases of abortion in women in which there was strong circumstantial evidence that the occurrence of abortion was related to contagious abortion of cattle. In several instances the women aborted during the time of an epidemic of contagious abortion among the cattle on their farms. There is evidence that *Brucella* organisms occasionally exhibit a predilection for the genital tract of human beings as in cows or bulls. Kristensen (*Ann de med* 26 339 [Nov.] 1929) isolated the abortus variety of the organism from the exudate which covered the uterine site of the placenta of a seven months fetus. Carpenter and Boak (*THE JOURNAL*, April 11, 1931, p 1212) recovered *Brucella* from the tissues of a human fetus which was aborted at the end of the fourth month of gestation. Frei (*Schweiz med Wchschr* 59 334 [March 23] 1929) isolated *Brucella* from the vaginal discharge of a woman who had aborted ten days previously. Simpson, Harbinson and Ey have found strongly circumstantial clinical and serologic evidence that *Brucella* infection was a factor in the production of several cases of human abortion. Cornell and DeYoung (*Am J Obst & Gynec* 18 840 [Dec.] 1929) tested the blood serums of 1,015 pregnant women in Chicago. Of this number none gave definitely positive reactions and in only five instances were there weakly positive reactions. Their conclusion was that brucellosis is not generally prevalent in pregnant women in Chicago. In this connection it should be noted that most of the milk supply of Chicago is pasteurized. Adequate pasteurization destroys *Brucella* organisms. It seems quite probable that brucellosis is an occasional cause of human abortion, particularly among women who live on farms where they have direct contact with infected animals as well as among women who consume unpasteurized milk and other dairy products. The agglutination test is perhaps the simplest method of determining the presence of the disease. In about 5 per cent of individuals with

brucellosis, antiabortus serum agglutinins failed to develop. If the agglutination test is negative, or positive in low titer, a diagnostic skin test may be done (Diagnosis of Undulant Fever, *Queries and Minor Notes*, *THE JOURNAL*, May 12, 1934, p 1633). If the agglutination test and skin test are negative, it is quite probable that the patient does not have brucellosis. There is no evidence to indicate that abortion, miscarriage or stillbirth may occur from this cause at any particular period during gestation.

CONJUGAL SYPHILIS

To the Editor—A man aged 33 and his wife, aged 32 came to me to be treated for syphilis. He gives a history of a penile lesion when 19 years of age which rapidly healed and the incident was forgotten until six years ago when he developed another penile lesion which he attributed to a scratch from a broken B V D button. He consulted a physician who suggested a Wassermann test although there were no secondary symptoms. The doctor did say he believed it was a chancre. He did not begin treatment and it spontaneously healed. Both the man's and his wife's blood at this time are 4 plus and have been for the past two years. Two years ago because of nervousness he again consulted the same doctor. Both he and his wife were treated. He was told that he had Malta fever as well as syphilis. He had several courses of nearsphenamine and a bismuth compound and yellow mercurous iodide by mouth. His blood is still 4 plus. The wife is in good health. They have a son 11 years old who has a negative Wassermann reaction and no syphilis. Five years ago the wife was about six months pregnant and began to flow. She was ordered to bed for a month. She had labor pains and was taken to a hospital and her doctor (an osteopathic physician surgeon) did a cesarean section. The child was apparently normal but died a short time after birth and because of her exhaustion she was given several syringefuls of whole blood fresh from her husband. It was injected into her left breast. Two years ago at the same time as her husband she had a Wassermann test and both were 4 plus as they are at this time. She had three nearsphenamine injections and had a very severe arsenical dermatitis develop. A single injection of sulfarsphenamine given a month later caused another similar reaction. Neither has ever developed secondary symptoms and the doctor told them he did not believe they ever would have negative Wassermann reactions but advised that they take a course of treatment once a year. I would appreciate your giving me an outline of treatment, a prognosis and anything else that you believe would be helpful. Please omit my name.

M D California

ANSWER—The history of a penile lesion or the history that no penile lesion was ever noted by a patient should have no weight in the decision as to whether or not a patient should be treated for syphilis. The fact that this couple have had repeatedly positive Wassermann reactions is highly suggestive that they both have syphilis. As several pertinent facts are not given in the query it is quite impossible to offer a prognosis or adequately outline treatments for these patients. It would be advisable to examine the spinal fluids of both patients and to examine them both for evidence of cardiovascular, visceral or other evidence of syphilis, and also to record if possible the exact amount of treatment of all types that the patients have received. The details and type of the subsequent treatment will depend on the result of these examinations but even though the cerebrospinal fluid and clinical examination are both negative the patients have not had a sufficient amount of treatment and both are sufficiently young to warrant intensive treatment with the arsphenamines and preparations of bismuth. If, on the other hand, the spinal fluids were positive or visceral evidence of syphilis is elicited, the treatment should be given according to the type of complication noted.

SALT RETENTION IN PEMPHIGUS

To the Editor—Would it be out of order for me to ask you to ask the writer of the query on pemphigus in *THE JOURNAL*, Oct. 19 1935 about his statement that salt retention is a feature of pemphigus? I should like to know the source of his information for that statement. I have never noticed any such retention in the study of my patients, but if it does occur I think it is a very important point.

M F ENGMAN M.D. St Louis.

ANSWER—There is plenty of authority for the statement that salt retention occurs in pemphigus. Riecke, (in the *Handbuch der Haut- und Geschlechtskrankheiten*, 7/2 Berlin, Julius Springer, 1931) devotes eight pages (511-518 inclusive) to a review of the literature of this subject. The phenomenon was first noted by K. Krieger in 1872. He found hardly any sodium chloride in the urine of a woman, aged 23, with pemphigus foliaceus. Fodor in 1895 in a case of pemphigus in which the whole body was involved, found hardly a fifth of the normal amount of sodium chloride in the urine. Since then there have been many reports, most of them agreeing that, during severe attacks of pemphigus, salt excretion in the urine, feces and sweat is at a minimum. Cassaët and Michelson in 1906 stated their opinion that salt retention means a general alimentary

intoxication and that a salt-free diet causes improvement of the pemphigus with increased elimination of salt in the urine. They also thought that there was with this increase a greater elimination of the toxins. Vanrobert in 1930 obtained the same results, with much salt in the diet there was retention. With a salt-free diet there was a gradual return to balance between intake and elimination. Moreinis and Medvedev in 1927 at postmortem examination in a case of pemphigus found salt retention in all organs except the spinal cord and the skin. Sabrazes and Torlais in 1929 warned against the use of a salt-poor diet, especially in cachectic cases, because it has not been proved that salt retention is due to kidney dysfunction.

Salt retention is not due to storing of salt in the fluid of bullae, for several authors have reported marked retention of salt in cases in which only mouth involvement before the skin involvement had occurred. In 1926 Urbach found low salt elimination with a normal amount in the blood, and in four cases without increased salt in the diet there was an increase in the sodium chloride content of the skin. He thinks that salt retention is a protective function with increase of albumin destruction. Skin involvement, disturbance of sodium chloride metabolism and albumin destruction are coordinate symptoms of pemphigus.

Leszczynski and Blatt in 1927 showed that sodium chloride retention fluctuated with eosinophilia, temperature and variation in severity of the eruption and that thirst, as manifested by shortened time of resorption of a wheal made with 4 per cent sodium chloride, also ran parallel with these.

Riecke's summary accords salt retention no place in the etiology or pathogenesis of pemphigus. It may be a protective phenomenon, retention of sodium chloride sparing albumin. This may be only apparent, however. Salt is retained during the florid period, increase of salt in the diet lessens excretion of salt in the urine, and lessening salt in the diet improves salt elimination. It is not peculiarly specific for pemphigus but occurs in other diseases in which tissue is destroyed. Riecke suggests that further studies should be made of the effect of increase of dietary salt during latent periods and of endocrine anomalies in cases of pemphigus.

ADMINISTRATION OF DIGITALIS

To the Editor—In a recent publication a well known cardiologist discusses a case in which a diagnosis was made of chronic rheumatic heart disease (inactive) with mitral stenosis and insufficiency, cardiac hypertrophy with auricular fibrillation and congestive failure dependent edema, ascites and right hydrothorax. After the congestive failure had been cleared up by bed rest, digitalis and salyrgan the patient was discharged from the hospital. A rigid cardiac regimen was instituted and the patient was advised to take tincture of digitalis intermittently 15 cc of standardized tincture (15 cat units) three times daily for two consecutive days each week. The patient's weight was 120 pounds (54 Kg). If the patient had left the hospital fully digitalized she would have excreted most of her digitalis within the next five days before the 9 cat units of tincture was administered over a two day period. Although this dose is more than is usually necessary to maintain digitalization I do not believe it can have any effect on a patient already digitalized. I would appreciate an opinion on the following: Would this method of administering digitalis have any appreciable effect in preventing a recurrence of congestive failure? Would it have any effect in reducing a pulse deficit? Would these effects be maintained during the five days digitalis was not taken? Digitalis is often given in single doses of from 1 to 5 cat units subcutaneously or intravenously when it is believed that the heart is failing as during the course of an acute infectious disease or after an extensive surgical procedure. Do such single doses exert any appreciable effect on the heart or circulation of patients not already fully digitalized? What is the present opinion on the daily use of minimal doses of digitalis (i. e. less than 1 cat unit daily) as a heart tonic or to prevent the onset of congestive failure? Please omit name. M. D. New York.

ANSWER—The advice given in this case was doubtless based on the rate of digitalis excretion as observed during the patient's stay in the hospital and was also probably given tentatively, to be changed from time to time as conditions indicated.

The rate at which digitalis bodies are detached from the heart muscle and excreted varies so much with each individual that no rules as to a maintenance dose can be formulated. It is moderately constant for the individual but not so constant that it does not have to be watched from time to time. The patient can successfully be taught to maintain an adequate dosage. The physician should be guided by the clinical results and not by the pulse deficit. Cases occur in which the minute value is greater and the heart more efficient with a greater pulse deficit or in whom evidences of passive congestion occur when the rate is slowed and there is no pulse deficit.

The dosage given in this case was quite enough to maintain the desired effect. Some cases might need more, some might need less. It might be better to give daily small doses sufficient to maintain the digitalis level but it is not important.

It is probable that the single doses given as stated have an effect in cases in which digitalis has not previously been given. They at least do no harm, as larger doses might do so definitely indicated.

The use of minimal daily doses of digitalis as suggested is a matter of opinion, and evidence as to the advantage or disadvantage is not clearly substantiated.

ONE DOSE ANTIRABIES VIRUS—DISTEMPER SERUM

To the Editor—Please give your opinion as to the value of the one dose antirabies virus which is given to dogs as a preventive of rabies. I am interested in this from a public health standpoint. What is the value of distemper serum?

M. D., Georgia

ANSWER—According to available information, the preventive inoculation of dogs with one dose of phenolized vaccine against rabies is still in the experimental stage. The method is not established as uniformly successful and reliable in practice though its use is recommended by many veterinarians.

So far as is known, no serum has been developed against distemper, but the vaccine of attenuated living virus of Landau and Dunkin appears to be effective in preventing the disease.

USE OF TETANUS ANTITOXIN

To the Editor—In the discussion on vaccination by Dr. J. P. Leake in THE JOURNAL Oct. 27, 1934, page 1275 the final thought seems to indicate that the use of tetanus antitoxin in Dr. Leake's opinion should be universal in the case of any wounds. I know that it is considered by some authorities that all persons injured in automobile accidents should receive immunizing doses of tetanus antitoxin. I know that many men hardly dare fail to give an immunizing dose in any puncture of the foot particularly but in a workmen's compensation case seen a few years ago the patient had a serum reaction and the medical adviser of the board stated that it was not current practice to use immunizing doses except in puncture wounds in the environment of stables and similar places. He said that it was permissible to use them but rather better judgment to refrain from using them. One is impressed by the rarity of tetanus when considering the frequency of wounds of all types and even of puncture wounds that occur in civil life. I should be glad to see an authoritative discussion of this subject. I have a feeling that perhaps commercial interests are to some degree responsible for a lot of sub-tetanic serum used.

ELMER S. BAGNALL, M.D. Groveland, Mass.

ANSWER—The tetanus bacillus and its spores are so widely distributed in nature that any accidental wound may become infected. It is true that in civil life only a small percentage of such wounds are followed by tetanus, but unfortunately there is no way of telling beforehand whether tetanus will develop from a given wound. Tetanus is a deadly disease. While tetanus antitoxin will prevent tetanus, it has little curative effect on the established disease. In view of these facts the physician on whom falls the duty to treat first a wounded person cannot expect to escape blame should tetanus develop in a case in which he ventured "to take a chance" and not inject antitoxin serum.

CHANGES IN NEW U. S. PHARMACOPEIA

To the Editor—I have been informed that there have been certain changes made in the new U. S. Pharmacopeia since its issuance. Will you kindly state whether or not these will affect the prescribing physician seriously?

L. W. Wierce

ANSWER—There have been a number of corrections in the U. S. Pharmacopeia XI. In compiling a book of such magnitude, typographical errors are bound to creep in. Many of these have been corrected and are of a nature which does not affect the prescribing physician directly. The essential changes in which the physician should be conversant are as follows:

1. The new Pharmacopeia directs that distilled water shall be used in all formulas. This requirement has been revised to permit the use of natural water of good quality as an alternative to distilled water in the extraction of U. S. Pharmacopeial drugs and in the manufacture of Resin of Podophyllum and of Saponated Solution of Cresol.

2. Dextrose. After the section Tests for Purity (p. 141) the following note has been added: "In preparing aqueous solutions of Dextrose it is permissible to use a dextrose which does not conform to the official requirements for water of hydration provided the product meets all other official requirements for purity and also provided suitable allowance is made for difference in water content."

3. Diluted Ferric Trinitrate. The dosage (p. 149) has been changed from 0.3 Gm. (5 grains) to 0.03 Gm. (1/2 grain). [Typographical error.]

4. Solution of Irradiated Ergosterol. The synonym "Vitamin D₂ in Oil" has been added (p. 203).

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA Montgomery June 29 July 1 Sec, Dr J N Baker, 519 Dexter Ave Montgomery
ALASKA Juneau Sept 1 Sec, Dr W W Council, Juneau
ARIZONA Phoenix Oct 6 7 Sec, Dr J H Patterson 826 Security Bldg Phoenix
ARKANSAS *Basic Science* Little Rock Nov 2 Sec., Mr Louis E. Gebauer 701 Main St Little Rock. *Medical (Regular)* Little Rock Nov 10 Sec Dr A S Buchanan, Prescott. *Medical (Eclectic)* Little Rock, Nov 10 Sec. Dr Clarence H Young 207 1/2 Main St Little Rock.

CALIFORNIA Sacramento Oct. 19 22 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento
COLORADO Denver Oct 6 Sec. Dr Harvey W Snyder 422 State Office Bldg Denver
CONNECTICUT *Basic Science* New Haven Oct. 10 *Prerequisite to license examination* Address State Board of Healing Arts 1895 Yale Station New Haven.

DISTRICT OF COLUMBIA Washington Jan 11 12 Sec. Commission on Licensure Dr George C Ruhland 203 District Bldg Washington
FLORIDA Jacksonville Nov 16 17 Sec. Dr William M Rowlett P O Box 786 Tampa

GEORGIA Atlanta, Oct. 13 Joint Sec. State Examining Boards Mr R C Coleman 111 State Capitol Atlanta

IDAHO Boise Oct 6 Commissioner of Law Enforcement Hon. Emmett Pfost, 205 State House Boise.

ILLINOIS Chicago Oct. 20-22 Superintendent of Registration Department of Registration and Education Mr Homer J Byrd Spring field.

IOWA *Basic Science* Des Moines Oct. 13 Sec, Prof Edward A Benbrook, Iowa State College Ames

KENTUCKY Louisville, Dec 24 Sec., State Board of Health Dr A T McCormack 532 W Main St Louisville

LOUISIANA New Orleans December Sec., Dr Roy B Harrison 1507 Hibernia Bank Bldg New Orleans

MAINE Portland Nov 3-4 Sec. Board of Registration of Medicine, Dr Adam P Leighton 192 State St. Portland

MARYLAND *Regular* Baltimore, Dec. 8 Sec Dr John T O Mara 1215 Cathedral St. Baltimore. *Homeopathic* Baltimore, Dec. 8 9 Sec Dr John A Evans 612 W 40th St. Baltimore

MASSACHUSETTS Boston, Nov 17 19 Sec Board of Registration of Medicine, Dr Stephen Rushmore 413 F State House, Boston

MICHIGAN Lansing Oct 14 16 Sec Board of Registration in Medicine Dr J Earl McIntyre 202 3-4 Hollister Bldg Lansing

MINNESOTA *Basic Science* Minneapolis Oct. 6 7 Sec. Dr J Charnley McKinley 126 Millard Hall University of Minnesota Minneapolis. *Medical* Minneapolis Oct. 20 22 Sec. Dr Julian F DuBois 350 St Peter St St Paul

MONTANA Helena Oct 6 Sec Dr S A Cooney 7 W 6th Ave Helena.

NEBRASKA *Basic Science* Lincoln Oct 6-7 Dir. Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEW HAMPSHIRE Concord Sept 10-11 Sec Board of Registration in Medicine Dr Charles Duncan State House Concord.

NEW JERSEY Trenton Oct. 20-21 Sec., Dr James J McGuire 28 W State St. Trenton

NEW MEXICO Santa Fe, Oct 12 13 Sec, Dr Le Grand Ward Santa Fe.

NEW YORK Albany Buffalo New York and Syracuse Sept. 21 24 Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg., Albany

NORTH CAROLINA Raleigh, Nov 30 Sec., Dr Ben J Lawrence, 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks, Jan 5 8 Sec. Dr G M Williamson 4 1/2 S 3rd St Grand Forks

OKLAHOMA Oklahoma City Dec. 9 Sec Dr James D Osborn Jr Frederick.

OREGON *Basic Science* Portland Nov 21 Sec Mr Charles D Byrne, University of Oregon Eugene. *Medical* Portland Jan. 5 7 Sec Dr Joseph F Wood 509 Selling Bldg Portland

PURATO RICO San Juan Sept. 1 Sec., Dr O Costa Mandry Box 536 San Juan

RHODE ISLAND Providence Oct 1 2 Chief Division of Examiners Mr Robert D Wholey 366 State Office Bldg Providence

SOUTH DAKOTA Pierre, Jan 19 20 Dir. Division of Medical Licensure Dr Park B Jenkins Pierre.

VERMONT Burlington Feb 10 12 Sec. Board of Medical Registration Dr W Scott Nay Underhill

VIRGINIA Richmond Dec. 9 13 Sec Dr J W Preston 28 1/2 Franklin Road Roanoke.

WISCONSIN *Reciprocity* Madison Sept 8 9 Sec Dr Robert E. Flynn, 401 Main St. La Crosse. *Basic Science* Madison Sept. 26 Sec., Prof Robert N Bauer 3414 W Wisconsin Ave. Milwaukee

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Sept 14 16 Ex. Sec Mr Everett S Elwood 225 S 15th St Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Philadelphia, June Sec. Dr C. Guy Lane 416 Marlboro St. Boston

AMERICAN BOARD OF INTERNAL MEDICINE *Written examination will be held simultaneously in different centers of the United States and Canada in December. Practical or clinical examination will be given in St Louis in April.* Chairman Dr Walter L Biering 406 Sixth Ave Des Moines

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov 7. *Applications must be filed at least sixty days prior to the examination* Sec Dr Paul Titus 1015 Highland Bldg., Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY New York, Sept 26 Sec. Dr John Green 3720 Washington Blvd St Louis
AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland, Jno 9 Sec, Dr Fremont A Chandler 180 N Michigan Ave. Chicago.
AMERICAN BOARD OF OTOLARYNGOLOGY New York, Sept. 25 26 Sec. Dr W P Wherry 1500 Medical Arts Bldg Omaha
AMERICAN BOARD OF PEDIATRICS Sao Francisco Oct 22 24 Baltimore and Cincinnati in November Sec Dr C A Aldrich 723 Elm St Winnetka Ill
AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York, Dec 29 30 Sec Dr Walter Freeman 1028 Connecticut Ave Washington D C
AMERICAN BOARD OF RADIOLOGY Cleveland, Sept 25 27 Sec, Dr Byrl R Kirklin Mayo Clinic Rochester Minn
AFRICAN BOARD OF URUGOLOGY Chicago Dec. 4-6 Sec. Dr Gilbert J Thomas 1009 Nicollet Ave Minneapolis

Alabama June Examination

Dr J N Baker, secretary, Alabama State Board of Medical Examiners, reports the written examination held in Montgomery, June 23-25, 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-seven candidates were examined, 23 of whom passed and 4 failed. The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| Emory University School of Medicine | (1936) | | 84 5 |
| Rush Medical College | (1935) | | 88 6 |
| (1936) 85 2, * 85 8 * 85 8 * 85 9 * 89 * | | | |
| Tulane University of Louisiana School of Medicine | (1935) | | 77 7 |
| 82.2 (1936) 79 5, 83 1 83 3, 84 5 89 1 | | | |
| Harvard University Medical School | (1936) | | 87 4 |
| Washington University School of Medicine | (1934) | | 87 9, |
| (1936) 82 9 | | | |
| Western Reserve University School of Medicine | (1936) | | 88 5 |
| University of Pennsylvania School of Medicine | (1933) | | 85 5, |
| (1934) 84 | | | |
| University of Tennessee College of | - | | 75 6 |
| Vanderbilt University School of | | | 81 7 |
| University of St. Andrews College of Medicine | (1935) | | 79 1 |
| Scotland | | | |

| School | FAILED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| Medical College of Alabama | (1904) | | 63 9 |
| Meharry Medical College | (1912) | | 43 8 |
| Regia Università degli Studi di Genova. Facoltà di Medicina e Chirurgia | (1930) | | 69 6 |
| Regia Università di Napoli Facoltà di Medicina e Chirurgia | (1923) | | 58 9† |

Five physicians were licensed by reciprocity from May 9 through June 13. The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|------------------------------|-------------------------|-----------|------------------|
| Emory University School | | | Mississippi |
| University of Minnesota | | | Minnesota |
| University of Tennessee | | | Tennessee |
| Vanderbilt University School | | | Tennessee |

* This applicant has received a four year certificate and will receive the M.D. degree on completion of internship
† Verification of graduation in process

Wyoming June Reciprocity Report

Dr G M Anderson, secretary, State Board of Medical Examiners, reports 4 applicants licensed by reciprocity at the meeting held in Cheyenne, June 8, 1936. The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--|-------------------------|-----------|-------------------|
| Rush Medical College | (1934) | | Illinois |
| University of Nebraska College of Medicine | (1935) | | Nebraska |
| Osteopathy * | | | Colorado Missouri |

* Licensed to practice osteopathy and surgery

Minnesota April Report

Dr Julian F Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held in Minneapolis, April 21-23, 1936. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Sixty-two candidates were examined, all of whom passed. Five physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| Stanford University School of Medicine | (1934) | | 91 4 |
| University of Georgia School of Medicine | (1932) | | 85 |
| Northwestern University Medical School | (1935) | | 88 4 |
| Rush Medical College | (1934) | | 89 |
| 89 3, (1935) 85 6 86 6 87 4 89 3 90 3, 91 6 | | | |
| School of Medicine of the Division of the Biological Sciences | (1935) | | 86 |
| University of Illinois College of Medicine | (1934) | | 89 4 |

| | | |
|--|--------|------|
| Indiana University School of Medicine (1934) 86 3, 87 2 | (1930) | 82.2 |
| State University of Iowa College of Medicine (1933) 88 6 | (1933) | 85 3 |
| Harvard University Medical School (1933) 88 6 | (1934) | 86 5 |
| University of Michigan Medical School (1927) | (1927) | 85 |
| University of Minnesota Medical School (1934) 85 1, 86 2, 87 1, 88 1, 89 1, 90 1, 91 2, 92 1, 93 2, 94 1, 95 1, 96 1, 97 1, 98 1, 99 1, 100 1, 101 1, 102 1, 103 1, 104 1, 105 1, 106 1, 107 1, 108 1, 109 1, 110 1, 111 1, 112 1, 113 1, 114 1, 115 1, 116 1, 117 1, 118 1, 119 1, 120 1, 121 1, 122 1, 123 1, 124 1, 125 1, 126 1, 127 1, 128 1, 129 1, 130 1, 131 1, 132 1, 133 1, 134 1, 135 1, 136 1, 137 1, 138 1, 139 1, 140 1, 141 1, 142 1, 143 1, 144 1, 145 1, 146 1, 147 1, 148 1, 149 1, 150 1, 151 1, 152 1, 153 1, 154 1, 155 1, 156 1, 157 1, 158 1, 159 1, 160 1, 161 1, 162 1, 163 1, 164 1, 165 1, 166 1, 167 1, 168 1, 169 1, 170 1, 171 1, 172 1, 173 1, 174 1, 175 1, 176 1, 177 1, 178 1, 179 1, 180 1, 181 1, 182 1, 183 1, 184 1, 185 1, 186 1, 187 1, 188 1, 189 1, 190 1, 191 1, 192 1, 193 1, 194 1, 195 1, 196 1, 197 1, 198 1, 199 1, 200 1, 201 1, 202 1, 203 1, 204 1, 205 1, 206 1, 207 1, 208 1, 209 1, 210 1, 211 1, 212 1, 213 1, 214 1, 215 1, 216 1, 217 1, 218 1, 219 1, 220 1, 221 1, 222 1, 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795 1, 796 1, 797 1, 798 1, 799 1, 800 1, 801 1, 802 1, 803 1, 804 1, 805 1, 806 1, 807 1, 808 1, 809 1, 810 1, 811 1, 812 1, 813 1, 814 1, 815 1, 816 1, 817 1, 818 1, 819 1, 820 1, 821 1, 822 1, 823 1, 824 1, 825 1, 826 1, 827 1, 828 1, 829 1, 830 1, 831 1, 832 1, 833 1, 834 1, 835 1, 836 1, 837 1, 838 1, 839 1, 840 1, 841 1, 842 1, 843 1, 844 1, 845 1, 846 1, 847 1, 848 1, 849 1, 850 1, 851 1, 852 1, 853 1, 854 1, 855 1, 856 1, 857 1, 858 1, 859 1, 860 1, 861 1, 862 1, 863 1, 864 1, 865 1, 866 1, 867 1, 868 1, 869 1, 870 1, 871 1, 872 1, 873 1, 874 1, 875 1, 876 1, 877 1, 878 1, 879 1, 880 1, 881 1, 882 1, 883 1, 884 1, 885 1, 886 1, 887 1, 888 1, 889 1, 890 1, 891 1, 892 1, 893 1, 894 1, 895 1, 896 1, 897 1, 898 1, 899 1, 900 1, 901 1, 902 1, 903 1, 904 1, 905 1, 906 1, 907 1, 908 1, 909 1, 910 1, 911 1, 912 1, 913 1, 914 1, 915 1, 916 1, 917 1, 918 1, 919 1, 920 1, 921 1, 922 1, 923 1, 924 1, 925 1, 926 1, 927 1, 928 1, 929 1, 930 1, 931 1, 932 1, 933 1, 934 1, 935 1, 936 1, 937 1, 938 1, 939 1, 940 1, 941 1, 942 1, 943 1, 944 1, 945 1, 946 1, 947 1, 948 1, 949 1, 950 1, 951 1, 952 1, 953 1, 954 1, 955 1, 956 1, 957 1, 958 1, 959 1, 960 1, 961 1, 962 1, 963 1, 964 1, 965 1, 966 1, 967 1, 968 1, 969 1, 970 1, 971 1, 972 1, 973 1, 974 1, 975 1, 976 1, 977 1, 978 1, 979 1, 980 1, 981 1, 982 1, 983 1, 984 1, 985 1, 986 1, 987 1, 988 1, 989 1, 990 1, 991 1, 992 1, 993 1, 994 1, 995 1, 996 1, 997 1, 998 1, 999 1, 1000 1 | (1935) | 83 2 |
| University of Nebraska College of Medicine (1934) 86 2 | (1934) | 85 4 |
| University of Cincinnati College of Medicine (1934) 86 2 | (1934) | 86 2 |
| University of Pennsylvania School of Medicine (1934) 86 2 | (1934) | 86 2 |
| University of Texas School of Medicine (1933) 85 6 | (1933) | 86 3 |
| University of Wisconsin Medical School (1932) 85 6 | (1935) | 90 1 |
| University of Toronto Faculty of Medicine (1928) | (1928) | 86 6 |

| School | LICENSED BY RECIPROCITY | Year | Reciprocity |
|---|-------------------------|--------|-------------|
| Rush Medical College (1928) | (1928) | (1930) | Illinois |
| University of Illinois College of Medicine (1934) | (1934) | (1934) | Illinois |
| University of Michigan Medical School (1930) | (1930) | (1930) | Wisconsin |
| Woman's Medical College of Pennsylvania (1929) | (1929) | (1929) | Penna. |

| School | LICENSED BY ENDORSEMENT | Year | Endorsement |
|--|-------------------------|--------|-------------|
| Harvard University Medical School (1930) | (1930) | (1930) | N B M Ex |

* This applicant has received the M B degree and will receive the M D degree on completion of internship

Book Notices

Epitome of the Pharmacopoeia of the United States and the National Formulary with Comments Prepared for the Use of Physicians under Authorization of the Council on Pharmacy and Chemistry of the American Medical Association by a Committee of Council Members Robert A. Hatcher Ph. M. M.D. Professor of Pharmacology Emeritus Cornell University Medical College Chairman of the Committee Ernest E. Irons Ph.D. M.D. Clinical Professor of Medicine Rush Medical College Torald Sollmann M.D. Professor of Pharmacology and Materia Medica School of Medicine Western Reserve University and Paul Nicholas Leech Ph.D. Secretary of the Council on Pharmacy and Chemistry Fifth edition Cloth Price 60 cents Pp 240 Chicago American Medical Association 1936

The new (fifth) edition of this book differs considerably from the preceding editions both in content and in appearance. The present volume contains only those items which are official in either the new (eleventh) Pharmacopoeia of the United States or the new (sixth) National Formulary. The result is that 343 items are omitted 202 are newly admitted and 118 appear under new names. The same care has been used in revising the sections on actions and uses of the retained items as in formulating those sections for the new admissions. This edition is the first to include the italicized statements of caution found in the Pharmacopoeia and National Formulary. The make-up has been improved by more uniform spacing of sections, preparations and items. The older plain red cover has been replaced by a green cover with the title on both the cover and the back bone. The newness of the book is further apparent in that those items which are to appear in the forthcoming edition of Useful Drugs are designated by a star. This new summary of the two official drug standards as extracted and augmented under the supervision of the Council on Pharmacy and Chemistry should prove even more useful than preceding editions.

Bacteriology in Relation to Clinical Medicine Theoretical and Applied For Students Laboratory Workers and Practitioners in Medicine and Public Health By M. N. De M.B. M.R.C.P. Professor of Pathology Medical College of Bengal Calcutta and K. D. Chatterjee M.B. Medical Registrar Medical College Hospitals Calcutta Cloth Price 30s. Rs 15/- Pp 599 with 276 illustrations Calcutta The Statesman Press 1935

This volume essentially a textbook of bacteriology presents data concerning micro-organisms commonly associated with disease in man. The several chapters describe the individual organisms their identifying biologic characteristics and their relation to disease, and in addition consider the pathology of the disorders induced by the pathogenic agents. The minutiae of the technical procedures of a bacteriologic laboratory, such as the preparation of culture mediums bacterial stains serologic tests and animal inoculations commonly used for diagnostic purposes are described in detail. In this respect it is the equivalent of a laboratory manual. Comments on pathogenesis and descriptions of pathologic processes are presented in condensed form but are not elaborated to the extent of the bacteriology. The combining of bacteriology and the related pathology is the special feature that is stressed by the authors. Bearing in mind that the book was designed for "students laboratory workers and practitioners in medicine and public

health," one finds the subject matter treated in an orderly and elementary way favorable to the initiation of beginners in the subject. The information is presented in simple and clear phraseology and includes, with a few exceptions, the results in current literature. As might be expected from the residence (Calcutta) of the authors, their consideration of the infectious agents and processes prevalent in India reflects an intimate experience, which makes the chapters devoted to these subjects the best of the book. The laboratory methods, described in detail, consist of many in universal use and others that are less regularly adopted in this country. There are numerous illustrations, many of which are colored. The selection and presentation of illustrations are excellent and form an unusually pleasant, as well as informative, feature of the book. The paper, type and format are to be commended for promoting the general attractiveness of the volume. Special students and investigators will find that, in some of the subjects, simplicity and brevity have been maintained at the expense of important though perhaps not elementary, points of view, and that the disposition of other material with paragraphic generalizations leaves much that is significant untouched. There is no bibliography.

Physical Therapy for Nurses By Richard Kovacs M.D. Clinical Professor and Director of Physical Therapy Polytechnic Medical School and Hospital New York. Cloth Price \$2.75 Pp 286 with 18 illustrations Philadelphia Lea & Febiger 1936

Realizing that nurses are constantly called on to give physical therapy treatments, the author has prepared this book with the idea that it will serve primarily as a manual for nurses. The book is divided into nine chapters, comprising a general survey of physical measures, simple physics, heat, sunlight, electricity, water, massage, exercise, and institutional practice. The chapter on general physics deals primarily with physical energy as applied directly to physical therapy. The language used should be readily understandable to those who have had a course in high school physics. The chapter on sunlight deals with the radiation not only from the sun but also from artificial sources. The dangers are pointed out that may befall the uninformed when using physical therapy equipment. Of particular value to nurses is the information on heat, massage, hydrotherapy and exercise. It is highly probable that a nurse may use these practical forms of treatment more than any other physical therapy agent. The technic of hydrotherapy procedures such as baths, packs and compresses, which are regular nursing procedures is given in detail. The technic of massage and its descriptive movements are effectively recounted. The chapter on exercise, prepared by Dr. Madge C. L. McGuinness deals with muscle training, athletics, formal gymnastics, and the physiologic effects of exercise. The final chapter, on physical therapy in institutional practice, contains information on personnel, relation of the physical therapy department to other departments, location, space, equipment and records. The author suggests the amount of equipment required for a physical therapy department in a clinic handling from thirty to fifty cases daily—a courageous undertaking. He points out that the appliances should be accepted by the Council on Physical Therapy of the American Medical Association. He proposes that the apparatus need not be complicated and suggests that the simpler equipment be used whenever possible. The clear compact information contained in this volume should be of great help to graduate nurses who have not had instruction in this type of treatment. It should be of particular value also to teachers of physical therapy in nurses training schools.

La syphilis gastrique. Etude clinique Par Anastase Landau Chef des hôpitaux de Varsovie et Joseph Held médecin du 1^{er} Service de l'Hôpital Wolski à Varsovie Paper Price 32 francs Pp 140 with 15 illustrations Paris Masson & Cie 1936

The authors describe what is called "syphilitic gastritis" in fifty-eight of a hundred cases of late syphilis. Their criteria for this diagnosis are hypoacidity or anacidity together with a delay or absence of the secretion of neutral red in the stomach contents the dye being injected subcutaneously. Similar studies in a control group of normal patients are lacking. The organic disease of the stomach due to syphilis is next considered. Three types of lesions are said to exist ulcerative, the stomach single or multiple pseudoneoplastic and plastic. The improvement obtained with antisyphilitic treatment

ment forms practically the sole basis for their diagnosis of stomach syphilis. A section is devoted to gastric complaints in neurosyphilis, especially the gastric crises of tabes, and what is termed 'syphilitic gastric radiculitis.' This book offers interesting reading, and though it presents little that is new it is of value in directing the attention of the internist to the possible manifestations of gastric syphilis.

A Systematic Handbook of Volumetric Analysis or the Quantitative Determination of Chemical Substances by Measure Applied to Liquids, Solids and Gases Adapted to the Requirements of Pure Chemical Research, Pathological Chemistry, Pharmacy, Metallurgy, Manufacturing Chemistry, Photography etc. and for the Valuation of Substances Used in Commerce, Agriculture and the Arts. By Francis Sutton F.I.C. F.C.S. Twelfth edition revised with numerous additions by A. D. Mitchell D.Sc. F.I.C. Scientific Assistant University of London. Cloth. Price \$10. Pp. 631 with 128 illustrations. Philadelphia: P. Blakiston, Son & Co. Inc., 1935.

This volume enjoys an enviable reputation as a standard work in the field of volumetric analysis. After the three score and ten years since the first edition was published, the volume is now found in its twelfth edition. Its age is proof of its merit and the service it has rendered, but during this span of years volumetric analysis has grown to be a large, unwieldy mass of information. It is therefore undoubtedly true that this volume does not cover the field of volumetric analysis now as thoroughly as did the first volume seventy years ago. In this connection the authors suggest in the preface to this edition:

It is regretted that space does not permit of the inclusion of a section on Microchemical Titration, but the advances in this region have been so great as to render this impracticable.

For general methods it is as valuable as ever. Discussion of these methods and references to the original papers are particularly valuable. In many cases specialized methods will have to be sought elsewhere.

Medizinische Praxis. Sammlung für ärztliche Fortbildung. Herausgegeben von Prof. Dr. L. R. Grote, Leitender Arzt der Medizinischen Klinik des Rudolf Hess Krankenhauses, Dresden. Prof. Dr. A. Fromme, Direktor der chirurgischen Abteilung des Städtischen Krankenhauses, Dresden. Friedrichstadt und Prof. Dr. K. Warnke, Direktor der städtischen Frauenklinik zu Dresden. Band IX: Blutung und Fluor. Von Prof. Dr. Hans Runge, Direktor der Universitäts-Frauenklinik, Heidelberg. Second edition. Paper. Price 7 marks. Pp. 117 with 18 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1936.

This small book is one of a series of monographs written expressly for general practitioners on a variety of medical topics. It is full of valuable information on the subjects of uterine bleeding and vaginal discharges. In the discussion of uterine bleeding the author includes the most recent advances made in the field of endocrinology as they pertain to his subject. The section dealing with the treatment of menstrual disturbances is especially useful because of the author's sane attitude on the use of endocrines. The chapter on leukorrhea likewise contains sound advice concerning therapy. The booklet should prove useful to any physician who desires a comprehensive knowledge of uterine bleeding and vaginal discharges.

La rate en pathologie sanguine. Par Emile Houcke, médecin des Hôpitaux de Lille. Préface de M. le Professeur Curtis. Paper. Price 45 francs. Pp. 167 with 20 illustrations. Paris: Masson & Cie, 1936.

This monograph concerns itself with the histopathologic, clinical and therapeutic aspect of enlarged spleens. The work is based on original studies previously published by the author and for the most part represents his personal observations. The text is divided into four parts. The first part is devoted to the hematopoietic reactions of the spleen from both experimental and anatomopathologic points of view. The following division is concerned with splenomegaly accompanying the reactions of the reticulo-endothelial system. The third is a consideration of the spleen in its relation to hemolytic anemias. The last chapter treats the circulatory disturbances in which the spleen may become involved. In this chapter the author presents an excellent discussion of Banti's syndrome. The neoplastic splenomegalies were not considered, as this phase of the subject was not included in the author's research program. The contribution is mainly from the anatomopathologic aspect of splenic reaction. With the aid of his histologic data the author has attempted to group the splenomegalies according to their morphologic alterations. Three general groupings have been adopted: hematopoietic, reticulo-endothelial and sclerotic. In

some respects the first two groupings overlap. In adopting such a general classification the author hopes to reduce the multiplication of types often found in a clinical grouping. The material is well presented and organized. The illustrations are in black and white. While the monograph does not solve many of the problems of splenomegaly, still poorly understood, it is a provocative and informative piece of work. The work should interest the clinician as well as the pathologist, for many of his therapeutic considerations are based on the clinical application of such data.

Formulary of the University Hospitals of Cleveland. The Babies and Childree's Hospital, the Leonard C. Hanna House, the Lakeside Hospital, the Maternity Hospital, the Rainbow Hospital. Revised by the Pharmacy Committee and Approved by the Medical Council. Paper. Pp. 81. Cleveland, Ohio: The University Hospitals of Cleveland, 1935.

The preparations in this loose-leaf formulary are selected from the Pharmacopeia, the National Formulary and New and Nonofficial Remedies. The inclusion of unofficial preparations is dependent on selection by the hospital pharmacy committee and subject to the approval by the medical council of the hospital. The items appear in prescription form with the amounts indicated metrically; they are therapeutically grouped. The book is superior to most hospital formularies in that the prescriptions are not individually numbered and it is of convenient size. Some of the official items included are designated U.S.P. or N.F., others are not. Available N.N.R. preparations appear in a separate list. Previous editions have been in use for almost ten years and this revision should serve its purpose well.

Measles. Report of the Medical Officer of Health and School Medical Officer on the Measles Epidemic 1933-34. London County Council No. 3180. Paper. Price 1s. Pp. 42. London: P. S. King & Son Limited, 1936.

This is the fourth report on measles in London, which there assumes epidemic form regularly every two years. The first part deals with the epidemic of 1933-1934 involving 12,896 cases with 712 deaths. Valuable statistical data are given in tables in the text and the appendix. Part 2 contains special papers. E. H. R. Harries writes on points of administrative procedure, Hilda Linford reports observations on otitis media in measles, J. E. McCartney discusses the preparation of adult and convalescent serum, and William Gunn and W. T. Russell report on the use of immune measles serum in the control of outbreaks of measles in hospitals, institutions and residential schools. The data (ten tables) concern 1,874 persons inoculated with convalescent serum or with adult serum presumed to contain measles immune substances. To secure complete protection, a minimum dose of 5 cc. of convalescent serum or 10 cc. of adult serum was given to children under 3 years of age within six days after exposure. For attenuation these amounts were given on or after the sixth day, or one-half these amounts earlier than the sixth, preferably about the third day after exposure. Children 3 years old and over received amounts of serum graduated according to age. Of the children inoculated with adult serum for prevention, a protection rate of 78.2 per cent was secured, with convalescent serum the protection rate was 80 per cent. The serum-treated patients had milder attacks, fewer complications and a smaller death rate than the controls. The report as a whole is a valuable contribution to the study of measles as a problem in public health. Why don't the departments of health in American cities publish reports of this nature?

Organic Chemistry. A Brief Introductory Course. By James Bryant Conant, President of Harvard University. Revised with the assistance of Alex. Tishler, Ph.D. Cloth. Price \$2.60. Pp. 293 with 27 illustrations. New York: Macmillan Company, 1936.

This textbook by James Bryant Conant, formerly Sheldon Emory professor of organic chemistry at Harvard University and now president of Harvard University, was written for use in a short course in organic chemistry. In the majority of cases it will be used by students who will take no more chemistry. The author attempts to arouse interest by brief descriptions of the nature and manufacture of certain well known organic compounds of commerce. There is an abbreviated discussion of biologic products such as the more common glandular principles and of the vitamins.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Dental Practice Acts Operation of Dental Office by Layman Unlawful—Carroll, a layman, owned and operated a dental parlor in Michigan, the dental services being rendered by three licensed dentists in his employ. He was convicted of violating section 15 of the dental practice act, which makes it unlawful for any person, not licensed to practice dentistry, to—

operate or be a partner in the operation of or control as proprietor manager or otherwise or to have any financial interest in the proceeds or receipts of or from, other than compensation as employee in the usual course of business any room, office or dental parlor where dental work is done provided or contracted for

He appealed to the Supreme Court of Michigan

Carroll contended that the section of the dental practice act quoted violates the due process clauses of the state and federal constitutions in that it deprives him of a right to have a proprietary interest in a dental parlor, if all dental work is done by licensed dentists, and that the prohibition does not even remotely promote the public health and welfare. It is a well known fact, answered the Supreme Court, that the services rendered in the profession of dentistry are personal and call for knowledge in a high degree. To separate this knowledge from the power of control is an evil. Courts distinguish between professions and businesses. In the latter, individuals may engage in the common occupations of life, and laws which unnecessarily impair these rights must be held unconstitutional, but in the practice of a profession such as dentistry, which has to do with personal privacy and where the licensee must possess skill and character, it is as well within the police power of a state to prohibit the ownership and operation of a dental parlor by a layman as it is to prescribe the qualifications of those who engage in the practice of dentistry.

The Supreme Court accordingly affirmed the conviction of Carroll—*People v Carroll (Mich)* 264 N W 861

Workmen's Compensation Acts Rupture of Blood Vessel Attributed to Strain—The employee, while engaged with others in lifting a heavy pipe, felt a sudden 'burning sensation' from his left kneecap downward to the ankle. Total and permanent disability resulted. The district court, in a proceeding under the workmen's compensation act of Texas, awarded the employee compensation, finding that the strain had ruptured a blood vessel in the employee's leg. The insurance carrier appealed to the court of civil appeals of Texas, San Antonio.

There was evidence to show, said the appellate court, that the strain of lifting the heavy pipe resulted in the rupture of one of the blood vessels in the employee's leg and that the resulting incapacity was total and permanent. While several physicians testified that the employee's condition was due to varicose veins with which he had been afflicted for from five to twenty years that testimony did not overcome in the opinion of the court, the direct testimony of the employee and of his wife and son and daughter that he had never before the accident had any of the symptoms of varicose veins. Furthermore, two weeks before the accident as the condition of his employment the employer's physician gave the employee a thorough physical examination and pronounced him sound in health and fit for work. This evidence concluded the appellate court, was sufficient to support the trial court's finding and the judgment for the employee was affirmed—*United States Casualty Co v Larc (Texas)* 91 S W (2d) 465

Evidence Competence of a Chiropractor as a Witness—In this proceeding under the workmen's compensation act of Texas the trial court permitted over the objection of the insurance carrier a chiropractor to testify concerning the injuries sustained by the employee. The insurance carrier

contended that the witness, being merely a chiropractor and not a licensed physician, was disqualified from testifying concerning the condition in which he found the employee, who he treated for four months, and to give his opinion as to the cause and effects of that condition. The witness, said the court of civil appeals of Texas, on appeal, was a graduate of a San Antonio chiropractic school and of "the well known Palmer School," and had been in active practice for more than five years. We may take judicial notice of the fact, said the appellate court, known as a matter of common knowledge, that chiropractic, "a system, or the practice, of adjusting the joints of the spine by hand for the curing of disease (Webster) imports a study, knowledge and treatment of the human vertebrae, which includes the bones of the neck. The witness testified that he made a thorough examination of the injured man, shortly after the accident, which disclosed a "misalignment" of the "second bone of the vertebrae in the neck," and that this displaced bone pressed on the spinal cord, causing the condition in which he found the employee. The trial court, said the appellate court, did not abuse its discretion in admitting the testimony—*Maryland Casualty Co v Hill (Texas)*, 91 S W (2d) 391

Health Insurance Insanity as Constituting Sickness—Insanity, said the court of appeal of Louisiana, Orleans, constitutes sickness within the meaning of an insurance policy providing certain weekly benefits in event of sickness of the insured. In the present case the insured suffered from dementia praecox, hyperphrenic type, and was committed to an institution for the insane. She was held to be sick within the meaning of the policy but recovery of benefits was disallowed because of the fact that she was not necessarily confined to bed, a condition prescribed by the policy—*Levas v Liberty Industrial Life Ins Co (La)* 166 So 143

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology New York Sept. 26-Oct. 3 Dr. William P. Wherry 107 South 17th St., Omaha Executive Secretary
American Association of Industrial Physicians and Surgeons All City, N. J., Oct. 5-6 Dr. Volney S. Cheney Armour and Co. Co. Stock Yards Chicago Secretary
American Association of Obstetricians Gynecologists and Abdominal Surgeons, Bretton Woods N. H., Sept. 14-16 Dr. James R. Elliott 418 Eleventh St. Hanington W. Va. Secretary
American Congress of Physical Therapy New York Sept. 7-11 Dr. Nathan H. Palmer 921 Canal Street, New Orleans Secretary
American Hospital Association Cleveland Sept. 28-Oct. 2 Dr. Bert W. Caldwell 18 East Division St., Chicago Executive Secretary
American Roentgen Ray Society Cleveland Sept. 29-Oct. 2 Dr. E. P. Pendergrass 3400 Spruce St. Philadelphia Secretary
Central Association of Obstetricians and Gynecologists Detroit Oct. 15-17 Dr. Ralph A. Reis 104 South Michigan Blvd. Chicago Secretary
Colorado State Medical Society Glenwood Springs Sept. 9-12 Dr. Harvey T. Sethman 1612 Tremont Place Denver Executive Secretary
Delaware Medical Society of Rehoboth Oct. 12-14 Dr. William H. Speer 917 Washington St. Wilmington Secretary
Idaho State Medical Association Boise Aug. 31-Sept. 4 Dr. Harold Stone 105 North Eighth St. Boise Secretary
Indiana State Medical Association South Bend Oct. 6-8 Dr. Thomas A. Hendricks 23 East Ohio St. Indianapolis, Executive Secretary
Kentucky State Medical Association Paducah Oct. 5-8 Dr. Arthur T. McCormack 532 W. Main St. Louisville Secretary
Michigan State Medical Society Detroit, Sept. 21-24 Dr. C. T. Edwards 35 West Huron St. Pontiac Secretary
Mississippi Valley Medical Society Burlington Iowa Sept. 30-Oct. 2 Dr. Harold Swanberg 510 Maine St. Quincy Ill. Secretary
Nevada State Medical Association Reno Sept. 25-26 Dr. H. Brown 20 North Virginia St. Reno Secretary
Northern Minnesota Medical Association, Fergus Falls Aug. 31-Sept. 1 Dr. Oscar O. Larsen Detroit Lakes Secretary
Ohio State Medical Association Cleveland Oct. 7-9 Dr. C. S. 79 East State St. Columbus Executive Secretary
Oregon State Medical Society The Dalles Oct. 8-10 Dr. J. M. Bridgman 1020 S.W. Taylor St., Portland Secretary
Pennsylvania Medical Society of the State of Pittsburgh Oct. 5-7 Dr. Walter F. Donaldson 500 Penn. Ave. Pittsburgh Secretary
Southern Minnesota Medical Association Albert Lea Aug. 31-Sept. 1 Dr. Harold C. Haben 102 Second Ave. Rochester Secretary
Virginia Medical Society of Staonon Oct. 13-15 Dr. J. A. Edwards 1209 East Clay St. Richmond Secretary
Washington State Medical Association Yakima, Aug. 31-Sept. 1 Dr. Vernon W. Spickard 1303 Fourth Avenue Seattle Secretary
Wisconsin State Medical Society of Madison Sept. 8-11 Dr. J. Crownhart 119 East Washington Avenue Madison Secretary
Wyoming Medical Society Cody Aug. 24-25 Dr. E. J. 69 North Main Street Sheridan Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American J Digestive Diseases and Nutrition, Chicago

3: 215-288 (June) 1936

- Significance of Chronic Gastritis J W Larnmore, St Louis—p 215
Pancreatic Enzymes and Tissue Metabolism H C Bradley and S Belfer Madison Wis.—p 220
Influence of Bacteria Coli and Its Products on Motility of Strips of Excised Intestine L Weinstein and L F Rettger New Haven Conn.—p 224
Observations on Ulcerations Adjacent to Experimental Gastric Pouches in Dogs A Winkelstein, New York—p 229
Ketosis as Measured by Ketonemia Following Fat Ingestion by Obese and Nonobese Patients E L Keeney, J W Sherrill and E M MacKay La Jolla, Calif.—p 231
*Is Gastric Secretion or Digestion Impaired by a Mixture of Carbohydrate and Protein in the Diet? H Shay, J Gershon Cohen and S S Fels Philadelphia—p 235
*I Effect of Acetylsalicylic Acid on Gastric Activity and the Modifying Action of Calcium Gluconate and Sodium Bicarbonate J G Schnedorf W B Bradley and A C Ivy Chicago—p 239
Problems in Obstructive Jaundice Cases. D P MacGuire New York—p 244
Experimental Peptic Ulcer Effect of Surgical Duodenal Drainage on Dogs and Value of Histidine in Preventing Ulcer C A Flood and C R Mullins New York—p 249
Present Status of Radiation Therapy in Carcinoma of Anus Rectum and Sigmoid Colon H E Bacon Philadelphia—p 255

Effect of Carbohydrate and Protein on Gastric Secretion.—Shay and his co workers studied five persons free of any organic gastro-intestinal disease by repeated fractional gastric analysis following meals of distilled water, a pure carbohydrate, a pure protein, and mixtures of the two. Four had a normal gastric acid response and one gave an achlorhydric response. The studies were done in order to test the validity of the claims made that mixtures of protein and carbohydrate interfere with proper gastric digestion. The gastric secretory studies included the usual titration of acidity to Töpfer's and to phenolphthalein, hydrogen ion determinations, total chlorides and quantitative pepsin. Gastric digestion was followed by quantitative determinations of reducing substances and amino nitrogen in the separate fractions. More than 6,000 determinations were made on 900 fractional specimens. It was found that mixtures of carbohydrate and protein in the test meal do not in any way interfere with gastric secretion. Not only do these mixtures not interfere with gastric digestion, but carbohydrate digestion in the stomach is prolonged and encouraged by its mixture with protein. This is probably brought about by the more favorable reaction for continued ptyalin activity in the stomach as a result of the acid combining power of the protein. The same would be true following any regurgitation of pancreatic amylase from the duodenum.

Effect of Acetylsalicylic Acid on Gastric Activity.—Schnedorf and his collaborators found that in some normal human subjects and in normal dogs single oral doses (from 1 to 2 Gm) of acetylsalicylic acid caused gastric retention, the addition of calcium gluconate tended to increase the degree of retention, while the addition of sodium bicarbonate increased the rate of gastric evacuation. Single oral doses of acetylsalicylic acid increased the total titrable acidity of the contents of the stomach, the addition of calcium gluconate diminished the rise in the acidity, while the addition of sodium bicarbonate decreased the acidity of the contents below that of the controls. In dogs with pouches of the entire stomach, the local application of acetylsalicylic acid caused a definite increase in the neutral chloride or diluting secretion of the stomach, the addition of calcium gluconate resulted in only a slight increase in the diluting secretion, while the addition of sodium bicarbonate to the acetylsalicylic acid also resulted in only a slight increase

in the diluting secretion. None of the solutions increased the formation of hydrochloric acid significantly. Prolonged daily administration of acetylsalicylic acid to normal dogs and to dogs with Pavlov stomach pouches resulted in definite augmentation of gastric secretion. With the addition of calcium gluconate the increase was not nearly so marked, while sodium bicarbonate and acetylsalicylic acid actually caused a decrease in the gastric secretion below the control values. The neutralizing and "inhibiting" actions of sodium bicarbonate and calcium gluconate on the titrable acidity of the gastric contents and on the output of hydrochloric acid may play a definite part in the ameliorating effects of these substances on the degree of gastric irritation and the incidence of ulceration produced by the prolonged oral administration of acetylsalicylic acid to dogs. Whereas the protective action of sodium bicarbonate may be adequately explained by a reduction of acid irritation, this is not true of calcium gluconate, the protective action of which against digestive disturbances appears to be due also in part to some systemic action of calcium. From the evidence available it would appear that, to obtain optimal protection when giving salicylates in large doses, the salicylates should be administered with sodium bicarbonate and calcium gluconate.

American Journal of Diseases of Children, Chicago

51: 1257-1500 (June) 1936

- *Quantitative Wassermann Tests in Diagnosis of Congenital Syphilis Clinical Importance of Fildes Law H K. Faber and W C Black, San Francisco—p 1257
Metabolism of Adolescent Girls III Excretion of Creatinine and Creatine C C Wang Ida Genter and Corinne Hogden, Cincinnati—p 1268
Pneumonia in Infants and in Children Bacteriologic Study with Special Reference to Clinical Significance. Rosa Lee Nemur Elizabeth Torrey Andrews and Julia Vinograd New York—p 1277
Ate Appendicitis in Children S Nixon and B Nixon Indianapolis—p 1296
Respiratory Metabolism in Infancy and in Childhood XVII Daily Heat Production of Infants—Predictions Based on Insensible Loss of Weight Compared with Direct Measurements S Z Levine and M A Wheatley New York—p 1300
Growth of Oriental Child in San Francisco Contrast Mary I Preston San Francisco—p 1324
*Thrombosis of Lateral Sinus and Jugular Bulb of Nonotitic Origin New Diagnostic Sign S Karelitz New York—p 1349
Congenital Cardiac Anomalies in Infants Report of Five Cases (1) Accessory Ventricle, (2) Tetralogy of Fallot with Right Aortic Arch and Redundant Left Ductus Arteriosus (3) Tetralogy of Fallot with Anomalous Band in Right Atricle, (4) Complete Transposition of Arterial Trunks and (5) Double Defect of Ventricular Septum F A Hemsath, Wilmington Del M Greenberg, New York, and J H Shan, Boston—p 1356

Diagnosis of Congenital Syphilis.—It is clear to Faber and Black that the quantitative Wassermann test gives an earlier clue to the absence of syphilitic infection than does the ordinary simple qualitative test. In seven of the eight presumptively nonsyphilitic babies the reaction to the initial routine Wassermann test was plus 3, but with the exception of that in one case the initial titer was low, giving an immediate indication that actual syphilis might not be present. This infant, with the initial high titer, may have been subjected to treatment had not the test on the seventh day shown a sharp reduction of the number of units of reagin to half the original figure. The progressive but very gradual decline was striking. When determined by the ordinary method, the Wassermann reaction remained plus 3 as late as the fifty-second day and was still plus 2 minus on the seventy-third. In other words, the clue of eventual negativity was given by the quantitative method on the seventh day and not until the seventy-third by the routine method. Complete and final proof that some or all of these infants may not still harbor syphilis in latent form has not been offered. They are serologically and clinically normal but must continue under periodic observation. The authors feel justified in withholding treatment in these and similar cases, first because no criterion remains for judging either the necessity of treatment or its results and secondly because arsphenamine therapy has serious risks, to which a nonsyphilitic person should not be subjected. These risks are greater than those of failing to treat a possibly but improbably present latent infection. They propose that the transmission of syphilitic reagin from mother to fetus without the transmission of syphilis itself is a soundly established phenomenon and one of sufficiently fundamental

importance to be designated by the name of its discoverer, Fildes. It is suggested that it be worded as follows: Syphilitic reagin in the blood of the new-born infant is diagnostic not of syphilis in the infant but of syphilis in the mother."

Thrombosis of Lateral Sinus and Jugular Bulb—Karelitz has observed two children in whom he believed that the source of sinus thrombophlebitis was not an otitic infection. In one case the condition was due to the spreading of a thrombus from the left lateral sinus to the healthy right side, and in the other two it was retrograde, from thrombophlebitis of the internal jugular vein. In each instance a peculiar engorgement of the tympanum was observed on the same side as that on which the sinus thrombosis was demonstrated at operation. He believes that in each instance the thrombophlebitis preceded the otitic manifestation, and he therefore wishes to present this picture of otitic congestion as a new sign of a new clinical condition, namely, retrograde sinus thrombophlebitis, which he thinks has heretofore been observed only at postmortem examination.

American Journal of Medical Sciences, Philadelphia 191:741-884 (June) 1936

- Interrelationships of Glands of Internal Secretion Concerned with Metabolism. C. N. H. Long. Philadelphia—p. 741.
Studies in Diabetes Mellitus. IV. Etiology. Part I. E. P. Joslin. Boston. L. I. Dublin and H. H. Marks. New York—p. 759.
*The Gordon Test for Hodgkin's Disease. J. D. Goldstein. Rochester, N. Y.—p. 775.
Hodgkin's Disease of the Lung. E. H. Falconer and M. E. Leonard. San Francisco—p. 780.
Plasma Cell Leukemia. Consideration of Literature. Report of Case. A. J. Patck Jr. and W. B. Castle. Boston—p. 788.
Effect of Roentgen Ray Irradiation on Platelet Production in Patients with Essential Thrombocytopenic Purpura Haemorrhagica. S. R. Mettler and R. S. Stone with technical assistance of Katherine Purviance. San Francisco—p. 794.
Postoperative Respiratory Complications. Occurrence Following 7,874 Anesthetics. E. A. Rovenstine and I. B. Taylor. New York—p. 807.
Lag Phase in Early Congenital Osseous Syphilis. Roentgenographic Study. N. R. Ingraham Jr. Philadelphia—p. 819.
Minor Blood Agglutinins and Their Relation to Posttransfusion Reactions. W. P. Belk. Philadelphia—p. 827.
Effect of Injecting Certain Electrolytes into Cisterna Magna on Blood Pressure. H. Resnik Jr., M. F. Mason, R. T. Terry. Baltimore. C. Pileher and T. R. Harrison. Nashville. Tenn.—p. 835.
*Blood Transfusion in Typhoid Fever. P. T. Lantin and F. S. Guerrero, Manila. P. I.—p. 850.

"Gordon Test" for Hodgkin's Disease—Goldstein declares that seven of nine lymphogranulomatous nodes, when inoculated intracerebrally into rabbits, produced an encephalitic syndrome. In two instances, in which tissue was obtained from histologically established cases of Hodgkin's disease, this reaction was not obtained. From both, biopsy specimens were obtained on two occasions, and enough material was available at necropsy to permit making an adequate number of rabbit tests. Dosage and time of icebox storage of the suspensions varied, but all the inoculated animals remained free from abnormal neurologic manifestations. Of the control group of twenty lymph nodes five were tuberculous and two came from patients with infectious mononucleosis. None of the control glands produced signs of encephalitis on inoculation into rabbits. The study suggests that the Gordon test may be of distinct value in the diagnosis of Hodgkin's disease, especially in instances in which the histologic observations are uncertain. A negative test at the present time has no diagnostic significance. It is apparent however that to settle the question of possible "false positive tests" additional cases must be studied.

Blood Transfusion in Typhoid—Lantin and Guerrero treated forty-one severe cases of typhoid with blood transfusion and thirty-four cases without. They succeeded in reducing the fatality from 47.05 per cent in the control cases to 24.39 per cent in the cases in which transfusion was performed. They remove 150 cc. of blood from the patient and immediately replace it by direct transfusion of 200 cc. of blood from a donor. They have repeated the blood exchange the day following or as often and as many times as required by the severity of the case after an interval of from two to four days. Sometimes they gave as many as seven transfusions. In cases in which there was an initial hemorrhage they did not remove blood from the patient but proceeded at once to transfuse 200 cc. of blood from the donor. In case of initial hemorrhage in itself is a natural

method of exsanguination. They base the rationale of the method of treatment on the principle of detoxication brought about by the withdrawal of blood from the patient and its immediate replacement with new blood from a donor. They believe that this procedure brings about a more rapid detoxication and an early neutralization of the poisons in the system, an immediate introduction of protective elements and the stimulation of the defenses of the body.

American J. Obstetrics and Gynecology, St. Louis 31: 911-1096 (June) 1936

- *Excessive Uterine Bleeding of Functional Origin. L. Wilson and E. Kurzrok. New York—p. 911.
Incidental Blindness in Pregnancy. D. W. de Carle. San Francisco—p. 929.
*Relation of Retinal Changes to Severity of Acute Toxic Hypertensive Syndrome of Pregnancy. R. D. Mussey. Rochester. Minn.—p. 934.
Further End Results in Treatment of Carcinoma of Cervix. I. I. I. Report of Second Five Year Series. L. C. Scheffey and W. J. Thudium. Philadelphia—p. 946.
Secondary Abdominal Pregnancy. Report of Ten Cases. P. J. Reel and T. F. Lewis. Columbus. Ohio—p. 957.
Immediate and Remote Effect of Abdominal Cesarean Section. T. L. Montgomery. Philadelphia—p. 968.
*Blood Loss During Normal Menstruation. Adelaide P. Barer and W. M. Fowler. Iowa City—p. 979.
Roentgenotherapy of Chorionepithelioma. M. E. Davis and A. Brunschwig. Chicago—p. 987.
Statistical Studies on Puerperal Infection. III. Analysis of 114 Deaths Due to Puerperal Infection. C. H. Peckham. Baltimore—p. 996.
Study of Surface Bacteria of the New Born and Comparative Value of Cleansing Agents. R. T. Potter and A. R. Abel. East Orange. N. J.—p. 1003.
Mechanics of Uterine Support and Position. II. Factors Influencing Uterine Position (Experimental Study). L. J. Harris. Toronto. Canada. W. F. Mengert and E. D. Plass. Iowa City—p. 1009.
*Cutaneous Hemorrhage During Puerperium with Later Development of Acute Yellow Atrophy. M. L. Stone and J. J. Bunim. New York—p. 1015.
Trichomonas Vaginalis Vaginitis. Clinical Study. Helen M. Aspelgren. Philadelphia—p. 1020.
Synetial Degeneration in Normal and Pathologic Placentas. B. Terry Jr., Boston—p. 1024.
Treatment of Incomplete Abortion. Results in 1971 Cases. W. H. Drane. Brooklyn—p. 1029.
Variations in Glycogen Content of Vaginal Mucosa as Relative Index to Quantitative Amount of Ovarian Hormone Available in Organism. J. F. Krumm. Chicago—p. 1035.
Spontaneous Rupture of Uterus. L. S. Schwartz and L. Korzok. Brooklyn—p. 1038.
Peptic Ulcer Complicating Pregnancy. F. W. Mulsow and W. E. Brown. Cedar Rapids. Iowa—p. 1041.
Value of Trendelenburg Position for Occult Prolapse of Cord. J. W. Bourland. Dallas. Texas—p. 1043.
Ligation of Both Ureters. Unilateral Nephrostomy Recovery. S. L. Slutsky. Brooklyn—p. 1045.
Pituitary Shock. W. McManis. Danville. Va.—p. 1047.
Charles Delucena Meigs. Leader in American Obstetrics. II. T. New Haven, Conn.—p. 1049.
- Uterine Bleeding of Functional Origin**—Wilson and Kurzrok consider five types of functional bleeding: puberty maturity, preclimacteric, ovulation, cyclic or anovulatory. Selected cases of functional bleeding are presented and they show that 1. Functional uterine bleeding is completely independent of the type of endometrium. 2. Cystic and glandular hyperplasia of the endometrium persists long after the bleeding has stopped. 3. The cause of functional bleeding must be sought for in some extra-endometrial factor. A theory to explain both menstrual and functional bleeding based on the assumed presence of a bleeding factor (or hormone) in the anterior pituitary gland is suggested on the following hypothesis: 1. Bleeding alone is due to a special hormone elaborated by the anterior lobe of the hypophysis. 2. The bleeding hormone is separate and distinct from the follicle stimulating and luteinizing hormones. 3. It is not gonadotropic but acts directly on the endometrium. 4. Its production is stimulated by the follicular hormone. 5. Its activity is inhibited but not destroyed by progesterin. 6. The actual onset of bleeding occurs when a certain concentration of the bleeding hormone has been reached and provided its action is not inhibited by the corpus luteum hormone. 7. The bleeding stops when the bleeding hormone is exhausted.
- Acute Toxic Hypertensive Syndrome of Pregnancy**—Mussey carried out ophthalmoscopic examination of the retina of 103 patients who presented the acute toxic vascular changes.

tensive) syndrome of pregnancy In 72 per cent of the cases in which the systolic blood pressure was 140 mm of mercury or more, positive evidence was found of more or less change in the retinal arterioles or in the retina proper As a rule, changes in the retina, which at first consisted of spastic narrowing of the retinal arterioles, showed a definite increase in degree and severity, with increase in the height of the systolic blood pressure and the duration of the toxemia Information obtained by retinal examination of patients who present acute hypertensive toxemia of pregnancy is a distinct aid in determining if and when pregnancy should be terminated It seems evident that when the spastic condition of the retinal arterioles is maintained, the first appearance of cotton-wool exudates and hemorrhages in the retina indicates the danger of permanent systemic arteriolar injury, in the presence of such retinal changes, pregnancy should be terminated promptly

Blood Loss During Normal Menstruation.—Barer and Fowler determined the menstrual blood loss in 100 normal women whose ages ranged from 15 to 43 years For the most part the subjects were members of the hospital staff who were in good health and whose menses were considered to be normal Cellulo-cotton pads were utilized in the collection of the menstrual flow except for five individuals who employed vaginal cups The iron content of the menstrual flow in the 100 women varied from 2.28 to 78.96 mg, which represents from 0.680 to 23.57 Gm of hemoglobin When these values are translated to terms of cubic centimeters of blood having a hemoglobin content equivalent to that of the particular individual's intravascular blood, they represent a loss of from 6.55 to 178.69 cc The mean loss for the entire group was 50.55 cc., with a standard deviation of 25.73 cc. While the greater number of cases actually fell in the 20 to 30 cc. group 50 per cent of the subjects lost between 23.21 and 68.43 cc There was no correlation between the age of the individual and the amount of blood lost There was, however, a difference between the blood loss in the unmarried (seventy-six cases, mean loss 52.96 cc.) and the married women (twenty-four cases, mean loss 42.91 cc.) The flow was more profuse in the parous than in the nulliparous subjects There was no correlation between the blood loss and the blood hemoglobin in the subjects studied As the duration of the period increases the average blood loss increases, but there are marked variations While the menstrual loss has been reduced to terms of cubic centimeters of blood to give a more graphic description of the results, it is not the volume itself but the hemoglobin and iron content of the menstrual flow which is of vital importance The loss of 2.28 mg of iron per period would require a daily iron storage of 0.08 mg to replace this loss alone The results of iron balance studies, which are to be reported later, indicate that the latter amount is far greater than the average daily iron retention and may be attained only by the administration of iron in addition to that obtained from the diet This continuous excessive iron loss may account for certain cases of hypochromic anemia which have been considered idiopathic in origin While this may not be the only etiologic factor in all such cases, it undoubtedly plays an important and frequently an unrecognized part

Cutaneous Hemorrhage During Puerperium with Development of Acute Yellow Atrophy.—Stone and Bunim report a case in which a primipara, aged 27, after a normal pregnancy and forceps delivery developed a purpuric eruption of peculiar distribution Several weeks following complete recovery from this condition she developed acute yellow atrophy of the liver and died The patient was tested for ergot but showed no hypersensitivity to it Her past history of having taken castor oil as well as quinine on a number of previous occasions without untoward reactions excludes these drugs as possible antigens Sensitivity to acacia has been reported both in experimental animals and in man Unfortunately the patient was not tested with this antigen However, following the appearance of purpura the patient was again given 300 cc. of acacia intravenously and no reaction followed The question of the relationship if any between acute yellow atrophy and the purpura or the preceding pregnancy remains The authors hesitate to consider the acute yellow atrophy a complication of the patient's pregnancy because more than five weeks elapsed between delivery and manifestations of her final illness, because

during this intervening period there was an interval of perfect health and because sections of the liver showed no evidence of any regenerative processes For the same reasons they hesitate to link the purpuric eruption with the later development of severe liver disorder

American Journal of Public Health, New York

26 561 664 (June) 1936

- Attainable Standards in Bacterial Counts of Raw and Pasteurized Milk. M E Barnes Iowa City—p 561
- Some Epidemiologic Aspects of Chronic Endemic Dental Fluorosis H T Dean and E. Elvive, Washington D C.—p 567
- Whooping Cough in Surveyed Communities E. Sydenstricker and R E Wheeler New York.—p 576
- Dermatitis from Synthetic Resins and Waxes L Schwartz New York.—p 586
- Setup and Budget for Public Health Education I V Hiscock, New Haven, Conn.—p 593
- Veterinary Service in Control of Dairy Products J G Hardenbergh Plainsboro N J.—p 597
- System of Codification of Medical Diagnoses for Application to Punch Cards with a Plan of Operation J Berkson Rochester Minn.—p 606
- Industrial Sanitation as Public Health Engineering Activity C L Pool Providence, R I.—p 613
- Cultural Methods of Isolation of Tubercle Bacilli A L MacNabb Toronto.—p 619
- Integration of the School Health Program with Community Health Education V S Blanchard Detroit.—p 625
- Preliminary Report of the Subcommittee on Educational Qualifications of Public Health Engineers R E Tarbett.—p 629
- Preliminary Report of the Subcommittee on Educational Qualifications of Sanitarians R E Tarbett.—p 632

Annals of Surgery, Philadelphia

103 863 1032 (June) 1936

- Report of the Committee to Study Further Problems of Postgraduate Surgical Education in General and Qualifications for Specialization in General Surgery in Particular E A. Graham St. Louis.—p 863
- Bacteriologic Studies of Chronic Appendicitis Based on 209 Consecutive Cases D C Collins Los Angeles.—p 870
- Bile Tract and Acute Pancreatitis C R Robins Richmond Va.—p 875
- Presacral Nerve Resection for Relief of Pelvic Pain and Dysmenorrhea J E Cannaday Charleston W Va.—p 886
- *Presacral Sympathectomy for Dysmenorrhea and Pelvic Pain W T Black Memphis Tenn.—p 903
- Total Hysterectomy Review of 177 Cases W A Bryan and C C Trabue Nashville Tenn.—p 914
- Nephroproly for Disabilities Due to Abnormal Renal Mobility P G Smith G F McKim and T W Rush, Cincinnati.—p 924
- Cautions in Treatment of Ureteral Calculi O Grant Louisville Ky.—p 935
- Cysts of Testicle I Abell Louisville Ky.—p 941
- Successful Operations for Hypospadias W Walters Rochester Minn.—p 949
- End-to-End Vascular Anastomosis Experimental Study N Winslow and W W Walker Baltimore.—p 959
- *Arteriovenous Aneurysm of First Portion of Right Subclavian Artery and Innominate Vein Report of Case Successfully Operated On I Cohn New Orleans.—p 964
- Closed Reduction of Recent Dislocations of Semilunar (Lunate) Bone with Results and Discussion Regarding Necrosis (Malacia) Report of Eleven Cases H. E. Conwell Birmingham Ala.—p 978
- Fractures of Humerus with Particular Reference to Nonunion and Its Treatment G E Bennett Baltimore.—p 994
- Diagnosis and Treatment of Osteomyelitis W B Owen Louisville Ky.—p 1007

Presacral Sympathectomy for Dysmenorrhea.—Through resection of the presacral (hypogastric) nerve for the relief of dysmenorrhea and pelvic pain Black obtained excellent results in the majority of the twenty-seven cases that he cites There were nine cases of the essential and eighteen of the acquired type of dysmenorrhea Fifteen patients suffered from bladder disturbances (dysuria was severe in some and milder in character in others) There was definite pathologic change in ten cases In fourteen retrodisplacements were corrected and appendectomy and sympathectomy were performed Three had a diagnostic dilation and curettage and two a cauterization of the cervix, besides the sympathectomy Postoperative catheterization was necessary in thirteen cases Seven patients in this group had postoperative bleeding in two or three days (without pain in six, slight in one) Three had a single nerve, one a double nerve and the remainder a plexiform arrangement Excellent results were obtained in twenty-one cases A marked improvement was obtained in five cases One patient could not be located Dysmenorrhea was relieved practically 100 per cent.

Bladder symptoms were relieved immediately, but after a few months some complained of a burning on urination. This could be due to a recent gonorrheal infection, although one must consider the nerve supply to the urethra as a possible cause of continued complaint. Constipation was not relieved in a number of instances, however, in some it was corrected. The sympathetic nerve supply is so variable that failure to relieve constipation can be ascribed to this cause in some cases. Metrorrhagia was relieved in two cases. Presacral sympathectomy in addition to removing the pelvic pathologic changes in suitable cases of pelvic pain has increased the percentage of cures.

Aneurysm of Right Subclavian Artery and Innominate Vein—Cohn discusses the case of a young man who had an arteriovenous aneurysm involving the first portion of the subclavian and possibly the innominate vein. He was tolerating well the existing aneurysm as evidenced by the following facts: the patient was stabbed in the right side of the neck eighteen months prior to admission (for external hemorrhoids), he had no symptoms indicative of general circulatory disturbance, the electrocardiographic observations were reported negative and the roentgen examination of the chest indicated no marked cardiac enlargement. There was, however, evidence of pulmonary disease, but tubercle bacilli were not found on repeated examinations prior to operation. There was evidence of an established collateral circulation, as the radial pulse was good and there was no muscular atrophy. The Branham bradycardiac phenomenon was not found on several occasions. The heart was only slightly enlarged, but the existing enlargement diminished following operation. Postoperatively the radial and brachial pulses have failed to return. In spite of this, the collateral circulation has been adequate to prevent evidence of atrophy or circulatory disturbance. The value of passive vascular exercise as an adjunct in developing collateral circulation is demonstrated by the good result. The operation consisted of ligation of the internal jugular vein, ligation of the right subclavian artery and the innominate vein on each side of the fistula and obliterative suture of the vein and artery at the site of the fistula. Cure of the aneurysm resulted. The arteriovenous fistula between the right subclavian artery and the innominate vein as existed in this case is evidently unique.

Archives of Dermatology and Syphilology, Chicago

33 951 1104 (June) 1936

- LXXXIII Cutaneous Torulosis W. H. Mook and M. Moore St. Louis —p. 951
- *Pustular Psoriasis Its Relation to Acrodermatitis Continua vel Perstans F. A. Ellis Baltimore —p. 963
- Familial Xanthoma Report on Three of Five Siblings with Xanthoma Tuberosum Multiplex E. A. Levin and M. Sullivan Cleveland —p. 967
- Amyloidosis Cutis Lichenoides O. S. Philpott and A. W. Freshman Denver —p. 970
- *Sphaceloderma Report of Case of Unusual Phagedenic Ulceration of Skin Subcutaneous Tissue and Muscle of Chest Wall W. Sachs Jersey City N. J. —p. 977
- The Field of Dermatology President's Address W. A. Pusey Chicago —p. 987
- Bejel Nonvenereal Syphilis E. H. Hudson Deir-ez-Zor Syria —p. 994
- Evaluation of Phytopharmacologic Test of Pels and Macht L. Hollander and R. J. Greb Pittsburgh —p. 1012
- Therapeutic Timidity D. W. Montgomery San Francisco —p. 1018
- An Aeneform Dermatoglossis J. W. Jones and H. S. Alden Atlanta, Ga. —p. 1022
- *Acne and Carbohydrates Preliminary Report G. M. Crawford and J. H. Swartz Boston —p. 1035
- Paradoxical Influence of Light Rays as Causative and as Curative Factor in Cancer of Skin F. Blumenthal Ann Arbor Mich. —p. 1042
- J. Francis Aitken Appreciative Sketch P. E. Bechet New York —p. 1052
- Curability of Syphilis J. E. Klein Chicago —p. 1055
- Increased Reactivity of Skin to Staphylococcus Toxin in Patients with Lupus Erythematosus H. H. Hopkins and E. L. Burky Baltimore —p. 1070

Pustular Psoriasis—Although Barber seemingly gave a convincing clear-cut differential diagnosis between acrodermatitis continua and pustular psoriasis, Ellis believes that occasionally a condition is seen which defies differentiation. A case of psoriasis is reported in which the condition was complicated by a unilateral superficial pustular eruption

after severe frost bite of the hand. The eruption had features which Barber considered characteristic of acrodermatitis continua. From the literature and the case reported, one must conclude either that acrodermatitis continua is a form of pustular psoriasis or that the patient had had acrodermatitis continua for ten years and psoriasis developed later.

Sphaceloderma—Sachs describes a case of extensive ulceration, of spontaneous origin, in a girl, aged 10 years, showing no symptoms at any time. Laboratory investigation proved of little value, and the condition resisted all types of treatment. It started without any known cause and terminated after four years without apparent cause. The patient's general condition remained good throughout four years of observation. The osteomyelitis of the left humerus became progressively worse, the area was operated on and the necrotic granulations were curetted. She responded well to this, and the condition gradually improved. The wound remained more or less stationary for two years, with the occasional appearance of healthy granulations at several points. The wound has slowly but progressively improved, until at the time of writing the entire area has undergone epidermization. At no time before or during the healing was any special treatment used. The osteomyelitis is completely healed. She has no subjective symptoms and other than impairment in motion, experiences no discomfort. There remains only a little motion in the left arm, owing to adhesions to the chest wall. The left breast is gone. On lateral view there is a marked concavity of the left side of the chest, causing considerable deformity of the thorax. The scar extends across the whole wall of the chest, the upper margin reaching to the top of the sternum in the center and on the sides extending over the shoulders, the lower border reaches to the bottom of the chest wall. The scar extends down over the upper third of the right arm, on the left side it extends around the back, in the upper part to within 2 inches (5 cm.) of the spine and in the lower part to the lower pole of the scapula. Almost the entire left arm is covered by scar tissue. The edges of the scar are irregular, in places white smooth and at the same level with the surrounding skin and in places raised, well defined and red. The surface is in part smooth except for a few cordlike red bands traversing it in different directions. In the region of the left shoulder and left arm the surface is very irregular, with large masses protruding. There are large fibrous bands connecting the left side of the chest wall and the upper half of the left arm. In part the scar is smooth, stretched thin and glossy, in part it is wrinkled dull and unlike cigaret paper in appearance. Over the lateral surface of the left arm is a deep scar, at which point the incision was made because of the osteomyelitis. The history, course and laboratory observations rule out extensive ulcerations caused by tuberculosis, syphilis, actinomycosis, blastomycosis, trichosis and coccidioidal granuloma. There was no history of the ingestion of drugs, especially iodides, before admission to the hospital. The wound healed, even though the patient was taking iodides. Antimony and potassium tartrate was given to the patient as a therapeutic test, with no results. The condition does not fit in with any of the types of gangrene described.

Acne and Carbohydrates—Crawford and Swartz hospitalized ten patients with severe pustular acne who were given routine examinations, including the usual laboratory studies and dextrose tolerance tests, and the blood sugar content was again checked on dismissal. All the patients showed values for the blood sugar content in the lower range of normal at all times and gave normal reactions to dextrose tolerance tests. They were placed on a high intake of carbohydrates and were given daily intravenous injections of dextrose for two weeks. Half of the patients exhibited definite improvement. 25 per cent showed a slight improvement and none were worse. Maintenance of this diet over periods up to one year has resulted in continued improvement in 50 per cent of the patients. These results are routine local measures as the only adjuvant. These results definitely intimate that a high carbohydrate regimen is inimical to the welfare of patients with acne. It is possible that other types of foods or perhaps specific foods also may be incriminated as factors in cases of acne, but the high carbohydrate

Archives of Internal Medicine, Chicago

57 1061 1252 (June) 1936

- Clinical Experiences in Use of Determinations of Blood Iodine E. P. McCullagh and D. R. McCullagh Cleveland—p 1061
- Experimental Diabetes Insipidus in Monkey W. R. Ingram, C. Fisher and S. W. Ranson Chicago—p 1067
- Studies on Nitrogen and Sulfur Metabolism in Bright's Disease VII Sulfur Content of Urinary Protein G. P. Grabfield and B. Prescott Boston—p 1081
- *Hirsutism, Hypertension and Obesity Associated with Carcinoma of Adrenal Cortex Indeterminate Pituitary Adenoma and Selective Changes in Beta Cells (Basophils) of Hypophysis I. Graef, J. J. Bunim and A. Rottino New York—p 1085
- Control of Hyperthyroidism Following Partial Thyroidectomy by Removal of Unusually Small Amounts of Thyroid Tissue S. F. Haines and J. de J. Pemberton, Rochester Minn—p 1104
- *Generalized Discoloration of Skin Resembling Argyria Following Prolonged Oral Use of Bismuth Case of Bismuthia H. C. Lueth, Evanston Ill., D. C. Sutton, C. J. McMullen and C. W. Muehlberger Chicago—p 1115
- Tularemic Pneumonia, Pericarditis and Ulcerative Stomatitis S. B. Peskin Madison Wis—p 1125
- Lymphedema (Elephantiasis) of Extremities Caused by Invasion of Lymphatic Vessels by Cancer Cells Report of Two Cases H. Montgomery Rochester Minn—p 1145
- Evaluation of Measures of Renal Function in Persons with Arteriosclerotic Bright's Disease A. H. Elliot and F. R. Nuzum Santa Barbara Calif—p 1151
- *Differential Platelet Count Its Clinical Significance I. Olef Boston—p 1163
- Blood Review of Recent Literature R. Isaacs, C. C. Sturgis, F. H. Bethell and S. M. Goldhamer Ann Arbor Mich—p 1186

Obesity Associated with Carcinoma of Adrenal—Graef and his associates believe that their case and the one reported by Mathias are the only ones recorded in which tumors have been found in the adrenal cortex and the anterior lobe of the pituitary gland of the same patient. Their patient, a girl 19 years of age, presented hirsutism, hypertension, obesity and atrophic striae in life and at necropsy was observed to have a metastasizing carcinoma of the adrenal cortex and an indeterminate miliary adenoma of the anterior lobe of the pituitary gland. Selective degenerative changes were noted in the nuclei of the beta cells of the anterior part of the hypophysis. Although data are not conclusive, evidence is given which tends to show that the pituitary adenoma is not merely a coincidental observation. Marked overexcretion of estrogenic substance in the urine was noted during life, and this is discussed with relation to the atresia and atrophy of the ovaries and endometrium. Clinical manifestations or pathologic evidence of changes in the pituitary gland in similar cases of metastasizing adrenal neoplasm have been found to coexist in (1) the case of a 24 year old man who had hypertension due to a tumor of the adrenal cortex and who had an acromegalic appearance (Oppenheimer and Fishberg), (2) a case of metastasizing carcinoma of the adrenal cortex in a man aged 45 in whom an acromegalic appearance developed while he was under observation during the last six months of life (Long and Gray) and (3) the 18 year old girl who had hypertrichosis with a well marked beard from the age of 3 years and at the age of 18 died of a metastasizing neoplasm of the adrenal cortex (Mathias).

Discoloration of Skin Following Use of Bismuth.—Recently Lueth and his associates observed a patient with a deep blue discoloration of the skin and mucous membranes who complained of severe diarrhea. At first the condition was considered to be argyria, but when the patient was questioned the possibility of bismuth poisoning appeared. A number of years before the patient had been told that he had a peptic ulcer. He thought the medicine given at that time was silver nitrate. Later diarrhea appeared. It had persisted for eighteen years, during which time he had ingested large amounts of bismuth salts. Histologic and chemical studies of the skin definitely excluded silver and established bismuth as the cause of the pigmentation. The term 'bismuthia' is suggested for the condition. A rough though inaccurate estimate of the amount of bismuth in the skin of the entire body was made by means of the Du Bois table for surface area. The skin used for the biopsy was taken from one of the lightest areas on the basis of its analysis about 82 mg of bismuth was calculated to have been present in the entire skin.

Differential Platelet Count.—The preserving fluid that Olef employed for both total and differential platelet counting consisted of 1 Gm of sodium metaphosphate, 0.5 Gm of sodium chloride, 0.1 Gm of dextrose and 100 Gm of distilled water.

Under optimal conditions the platelets in this solution, when observed with the oil immersion lens, appear as free-floating, isolated, clear, highly refractile bodies with numerous spinelike processes projecting from the periphery. The technic for the enumeration of the platelets is as follows. The palmar surface of the finger tip is punctured with an automatic lancet. The first drop or two of blood is discarded. A drop of the diluting fluid is then placed over the puncture wound before the blood reaches the surface of the skin, and the hand is quickly turned over so that the palmar surface is directed downward. After a sufficiently large drop of blood has escaped into the drop of diluent the mixture is applied to the surface of a small quantity (3 or 4 drops) of diluting fluid contained in a paraffin cup. The mixture is stirred gently and then transferred by means of a paraffin-coated applicator to a glass slide, usually three preparations can be obtained, as the quantity of fluid in the cup yields 3 large drops. A coverslip is placed over each drop and after the preparations have been allowed to stand for from ten to fifteen minutes a relative thrombocyte-erythrocyte count is made, the oil immersion lens being used. Sealing the edges of the preparations with liquid petrolatum will prevent air currents in them. An erythrocyte count is then done in the usual manner, and the absolute number of platelets per cubic millimeter is determined. With this method the average number of platelets per cubic millimeter in normal adults is about 500,000. The platelets as observed in wet preparations vary considerably in size. They can generally be divided into four distinct groups: group 1, about 1.8 microns, group 2, about 2.5 microns, group 3, about 3.6 microns, and group 4, consisting of irregular-shaped platelets. The behavior of the total and differential platelet counts in a number of important clinical conditions is presented and the significance of the deviations from the normal discussed. In conditions associated with thrombocytosis and at times in those associated with thrombopenia, the deviation from the normal in the differential platelet formula is usually due to an absolute or relative increase in the number of small platelets. The presence of increased numbers of the larger types of platelets is often associated with intense regenerative activity, abnormal function or hypoplasia of the megakaryocytes in the bone marrow. Normally functioning platelets are usually normal morphologically. Functionally, the smaller platelets are much more active than the larger types. The small juvenile platelets possess high agglutinating powers, and their presence in large numbers constitutes a significant factor in the causation of spontaneous thrombosis in conditions associated with thrombocytosis.

Canadian Medical Association Journal, Montreal

34 609 732 (June) 1936

- Histology of Thyroid Gland in Pregnancy A. C. Abbott and J. Prendergast, Winnipeg Manit—p 609
- *Hypertrophy of Palpebral Tarsus Facial Integument and Extremities of Limbs Associated with Widespread Osteoperiostosis New Syndrome. J. N. Roy Montreal—p 615
- Surgical Treatment of Chronic Radiation Dermatitis S. Gordon Toronto—p 622
- Syphilis of Placenta P. J. Kearns Montreal—p 625
- Pentothal New Intravenous Anesthetic K. M. Heard Toronto—p 628
- Cryptomyces Pleomorpha Has No Etiologic Relation to Carcinoma Pauline Beregoff Gallow Montreal—p 634
- Effects of Betane on Cholesterol and Bilirubin Contents of Blood Plasma in Diabetes Mellitus I. M. Rabinowitch Montreal—p 637
- The Unstable Colon C. J. Tidmarsh Montreal—p 641
- Tuberculosis and the Student Nurse R. J. Collins and C. W. MacMillan St. John N. B.—p 649
- Sedimentation Test in Pulmonary Tuberculosis Review of 635 Cases A. H. Duncan Gravenhurst Ont—p 655
- The Physician and Modern Dietetics M. A. Bridges New York—p 659
- Observation on Use of Iron Preparations in Treatment of Anemia J. T. Tweddell Kingston Ont—p 664
- Relation of Bronchiectasis to Paranasal Sinus Infection G. E. Hodge Montreal—p 666
- Subcutaneous Emphysema Complicating Tonsillectomy L. J. Baker Montreal—p 670
- Cancer Effective Offensive (Evolution of Saskatchewan's Anticancer Campaign) E. E. Shepley Saskatoon Sask—p 672

Hyperplastic Disturbance of Connective Tissues.—In summing up the salient features of the multiple lesions in his case, Roy finds that they present a hyperplastic and degenera-

tive disturbance of certain connective tissues—bones, periosteum of the long bones, skin and subcutaneous tissues of the face and extremities of the limbs, and, above all, of the tarsus of the eyelids. This observation allows him to describe a disease having for its manifestations a hypertrophy of the eyelids, of the integuments of the face and of the extremities of the limbs, and also of the bony system in general, caused most probably by an endocrine disturbance. Though appearing like acromegaly, this syndrome does not present any of the essential features of this disease. He is of the opinion that it is impossible to classify the syndrome of this patient in the category of any disorder described heretofore, whether osseous, cutaneous or palpebral. Consequently, he advances a hypothesis in regard to the etiology, a hypothesis based on endocrinologic knowledge and on certain morbid factors concerning the relations of the patient and the place of his birth. The patient belongs to a goitrous family, he was born and brought up in a locality in which hypertrophy of the thyroid is endemic. The hypertrophy of the palpebral tarsus, the integuments of the face and extremities of the limbs as well as the hyperplastic fibrous osteoperiostosis should be attributed to an upset of endocrine function in direct relation with a hereditary vice transmitted by goitrous parents or acquired as a result of a local pathologic factor which maintained a hypertrophy probably associated with thyroid derivation. The author places in the forefront of this imbalance certain physiologic disorders of the thyroid and parathyroids. The nonprogressive character of the syndrome in his patient leads him to conclude that the disorder completed its course long ago. So far as the hypertrophy of the eyelids and integuments of the face is concerned, it is easy to come to the conclusion, on consideration of a photograph taken eight years after the first one, that the small difference observed in these two pictures is due to the progress of age rather than to the continuation of the pathologic process. So far as the hypertrophy of the palpebral tarsus is concerned, perhaps one should not totally ignore the ocular irritation produced by smoke, when the patient was 20 years old, an irritation which in the space of about two months necessarily resulted in a chronic conjunctivitis. The palpebral troubles made their appearance in the fall of the same year. This inflammation, in its turn, has perhaps participated in the development of such a strange disease of the tarsus, because the endocrine or humoral predisposition of the patient was of a nature to favor the reaction of fibrous hyperplasia.

Florida Medical Association Journal, Jacksonville

22 563 610 (June) 1936

- Present Day Conceptions in the Management of Prostatic Obstruction L. M. Orr II and D. T. Rue Orlando—p. 573
Coordination of Private Practice and Preventive Medicine W. W. Bauer Chicago—p. 578
Some Observations on Fractures Seen at Florida State Hospital J. C. Robertson Chattahoochee—p. 582
Treatment of Tuberculosis E. C. Hood Florence S. C.—p. 586
Pyelitis in Pregnancy I. J. Strumpf Jacksonville—p. 589

Illinois Medical Journal, Chicago

69 477 564 (June) 1936

- The Physicians and the Pharisees C. B. Reed Chicago—p. 491
The Social Security Act and Its Relation to the Medical Profession T. A. McDavitt Chicago—p. 499
Reciprocal Relations Between State Medical Societies H. M. Camp Menmouth—p. 502
Standardization of Activities of the Committee on Medical Economics of the Midwest and Northwest F. L. Loveland Topeka, Kan.—p. 510
Diagnostic Value of X-Ray in Diseases of Chest R. S. Berghoff Chicago—p. 524
The Social Security Act and the Doctor A. Genevieve Chipman Savanna—p. 527
Standards for Private Sanatoriums for the Care of Patients with Nervous or Mental Diseases S. H. Kraines Chicago—p. 530
Bactericidal and the Public Health F. O. Tenney Chicago—p. 533
Principal Research Publications Section of Technical Service and Research Board of Health F. O. Tenney Chicago—p. 537
The Necessary Treatment of Simple Sprains W. K. Jennings Evansville—p. 548
Injuries of the Kidney Perlick on Effects of Trauma in General on Urinary Infection and Stone Formation A. J. O'Connor Chicago—p. 541
Early Infection in General Surgery M. S. Underhill Evansville—p. 545
The Organisms A. S. Underhill Chicago—p. 547
Research in the General Laboratory in the Study of Diarrhea A. J. Underhill Chicago—p. 547

Johns Hopkins Hospital Bulletin, Baltimore

58: 333 382 (May) 1936

- Differential Diagnosis of Disseminated Sclerosis from Other Forms of Multicentric Encephalomyelopathy Comments on Recent Ideas Concerning Etiology and Treatment L. F. Barker, Baltimore—p. 333
*Morphologic Changes in Blood Associated with Experimentally Produced Hepatic Damage H. B. Shumacker Jr. and M. M. Wintrobe, Baltimore—p. 343
Dinitrophenol Poisoning Unusual Case. H. Eichert, Baltimore—p. 378

Changes in Blood Associated with Hepatic Damage.—Shumacker and Wintrobe describe the blood changes in mice and rabbits in which acute and chronic hepatic damage was produced by the administration of carbon tetrachloride. Polycythemia developed following the initial doses of carbon tetrachloride or after the dosage was abruptly and substantially increased. Refractive index determinations suggested that hemoconcentration may have played a part in the causation of the polycythemia. Occasionally the refractive index before polycythemia developed rose to values found during polycythemia. More conclusive as suggesting hemoconcentration is the increase in total plasma solids from 0.0761 to 0.0825 Gm. per cubic centimeter of plasma, which occurred in one dog during the period of polycythemia. In the rabbits similar polycythemia was observed. After injury to the liver was caused repeatedly and a chronic condition closely resembling cirrhosis was produced, anemia developed. This was usually normocytic in type, but in instances in which the liver damage was very severe and of long duration, macrocytic anemia occurred. In such instances the bone marrow was hyperplastic and macroblastic in type. It is suggested that the anemia may be the indirect result of liver damage and that the macrocytic anemia developed as the consequence of a fault in the internal metabolism of antranemic principle.

Journal Industrial Hygiene and Toxicology, Baltimore

18 341 370 (June) 1936

- Determination of Trichlorethylene in Air H. M. Barrett Toronto, Canada—p. 341
Plant Study of Urine Sulfate Determinations as Measure of Benzene Exposure W. P. Yant, H. H. Schrenk and F. A. Patty Pittsburgh—p. 349
Prevention of Anthrax Infection in Woolen Textile Processing L. G. Macdonald Cornwall N. Y.—p. 357
Contributions of J. S. Haldane to Industrial Hygiene A. Henderson, New Haven, Conn.—p. 363

Journal of Lab. and Clinical Medicine, St. Louis

21 883 992 (June) 1936 Partial Index

- Hemography in Diagnosis of Appendicitis Based on 500 Cases W. J. Crocker and Eleanor H. Valentine Philadelphia—p. 883
Effect of Obstructive Jaundice on Blood Platelets of Rabbit L. V. Dittmer Durham N. C.—p. 899
Primary Carcinoma of Lung Review of Thirty Cases Carol M. Fox Madison Wis.—p. 906
*Alleged Variabilities of Kahn and Wassermann Reactions from Meteorological Changes Margaret F. Kelley and J. J. Short, New York—p. 910
Modification of Hematopoietic Function in Rabbit by Certain Cyclic Compounds D. R. Climenko New York—p. 913
*Sodium Citrate Spirocheticide R. S. Leasingham Atlanta Ga.—p. 922
Rapid Universal Blood Stain May Gruenwald Giemsa in One Solution M. M. Strumia Bryn Mawr Pa.—p. 930
Rapid Flocculation Method for Diagnosis of Syphilis Final Report F. Rytz Minneapolis—p. 934
Technic for Obtaining Human Blood for Tissue Culture Experiments J. T. King Minneapolis—p. 940
Prolonged Preservation of Antigenic Specificity of Sheep Cells Associated with Production of Marked Increase in Resistance to Hypotonic Solutions Winifred Ashby Washington D. C.—p. 943
Study of Relative Sensitivity and Specificity of Kolmer Wassermann and Kahn and Eagle Precipitation Tests F. Boerner Margate Beach N. J.—p. 952
Estimation of Phospholipid Content of White Blood Cells E. M. Ely Kingston Ont.—p. 957
General Purple Polychrome Blood Stain W. A. Grant Syracuse N. Y.—p. 978

Kahn and Wassermann Reactions and Meteorological Changes.—Kelley and Short declare that the extreme variations in serologic reactions for syphilis reported by Hensley and Peter and their wide divergences between the results of Kahn and Wassermann tests on identical specimens are contrary to their own and to common experience. That the

logical changes could account for such inconsistencies is not supported by the results of their study. Repetitions were in the majority of instances highly consistent with the original tests. If meteorological variations are such an important factor as Hoverson and Petersen assert, supporting evidence should not be difficult to find in the vast literature that has accumulated on the subject of Wassermann and Kahn reactions. Hoverson and Petersen should look elsewhere for a satisfactory explanation of their results.

Sodium Citrate Spirocheticide—While preparing for darkfield examination a rather thick cover glass specimen from a laryngeal lesion of Vincent's angina, containing many pus cells and a bacterial flora consisting mainly of myriads of Vincent's organisms, Leadingham observed that the addition of a drop of a 2 per cent solution of sodium citrate caused immediate cessation of movement of the spirochetes and apparently eventual dissolution. Repeated examinations gave the same results. Later the same solution was applied to the surface of the ulcer from which the specimen had been taken. Ten minutes later no Vincent's organisms were found. None were present the next day or the day following, when the patient was dismissed.

Journal of Pharmacology & Exper Therap, Baltimore 57: 113-198 (June) 1936

- Comparative Actions of Sympathomimetic Compounds. Bronchodilator Actions in Bronchial Spasm Induced by Histamine. W. M. Cameron and M. L. Tainter. San Francisco.—p. 152.
Effect of Morphine Sulfate and of Dihydromorphine Hydrochloride on Antrum Pyloric Sphincter and Duodenum in Nonanesthetized Dogs. C. M. Gruber, J. E. Thomas, J. O. Crider and J. T. Brundage. Philadelphia.—p. 170.
Action of Certain Choline Derivatives on Coronary Flow. A. M. Wedd. Rochester, N. Y.—p. 179.
Effect of Certain Salicyl Derivatives on Isolated Hearts of Frogs and Turtles. R. L. Johnston. Cincinnati.—p. 193.

Journal of Thoracic Surgery, St. Louis

5: 453-566 (June) 1936

- Complementary Anterior Thoracoplasty for Pulmonary Tuberculosis. Technic Employing Parasternal Division of Costal Cartilages. C. Haight, Ann Arbor, Mich.—p. 453.
Consideration of Contralateral Pneumothorax as Complication of Intrathoracic Operations. H. B. Stephens. San Francisco.—p. 471.
*Negative Sputum. M. Pinner, Oneonta, N. Y. and M. T. Wooley. Tucson, Ariz.—p. 476.
Cavity Closure by Combined Pneumothorax and Phrenic Nerve Interruption. C. M. Miller. Olive View, Calif.—p. 481.
Phrenic Exeresis at Termination of Pneumothorax Therapy. R. A. Bendove and L. R. Davidson. New York.—p. 487.
Phrenico-Exeresis. G. W. Weber, J. J. Jacobson and F. W. Holcomb. Kingston, N. Y.—p. 496.
Acute Dilatation of Stomach Following Left Sided Phrenic Paralysis and Thoracoplasty. Two Fatal Cases and Two Cured by Continuous Gastric Suction. C. A. Thomas and F. R. Harper. Tucson, Ariz.—p. 507.
Anesthesia in Thoracic Surgery with Especial Reference to Cyclopropane. U. H. Eversole and R. H. Overholt. Boston.—p. 510.
Technic of Experimental Coronary Sinus Ligation. L. Blum and L. Gross. New York.—p. 522.
*Rib Fracture from Cough. Report of Twelve Cases. W. R. Oechsl. Olive View, Calif.—p. 530.
Pharyngocele (Pulsion Diverticulum). Report of Case. H. Lilienthal. New York.—p. 535.
Chylothorax Due to Bullet Wound of Thoracic Duct and Syndrome of Traumatic Chylothorax. Report of Case and Seven Cases from Literature. A. Strauss. Cleveland.—p. 539.
Matched Set of Periosteal Elevators. R. H. Overholt. Boston.—p. 552.
Continuous Automatic Water Suction Apparatus for Aspiring Cavities. W. S. Glazer. Detroit.—p. 557.
Pneumothorax Decompressor. B. Gordon. Philadelphia.—p. 560.

Negative Sputum—On the basis of a numerical comparison of various methods for the demonstration of tubercle bacilli, Pinner and Wooley show that the unqualified term 'negative sputum' is practically meaningless. Many patients whose sputum is found negative on repeated direct smears and concentrations expectorate bacilli that can be demonstrated by cultural methods and guinea-pig inoculation, by the use of laryngeal smears and gastric lavage and by appropriate methods of sputum collection. Following collapse therapy, and particularly following thoracoplasties, the roentgenologic evidence of healed cavities is often misleading and always inconclusive unless confirmed by the absence of sputum or the absence of tubercle bacilli according to the strictest tests. It is urged not to use the term 'negative sputum' without stating specifically the criteria that were used to establish the absence of tubercle bacilli.

Rib Fracture from Cough—During the last three years Oechsl has looked for rib fractures as a part of the routine interpretation of roentgenograms of the chest. Among about 2,000 admissions, twelve instances of fracture involving from one to four ribs have been observed, an incidence of 0.6 per cent. Fracture in all twelve cases was due to cough. Fracture was associated with far advanced tuberculosis in all but one patient, who had bronchial asthma and bronchitis. Induced pneumothorax was present in four instances and phrenic paralysis in one case. Three of nine unilateral fractures were associated with tuberculosis in the lung on the same side, three in the lung on the opposite side, two with bilateral tuberculosis and one with asthma. Of the three patients with fractures on both sides, two had tuberculous lesions in only one lung. Of the unilateral fractures, five were right sided and four left sided. Of the total of eighteen individual fractures experienced by the twelve patients, nine were right sided. In the light of these figures, one cannot ascribe much splinting effect to the liver. The appearance of the ribs was normal in every instance, and healing was fairly prompt, depending on the treatment afforded. There was no evidence of bone atrophy or calcium absorption. Muscular action is the determining factor in the occurrence of these fractures. A typical history is that, during a severe coughing spell, the patient notices a 'catch' or 'stabbing pain' in a sharply localized area, which he can point out accurately and which later is found to be the site of fracture. The usual signs and symptoms of fracture are elicited. Without exception, the fractures were found in a line extending from a point about 4 cm from the costochondral articulation of the fourth rib obliquely caudad and laterally to the ninth rib in the midaxilla. This location corresponds to the heavy muscular attachments of the obliquus externus abdominis, where it interdigitates with the serratus anterior. In six of the author's cases the muscles attached to the shoulder girdle and to the chest wall were tense at the same time that the abdominal muscles were in strong contraction in the expiratory phase of coughing. It seems possible that contraction or tension of the shoulder girdle muscles, particularly the serratus anterior, exerting a pull laterally and cephalad, as opposed to the simultaneous pull of the abdominal muscles mesiad and caudad, may be the determining factor in this type of fracture.

Military Surgeon, Washington, D. C.

78: 413-490 (June) 1936

- Treatment of Nonunion With or Without Loss of Bone. F. H. Albee.—p. 413.
The Third Pan American Conference of National Directors of Health. B. J. Lloyd.—p. 427.
Observations on Preventive Medicine in the Tropics. S. F. Seeley.—p. 433.
Study of *Pes Planus*. H. L. Wheeler.—p. 438.
Shoes versus Feet. F. J. Vokoun.—p. 447.
Treatment of Neurosyphilis. T. C. C. Fong.—p. 449.
Surgical Treatment of Pulmonary Tuberculosis. J. H. Forsee.—p. 456.
A Ray of Normal Chest. What Structures Underlie Shadows in Normal Chest Plate? M. Kasich.—p. 466.

Minnesota Medicine, St. Paul

18: 343-414 (June) 1936

- Rocky Mountain Spotted Fever in Minnesota. Report of Second Indigenous Case and Biologic Studies. H. A. Reimann. Minneapolis.—p. 343.
Acute Coronary Thrombosis Without Characteristic Pain and Without Symptoms of Shock. Report of Three Cases. H. L. Smith and J. R. Brink, Rochester.—p. 346.
Ambulatory Treatment of Auricular Fibrillation with Quinidine. Five Year Follow Up Study. S. A. Weisman, Minneapolis.—p. 349.
Huge Ovarian Cysts. C. W. Mayo and H. W. K. Zellhoefer. Rochester.—p. 353.
Ovulation Pain. R. N. Andrews. Mankato.—p. 355.
Hormone Effects in Women. E. C. Hartley. St. Paul.—p. 357.
*Clinical Significance of Ovarian Cysts. Selma C. Mueller. Duluth.—p. 361.
Surgery in Chronic Sinus Disease. F. L. Bryant, Minneapolis.—p. 364.
Primary Operation for Suppuration of Petrous Pyramid. Report of Two Cases. H. L. Williams. Rochester, Minn.—p. 367.
Diagnosis and Treatment of Acute Intestinal Obstruction. H. W. Quist. Minneapolis.—p. 372.
Varicose Veins of Broad Ligaments. C. H. Mattson. St. Paul.—p. 376.

Significance of Ovarian Cysts—In an attempt to determine what proportion of ovarian tumors, particularly cysts, cause functional abnormalities as shown by changes in the menstrual cycle, Mueller studied 186 cases that had a diagnosis

involving the ovary, with or without other diagnoses. Of these, 169 were diagnosed cyst, cystic change or corpus luteum cyst, with or without associated lesions. Fourteen were malignant ovarian tumors, four pseudomucinous cysts, five carcinomas of the ovary, four papillary cystadenomas, one sarcoma, eight parovarian cysts, four dermoids, two 'multilocular' cysts, two chocolate cysts, one endometrial cyst, one fibroma and one fibrosis of the ovary. In thirty-nine cases, more than one type of cyst was mentioned or the cyst was associated with inflammatory changes in the tubes, ovaries or appendix. The ages of the patients varied from 15 to 77 years. The oldest patient had a benign ovarian cyst, while one of the 15 year old patients was operated on for a pseudomucinous cyst weighing 8,100 Gm. This patient died of a pulmonary embolus. In reviewing the histories of these patients, particular attention was paid to the menstrual cycle. 102 patients gave a history of regular, normal menses, seventeen were past the menopause and twenty-one gave a history of regular menses but stated that the flow was somewhat more profuse than normal. Thus 140 of these patients gave a history of regular menses. Only forty of the entire series gave a history of irregular menses. Of these, fourteen had a diagnosis of only 'cyst' or 'corpus luteum cyst,' without any other pelvic diagnosis. The remaining twenty-six had additional diagnoses, such as fibroids, cervical polyps, salpingitis and appendicitis. There were four tubal pregnancies included in this group. Infection, either of the fallopian tubes or of the appendix, was found in twenty patients having irregular and profuse menstrual flowing. In only fourteen cases was there no complicating factor, such as infection, fibroids or polyps. Inflammatory lesions such as salpingitis and oophoritis and appendicitis, were associated with irregularities of menstruation in more than half of the cases showing this irregularity. The present conception of the pathologic physiology underlying functional uterine bleeding is that a lack of the luteinizing hormone of the anterior pituitary exists. This allows the follicular hormone to act without the luteinizing hormone and the endometrial hyperplasia so induced results in hemorrhage. In addition to hormone therapy, stimulating doses of x-rays to the pituitary and ovary have been found beneficial in certain of the functional metrorrhagias and amenorrheas. Theoretically the old treatment of bimanual palpation and rupture of a single ovarian cyst found on pelvic examination would be good treatment if followed by other measures and if the diagnosis could be definitely established but occasionally serious error might result and malignant lesions or other complications be overlooked.

Nebraska State Medical Journal, Lincoln

21: 241 280 (July) 1936

- Maternal Mortality J. R. McCord Atlanta, Ga.—p. 241
Introduction to Symposium on Hemorrhages of Pregnant Uterus P. Findley Omaha—p. 245
The Management of Abortion C. F. Moon Omaha—p. 246
The Management of Placenta Praevia E. C. Sage Omaha—p. 247
Management of Placenta Abruptio R. Luikart Omaha—p. 250
Other Causes of Bleeding in Pregnancy L. O. Hoffman Omaha—p. 253
Progress of Surgery Review of Literature for the First Half of 1936 H. H. Davis Omaha—p. 255
Infectious Mononucleosis A. S. Rubnitz Omaha—p. 259
A Few Remarks Concerning Treatment of Appendicitis J. M. Willis McCook—p. 264
Treatment of Angina Pectoris and Congestive Heart Failure by Total Ablation of Thyroid Gland J. D. Bisgard Omaha—p. 267

New England Journal of Medicine, Boston

214 1173 1228 (June 11) 1936

- Acute Cholecystitis Study of Conservative Treatment C. D. Branch and R. Zollinger Boston—p. 1173
From Cow Path to State Road R. Fitz Boston—p. 1178
Hereditary Aspect of Progressive Pseudohypertrophic Muscular Dystrophy G. de la Hough Jr. Springfield, Mass.—p. 1189
Mxedeema Following Removal of Aberrant Thyroid Tumor J. G. Probert and H. Agrest St. Louis—p. 1191
Recent Progress in Physiology P. G. Stiles Boston—p. 1193

Hereditary Aspect of Pseudohypertrophic Muscular Dystrophy—Hough declares that the pedigrees of families having progressive muscular dystrophy reported in the literature show that the hereditary transmission may be as a dominant or a recessive or a sex-linked characteristic. He cites a

family history presenting six cases of the disease, one of which is uncertain. Seventy-nine known individuals are recorded. The transmission was in all cases in this family through an apparently normal female. There is increasing evidence to substantiate Barker's statement that the facioscapulohumeral or Landouzy-Déjerine type of progressive muscular dystrophy is transmitted as a dominant characteristic. As these individuals frequently live to sexual maturity, they should be warned against having offspring. The more common pseudohypertrophic or Duchenne type of progressive muscular dystrophy is apparently transmitted through the clinically normal female members of the family, exactly as is hemophilia. Perhaps this is due to the fact that individuals with this type of the disease are almost always incapacitated before sexual maturity. There is sufficient evidence to prohibit reproduction by the apparently normal females in such a family but to permit offspring to the apparently normal males. The method of inheritance may be used as a basis of sound classification as it is directly concerned with the prevention of the condition. The varying types of hereditary transmission as well as other evidence seem to prove conclusively that these cases are not all one disease entity.

Northwest Medicine, Seattle

35 203 242 (June) 1936

- Recent Studies in Nutritional Requirements of Man E. N. Todman Pullman Wash.—p. 203
Vitaminized Foods and Commercial Vitamin Concentrates I. A. M. ville Portland Ore.—p. 209
Specific Influences of Dietetic Fundamentals on Clinical Entities in Internal Medicine C. H. Hoffrichter Seattle—p. 215
First Infection Type of Tuberculosis in Young Adult Life J. A. Myers Minneapolis—p. 218
Congenital Cyst of Lung Report of One Case C. R. Jensen Seattle—p. 222
Response of Body to Infection Immunity and Fever L. A. Crumb Jr. Chicago—p. 223
Gastric Motility Following Subtotal Gastrectomy J. H. Berge Seattle—p. 227
*New Principle in Treatment of Perforated Peptic Ulcer Preliminary Report and Case History P. E. Spangler Portland Ore.—p. 229

Treatment of Perforated Peptic Ulcer—Spangler reports a case of perforated gastric ulcer in which the course was unusually benign. The explanation lies in the neutralization of the irritant hydrochloric acid by copious quantities of sodium bicarbonate solution ingested (twelve glasses) by the patient. This suggests the possible new principle in the treatment of perforated peptic ulcers, that is, alkaline therapy by mouth prior to operation, and intra abdominal alkaline therapy during the operation directed toward complete neutralization of the irritant hydrochloric acid. Laboratory demonstration in experimental animals of the innocuousness of sodium bicarbonate solution in the peritoneal cavity and the demonstration of the effective intraperitoneal neutralization of gastric hydrochloric acid by sodium bicarbonate solution is necessary. In the light of this experience the author would not hesitate any time in a similar case to aspirate stomach contents and wash the stomach with alkaline solution, and to allow it to remain in the stomach.

Pennsylvania Medical Journal, Harrisburg

39 561 664 (May) 1936

- Cancer of the Breast with Particular Reference to Irradiation as Factor in End Results A. Graham Cleveland—p. 561
Diagnosis and Treatment of Cancer of Bladder by Means of Roentgen Ray G. E. Pfahler Philadelphia—p. 572
Modern Treatment of Human Infertility B. Green Philadelphia—p. 576
Outstanding Signs and Symptoms in Sinus Thrombosis Meritt J. Demerits of Internal Jugular Ligation in Treatment of Lateral Sinus Thrombosis M. S. Erner and D. Myers Philadelphia—p. 579
Eradication of Diphtheria in Pennsylvania H. J. Deane Philadelphia—p. 585
Practical Consideration of Carcinoma of Skin C. L. Schenck Harrisburg—p. 587
Spinal Cord Tumors F. C. Grant Philadelphia—p. 591
Vesicovaginal Fistula J. N. White Scranton Pa.—p. 594
History and Recollections of Development of Pediatrics in Pennsylvania J. P. C. Griffith Philadelphia—p. 597
Further Studies on Thyroid and Pineal Glands L. G. Pomeroy Philadelphia—p. 601
Clark, A. Steinberg N. H. Einhorn Philadelphia—p. 601
Fantault, Nunn—p. 601

Public Health Reports, Washington, D C

51: 643-684 (May 22) 1936

Sickness Among Male Industrial Employees During Final Quarter of 1935 and Entire Year D K Brundage—p 643
Engineering Control of Occupational Diseases J J Bloomfield—p 655
Chemical Studies on Tumor Tissue III Titration of Mouse Tumors M J Shear—p 668

51: 685-730 (May 29) 1936

Preparation of Concentrate of Vitamins B₁ and B from Brewers Yeast M I Smith and A Seidell—p 685
Application of Preliminary Sanitary Survey to Flooded Areas J M Dalla Valle and J J Bloomfield—p 688
Rat Proof Construction and Its Effect on Control of Rat Life on Ships Instances of Permanent and Apparent Automatic Control Effected by This Type of Construction Observed on Fifty Ships at the Port of New York B E Holsendorf—p 693

51: 731-756 (June 5) 1936

Smallpox Immunity in 5 000 College Students R C Bull and S L Rankin—p 734

51: 757-798 (June 12) 1936

Development of Technic for Measuring Knowledge and Practice of Midwives M Derryberry and Josephine Daniel—p 757
*Anemia of Deaminized Casein M I Smith and E F Stohman—p 772

Anemia of Deaminized Casein—Smith and Stohman found that deaminized casein has little if any nutritional value in the nutrition of the white rat. When fed at a level of 10 per cent, deaminized casein produces in the white rat a characteristic macrocytic megaloblastic anemia with many Howell-Jolly bodies. The inclusion of good quality protein does not prevent the pathologic process, though it mitigates the severity of the anemia. Boiling deaminized casein with alcoholic sodium hydroxide, or reprecipitation of deaminized casein from aqueous alkaline solution, destroys the anemia-producing factor to a considerable extent. The intraperitoneal injection of the alcohol soluble fraction of a hydrochloric acid hydrolysate of deaminized casein reproduced the anemia definitely enough to prove conclusively that the anemia is an intoxication and not a deficiency disease.

Rhode Island Medical Journal, Providence

19: 83-96 (June) 1936

Bronchiectasis J M Beardsley Providence.—p 83
Peroral Endoscopy as an Aid in Diagnosis of Diseases of Bronchi and Esophagus L C. Happ Providence.—p 89

Science, New York

83: 533-562 (June 5) 1936

*Potassium Basal Factor in Syndrome of Cortico-Adrenal Insufficiency R L Zwemer and R Truszkowski New York.—p 558
Differential Staining of Thick Sections of Tissues Madeline Kueberg Chicago—p 561

Potassium and Cortico-Adrenal Insufficiency—Zwemer and Truszkowski endeavored to find whether adrenal insufficiency is necessarily associated with disturbances in potassium metabolism, whether the symptoms of adrenal insufficiency can be reproduced in normal animals by raising the plasma potassium to the same extent by injection and what the mechanism is whereby the adrenal cortex regulates potassium metabolism. They believe that an important function of the adrenal cortex is the regulation of potassium metabolism and that the various known symptoms of cortico-adrenal insufficiency may be explained in terms of a disturbance of cortico-adrenal-potassium interrelations. It is further considered that the beneficial action of adrenal cortex extract in certain other pathologic conditions would suggest that the same mechanism is involved.

South Carolina Medical Assn. Journal, Greenville

32 117-144 (May) 1936

The Relationship of the Clinical Pathologist to the Medical Profession at Large J M Feder Anderson, S C—p 117

32 145-162 (June) 1936

Relation of Nutritional Deficiencies to Development of Heart Failure in Organic Heart Disease W B Porter Richmond, Va.—p 145
Study of Hookworm Disease G R O Daniel Hartsville—p 151
The Ammoniacal Diaper D O Rhame Jr, Clinton—p 153
Report of Spider Bite H L Shaw Sumter—p 155

Southern Medical Journal, Birmingham, Ala

29: 547-650 (June) 1936

Rabies, Continuing Challenge J N Baker J G McAlpine Montgomery Ala and J D Dowling Birmingham Ala—p 547
Some Important Factors That Influence Morbidity and Mortality in Gynecologic Surgery Based on Review of 1 000 Consecutive Private Cases J T Sanders and T B Sellers New Orleans—p 557
Symptomatic Mimicry of Gastro-Intestinal Diseases by Lesions of Genito-Urinary Tract C L Hartsock Cleveland—p 566
The Management of Heart Disease in Pregnancy J Jensen St Louis—p 572
Prolonged Barbiturate Narcosis in Treatment of Acute Psychoses G F Whit and T H Cheavens Dallas Texas—p 574
Neurologic and Psychiatric Manifestations of Malaria C C Turner, Memphis, Tenn—p 578
Use of Oxygen in Mobilization of Stiff Joints E B Henson, Charleston W Va—p 586
Acute Osteomyelitis Etiology Symptoms Diagnosis and Treatment of Eighty Cases J I Mitchell Memphis Tenn—p 588
Indications for External Ethmoidophrontal Sinus Operation W L Simpson Memphis Tenn—p 594
Chief and Most Common Cause of Nasal and Upper Dental Deformities G E Adkins Jackson Miss—p 603
Present Day Status of Irradiation and Surgery in Malignant Disease About Head and Neck J C Beck and M R Guttman Chicago—p 606
Local Nonsurgical Management of Various Types of Glaucoma J Green St Louis—p 609
Comparative Study of Bacillus Coli Mntable from Outbreak of Diarrhea in the New Born I D Michelson and Anna Deau Dulauer, Memphis Tenn—p 611
Blood Groups and Allergy Statistical Review L V Dyrenforth, Jacksonville Fla—p 617
Unilateral Renal Agenesis Case Reports of Unilateral Renal Aplasia and Congenital Absence of One Kidney T Ainsworth Jackson Miss—p 619
Submucous Fibrosis of Urinary Bladder W R. Barron Columbia S C—p 623
Treatment of Uterine Carcinoma K C Morin St. Louis—p 624
*Calcium Metabolism and Therapy in Dermatology E S Lain Oklahoma City—p 626
Hernia and Its Effect on the Industrial Worker Coral R Armentrout Houston Texas—p 630
A Few Health Problems Awaiting Solution J A Ferrell New York—p 635
Proctology for the General Practitioner R D Alexander St Louis—p 638
The Saint Philip Hospital Postgraduate Clinic for Negro Physicians Five Year Report L E. Sinton Jr Richmond Va—p 640

Calcium Metabolism and Therapy in Dermatology—Lain finds that the most gratifying effects of adequate and properly administered calcium therapy are that 1 It produces a degree of sedation and stability of the sympathetic nervous system, thereby serving to give immediate relief in most acute or chronic pruritic dermatoses 2 It limits to a striking degree exudation from either mucous or cutaneous structures, whether the irritant is due to internal or to external factors 3 Administered intravenously, after the first flush of warmth passes away it gives immediate tone to the tissues, both cutaneous and muscular There soon occurs a feeling of well being somewhat like that from a narcotic drug, without the unpleasant after-effects 4 When it is given in conjunction with viosterol and foods high in vitamin D value, with an adequate exposure to ultraviolet radiation, it promises to be of special value in other skin eruptions which have for their etiologic background disturbed calcium metabolism 5 By making this presentation, the author hopes to stimulate more interest among dermatologists for a closer cooperation between the physiologic laboratory and the clinician, whereby the establishment of calcium therapy on a rational basis with a full knowledge of its values and limitations may become a reality

Southern Surgeon, Atlanta, Ga

5 179-254 (June) 1936

Occurrence of Convulsions in Series of Over 700 Verified Intracranial Tumors L T Furlow and E. Sachs St. Louis.—p 179
What Can We Expect from Radical Surgery for Rectal and Rectosigmoid Cancer? F W Rankin Lexington Ky—p 192
Recent Developments in Surgery of Sympathetic Nervous System P G Flothow Seattle—p 200
Dyschondroplasia Consideration of Osseous Dystrophies H R. Mahorner New Orleans.—p 209
Instrument for Treatment of Trigeminal Neuralgia by Electrocoagulation H H Cooke, Miami, Fla—p 224
Technic for Injection Treatment of Hernia C O Rice and L M Larson Minneapolis—p 227
The Use of the Time Factor in Peritonitis R G Doughty Columbia S C—p 234
Tumors of Larynx F E. LeJeune New Orleans.—p 243

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1 1033 1090 (May 23) 1936

- Hormones and Pregnancy J M Robson—p 1033
 A Center or Centers in Hypothalamus Controlling Menstruation
 Ovulation Pregnancy and Parturition G W Theobald—p 1038
 *New Arsenical for Treatment of Syphilis and Trypanosomiasis W
 Yorke and F Murgatroyd, in collaboration with F Glyn Hughes
 H M O Lester and A O F Ross—p 1042
 Estimation of Percentage of Ethyl Alcohol in the Blood. H K V
 Soltau—p 1048
 Traumatic Heterophoria H de Villiers—p 1050

New Arsenical in Treatment of Syphilis and Trypanosomiasis—As a result of examining the trypanocidal activity of a large number of arsenical products, Yorke and Murgatroyd selected sodium succinylmethylamide-*p*-arsonate for detailed therapeutic trial. In experiments on laboratory animals this compound compared favorably with tryparsamide in that it was found to be rather less toxic and of somewhat greater trypanocidal activity than the latter drug. In man it was well tolerated in weekly amounts of from 2 to 4 Gm. The usual course consisted of the administration of this amount weekly until a total quantity of from 30 to 36 Gm had been given. A number of patients had several such courses, the total quantity ranging from 66 to 141 Gm while one patient had an uninterrupted course of 69 Gm, without showing any toxic signs. Apart from occasional nausea and vomiting, the only toxic signs observed were mild arsenical dermatitis in two patients and temporary jaundice in three advanced cases of neurosyphilis after prolonged courses of the drug. Visual disturbances have not been encountered. The drug exhibited the stimulating action associated with tryparsamide and other pentavalent aromatic arsenicals. In contrast with tryparsamide, the new drug exerts a definite action in primary, secondary and tertiary syphilis. In primary syphilis it alone is inadequate since, although the lesion cleared up rapidly, secondary manifestations developed subsequently. When it was combined with bismuth the effects on primary syphilis seemed to be more permanent, and so far none of the patients treated in this way have relapsed. It has a definite action on tertiary manifestations of syphilis: the lesions disappeared completely in twenty of twenty-five cases. In early neurosyphilis and in tabes it gave satisfactory results. Of eleven patients with Nigerian sleeping sickness treated by a single course, ten became clinically normal and the other was improved. Eight of these patients had pathologic spinal fluids at the time of treatment, in three of them the fluid had become normal after the single course of treatment in two it had become considerably improved and in one pathologic changes had apparently increased, although clinically the patient had become quite normal, the other two patients, owing to their clinical improvement, did not complete the treatment. In addition, a twelfth advanced case, which had failed to react to full courses of tryparsamide and other drugs, improved remarkably after a course of the compound.

Clinical Science, London

2 149 236 (May 4) 1936

- *Circulatory Changes in Fingers in Some Diseases of Nervous System with Especial Reference to Digital Atrophy of Peripheral Nerve Lesions T Lewis and G W Pickering—p 149
 *Effect of Introducing Blood from Patients with Essential Hypertension into Other Human Subjects G W Pickering—p 185
 Relationship of Carotid Sinus Mechanism to Persistent High Blood Pressure in Man G W Pickering M Kussin and P Rothschild—p 193
 Effects of Adrenalin and of Cold on Blood Pressure in Human Hypertension G W Pickering and M Kussin—p 201
 Peripheral Resistance in Persistent Arterial Hypertension G W Pickering—p 209

Circulatory Changes in Diseases of Nervous System.

—Lewis and Pickering state that disuse whether resulting from lesions of the motor nerves from fixation of the joints or tendons or from psychic disturbances leads to a diminished circulation through the skin of the immobilized part. After loss of sympathetic supply there is some regaining of tone by the vessels of the affected limb but the skin remains in general

warmer than the symmetrical normal skin. After complete loss of motor and sympathetic supply, as in cases of longstanding anterior poliomyelitis subjected to sympathectomy, the affected limb is in general warmer than the unaffected. Section of a mixed peripheral nerve leads first to abnormal warmth but soon to persistent coldness of the denervated skin. The change from warm to cold skin seems to correspond more with degeneration of the sensory fibers. The reduction in blood flow through the skin after section of a mixed nerve is due chiefly to loss of the posterior root fibers, partly to regaining of vascular tone after loss of sympathetic supply, and partly to muscular inactivity consequent on motor nerve loss. The possibility of organic vascular change in the digital vessels in long standing cases of peripheral nerve section is also considered. The nutritional changes in the skin, subcutaneous tissues and bones are described in a number of patients with lesions of the nervous and locomotor systems. These changes may all be explained by disuse, defects in blood flow and sensory loss, and it is unnecessary to assume in explanation any "trophic" influence of the nervous system on these structures.

Transfusing Blood from Hypertensive Patients to Anemic Subjects—Pickering declares that from 400 to 500 cc. of blood from five normal donors introduced into five anemic recipients in from six to twenty-six minutes produced rises of systolic pressure varying from 0 to 16 mm of mercury and of diastolic pressure varying from 6 to 15 mm of mercury. So small a rise in arterial pressure suggests that the introduction of this large volume of fluid was accompanied by a corresponding increase in the capacity of the circulation. The blood content of the skin vessels increased during the transfusion and the color of the face and hands deepened much more than could be accounted for by increase in the hemoglobin content of the blood. The venous pressure appeared to be raised from 2 to 4 cm by the transfusion. The results of seven transfusions in which from 350 to 600 cc. of blood from donors with hypertension was introduced in from four to nine minutes into anemic recipients, show that the changes in systolic pressure varied from a fall of 4 mm to a rise of 7 mm and of diastolic pressure from 0 to a rise of 8 mm of mercury. The changes in the color of the skin and in the neck veins were similar to those seen when blood from normal donors was used. In each of the recipients receiving blood from donors with hypertension the blood pressure was again measured after two and twenty-four hours: these pressures were a little lower (from 5 to 15 mm of mercury systolic) than immediately before the transfusion, a difference probably attributable to excitement associated with this procedure. These results suggest that the blood of patients with essential hypertension is similar to normal blood in its content of pressor and depressor substances. The observations are opposed to the idea that in so-called essential hypertension the high blood pressure is due to excess of pressor or to deficit of depressor substance in the circulating blood. They could be made consistent with the view that the high blood pressure in such patients is due to a circulating pressor substance only by supposing that this substance is destroyed rapidly in vitro or in subjects without hypertension or that the substance is inactive in relatively small dilutions. The results do not exclude the possibility that hypertension may be due to the intervention of a chemical agent which is not circulating but is fixed by the tissues. The therapeutic results of using donors with hypertension were quite satisfactory and the procedure is one that may be commended as likely to benefit both the donor and the recipient.

East African Medical Journal, Nairobi

13 33-64 (May) 1936

- Primary Arterial Hypertension A J Jex Blake—p 34
 Red Cell Count and Cell Diameter of Kenya Natives H D Tait—p 43
 Congenital Relapsing Fever Case P C C. Carrham—p 43

Glasgow Medical Journal

201 236 (May) 1936

- Blood Viscosity in Congestive Heart Failure A Markham—p 201
 The Opening of the Tennant Memorial Institute at Obituary Western Infirmary Glasgow A M Ramsay—p 213
 Ophthalmology and General Medicine T F Morris—p 213

Guy's Hospital Reports, London

SG 1248 (Jan April) 1936

- Guy's Hospital Reports 1836-1936 H Rolleston—p 1
Thomas Wilkinson King the Father of Endocrinology W Hale White.—p 4
Remarks on Microscopic Preparations Made from Some of the Original Tissue Described by Thomas Hodgkin 1832 H Fox—p 11
Acute Generalized Tuberculous Adenitis Case E R. Boland—p 17
Observations on Endocarditis R. T. Grant—p 20
*Spontaneous Fluctuations of Blood Pressure. A. Schott—p 69
Studies in Bright's Disease XII Late Results of Acute Nephritis in Soldiers and Civilians A. A. Osman—p 93
Pustular Psoriasis of Extremities H W Barber—p. 103
Observations on Gastritis. C. K. Simpson—p 120
Incidence, Mortality and Treatment of Hemorrhage in Gastric Duodenal and Anastomotic Ulcer I Hospital Statistics A. M. Babey—p 129
Id. II. Incidence, Mortality and Treatment of Hemorrhage. A. F. Hurst—p 135
Letters on Orthopedics by W H Trethowan. Edited by C. Lambriaudi and T T Stamm—p 144
Fate of Metallic Foreign Bodies Introduced into Tissues in Treatment of Fractures. D W C Northfield—p 159
*Serum Test for Diagnosis of Liver Disturbances. H Ucko—p 166
Leukemia and Deep X Ray Therapy W L. Watt—p 175
Ear and Occupation. W M. Mallison—p 185
Postoperative Chest Complications Clinical Study R C. Brock—p. 191

Spontaneous Fluctuations of Blood Pressure—Schott measured the systolic and diastolic blood pressure in the ward by the auscultatory method at intervals of from fifteen to twenty minutes during about one hour in sixty-four unselected cases admitted to Guy's Hospital for reasons other than cardiovascular disease. In twelve cases there was transient or permanent hyperpiesia, the systolic pressure being 160 mm. of mercury or more and/or the diastolic 100 mm of mercury or more, the remaining fifty-two patients had normal blood pressure. Changes in the systolic pressure up to 10 mm. of mercury occurred in twenty-one cases and in the diastolic pressure in thirty-eight cases. Changes in the diastolic pressure of not more than 5 mm were observed in only seventeen cases. In the remaining forty-three cases the systolic and diastolic changes ranged from 15 to 45 mm systolic and from 15 to 30 mm. diastolic. Maximal differences existed in the systolic and diastolic pressure in each arm. The author is unable to offer any explanation for this difference whether the blood pressure determinations were done first on the right or on the left arm was of no influence. The incidence of marked fluctuations of both systolic and diastolic pressure was comparatively high in the twelve cases of hyperpiesis. Almost every conceivable type of curve representing the changes of blood pressure during the time of observation has been found to occur in the present series of cases. The main causes which are known to produce periodic changes in blood pressure experimentally and clinically are respiratory changes, periodic changes independent of respiration and having a slower frequency and diurnal changes, and the causes of nonperiodic changes are posture, ingestion of food, changes in temperature, physical exercise and emotional factors. The most important cause for changes in pressure was observed to be the emotional factor. The great variations of both systolic and diastolic pressure emphasize the often cited but neglected fact that an isolated reading of blood pressure has only a limited value. The study of the fluctuations of blood pressure as observed under the conditions prevailing in a hospital ward seems to be a functional test of the response of blood pressure to the comparatively weak stimuli caused by unrest in such a hospital ward and by the emotional upset caused by the investigation under those conditions. Abnormally high fluctuations of blood pressure may then be interpreted in an analogous way, viz., that patients exhibiting such abnormally high fluctuations, particularly if they are young and if the fluctuations affect both systolic and diastolic pressure, should be looked on as possibly being in the prehypertensive state and should therefore be treated accordingly and watched over a period of years. Abnormally high fluctuations without any reading showing a figure actually above normal would be suggestive of the first stage of such a prehypertensive condition.

Serum Test for Diagnosis of Liver Disturbances—Ucko modified the Takata reaction for the diagnosis of disorders of the liver in the following manner. Into five clean test tubes, each of a diameter of 11 mm, containing 0.2 cc. of

serum are measured 0.1, 0.15, 0.2, 0.25 and 0.3 cc. of a 0.36 per cent solution of anhydrous sodium carbonate. After shaking, the same quantities of a 0.5 per cent solution of mercury bichloride are added. The tubes are shaken again and allowed to settle. Four different types of reaction can be observed by daylight. 1 immediately after addition of the reagents, 2, 3 and 4 after one and a half hours. Reaction 1 (+++) a thick precipitation forms in all the tubes immediately after the addition of the reagents. Reaction 2 (++) all the tubes show a uniform turbidity. Reaction 3 (+) in the first three tubes a uniform turbidity is present, the remaining two tubes are translucent. Reaction 4 three or more tubes are translucent. Of 132 patients tested by both methods, the results of the two reactions differed in twenty-six cases. 1 Of four patients with a positive modified reaction and a negative Takata reaction, three were suffering from liver disease which was confirmed in two of them at postmortem examination. In the fourth patient with a general carcinomatosis, secondary deposits in the liver were highly probable. 2 Of twenty-two cases with a negative modified reaction and a positive Takata reaction, the possibility of a liver involvement has to be admitted in three, while nineteen cases were apparently free from any liver disturbance and no probability of such a complication arose from the clinical picture. Only seven of these nineteen patients had a really positive Takata reaction, while the remaining twelve showed only flocculation in two tubes of the range. It seems therefore that the results of the Takata reaction would be more conclusive if the so-called weakly positive reaction (+) was considered negative. The comparison of the two reactions shows that the modified reaction is capable of indicating liver disturbance with more certainty than the original Takata reaction. In addition to the technical advantages, the gradation of the results of the modified reaction offers the possibility of distinguishing between different forms of liver disease.

Indian Journal of Medical Research, Calcutta

23 837 1036 (April) 1936

- Absorption of Antigens by Antibodies or Vice Versa Part II B N Ghosh—p 837
Proteus Group Observations on Twenty Five Strains Maintained at the King Institute, Madras S R. Pandit—p 847
Cultivation of Vaccinia Virus on Chorio Allantoic Membrane of the Chick Embryo R Sanjiva Rao C G Pandit and H E. Shortt.—p 857
Cultivation of Viruses of Sandfly Fever and Dengue Fever on Chorio-Allantoic Membrane of the Chick Embryo H E Shortt R Sanjiva Rao and C S Swaminath—p 865
Filariasis in Patnagarh (Orissa Feudatory State) S Sundar Rao—p 871
Viability of Infective Forms of Larvae of Wuchereria Bancrofti When Freed from Mosquito Host K P Menon and P V Sektarama Iyer—p 881
Life History and Morphology of Babesia Canis in Dog Tick Rhipicephalus Sanguineus Parts I and II H E. Shortt—p 885
Studies on Typhus in Simla Hills Part IV Role of Rat Flea in Transmission of Typhus G Covell and D R. Mehta—p 921
Growth of Embryonic Nervous Tissue in Plasma Taken from Vitamin A Deficient Fowls and Rats W R. Aykroyd and G Sankaran—p 929
Carotene Content of Some Indian Vegetable Foodstuffs Preliminary Note on Its Variation Due to Storage Parts I and II N K De.—p 937
Comparative Study of Some Properties of Carotene and Lycopene N K. De—p 949
Action of Lugol's Iodine Solution on Thyroxinized Heart. R K Pal—p 957
Rate of Absorption of Glucose from Gastro-Intestinal Tract of the Cat and Influence of Insulin on Absorption Coefficient. H Chaudhuri and B S. Sahal—p 963
Hematologic Studies in Indians Part V Red Blood Cell Measurements L. E. Napier and C R. Das Gupta—p 973
*Use of Tapioca in Immunization with Snake Venoms S M K Mallick—p 993
Studies on Indian Snake Venoms Part I Daboia Venom Its Chemical Composition Protein Fractions and Their Physiologic Action S N Ganguly and M T Malkana—p 997
*Cirrhosis of Liver Following Chronic Intoxication with Carbon Tetrachloride Experimental Study M. V Radhakrishna Rao—p 1007
Study of Epiphyseal Union for Determining Age of South Indians Study of One Hundred Cases Chiefly from the Madras Schools and Colleges Ages Ranging from 10 to 23 M J S Pillai—p 1015

Use of Tapioca in Immunization with Snake Venoms—Mallick studied the effect of the addition of a sterile suspension of tapioca and of aluminum hydroxide to the venom solutions employed in immunizing animals for the production of

antivenene He found that when tapioca suspensions were added it was possible to bring horses to standard titer against both cobra and daboia venoms with greatly reduced dosage of the venoms, the quantities employed being one third of that found necessary formerly. Comparative trials in goats showed that the addition of tapioca was of special value in immunization with cobra venom and that this addition was more satisfactory than the use of aluminum hydroxide. The extensive suppurative reactions with abscess formation, which occurred when tapioca was not employed and with the larger doses formerly used to reach titer, were not observed when tapioca was added or were of much less degree.

Cirrhosis of Liver Following Carbon Tetrachloride Intoxication.—Radhakrishna Rao found that the repeated administration of small doses (from 0.1 to 0.2 cc. once or twice a week) of carbon tetrachloride subcutaneously to albino rats produced toxic cirrhosis. The fibrous tissue was mainly distributed around the hepatic venous tree, which showed sclerotic changes in its larger divisions, its genesis in the cirrhosis thereby induced was traced to a disorganization, collapse, condensation and sclerosis of the perisinusoidal reticulum around the hepatic terminals, consequent on a necrosis of the parenchyma in the same area.

Journal of Neurology and Psychopathology, London

16: 289 384 (April) 1936

Multiple Metastatic Tumors in the Brain Arising from Primary Bronchial Carcinoma W. E. C. Dickson and C. Worster Drought—p. 289

Heat Regulation in Dementia Praecox Reactions of Patients with Dementia Praecox to Cold I. Finkelman and W. Mary Stephens—p. 321

État Marbré, A. Meyer and L. C. Cook—p. 341
Some Observations on Masked Epilepsy and Simulation of Traumatic Epilepsy by Cerebral Tumor with Especial Reference to Head Injuries Without Fracture L. R. Yealland—p. 353

Lancet, London

1: 1161 1222 (May 23) 1936

Biochemical Lesion in Vitamin B₁ Deficiency Application of Modern Biochemical Analysis in Its Diagnosis R. A. Peters—p. 1161

*Anemia in Pregnancy J. A. Boycott—p. 1165

Acute Suppurative Thyroiditis R. Coope and L. Findlay—p. 1172

The Intravenous Route New Method and Apparatus C. G. K. Thompson—p. 1173

Prognosis of Resection in Carcinoma of the Stomach W. Anschutz—p. 1175

Anemia in Pregnancy—Boycott examined 222 unselected patients attending the antepartum clinic at University College Hospital. One hundred and seventy-two always had hemoglobin above 80 per cent, fifty hemoglobin below 80 per cent on at least one occasion and twenty-five below 70 per cent. Twenty-six cases in which the hemoglobin was below 80 per cent were examined in detail: their histories and present states gave ground for supposing that the low level of hemoglobin was due to pregnancy alone. It was found that they were equally divided into those with normal and those with subnormal color indexes. These two classes could also be distinguished on clinical and hematologic grounds. There is evidence to show that there is an inconsistent increase in the plasma volume in pregnancy causing a dilution of the red cells, and it has been suggested that the existence of the group with low hemoglobin figures and normal color indexes is explicable on this basis. On the grounds of hematologic resemblances and satisfactory response to iron treatment the group with low color indexes has been assigned to the class of anemia due to iron deficiency. The two groups are not mutually exclusive. Thirteen of these have been ascribed to iron deficiency due to the demands of the fetus in combination with either dietary insufficiency or defective utilization of iron. The remainder occurred in patients who had some complicating disease: the majority of these were of the hypochromic type. Although the series is too small to establish the preeminence of any factors as a cause of anemia in pregnancy, the evidence goes to show that diseases which cause anemia in the normal subject also predispose to anemia in pregnancy. Although the data are suggestive it is not proved that social status, age or parity affects the incidence of anemia.

Medical Journal of Australia, Sydney

1: 631 664 (May 9) 1936

The Problem of Calcification F. S. Hansman—p. 631

Herpes Cramps Fidgets and Other Disordered Sensations R. C. Skirving—p. 643

Growth Curve of Australian Infants During Second Year of Life F. W. Clements—p. 647

Reaction of Dilator Muscle of the Pupil to Light and Its Bearing on Argyll Robertson Sign K. O. Day—p. 648

Carriage of Serum for the Wassermann Test C. J. Hackett—p. 651

Chinese Medical Journal, Peiping

50: 297 650 (April) 1936

*Use of Dry Form of Placental Extract in Modification of Measles F. T. Chu and C. Y. Chou—p. 297

Cancerum Oris Clinical Study of One Hundred Cases, with Especial Reference to Prognosis F. T. Chu and C. Fan—p. 303

Infantile Beriberi in Shanghai C. L. Kao—p. 324

Tetany in Nephritis Report of Case with Postmortem Findings C. Fan and K. Y. Chin—p. 341

*Congenital Bone Syphilis Roentgenologic Diagnosis in Infants Less Than One Year of Age T. S. Jung—p. 352

Stovarsol Treatment of Congenital Syphilis in Chinese Children P. L. Fan—p. 364

Splenic Enlargement in Infants and Children Statistical Study of 1028 Cases F. T. Chu and Sarah Detrick—p. 382

50: 651 760 (May) 1936

Study of Blood in Cholera Note on Urine Analysis V. T. Le and T. Y. Tai—p. 651

Placental Extract in Modification of Measles—To shorten the time for the fractionation of globulins and to get a dry form of extract that may be better preserved, Chu and Chou used methyl alcohol as a precipitating agent, following the method of Liu and Wu. The redissolved extract is immunologically as potent as the preparation made from ammonium sulfate precipitation. The dry extract is convenient for pooling and may be stored without rapid deterioration. When the dry product is redissolved and administered intramuscularly to susceptible family contacts early in the incubation period, either modification of measles or its complete prevention may be the result. If the nonimmune children who are intimately exposed to measles at home are given the extract on the fourth or fifth day after exposure, a dose of from 0.01 to 0.025 Gm. of the protein per kilogram of body weight is adequate for the successful modification of measles.

Congenital Bone Syphilis—Jung gives an analysis of the roentgenologic changes in the long bones of sixty-two infants less than 1 year of age, including six stillborn premature fetuses. A zone of decreased density just proximal to a zone of provisional calcification (osteochondritis) was found in sixteen cases. Cases were placed under this category if the reaction was sharply outlined and if the bony trabeculation inside such an area could be seen in normal orderly arrangement, even though decreased in number. When the zone was irregular in outline and actual destruction of the bone could be seen, it was included as an osteomyelitic process. At an advanced stage of osteochondritis, a zigzag or sawtooth type of lesion in the region of the metaphysis was found in ten infants. In four of the ten cases this form of osteochondritis was the only positive sign present. When the lesion is further advanced with evident bony destruction it should be considered an osteomyelitic change. As the change progresses, epiphyseal separation may occur. The so-called epiphyseal separation was present in eleven cases, the distal ends of the radius and ulna being the most frequent location. Osteomyelitis is the most common lesion in advanced congenital bone syphilis. In the fifty-six syphilitic infants born after 1920, osteomyelitis was present in forty-four. Thirty-one showed symmetrical distribution of the lesion. Typical symmetrical punched out destruction at the upper inner aspects of the femur was found in fifteen instances. In three of them there were the only diagnostic syphilitic changes. Fairly extensive osteomyelitic changes involving the shaft of the long bones were present in five cases. There were eleven cases in which osteochondritis was present without any definite evidence of osteomyelitis. These included all the six stillborn premature fetuses and the other five cases were all in the first month of life. Periostitis without definite evidence of osteochondritis was present in five cases.

in four instances. Of the twenty-seven cases of periosteal thickening, eleven showed two or more layers of periosteal shadows with a thin zone of radiolucency between, exhibiting a tendency toward ossifying periostitis. The supportive type of periostitis was usually seen accompanying marked osteochondritis. Periostitis of this type was seen in twenty of twenty seven cases showing osteomyelitic changes.

Archives de Médecine des Enfants, Paris

39: 329-392 (June) 1936 Partial Index

Lipoid Nephrosis and Azotemia P. Gautier—p. 329

*Clinical Diagnosis of Strangulated Diaphragmatic Hernia L. Garot. p. 337

*So-Called Hilus Pneumonias of Children A. Carrau and H. C. Bazzano—p. 354

Diagnosis of Strangulated Diaphragmatic Hernia.—In discussing the diagnosis of strangulated diaphragmatic hernia, Garot says that the epigastric pain is intermittent and at times almost unbearable. Vomiting may be the first symptom of the occlusion or may not appear for several hours. Dyspnea is an early symptom and may be so marked as to be accompanied by the use of the accessory respiratory muscles. The intensity of the cyanosis varies. The facies is changed after the first few hours and recalls the so-called abdominal facies. The subject is in shock but has no fever. Thoracic symptoms are dominant. Dilatation of the left hemithorax with reduction or even repression of the respiratory expansion can be found by inspection and palpation. The heart is pushed toward the right. Differential diagnosis between intestinal invagination and a strangulated diaphragmatic hernia is accomplished by means of the clinical signs and symptoms and especially by x-ray examination. Strangulated diaphragmatic hernia of the stomach or the intestine constitutes an accident which carries a severe prognosis. Death may supervene after a time, varying from a few hours to two or three days. The only possible treatment is surgical, and hence the early diagnosis of this relatively rare disorder is most important.

Hilus Pneumonias of Children.—Carrau and Bazzano believe that the pneumonias which are called hilus pneumonias because of the x-ray observations are in reality in the cases observed by them pseudohilar. These pneumonias are localized in the right or left lower lobes or in the middle lobe, the latter constituting a group around the hilus during their entire evolution, while the two former localizations are hilar at the beginning but extend toward the pulmonary bases as they develop. These facts explain why this variety of pneumonia ascends. X-ray examinations, both oblique and in profile, are necessary in order to verify the exact anatomic situation of the process in relation to the hilus. Initial pneumonic bronchial adenopathy is not constantly observed. The pneumonias can begin in the pulmonary parenchyma around the hilus, but in the majority of the authors' cases the initial clinical roentgenologic point was always in the dorsal portion in the middle lobe, always near the inner lobe fissures. Consequently in the upper lobes it is below and dorsal, in the lower lobes it is above and dorsal, and in the middle lobe it is posterior and near the fissure.

Presse Médicale, Paris

44: 913-936 (June 6) 1936

*Skin Reactions to Tuberculin in Children Aged from 6 to 10 Years P. Nobécourt and S. B. Briskas—p. 913

Definite Cure of Urticaria of Anaphylactic Type Following Appendectomy R. Leriche—p. 916

Colonic Intolerances R. A. Gutmann, A. Tzanck and J. Arnoux—p. 917

Remarks on Classification of War Gases. J. Dadlez and W. Koslowski—p. 920

Tuberculin Skin Reactions in Children.—Between 1921 and 1935, inclusive, Nobécourt and Briskas made Pirquet tests and when necessary intradermal tests on 1,989 children aged between 6 and 10 years. Of these, 58 per cent were boys and 42 per cent were girls. The percentage of positive reactions was 107 for the combined groups, and 12.7 for the boys and 8 for the girls, separately. The interpretation of these results involved considerable difficulty. Positive cutaneous reactions are obtained in children having active tuberculosis or occult tuberculosis or being carriers of discrete lesions which are not in any way active. When the positive tests were analyzed in greater detail as to sex distribution and frequency over the

fifteen year period, the conclusion was advanced that the number of children of this age group contaminated by tubercle bacilli had diminished since 1929. The number of actively tuberculous had not changed materially. In the seventh and eighth years the proportion of active tuberculosis was lower in boys than in girls. In the ninth year the proportion was raised in the boys, while it was lowered in the girls. In the tenth year the proportion diminished in both boys and girls although remaining slightly higher in the former. It was notable that between the sixth and the tenth year there was an increase in the percentage of positive cutaneous tuberculosis reactions, which contrasted with the relative fixity of the percentage of active tuberculosis.

Schweizerische medizinische Wochenschrift, Basel

66: 585-608 (June 20) 1936 Partial Index

Nervous Diseases in Human Subjects and Animals E. Frauchiger—p. 585

Chemotherapy in Treatment of Malaria S. P. James—p. 587

Idiopathic Stenosing Periduodenitis J. R. Dreyfus—p. 588

*Protection Against Yperite (Dichlorodiethylsulfide or Mustard Gas)—Prophylactic Treatment Against Yperite A. Schraff—p. 591

Protection Against Yperite (Mustard Gas).—Schraff reports observations on the efficacy of various therapeutic and prophylactic measures that are employed against yperite (mustard gas). He was able to make these tests on a man who, to satisfy his curiosity, had burned himself with yperite and who requested that the protective measures be likewise tested on him. Twelve different patch tests were made (ten on the back and two on the upper arm). Some of the tests corroborated observations made by other investigators, for instance, that the impairment is the more severe the earlier the first sign, reddishness, appears, that is the shorter the period of latency. The tissue lesions reach their maximum after forty-eight hours and after that they commence to subside. The author differentiates three stages of impairment by yperite: (1) reddishness and swelling, (2) blister formation and (3) tissue destruction. He describes and then discusses the appearance of the various patch tests after forty-eight hours. He was able to corroborate Muntz's observation, namely, that washing with a suspension of chlorinated lime (1:10) and rinsing with water is most effective when done during the first ten minutes after exposure to mustard gas. Bandaging with a 5 per cent chlorine petrolatum (0.5:10) was likewise found helpful for prophylactic treatment. However, he observed also that the area which was washed with chlorinated lime solution fourteen minutes after exposure was considerably less impaired than the area that remained untreated. The aforementioned chlorine petrolatum did not prove effective as a protective ointment against the gas but only for prophylactic treatment, that is, after exposure to the mustard gas.

Annali Italiani di Chirurgia, Naples

15: 1174 (Jan-Feb) 1936

Treatment of Perforations of Gastroduodenal Ulcers in Free Peritoneum G. Conti—p. 1

*Action of Vitamins on Healing of Wounds M. Proto—p. 31

Chronic Gastritis: Clinical and Histologic Study G. Perazzo—p. 43

Benign Tumor of Epididymis: Case A. Scalfi—p. 81

Cholecystographic Aspects of Abdominal Diseases Complicating Syndrome of Right Abdominal Quadrant Q. Vischia—p. 125

Action of Vitamins on Healing of Wounds.—Proto made experiments to ascertain the action of vitamins A, C and D on the healing of wounds in rabbits. The animals, both those treated by the vitamins and the controls, were normally fed and kept in the same condition. The animals treated by vitamins were placed in the following groups: (1) those treated by administration of the vitamins by the mouth, (2) those treated by application of the vitamins on the wound and (3) those treated simultaneously by oral administration and local application of the vitamins. The animals in each of the groups were placed in the A, C and D groups, according to the vitamins that were administered to them. The process of healing is not modified at all by vitamin C, whether administered by mouth or locally applied, but it is slightly modified by vitamins A and D given by mouth and greatly and favorably modified by local application of these vitamins to the wounds, especially vitamin A. The time of healing is greatly lessened and the condition of the wounds is much better than in the controls.

Annali di Ostetricia e Ginecologia, Milan

58 727-880 (June 30) 1936

- *Placental Cavities or Foci of Dissociation? F Spirito—p 727
 *Multiple Metastases of Chorionepithelioma A Vignali—p 769
 Gonorrhea and Extra Uterine Pregnancy D Mancini—p 811
 *Partus Nullus Etiopathogenesis and Report of Cases E Giudici
 p 829

Cavities in the Placenta—Spirito states that cavities are found in the normal human placenta some of them are true cysts of decidual or trophoblastic origin or come from colliquation of infarcts. Those of a decidual origin are located between or within the cotyledons. Placental cavities originate in necrosis and colliquation of the villi, are located within the cotyledons, and do not have the shiny white zone of delimitation that cysts and pathologic cavities may have. Histologically, the walls of placental cavities consist of more or less perfectly identifiable villi, while those of other placental formations consist of decidual or trophoblastic cells or by other cells similar to those of the villi but greatly changed like those found in infarcts. Placental cavities have no relation with fetal circulation. With the aim of differentiating the several formations of human normal placenta, it is advisable to give the name of placental cavities to those of villous origin (which were described the first time by Poso and Clemente), the name of cysts (subchorial and intraplacental, according to their location) to those of decidual, trophoblastic and infarct origin, and the name of cavitary lesions or hemorrhagic foci to the pathologic cavities.

Multiple Metastases from Chorionepithelioma—Vignali says that the presence of a greatly enlarged uterus of softened consistency, with an open cervix and expelling dark blood and remnants of tissues, similar to placenta, is an indication for immediate complete hysterectomy, with removal of the adnexa which according to the literature controls further development of metastases and modifies metastases already present. His patient, aged 20, entered the hospital three months after a normal labor and puerperium with a syndrome of cerebral hemorrhage, with left hemiplegia and hemianesthesia and also with slight fever. The condition remained stationary for three weeks without responding to symptomatic treatment, after which the fever increased and a grave syndrome of albuminuria, azotemia and blood in the feces, urine and vomiting, in addition to toxic symptoms, made its appearance. The patient began to discharge dark blood through the genitals. Genital examination showed a large tumor in the uterus. A clinical diagnosis was not made. The syndrome was caused by a chorionepithelioma of rapid evolution of the uterus with metastases to the brain, kidney and intestine. The uterus and adnexa were entirely involved in the tumoral process. The ovaries were polycystic. The metastases to the brain, kidney and intestine were extensive, with foci of hemorrhage with the blood in a process of disintegration. An extensive focus of hemorrhagic infiltration was located at the internal capsule, under the Rolandic fissure. The author states that in his case the evolution of the disease was so rapid that hysterectomy at the time of admission of the patient to the hospital, when the cerebral but not the renal and intestinal metastases had taken place, probably would have resulted in no benefit to the patient.

Giornale di Clinica Medica, Parma

17 769-840 (June 30) 1936

- Hyperglobulia from Bleeding A Marrasini—p 769
 *Vertebral Lesions in Undulant Fever F Pratesi—p 789
 Action of Sodium Dithionate on Glutathione in Certain Organs of Guinea Pigs C Gualazzini—p 801
 Changes of Leukocytes from Mechanical Stimulation of Appendix in Chronic Secondary Appendicitis with Symptomatic Febricula C Sestini—p 817

Vertebral Lesions in Undulant Fever—Pratesi says that the clinical diagnosis of spondylitis melitensis may be considered impossible. A positive diagnosis can be made only by the characteristics of the vertebral lesions in the roentgenogram which are characterized by moderate destruction of the bone and intense formation and reconstruction of the bone. Early in the development of spondylitis melitensis the vertebral alterations are not clear in the roentgenogram. Nevertheless the diagnosis is made by the existence of serologically proved undulant fever in the history of the patient the presence of

lumbar or lumbodorsal spondylitis of a scoliotic or kyphotic type and, in the roentgenogram, of the moderate destruction and excessive bone formation and reconstruction of the involved vertebra with absence of symptoms and roentgen signs of ossifluent abscess. The author reports a case of spondylitis melitensis in a patient, aged 46, in whom the diagnosis of Pott's disease was entirely excluded.

Archivos de Medicina Cirugia y Espec., Madrid

39: 381-420 (June 15) 1936

- Treatment of Laryngeal Tuberculosis by Ultraviolet Irradiation (Cemach's Lamp) Is Modification of Technique Advisable? J Fernandez Cervantes Pinedo—p 381
 *Parathyroid Function in Relation to Chemism of Muscles. J Yáñez Sardá, Celsa Pérez Moreiras and A Fernandez Cruz—p 383
 Left Diaphragmatic Eventration Cases F Pons Iñiguez and J Moragues Gonzalez—p 387

Parathyroid Function—Morros Sardá and his collaborators studied the modifications of the organic and inorganic phosphorus and carbohydrates of muscles of rabbits injected with parathyroid extract, creatinine or the two substances simultaneously. The authors conclude that the injection of parathyroid extract causes an increase of the total phosphorus in the muscle with a predominance of the inorganic over the organic fraction. Creatinine, when intravenously injected, brings about a slight increase of the phosphorus compounds in the muscle. The simultaneous injection of parathyroid extract and creatinine is followed by marked accumulation of phosphorus in the muscle, with predominance of phosphagen, and also by an accumulation of carbohydrates in the muscle which is at its peak one hour and a half after the injection is made. Parathyroid functions play a part in the metabolism of creatinine by favoring the esterification of the latter into phosphagens and its utilization in this form by the muscles. The antitoxic functions that the parathyroids are supposed to have depend on the intervention of the parathyroid hormone in the formation of phosphagen. Therefore the lack of esterification of creatinine would result in the presence of free creatinine and guanidine, the accumulation of which would result in the development of toxic symptoms. The absence of the parathyroid hormone would result in incomplete or difficult formation of the creatine-phosphoric acid complex, the accumulation of creatine derivatives and the development of autotoxic symptoms.

Prensa Medica Argentina, Buenos Aires

23 1411-1462 (June 10) 1936

- *Dysgenesias of Respiratory Tract. J B Morelli—p 1411
 Skeletal Traction with Steinmann's Extension Nail Results. F Escobar—p 1430
 Action of Genital Stimulating Hormones and of Folliculin on Fat Metabolism and on Specific Dynamic Power of Albumin. M Sgarbi and Ida Ch De Uryson—p 1440
 Atypical Mibelli Angiokeratoma Case. M F Blanco—p 1442
 Congenital Syphilis. J L Carrera—p 1445
 Delmas Method for Onset of Labor. J R Valenzuela—p 1447

Dysgenesia of Respiratory Tract—According to Morelli there is a form of congenital subpleural giant emphysema that is one of several types of complicated syndromes known as dysgenesia of the respiratory tract (impaired intrauterine development of one or several segments of the respiratory tract). Emphysema in these cases is in direct communication with the bronchial tree and with the pulmonary alveoli at the seat of implantation of the bleb. Iodized oil intrabronchially injected fails in passing to the sac, but if a weak solution of methylene blue is injected into the sac by the transthoracic route, the dye passes immediately to the bronchi. The diagnosis is made by roentgenography of the lung which shows an irregular line of division between the lung and the emphysema. The prognosis depends on the significance of coexisting malformations. In the three cases of the author, congenital emphysema was complicated by malformations of the pulmonary artery, erythremia and paradoxical cyanosis. The anatomopathologic study of the respiratory tract performed in the three cases proved that the main malformation was in the pulmonary artery and consisted in defective development of the elastic fibers of the artery which were few and thin.

Archiv für klinische Chirurgie, Berlin

185: 189-358 (June 3) 1936 Partial Index

- Attempt at Differentiation of Disease Processes, Particularly Malignant Neoplasms by Ultramicroscopic Examination of Blood Serum W Fischer—p 189
- *Observations on Cholesterosis of Gallbladder A Troell—p 211
- *Late Results of Surgical Therapy of Gastroduodenal Ulceration and Gastric Cancer E. Harms—p 241
- Clinical and Experimental Study of Gastropathy of Appendicular Origin M Mashiko—p 284
- Pathologic Alterations of Vessels Following Vasography with Thorium Dioxide Sol G A Sedgenidse—p 299
- Distribution of Tension in Neck of Femur G Kuntzsch—p 308.

Cholesterosis of Gallbladder—In a study of 600 cholecystectomies performed during the period between 1925 and 1934, Troell found three cases of so-called lime bile and twenty-three of cholesterosis or strawberry gallbladder. Besides the stones, the gallbladders in the first group contained an amorphous, putty-like substance the color of which was like that of the stones. This "lime bile" was possibly the forerunner of the stones. Of the twenty-three cases of the cholesterosis group, nineteen presented stones. In seven of these there was present a solitary stone made up entirely, or almost entirely, of cholesterol. In two cases large cholesterol stones were associated with smaller stones. In five there were found small mulberry stones the chief component of which was cholesterol. On gross inspection these gallbladders presented a fine white or yellowish white structural network above the mucosa. It gave the impression in one of the cases of incrustated cholesterol. In two cases the reticulated mucosa showed prominent, yellowish white nodes in its entire extent. In one case formations resembling pedunculated papillomas were observed. Microscopic examination revealed chronic inflammation in eighteen and acute inflammation in three of the cases. Deposition of cholesterol was the characteristic feature. In the subepithelial connective tissue layer there were clusters of large, clear round or polygonal phagocytic cells with a small nucleus, containing fat and giving the cholesterol reaction. The source of cholesterol in strawberry gallbladder was believed by some observers to be the result of secretion by the mucous membrane, while others, notably Aschoff, held that its source was the gallbladder bile from which it was absorbed by the mucosa. By analogy with the stones of "lime bile," one is tempted to conclude that cholesterosis represents the first stage in the formation of cholesterol stones. Further observations will be necessary before this hypothesis can be accepted.

Late Results of Treatment of Gastroduodenal Ulcer and Gastric Cancer—Harms presents a follow-up study of late results of surgical therapy in 846 cases of benign lesions of the stomach and duodenum and of 432 operations performed for malignant disease of the stomach. The operations were carried out during the period between 1920 and 1927. Radical operations for gastroduodenal ulcer gave entirely satisfactory results in 80 per cent of the cases, while the indirect methods (palliative operations) gave good results in only 50 per cent. No difference was noted in the late results of the first Billroth and the second Billroth operations. Failure after gastroenterostomy and pyloric exclusion were noted with the greatest frequency in the younger patients. It was only after the fifth decade that better results were noted. Even the penetrating duodenal ulcers not amenable to resection still offered a relatively good prognosis in persons past 50. Resection of the pylorus and antrum and segmental transverse resection are likewise followed by better results in the older patients. The first Billroth operation appeared to be best suited for the younger patients. The longer the lapse of time since the operation, the better were the results with the first Billroth operation, and the worse with the indirect procedures. Better late results could be expected when the resection of the pylorus and antrum was undertaken for an extensive ulcerative lesion than when it was performed for a superficial ulcer. Peptic jejunal ulcer was the principal cause of failure after gastroenterostomies and pyloric exclusions (134 and 15 per cent, respectively). The transverse resection gave an incidence of 78 per cent of recurring ulcer and 6.1 per cent of disturbances of motility. Following the second Billroth method of resection the incidence of peptic jejunal ulcer was 0.8 per cent and that of recurring ulcer 25 per cent. The failure to obtain good

results after the first Billroth method of resection was because of recurring ulcer in 41 per cent and narrowing of the anastomosis in 34 per cent. Of the 432 cases admitted with the diagnosis of cancer of the stomach, 75 per cent were inoperable. The operative mortality was 32.9 per cent. Peritonitis was the most frequent cause of death. Most of the patients surviving the operation died within the first two years, 33½ per cent survived the five year period and 8.3 the ten year period. The best prognosis was offered by adenocarcinomas limited to the stomach with an average duration of not more than seven and a half months. Prognosis appeared to be somewhat better in the older patients.

Deutsche Zeitschrift für Chirurgie, Berlin

247: 1144 (May 18) 1936 Partial Index

- Surgical Significance of Streptotrichosis G Woytek—p 1
- Effect of Operative Trauma on Respiration Capillary Gas Exchange and the Volume of Circulating Blood E. Derra—p 82
- *Management of Appendiceal Inflammatory Tumor and of Abscess W F Suermondt—p 96
- Aseptic Meningitis Following Operation for Cystic or Breaking Down Blastomas G Merrem—p 105
- *So-Called Hemolytic Shock. G Woytek—p 113
- Etiology, Diagnosis and Therapy of Acute Adrenal Insufficiency M Breitfellner and R Herbst—p 123

Appendiceal Inflammatory Tumor and Abscess—In his indication for operative intervention in acute appendicitis, Suermondt is governed by the question of whether the inflammatory process manifests a tendency to encapsulation and not by the number of hours elapsed since the onset of the attack. A patient with an acute spreading peritonitis is submitted to an appendectomy regardless of the number of hours elapsed. The presence of diffuse peritonitis constitutes an even more stringent indication for operative intervention. On the other hand, a patient presenting himself with a sharply delimited inflammatory swelling in the appendiceal area even before forty-eight hours has elapsed is treated on a conservative plan. This consists of absolute rest in bed in the Fowler position, strict diet and application of an ice bag. No attempt is made to differentiate sharply between an infiltrate and an abscess. The infiltrate may undergo complete absorption in which case the appendectomy is performed six weeks later. The inflammatory swelling, on the other hand, may continue to grow in size and to give rise to pain. The danger of perforation into the free peritoneal cavity is imminent if the abscess enlarges upward or medially. Rise in temperature, onset of vomiting and muscle rigidity that did not exist before constitute together with the type of enlargement already described, an indication for immediate operative intervention. The abscess is incised and drained. No attempt is made to find or to remove the appendix. When the approach to the abscess is through the free peritoneal cavity, the latter is carefully protected with iodoform gauze, which remains undisturbed and is removed some time after the operation. An abscess pointing downward is treated conservatively in the Fowler position. It forms, as a rule an abscess of the pouch of Douglas. Such abscesses, according to the author, show no tendency to perforate into the free peritoneal cavity. They usually perforate spontaneously into the rectum, vagina or urinary bladder. The appendectomy was performed eight weeks later. To prove his contention, the author submits the statistics of the clinic in Leiden, where 2853 patients having acute appendicitis, with or without an acute spreading peritonitis, were treated in the last twenty-five years by immediate operation, with a mortality rate of 27 per cent. There were 407 cases of inflammatory swelling in which treatment was given on a conservative plan with a mortality of 0.7 per cent. Of this group, 256 patients had recovered without any intervention. In 151 the abscess was incised. There were two fatalities in this group. Of the 405 surviving patients, 324 were submitted to a later appendectomy with one fatality (0.3 per cent). Eighty-one did not return for the appendectomy because they were free from symptoms.

Hemolytic Shock—Woytek states that, despite some 350 blood transfusions performed annually in Sauerbruchs clinic, there were no fatalities and but few complications. Three cases of profound hemolytic shock were promptly saved by recourse to the method developed by E. P. Hesse and N. Filatov in 1932 and consisting of an immediate transfusion with com-

patible blood. From his observations the author concludes that the usual blood group determination with the aid of test serums does not guarantee against mishaps. Neither can absolute reliance be placed on the biologic test. The latter was negative in the three cases. Blood from a universal donor is more likely to cause reactions than that from the same group. Repeated transfusions utilizing the same donor are more likely to give rise to anaphylactic shock. The following rules were adopted in Sauerbruch's clinic: 1. Group determinations are made by testing at least twice and utilizing different serums. 2. The effect of the recipient's serum on the erythrocytes of the donor and the reverse is determined by direct cross-testing. 3. Universal donors are not used. 4. The biologic test is regarded valuable and is used as an adjunct but is not permitted to replace blood grouping. Experimental studies of E. P. Hesse and N. Filatov established that the symptoms of hemolytic shock are due to a direct toxic effect on the vessel walls of depressor substances released by the breaking down of the erythrocytes. This results in dilatation of the venous capillaries and in spasm of peripheral arterioles. The result is a fall in the blood pressure and impaired heart action because of insufficient return of venous blood to the right side of the heart. Cyanosis, dyspnea and particularly anuria are explained by the destruction of the erythrocytes with consequent lowering of the respiratory function and embolic closure of the finest pulmonary and renal vessels. The vascular phenomena of hemolytic shock resemble those of histamine shock. The red cells are the carriers of histamine. Hemolysis is the result of agglutination and breaking down of erythrocytes of the donor by the serum of the recipient. In cases in which control determinations of blood grouping were made, an error in determination was found to be the most frequent cause of hemolysis, as in one of the author's cases. In the remaining two, control tests revealed no error. The author speculates on the possibility of there existing a heretofore undiscovered incompatibility in the blood of two persons belonging to the same blood group. There may exist subgroups which are not recognized by the usual method of group testing. Failure to recognize early symptoms of hemolysis was responsible for the fatal result in most of the reported cases. The most characteristic and suggestive subjective symptom is the excruciating backache, resembling in its severity that of renal colic. According to Hesse and Filatov, it is the result of a spasm of the renal arteries. The cases reported by the author presented symptoms of severe hemolytic shock. Reinfusion with compatible blood accomplished in all three a prompt and lasting recovery. The author therefore concludes that the method proposed by Hesse and Filatov offers a prompt and efficient therapy of hemolytic shock.

Klinische Wochenschrift, Berlin

15 769 808 (May 30) 1936 Partial Index

- Requirements and Technic of Treatment of Pneumonia. J. G. M. Bullowa.—p. 769
- Experimental Studies on Effects of Analeptics in Suffocation. L. Lendle and F. H. Lu.—p. 775
- Investigations on Behavior of Peripheral Circulation in Healthy Persons and in Patients. R. Nothhaas.—p. 778
- Action of Freund-Kaminer's Fatty Acids on Growth. V. Kilian and K. Pichler.—p. 781
- Use of Ottenstein's Diastase Test for Recognition of Internal Disorders. B. Schuler, W. Dreier and H. Jonas.—p. 782
- *Simplified Electrometric Determination of Halogen in Blood and Tissues. H. Paal and G. Motz.—p. 783
- Method for Determination of Phosphorus in Blood. G. Motz.—p. 789

Electrometric Determination of Halogen in Blood

Because their former use of the electrometric principle for the determination of small amounts of iodine in the blood was complicated, Paal and Motz have simplified their procedure. From 20 to 25 cc. of oxalated blood or several grams of tissue is placed in the closed system for incineration. After heating the quartz tube between the combustion flask and the ice-cooled absorption receiver (the first absorption receptacle contains 25 cc. of a 20 per cent solution of iodine free sodium carbonate and the second 15 cc. of a 10 per cent solution of sodium carbonate) and after adjusting the water jet pump the suction of which is throttled not only by the glass wool in the absorption receptacles but also by an interposed set screw, they suction from 100 to 115 cc. of concentrated sulfuric acid into the

distillation flask through a capillary tube with funnel attachment. While the distillation flask is carefully heated with a bunsen burner, a 30 per cent solution of hydrogen peroxide added in drops until complete decolorization has been obtained which as a rule requires about 50 cc. Then, after about 15 cc. of a 10 per cent solution of sodium sulfite has been added, distillation is continued for about twenty minutes, so that iodine which might have been formed, is again reduced to iodide. The alkaline absorption fluids are washed in a Kjeldahl flask. In order to destroy possibly existing oxidation stages of iodine, sodium sulfite (in an amount that can be placed on the point of a knife) is added and dissolved. Then, in order to precipitate the iodine in the fluid, a mixture of 50 cc. of two normal sulphuric acid and 1 cc. of tenth normal silver nitrate is added. The weakly acidified solution becomes at once turbid with halogen silver precipitates (all iodine as silver iodide, bromine as silver bromide and a little chlorine as silver chloride). Precipitation is promoted by adding a few drops of dilute nitric acid and by a short boiling. After several hours of standing, the precipitate is filtered through a porcelain filter that has been boiled with nitric acid and has been washed with halogen free and then is thoroughly washed several times with several cubic centimeters of hot, iodine free water. The silver precipitate is decomposed in the dish by the addition of a hot mixture of 1 cc. of a 10 per cent solution of sodium hydroxide with 1 drop of hydrazine and from 2 to 3 cc. of bidistilled water. In the course of the reduction, metallic silver is formed and held back on the filter, whereas the halogens pass into the filtrate. The filter residue is thoroughly washed with small portions of hot iodine free water, so that the entire quantity of filtrate is at the most 12 cc. After the filtrate has been acidified with about 4 cc. of normal sulfuric acid, the electrometric test is made. The authors give a table of report of the electrometric determination of the blood iodine and discuss the electrometric determination of chlorine and bromine.

Medizinische Klinik, Berlin

32 721 756 (May 29) 1936

- Shrinking Processes in Silicosis. V. Reichmann.—p. 726
- Experiences with Resection of Nerves Going Toward Kidney in Disease of Kidney. W. Rieder.—p. 729
- Arrhythmia after Psychic and Somatic Traumas. G. W. Pank.—p. 733
- Noteworthy Case of Precipitated Labor. A. M. Marx.—p. 734
- Postdiphtheric Hemiplegia. A. Kral.—p. 735
- *Possibility of Influencing Hiccups by Short Wave Therapy. E. Weissberg.—p. 737

Short Wave Therapy in Hiccups—Weissberg points out that hiccups may develop in the course of encephalic processes, influenza, abdominal disorders and after laparotomy. The author says that hiccups usually yield rapidly to treatment with short waves. He describes six cases in which the hiccups had persisted for from several hours to two weeks and in five of which the hiccups were counteracted by weak doses of short waves applied to the occiput, the epigastric region or the cervical sympathetic. He thinks that, although the mechanism of the treatment is not fully explained, the possibility of the removal of a symptom that greatly impairs the general condition justifies a trial with short wave therapy in cases of persistent hiccups.

Medizinische Welt, Berlin

10:733 770 (May 23) 1936 Partial Index

- *Nonspecific Vaginal Leukorrhea of Adults and Exudative Discharge. H. Geiger.—p. 733
- Disturbances of Renal Function and Psychosis. C. Riethe.—p. 737
- Present Status of Statistics of Cancer Problem. M. Hecht.—p. 741
- Present Status of Treatment of Whooping Cough. H. Vogt.—p. 743
- Danger in Delayed Administration of Diptheria Serum. H. F. Schmidt.—p. 743
- Plaut Vincent's Angina. E. Reye.—p. 743
- Injection or Surgery in Treatment of Varicose Veins. P. L.—p. 745

Leukorrhea and Exudative Diathesis—In a discussion of gonorrhea Geiger points out that the opinion prevails that endogenic factors are active before exogenic factors (trauma of pathogenic bacteria trauma) exert their influence. He states that the role of trichomonas infection has been over-

and that constitutional factors play a part in nongonorrheal leukorrhea. He shows that constitutional anomalies such as infantilism, asthenia and the exudative diathesis are closely related to nonspecific leukorrhea. He points out that the term "exudative diathesis" designates a predisposition to an increased secretory action of the skin and of the mucous membranes during childhood and that a variety of disorders of the skin and of the mucous membranes, such as urticaria, impetigo, strophulus, chronic catarrhs of the respiratory tract and nongonorrheal vulvovaginitis, are frequent in such cases. Neuropathic conditions often appear as accompanying symptoms. The author observed that in many patients with frequent catarrhal disturbances of the respiratory apparatus the anamnesis revealed an exudative diathesis during childhood and that many of the women and girls received treatment also for nongonorrheal leukorrhea. At the women's clinic later, whenever the anamnesis of women with nongonorrheal leukorrhea disclosed exudative processes during childhood, the nasopharyngeal region was carefully inspected and nervous symptoms (urticaria, bronchial asthma, angioneurotic edema and vasomotor rhinitis) were found in nearly all these cases. In treatment he largely dispensed with the local therapy of leukorrhea and stressed a general treatment in the form of a predominantly vegetarian diet with restricted salt intake but with a high vitamin content. He also prescribed cod liver oil and calcium. Usually this treatment produced improvement after from ten to fourteen days. There was improvement in the leukorrhea and in the general condition, and the accompanying symptoms, such as rhinitis, disappeared. When the treatment was discontinued, relapses occurred.

10 807 844 (June 6) 1936 Partial Index

Early Diagnosis of Pulmonary Tuberculosis in Daily Practice F Roester—p 815

Erroneous Diagnoses in Pulmonary Tuberculosis. E Engelhardt—p 819

*Modified Ziehl-Neelsen Staining Method K H Lange—p 822

Benign Spontaneous Pneumothorax of Tuberculous Origin. P Heilmann—p 824

Modified Ziehl-Neelsen Staining Method—Lange describes a modification of the Ziehl-Neelsen method. The air-dried, relatively thick smear is left for twenty-four hours in carbolfuchsin that has been diluted to half the concentration by means of 5 per cent phenol. After rinsing with water, it is rapidly decolorized with 3 per cent hydrochloric acid alcohol, and it is left in 96 per cent alcohol until decolorization has become complete. Then the preparation is placed for four or five minutes in aqueous solution of iodine and dried with blotting paper. Instead of treating the specimen with aqueous solution of iodine, it is permissible to pass over the decolorized and dried (with blotting paper) preparation some cotton that has been saturated with tincture of iodine. The author maintains that this method of staining reveals a much larger number of tubercle bacilli than does the customary Ziehl-Neelsen method, and for this reason it is possible to dispense with the methods that are employed to bring about an abundant growth of tubercle bacilli. Moreover, this modification is less expensive and less complicated. It is especially suited for the demonstration of tubercle bacilli in the sputum but not for their detection in the feces.

Münchener medizinische Wochenschrift, Munich

83 835-874 (May 22) 1936 Partial Index

Birth Injuries of Children. H Nanjoks—p 835

Experimentally Produced Reflex Epilepsy W Baumann—p 841

Influenzal Pneumonias. O Gsell—p 843

Medicinal Induction of Labor by Treatment of Primary Weakness of Labor Pains with Quinine Calcium H Winkler and H Vetter—p 847

Gastric Cancer and Its Causes M Hindbede—p 852

Experimentally Produced Reflex Epilepsy—Baumann points out that formerly it was assumed that in entirely normal subjects epileptic attacks could be elicited by pressure on a sensory peripheral nerve and centripetal conduction to the brain. This standpoint is no longer tenable in that it is now believed that a convulsive tendency in the central nervous system is necessary. This convulsive tendency may be congenital (as in subjects with genuine epilepsy) or acquired by cerebral trauma,cretory disturbances or brain lesions. In this con-

nection the question arises whether so-called reflex epilepsy may develop in patients with a convulsive tendency. The author thinks that in the present status of our knowledge the answer must be affirmative. The type of the eliciting agent is of no importance, at any rate it is erroneous to assume that only a pressure from a scar or from a tumor could elicit an attack of reflex epilepsy. Theoretically considered, every stimulus, whether mechanical, thermic, chemical or electrical, can do this. In discussing the conduction of the stimulus from the periphery to the central organ, the author points out that it is not likely that it takes place by way of the sensory nerves, he believes with Foerster that it occurs by way of the vascular sympathetic. This theory is corroborated by experiments, which the author carried out in collaboration with Muck, who, in the course of his epinephrine probe test, had found that after freezing of a radial artery with ethyl chloride the white streak sign appeared on the same side of the nose and in cases in which the phenomenon had not been present before. When the epinephrine probe test was once made on a patient with suppurating meningitis, the freezing was followed by an epileptic attack, although the patient had never before had such an attack, that is, the attack was elicited by way of the vascular sympathetic. Subsequently, Muck made his epinephrine probe test on a number of patients with genuine and with symptomatic epilepsy, many of whom were patients in the author's clinic. The author describes his observations on five patients, which show that by spraying with ethyl chloride true epileptic attacks can be elicited in persons with a convulsive tendency, the majority of whom belong to the group of patients with traumatic or symptomatic epilepsy. To be sure, reflex epilepsy by means of freezing with ethyl chloride can be elicited also in some cases of genuine epilepsy, but the author gained the impression that it is more readily elicitable in traumatic and symptomatic than in genuine epilepsy.

Zeitschrift für Kinderheilkunde, Berlin

58 1-86 (May 20) 1936

*Pathologic Anatomic Investigations on Nature of Osteogenesis Imperfecta. K L Winkelmann—p 1

*Serologic Investigations Following Vaccination with Whooping Cough Bacilli. Foundations of Active Immunization W Keller—p 23

Connections Between Climate and Pneumonias H Meseth—p 41

*Phosphatolysis in Human Erythrocytes H Sunthum—p 54

Occurrence of Cerebral Hemorrhages in Hemorrhagic Purpura E Traub—p 67

Etiology and Therapy of Anemia in Premature Infants Rose Scholz—p 73

Osteogenesis Imperfecta—Winkelmann describes studies on the pathologic anatomy of osteogenesis imperfecta on the basis of which he reaches the conclusion that it is merely a retardation in the normal development of the fetal bones and that there is no change in the osteogenic processes. The osteogenesis is imperfect. In view of this nature of the disease he concludes that it is essential to help the child by careful nursing through the first most dangerous period of life and to protect it particularly against those hazards which may lead to an infection of the air passages and the lung. This demand is the more justified since the clinical and anatomic factors indicate that with this type of treatment the life of otherwise healthy children can be preserved.

Serologic Investigations Following Vaccination with Whooping Cough Bacilli—Keller studied the theoretical foundations of active immunization against whooping cough. By means of the complement fixation test he examined the antigenic action of ten different whooping cough vaccines that had been prepared according to various methods. The investigations revealed that the efficacy of the vaccination, if judged on the basis of the antibody titer produced, depends largely on the manner of application, the total dose, and, particularly, on the mode of preparation of the vaccine. It was found that (1) the bacillary vaccines are superior to the vaccines in which the bacilli have been dissolved (2) the antigenic action of the various strains of the bacillus differs greatly in human subjects and the toxicity in the animal experiment is no measure for this (3) monovalent vaccines from a potent antigenic strain are better and more reliable than polyvalent vaccines that are composed of strains of various potency (4) the excess over

a certain total dose does not improve the results in persons who are constitutionally poor antibody formers. A small percentage of vaccinated persons, even in case of optimal vaccination, are more or less refractory to antigenic action. The author did not detect a relationship between the capacity to form antibodies and the type of blood group or the blood factors M and N. Even nurslings form a considerable number of antibodies in response to a suitable vaccination. The curve indicating the antibody content increases before the tenth day after the first vaccination, it usually reaches its maximum between the tenth and the fourteenth day and after that gradually subsides again so that usually at the end of twenty weeks (the duration varies greatly) the complement fixation reaction is again negative.

Phosphatolysis in Human Erythrocytes—Suntham investigated phosphatolysis in human erythrocytes, using heparinized blood in the tests. 1 He found that carbon dioxide produces the greatest acceleration of phosphate cleavage but that other acids may take its place, for citric acid, pyruvic acid, hydrochloric acid, acetic acid and lactic acid appeared in the four hour value. 2 Sodium fluoride, sodium oxalate and the higher concentrations of citric acid inhibit phosphatolysis, and this inhibitory effect cannot be completely counteracted by carbon dioxide. 3 The alkali cations have no effect on phosphatolysis, whereas the alkaline earths have an inhibiting effect. However, this inhibition can be compensated by carbon dioxide. 4 It appears that the principle of the exchange of anions is of greater importance in the interpretation of phosphatolytic processes than is the pH. 5 In the heparinized blood a lively glycolysis takes place without disappearance of phosphate. The organic phosphorus compounds are probably further decomposed by unimpaired erythrocytes with such rapidity that binding and composition remain in equilibrium. The more lactic acid develops, the greater the cleavage. 6 The theory of the inhibiting action of glycolysis on phosphatolysis does not apply to intact erythrocytes. The irradiation of heparinized blood with ultraviolet rays was without influence on the phosphate cleavage.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

April 30 1936 (No. 8) pp. 561-640 Partial Index

Local Anesthesia in Performing Artificial Abortion P. I. Kolosho—p. 569

Dialthermy Treatment of Breasts for Uterine Myoma, Metritis and Other Uterine Disturbances G. I. Russin—p. 583

Congenital Hypertonic Athetotic Disturbances and Icterus Gravis Neonatorum M. I. Togikh and S. Ya. Khotina—p. 592

Fresh Yeast Therapy of Cachexia N. Ya. Chervyakovskiy—p. 596

Symptoms of Chronic Amebiasis I. A. Alekseev Berkman—p. 601

*Lead in Duodenal Juice in Saturnism N. K. Alyaydin and E. A. Peregud—p. 604

Lead in Duodenal Contents in Lead Poisoning—Alyaydin and Peregud investigated the lead content of the duodenal juice in twenty-eight cases of existing or suspected lead poisoning and in five normal controls. The method consisted of reducing the organic matter to ash precipitating the lead from the ash with hydrogen sulfide treating it with potassium bichromate and determining the resulting lead chromate iodometrically. They found that lead was present in the duodenal contents in cases of lead poisoning with about the same frequency as in the urine. It may be present in the urine alone or in the duodenal contents alone. Its concentration in the duodenal contents was considerably greater than in the urine. In about one third of the cases lead was found in the duodenal contents, when it was absent in the urine, in amounts sufficient not to leave any doubt as to its pathologic significance in the presence of other symptoms. They conclude that the finding of lead in the duodenal contents may, in the absence of other symptoms of lead intoxication, lead to a correct diagnosis. The test is only of a relative value since it may be negative in the presence of unmistakable signs of lead intoxication. The authors believe that the method opens up new perspectives in the study of lead poisoning. It may on further investigation throw light on the circulation of lead in the organism and on the mechanism of its excretion by the duodenum. They likewise suggest that the removal of some of the lead by the duodenal tube may be of value in the treatment.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

SO 3241-3304 (July 11) 1936

Cushing's Syndrome M. Hommes—p. 3257

*Thyroid Disturbances and Arthritis H. J. Viersma—p. 3264

Danger of Duck Paratyphoid for Man A. Charlotte Ruys—p. 3272

Thyroid Disturbances and Arthritis—Viersma states that the conditions which have called attention to a possible connection between the thyroid and arthritis are (1) the frequent occurrence of arthritis in youth in goiter countries, (2) the frequent observation of low basal metabolism in chronic arthritis and (3) the favorable influence of thyroid extract in some cases of chronic arthritis. Although it has seemed reasonable enough to connect arthritis with hypothyroidism, until lately it was not known that there are also cases in which hyperthyroidism is the undoubted cause of arthritis. The author describes the history of a man, aged 52, who suffered from exophthalmic goiter and developed in the course of six or seven weeks total fixation of both shoulder joints with severe pains radiating to the arms and atrophy of the shoulder and upper arm muscles which rendered him completely helpless. Suspicion was directed toward hyperthyroidism and attention called to Duncan's report of 292 cases of hyperthyroidism with articular disturbances, in eighty-five of which an etiologic connection was accepted between the two disorders. While any other of the usual treatments failed in these cases, subtotal removal of the thyroid brought improvement, frequently within forty-eight or seventy-two hours after the intervention. In the present case, after a preliminary twelve day treatment with di-iodotyrosin (3.5 di-iodo-4-oxypyphenylalanine), subtotal thyroidectomy caused disappearance of the pains in thirty six hours. Follow-up examination three months later showed a 45 degree abduction in the shoulders and a 30 degree anteroposterior movement with a slight degree of rotation to the left but none to the right. Atrophy of the deltoid and of the supraspinatus was still marked, but the patient was ready to resume his occupation.

Finska Lakaresällskapets Handlingar, Helsingfors

70 391-484 (May) 1936

Applicability of Original or Modified Binet Simon Method of Intelligence Test in Finland T. Brander—p. 395

Who Is Mentally Defective? Figures and Citations Illuminating the Important Question T. Brander—p. 409

Disturbances in Metabolism of Plasma Protein and Attempts at Their Marrow Therapy M. C. Ehrstrom—p. 421

*Benign Meningitis H. Björk—p. 428.

Benign Meningitis—Björk reports twelve cases of syphilitic meningitis treated since 1933. In one case the meningitis set in with grave symptoms on the fourth day of an acute polyarthritis and receded in a few days. Six cases occurred simultaneously with or a couple of days after the onset of parotitis. The general condition was relatively little affected, although there were marked changes in the spinal fluid in three of the cases. The cell count varied from 65 to 950, the pleocytosis was mononuclear. Seven cases were complications connected with an influenza-like disorder, appearing with chills and high temperature, in most of the cases after apparent recovery from the basic disorder. During the latent period the patients had felt tired and apathetic. In two instances the clinical picture was atypical, with almost exclusively psychical symptoms in the one, suggestive of a schizophrenia, and in the other a paralysis of the bladder at the start in the other. In three cases there was a transitory disturbance of the extremities. In one case there was a roseola-like exanthem and in another diarrhea, symptoms reported in epidemic serous meningitis in other countries. All the patients recovered, but in three the course was protracted, in one, lumbar puncture was done eleven times, in another, twenty-five times, and in one a transitory cachexia developed.

Hygiea, Stockholm

98 353-384 (June 15) 1936

Prognosis and Treatment of Exudative Pleuritis S. Karl—p. 357

*Cancer in Tuberculosis and Tuberculosis in Cancer B. Strandberg—p. 372

Cancer in Tuberculosis and Tuberculosis in Cancer—Strandberg's material of 1,206 cases of cancer and 1,806 cases of tuberculosis out of 5,366 necropsies from 1929 to 1935 shows that cancer and active tuberculosis occurred simultaneously more often than they would occur if the disorders were independent of each other. This holds particularly in the cases in which tuberculosis has been more active or more developed.

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THE EARLY TREATMENT OF POLIO- MYELITIS AND THE IMPORTANCE OF PHYSICAL THERAPY

CHAIRMAN'S ADDRESS

ARTHUR T LEGG, MD
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The recent outbreak of poliomyelitis in Massachusetts has brought to my mind again the necessity of stressing the importance of good after-care. Previously I have written and said a great deal on general follow-up treatment. Now I should like to bring out the benefits to be derived from a long period of competent treatment, namely, the prevention of deformities and the regaining of muscle power.

As soon as the first or acute stage is over, that is, when the temperature has returned to normal and the muscles have shown definite paralysis or weakness, orthopedic treatment should begin immediately, for it is then that contractures must be and can be prevented by holding the various affected parts in a neutral position, thus stopping all strain on the affected muscle.

In immobilizing the legs and arms, one must remember that the neutral position should not be held so continually, or the joints may become stiff. I recently saw a pathetic example of this. A boy whose onset of poliomyelitis was in August 1935, with involvement of the legs, had had solid plasters put on both. They were kept on for six months with the result that when they were removed the knee joints had so stiffened that it was possible to get only a few degrees of flexion in either knee.

For this immobilization, I prefer for the legs posterior wire splints or bivalved plasters, they hold the legs in a neutral position but can be removed easily. I make it a rule to remove the posterior wire splints twice a day and let the patient flex his knee if he can. If he is unable to do this, it should be done manually within the limits of sensitiveness.

With deltoid and arm involvement, simple wire splints may be made to hold the arms in abduction with the elbows flexed or extended according to the involvement of the biceps and triceps while the patient is recumbent, that is, holding the arm in extension if the triceps is weak or in flexion if the biceps is weak, or part time in flexion and part time in extension if both are weak. When the patient is over the recumbent stage and is allowed to sit up, the arm should still be kept up on an abduction or platform splint to support the deltoid. If there is any involvement of the trunk muscles, these also should be supported by a corset.

Sensitiveness of the patient should be relieved as soon as possible in order to start muscle training. I have found that hot wet packs and hot baths given two or three times a day for fifteen minutes help best to shorten this stage. Dry heat may be applied, but it is my experience that moist heat is more effective. I often have patients put in the Hubbard tub even before the sensitiveness is entirely over with the water at 100-104 F to take the place of a hot pack and allow the patient some slight movement to prevent the stiffening of the joints.

At the same time rest is essential and patients should be moved as little as possible.

No muscle activity should be allowed until this stage of sensitiveness is over, and then a complete muscle examination should be made and muscle training can be started. Fatigue of the involved muscles must be carefully watched for, lest in becoming overtired they become weakened.

Rapid regaining of power in one group of muscles over its opposing group will necessitate changes in exercises to prevent unbalance, therefore frequent muscle examinations must be made in order that a true and complete muscle picture of the whole limb may be visualized at all times, to guide correct muscle training. It is my rule to make a complete muscle examination every month for four months, every two months for two examinations, every four months for five years, and then every six months.

I mention here the under water treatment of poliomyelitis. From the buoyancy of the water patients are relieved of the influence of gravity and friction, making it possible to do exercises much more easily than out of water. This affords a sense of accomplishment out of proportion to the actual ability of the weakened muscles, which stimulates the interest and effort of the patient. A wider range of activity other than table exercise is possible without strain. This diversion lessens the possibility of going stale during prolonged treatment. Body balance is learned more easily and walking may be practiced much earlier than outside. This benefit is eventually carried over out of water and prepares the patients for the adjustment of learning to walk in braces.

When shall patients with involvement of the legs be allowed to walk? Patients who with only moderate weakness are making constant gain in muscle power should be, I believe, kept off their feet for a long time, even nine or ten months, since if they are allowed to walk it will be impossible to control their activities. They will overdo and show a loss in muscle power from fatigue. If a patient, however, with moderate or extensive weakness shows but little or no return of power, I believe that braces should be applied even after six or seven months.

Many physicians are too prone to leave the treatment of poliomyelitis patients to their physical thera-

pists Some are capable of taking this responsibility, but I feel that it is important that the physician assume the entire supervision of the case throughout its course

Having discussed the importance of immediate and thorough after-care, I shall present the information I

mal, ninety-seven, or 197 per cent, had moved, died, or had been transferred elsewhere for treatment. 164, or 33 per cent, are still under my supervision at the clinic

Of these 164 cases, 109 are omitted because they were operative cases and I am measuring gain in

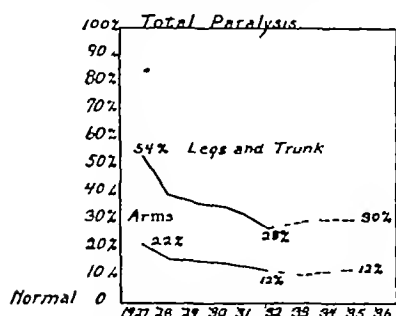


Chart 1—Result of good and poor treatment in a case of arm and leg involvement C P a girl aged 3 years onset in September 1927 Solid line, good treatment broken line poor treatment

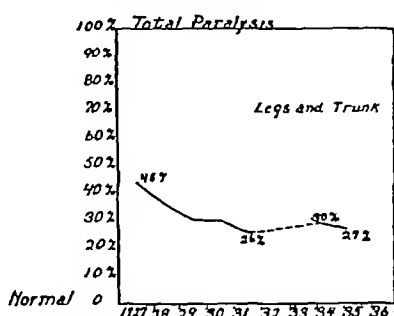


Chart 2—Course in a case in which treatment was given for four years interrupted for two years and given for two years L S a boy aged 9 years onset in July 1927 Solid line, receiving treatment broken line not receiving treatment

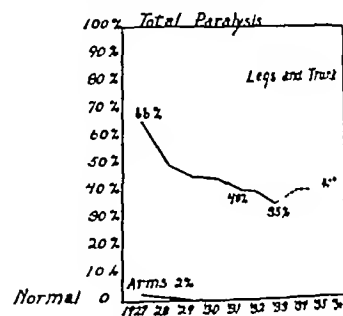


Chart 3—Course in a case receiving and not receiving treatment A P a girl aged 2 years onset in September 1927 Solid line, receiving treatment broken line not receiving treatment

have collected from my clinic cases concerning the amount of benefit derived from a long period of after-care I shall show that treatment after even five years is not just a preventive treatment By that I mean that it is not just to prevent deformities due to muscle

in muscle power, therefore the cases are limited to fifty-three

These fifty-three cases are divided into three classes of treatment, good, medium and poor In classifying these cases I have taken into consideration record of

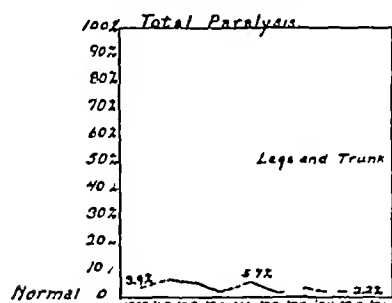


Chart 4—A case with poor and good treatment F T a boy aged 1 year onset in September 1927 Solid line good treatment broken line poor treatment

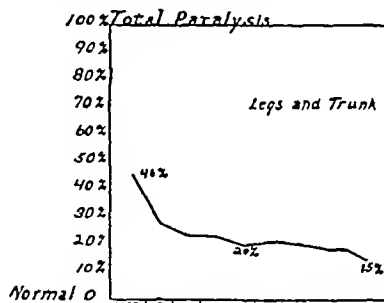


Chart 5—A case with good treatment for eight years J S a boy aged 7 years onset in September 1927

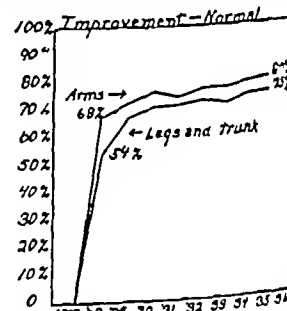


Chart 6—Yearly percentage rate of improvement in fifty-three cases

contractures, which is reason enough to continue treatment, but that even after five years definite gain in muscle power still can be made I am using the figures compiled from the cases in which the onset occurred

attendance to the main and field clinics and faithfulness of home treatment The latter information based on the report of the family and the physical therapist

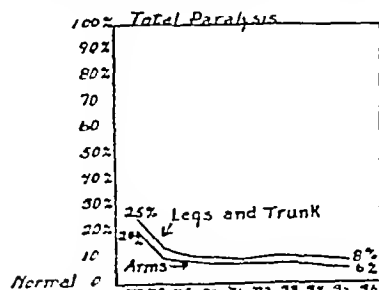


Chart 7—Yearly percentage of involvement in fifty-three cases of paralysis of the legs arms and trunk

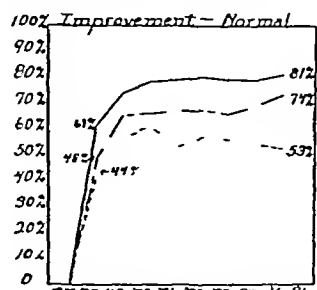


Chart 8—Yearly percentage of improvement in paralysis of the legs and trunk with good medium and poor treatment

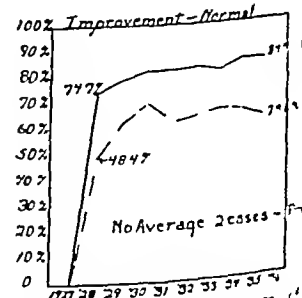


Chart 9—Yearly percentage of improvement of the arms with fair and medium treatment

in 1927 There were 496 cases reported to the Harvard Infantile Paralysis Clinic the onsets of which were in 1927 Of these 496 patients by Jan 1 1934, 167, or 33.6 per cent had been discharged or left practically normal or normal, sixty-eight or 13.7 per cent left or were discharged for noncooperation and were not nor-

In getting the percentage figures of the average amount of involvement, I graded the muscle as follows

- A normal muscle was graded 0 paralysis
- A good muscle was graded 1 paralysis
- A fair muscle was graded 2 paralysis

A poor muscle was graded 3 paralysis
A trace muscle was graded 4 paralysis
A gone muscle was graded 5 paralysis

The total number of muscles of the legs and arms left and right according to the 1927 muscle charts equal forty-six. Therefore, if each of the forty-six muscles was graded a "gone muscle," total paralysis of the legs and trunk would equal five times forty-six, or 230. The same holds true with the arm muscles, total paralysis equaling 290. A yearly muscle examination of each case was figured on this basis.

On the graphs it will be seen that good treatment is shown by a solid line and poor treatment by a broken line. It is of interest to note that, as soon as treatment was discontinued, muscle power weakened even after five years of care, after a return of the same cases to steady treatment, muscle power gained even within the ninth year after onset. This is shown by charts 1, 2 and 3.

In chart 4 the patient showed increased muscle weakness during the first year with no treatment, which is, though perhaps not a common occurrence, at least contrary to the opinion that all cases will improve at first regardless of treatment.

Chart 5, of a patient receiving good treatment steadily for nine years, shows an absolutely steady gain in muscle power right on to 1936.

The averaging of these fifty-three cases proves to my mind that steady follow-up treatment is not only beneficial in preventing deformities but equally important in positive increase in muscle power.

Here the graphs read as 0 improvement at the bottom of the graph, which would be the first examination, and 100 per cent improvement, or normal, at the top. Therefore chart 6 shows that the legs and trunk, over a period of nine years, improved 75 per cent on an average and the arms 80 per cent. It is of great interest, I believe, to see that the average goes slowly but steadily up toward normal even in 1935, nine years after the onset. In other words, the average paralysis of the legs and trunk, which at onset was 25 per cent, dropped down to only 8 per cent and the arms from onset of 20 per cent paralysis to 6 per cent paralysis (chart 7).

But, definite as these averages are, the division of the cases into good, medium and poor treatment and their according averages leaves my mind without a doubt that correct and steady follow-up care is of tremendous importance long after the onset (charts 8 and 9). They show the average yearly percentage of improvement of the legs and arms according to their class of treatment. Patients with leg and trunk paralysis receiving good treatment improved 81 per cent in nine years, patients receiving medium treatment improved 74 per cent, and those receiving poor treatment improved but 53 per cent. The arms improved in about the same proportions. Patients receiving good treatment improved 84 per cent, those receiving medium treatment improved but 73.6 per cent. There were two poor treatment cases which would not make a true average and are therefore omitted. Charts 8 and 9 not only have shown the importance of long continuous treatment but also refer back to the first point the importance of immediate good treatment.

During the first year, patients with leg and trunk paralysis receiving good treatment improved 61 per cent, those receiving medium treatment only 48 per cent and those receiving poor treatment but 44 per cent. Again the arms show the same, the patients

receiving good treatment improving 74 per cent and those receiving medium treatment but 48 per cent in the first year.

There is some spontaneous recovery of muscle power following an attack of poliomyelitis, owing to the edema of the cord. Many patients severely weakened or paralyzed make a very rapid and often complete recovery of muscle power even without treatment. It is my belief that there is no spontaneous recovery after six months. Late return of power may occur when a muscle has been put out of commission by more rapid recovery of its opponent and contracture. This being relieved, the muscle will immediately come back to power.

SUMMARY

Complete rest and immobilization with limbs in the neutral positions should be insisted on as soon as the paralysis or weakness occurs, to prevent contracture and to aid in the relief of the sensitive stage. A complete muscle examination should be made as soon as the sensitive stage is over and from this the muscle training should be planned. A careful check up on the gain or loss of muscle power should be made at definite intervals. The careful check up on the muscles affected should be carried out for years.

I believe my graphs show conclusively that while the greatest rate of gain is in the first year, with treatment a real progress can be made over a long period of years.

319 Longwood Avenue.

TEACHING PSYCHIATRY IN THE MEDICAL SCHOOL GENERAL HOSPITAL

A PRACTICAL PLAN

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The 1932 survey of sixty-eight medical schools in the United States and Canada, made by Ebaugh¹ for the National Committee for Mental Hygiene, indicated that 42 per cent of schools had not, at that time, developed clinical facilities for general psychiatric teaching, and that only eight schools had developed psychiatric liaison with the clinical departments of the general hospital. Unquestionably, many schools, since this survey was made, have begun developing more adequate facilities for training the medical student and intern in the diagnosis and treatment of the relatively large number of psychiatric cases commonly coming to the general practicing physician (generally estimated at from 35 to 75 per cent of the general physician's patient load). Suffice it to say that, since the present-day trend of modern medicine is toward a more firm coalescence of the fundamental scientific principles, clinical procedures and teaching methods of psychobiology and psychiatry with those of other departments of medical schools, the general hospital is being and will continue to have to be used more and more as a medium of procedure.

Such liaison projects in general hospitals are, however, relatively few and naturally differ considerably in

¹ The Psychiatric Liaison Department is a part of the Department of Psychiatry, Colorado University School of Medicine, financed by the Rockefeller Foundation.
² Ebaugh, F. G. Psychiatric Education in America, a Confidential Report to the National Committee for Mental Hygiene, 1932.

their working methods, depending on the many situational factors among which they are developed. The experiences of others have been exceedingly helpful in organizing and developing such an enterprise in the University of Colorado General Hospital. It is with this in mind that this exposition of the development of the Psychiatric Liaison Department of the University of Colorado Medical School and Hospitals is offered, in the hope that our experiences may give a modicum of helpfulness to those just beginning, or about to begin, similar work. In this paper no attempt is made to do more than sketch the general situation, some of the more prominent objectives, the mode of procedure and the difficulties and successes.

THE SITUATION

The University of Colorado School of Medicine and Hospitals, which is located in Denver (population 287,861), the capital of the state of Colorado (population 1,035,791), gives all four years of medicine and accommodates fifty students per class. The group of buildings serving the school includes a medical school building which is connected with the State General Hospital of 150 beds, and an outpatient wing that houses some twenty clinics. Uniting these is a central administration building in which are located the school administrative offices, the library of some 19,000 volumes and 321 current journals, a museum, an amphitheater, centralized laboratory and research units, and the Child Research Council under the directorship of Dr. Alfred H. Washburn. The State Psychopathic Hospital of eighty beds occupies a separate building adjacent to the school and the General Hospital. The physical set-up is not far different from that of the average medical school and state general hospital except for the excellent psychiatric facilities which are to be had in the Colorado Psychopathic Hospital, under the direction of Dr. Franklin G. Ebaugh.

During the past three years the average yearly admission rate to the General Hospital was 4,366. To the outpatient dispensary there came 9,448 new cases, and a total of 57,900 return visits were made during the year 1934-1935.

Prior to mid 1934, the psychiatric problems in the Colorado General Hospital and Dispensary were seen by the staff members and Commonwealth Fellows of the Psychopathic Hospital. This consultation service, over a period of eight years, did much to pave the way for the more recent ingrowth of psychobiology and psychiatry in the thinking and activity of the medical-surgical fields of this locus. In September 1934 a grant by the Rockefeller Foundation made possible the organization of a full time department of psychiatry in the General Hospital wards and dispensary. This department is called the Psychiatric Liaison Department of the Colorado General and Psychopathic Hospitals and is manned by a full time staff consisting of the psychiatrist, a social service worker and a secretary. A Commonwealth Fellow from the Psychopathic Hospital serves as the psychiatrist's assistant on a three months part time basis. It is concerning the development and functions of this liaison department during the past eighteen months that the present report is made.

AIMS AND OBJECTIVES

The not atypical attitude of "I'm from Missouri" on the part of the General Hospital visiting staff, resident staff and students and the feeling that psychobiology and psychiatry are not for the "general man" prevailed

at the inception of this liaison project. This feeling of apparent skepticism on the part of nonpsychiatrists might have been taken as a confronting difficulty and was interpreted as one of being willing to be convinced that psychiatry could be used practically and advantageously in a general hospital. It therefore seemed imperative that the program be demonstrative and not one of mere "preaching." We have found that such a program is of the greatest importance in creating a curiosity on the part of the nonpsychiatrist and leading to a spontaneous search for facts with an emotional as well as an intellectual acceptance of them.

With this type of program to be undertaken the utilization of limited and narrow aims seemed somewhat hazardous. In a general hospital the psychiatrist constantly has to maintain the clinical perspective of his nonpsychiatric colleagues as well as that of his own particular specialty and cannot possibly anticipate an amalgamation, such as has been referred to, by starting with a horizon contracted to a mere interesting case or a lone special project. It seemed essential, therefore, that our aims be formulated for realization far in the future and that any objectives to be undertaken in terms of the present or near future must always fall in line with them and at the same time be fluid enough to fit the ever changing situation.

The department was organized around and developed on three rather broad aims which we hope will prove adequate:

- 1 To sensitize the physicians and students to the opportunities offered them by every patient, no matter what complaint or ailment is present, for the utilization of a "common sense" psychiatric approach for the betterment of the patient's condition, and for making that patient better fitted to handle his problems—somatic or personality determined or both.

- 2 To establish psychobiology as an integral working part of the professional thinking of physicians and students of all branches of medicine.

- 3 To instill in the physicians and students the need for patient-public has for a more tangible and practical concept of personality and sociological functioning. This, not so much in the sense of "prevention" of mental and personality disorders per se, but rather in the sense of prevention of false thinking, misconception, misunderstanding, folklore and tabus which make it difficult for the patient to accept help or to allow the physician to be of help.

A CONFRONTING ATTITUDE, PROCEDURE, SOME GENERAL RESULTS

To the beginning intern in and the visiting physician to a general hospital, the first evaluation of the importance of a new clinical department is based, seemingly, on case turnover. If the psychiatrist picks his cases in any way designates what is or is not "his case," the project loses the interest of his confreres. During the first year the department took "everything" referred. Of this case load, on thorough examination, approximately 12 per cent of the patients were found to have some body disorder either purely incidental to and playing no role in the psychiatric problem presented, presenting only a minor contributive part. Between 5 and 6 per cent of the cases referred as "pre-emptive" "functional" problems during that year proved not to be psychiatric disorders but real somatic diseases ranging from pulmonary tuberculosis, cholecystitis, appendicitis, planus to brain tumor, which had been entirely overlooked because the case somewhat resembled a psychiatric one and usually was designated in lay terms as "hysteria" or "neurasthenia." These cases, unassumingly examined, diagnosed, formulated and treated, which treatment in keeping with medical opinion...

outlined, did a great work in stimulating the internist, surgeon and student to look further before referring his patients. The result has been that in looking further the nonpsychiatrist has asked for aids in studying personality, has used them and finds that in employing them he gets the "feel" of so-called functional personality disorders. Thus, then, paves the way for a better and more acceptable assimilation and utilization of the content of the case formulations which the department, as time goes on, endeavors to make more complete and instructive for the referring physician. In regard to these formulations, we try to fulfil four obligations: first, to arrange and group the complaint of the patient so that it presents a clear and concise verbal picture, second, to evolve the complaint in a simple but clear fashion to sound plausible and sensible and to stimulate an urge to know more of the details, third, to avoid nosologic psychiatric diagnosis in favor of a summarizing sentence or two that neutralizes any antipathy that might exist for "big words," and, fourth, to outline treatment in as clear, concise and all encompassing a manner as is possible, pointing out dangers and difficulties and ways of evaluating success. Through progress notes written after each treatment interview with the patient, as well as through discussions with the attending doctor, the physicians are kept informed as to methods, attainments and failures.

The result is that ordinary deliriums, mild depressions, simple anxiety syndromes and the like are being competently handled more and more by students, interns and the visiting physicians. Furthermore, potential personality reactions such as postoperative excitement, delirium, panic, early depressions, schizophrenic reactions and some of the "part disorders" (i.e., psychoneuroses) are being recognized by them. Thereupon the psychiatrist is called in to collaborate on the medical, surgical or obstetric procedures best fitted to avoid stirring up more profound disorders and for ameliorating those existent. For example, the ophthalmologist now often calls for the psychiatrist to assist him in determining whether a visual disturbance is a result of a combination of refractive error and a physiologic phenomenon of a tension state and, if such exists, whether refraction should precede or follow the psychiatric job of ameliorating the tension. Or the gynecologist, for instance, is beginning to ask for assistance in deciding whether a certain patient can or cannot be given douches for a local vaginal condition without stirring up more personality determined pelvic sensations. Thus, one clinician after another has learned to avail himself of the department, so that at the present time our clinical material is drawn from 61 per cent of the outpatient clinics and from all the wards of the General Hospital.

PSYCHIATRY IN THE OUTPATIENT DEPARTMENT OF THE GENERAL HOSPITAL

In the outpatient department the psychiatrist works each morning in the medical clinic, since more space is available here and because it is from this clinic that most of our referrals come. At least one new case and an average of two to four cases previously examined and under treatment are seen daily. The new cases, despite the fact that they have been examined physically and neurologically, are reexamined in these fields as well as psychiatrically. This keeps the psychiatrist medically minded, makes the referring physician more respectful of psychiatry, and brings the student face to face with the fact that psychiatry and the other

branches of medical science cannot be segregated. It is frequently felt that the psychiatrist must have a special and private environment in which to examine his patient. This, of course, is ideal. In our outpatient department, however, we have to work in a booth that is not sound proof. It has been our experience that this condition has helped a great deal in teaching the internist by indirect means, since it is possible for the physician working in the booth next door to overhear the examination and treatment of the case he has referred to us. After the case is examined, our observations are discussed with the referring physician, social workers and any others who are interested. A mutual understanding is reached and treatment is planned. A decision is then attained as to who is to be in charge of the case. Frequently the referring physician wishes to learn the management of this personality problem. He is directed to the literature, regular discussions with the psychiatrist are planned and he is helped in formulating the case for himself. It is the consensus of the physicians in our medical dispensary that at least 37 per cent of all new cases admitted to the medical outpatient clinic are psychiatric problems. Our department is able to see only approximately 20 per cent of the new cases. The remainder are carried by the internists under our supervision and guidance. Cases presenting good teaching and research problems are sent to the Psychopathic Hospital as these are desired by the staff of that unit.

TEACHING THE STUDENT PSYCHIATRY IN THE OUTPATIENT MEDICAL CLINIC

The General Hospital psychiatrist comes in contact, through the clinical cases, with the student senior clerks, who are assigned in rotating groups of eight to medicine, in the outpatient department and the wards. Each student, before presenting himself for clinical work, is required to study a compendium in which are outlined the rudiments of psychobiology, the methods of examination and a simple, descriptive outline of the differential diagnosis. Each student group is carefully instructed, in a special two hour meeting, how to elicit the facts from the patient and how to sort and use them. Each student spends several two hour periods of his clinical medical outpatient time with the psychiatrist. Since we see our outpatients by appointment, it is possible to choose cases that are best adapted for teaching and that illustrate points made in the general lecture course, and to assign them to students a week ahead of the examination date. If the student clerk has at any previous time seen the patient in question in any clinic of the outpatient department, he is assigned that case for psychiatric study. He is responsible for a thorough knowledge of the case as given by the data thus far collected, including other clinical examinations, any laboratory reports and the material our social service department has collected from social agencies, schools, employers or relatives. During his six weeks in medical clinic, each student has from three to five opportunities to examine new cases. At the first meeting with a patient he listens to the psychiatrist as he obtains the data from the patient, records it, formulates it and outlines the therapy. At the second meeting the clerk is required to record the data under supervision as the psychiatrist elicits it. The third meeting finds the student doing the whole job with the psychiatrist sitting by as an observer and assistant. The complaint of the patient is carefully and completely elicited. It has been our experience that if the student can be led to get these most important data his curiosity will usually compel

their working methods, depending on the many situational factors among which they are developed. The experiences of others have been exceedingly helpful in organizing and developing such an enterprise in the University of Colorado General Hospital. It is with this in mind that this exposition of the development of the Psychiatric Liaison Department of the University of Colorado Medical School and Hospitals is offered, in the hope that our experiences may give a modicum of helpfulness to those just beginning, or about to begin, similar work. In this paper no attempt is made to do more than sketch the general situation, some of the more prominent objectives, the mode of procedure and the difficulties and successes.

THE SITUATION

The University of Colorado School of Medicine and Hospitals, which is located in Denver (population 287,861), the capital of the state of Colorado (population 1,035,791), gives all four years of medicine and accommodates fifty students per class. The group of buildings serving the school includes a medical school building which is connected with the State General Hospital of 150 beds, and an outpatient wing that houses some twenty clinics. Uniting these is a central administration building in which are located the school administrative offices, the library of some 19,000 volumes and 321 current journals, a museum, an amphitheater, centralized laboratory and research units, and the Child Research Council under the directorship of Dr. Alfred H. Washburn. The State Psychopathic Hospital of eighty beds occupies a separate building adjacent to the school and the General Hospital. The physical set-up is not far different from that of the average medical school and state general hospital except for the excellent psychiatric facilities which are to be had in the Colorado Psychopathic Hospital, under the direction of Dr. Franklin G. Ebaugh.

During the past three years the average yearly admission rate to the General Hospital was 4,366. To the outpatient dispensary there came 9,448 new cases, and a total of 57,900 return visits were made during the year 1934-1935.

Prior to mid 1934, the psychiatric problems in the Colorado General Hospital and Dispensary were seen by the staff members and Commonwealth Fellows of the Psychopathic Hospital. This consultation service, over a period of eight years, did much to pave the way for the more recent ingrowth of psychobiology and psychiatry in the thinking and activity of the medical-surgical fields of this locus. In September 1934 a grant by the Rockefeller Foundation made possible the organization of a full time department of psychiatry in the General Hospital wards and dispensary. This department is called the Psychiatric Liaison Department of the Colorado General and Psychopathic Hospitals and is manned by a full time staff consisting of the psychiatrist, a social service worker and a secretary. A Commonwealth Fellow from the Psychopathic Hospital serves as the psychiatrist's assistant on a three months part time basis. It is concerning the development and functions of this liaison department during the past eighteen months that the present report is made.

AIMS AND OBJECTIVES

The not atypical attitude of 'I'm from Missouri' on the part of the General Hospital visiting staff, resident staff and students and the feeling that psychobiology and psychiatry are not for the general man prevailed

at the inception of this liaison project. This feeling of apparent skepticism on the part of nonpsychiatrists might have been taken as a confronting difficulty. I was interpreted as one of being willing to be convinced that psychiatry could be used practically and advantageously in a general hospital. It therefore seemed imperative that the program be demonstrative and not one of mere "preaching." We have found that such a program is of the greatest importance in creating a curiosity on the part of the nonpsychiatrist and leading to a spontaneous search for facts with an emotional as well as an intellectual acceptance of them.

With this type of program to be undertaken the utilization of limited and narrow aims seemed somewhat hazardous. In a general hospital the psychiatrist constantly has to maintain the clinical perspective of his nonpsychiatric colleagues as well as that of his own particular specialty and cannot possibly anticipate an amalgamation, such as has been referred to, by starting with a horizon contracted to a mere interesting case or a lone special project. It seemed essential, therefore, that our aims be formulated for realization far in the future and that any objectives to be undertaken in terms of the present or near future must always fall in line with them and at the same time be fluid enough to fit the ever changing situation.

The department was organized around and developed on three rather broad aims which we hope will prove adequate:

- 1 To sensitize the physicians and students to the opportunities offered them by every patient, no matter what complaint or ailment is present, for the utilization of a "common sense" psychiatric approach for the betterment of the patient's condition, and for making that patient better fitted to handle his problems—somatic or personality determined or both.

- 2 To establish psychobiology as an integral working part of the professional thinking of physicians and students of all branches of medicine.

- 3 To instill in the physicians and students the need the patient-public has for a more tangible and practical conception of personality and sociological functioning. This, not so much in the sense of "prevention" of mental and personality disorders per se, but rather in the sense of prevention of false thinking, misconception, misunderstanding, folklore and tabus which make it difficult for the patient to accept help or to allow the physician to be of help.

A CONFRONTING ATTITUDE, PROCEDURE, SOME GENERAL RESULTS

To the beginning intern in and the visiting physician to a general hospital, the first evaluation of the importance of a new clinical department is based, seemingly, on case turnover. If the psychiatrist picks his cases in any way designates what is or is not 'his case,' the project loses the interest of his confreres. During the first year the department took "everything" referred. Of this case load, on thorough examination, approximately 12 per cent of the patients were found to have some body disorder either purely incidental to and playing no role in the psychiatric problem present or presenting only a minor contributive part. Between 5 and 6 per cent of the cases referred as pre-entirely "functional" problems during that year proved not to be psychiatric disorders but real somatic disorders ranging from pulmonary tuberculosis, cholecystitis, and pes planus to brain tumor, which had been entirely overlooked because the case somewhat resembled a psychiatric one and usually was designated in such terms as "hysteria" or "neurasthenia." These cases, unassumingly examined, diagnosed, formulated and treated, which treatment in keeping with medical opinion was

outlined, did a great work in stimulating the internist, surgeon and student to look further before referring his patients. The result has been that in looking further the nonpsychiatrist has asked for aids in studying personality, has used them and finds that in employing them he gets the "feel" of so-called functional personality disorders. This, then, paves the way for a better and more acceptable assimilation and utilization of the content of the case formulations, which the department, as time goes on, endeavors to make more complete and instructive for the referring physician. In regard to these formulations, we try to fulfil four obligations: first, to arrange and group the complaint of the patient so that it presents a clear and concise verbal picture, second, to evolve the complaint in a simple but clear fashion to sound plausible and sensible and to stimulate an urge to know more of the details, third, to avoid nosologic psychiatric diagnosis in favor of a summarizing sentence or two that neutralizes any antipathy that might exist for "big words," and, fourth, to outline treatment in as clear, concise and all encompassing a manner as is possible, pointing out dangers and difficulties and ways of evaluating success. Through progress notes written after each treatment interview with the patient, as well as through discussions with the attending doctor, the physicians are kept informed as to methods, attainments and failures.

The result is that ordinary deliriums, mild depressions, simple anxiety syndromes and the like are being competently handled more and more by students, interns and the visiting physicians. Furthermore, potential personality reactions such as postoperative excitement, delirium, panic, early depressions, schizophrenic reactions and some of the "part disorders" (i.e., psychoneuroses) are being recognized by them. Thereupon the psychiatrist is called in to collaborate on the medical, surgical or obstetric procedures best fitted to avoid stirring up more profound disorders and for ameliorating those existent. For example, the ophthalmologist now often calls for the psychiatrist to assist him in determining whether a visual disturbance is a result of a combination of refractive error and a physiologic phenomenon of a tension state and, if such exists, whether refraction should precede or follow the psychiatric job of ameliorating the tension. Or the gynecologist, for instance, is beginning to ask for assistance in deciding whether a certain patient can or cannot be given douches for a local vaginal condition without stirring up more personality determined pelvic sensations. Thus, one clinician after another has learned to avail himself of the department, so that at the present time our clinical material is drawn from 61 per cent of the outpatient clinics and from all the wards of the General Hospital.

PSYCHIATRY IN THE OUTPATIENT DEPARTMENT OF THE GENERAL HOSPITAL

In the outpatient department the psychiatrist works each morning in the medical clinic, since more space is available here and because it is from this clinic that most of our referrals come. At least one new case and an average of two to four cases previously examined and under treatment are seen daily. The new cases, despite the fact that they have been examined physically and neurologically, are reexamined in these fields as well as psychiatrically. This keeps the psychiatrist medically minded, makes the referring physician more respectful of psychiatry, and brings the student face to face with the fact that psychiatry and the other

branches of medical science cannot be segregated. It is frequently felt that the psychiatrist must have a special and private environment in which to examine his patient. This, of course, is ideal. In our outpatient department, however, we have to work in a booth that is not sound proof. It has been our experience that this condition has helped a great deal in teaching the internist by indirect means, since it is possible for the physician working in the booth next door to overhear the examination and treatment of the case he has referred to us. After the case is examined, our observations are discussed with the referring physician, social workers and any others who are interested. A mutual understanding is reached and treatment is planned. A decision is then attained as to who is to be in charge of the case. Frequently the referring physician wishes to learn the management of this personality problem. He is directed to the literature, regular discussions with the psychiatrist are planned and he is helped in formulating the case for himself. It is the consensus of the physicians in our medical dispensary that at least 37 per cent of all new cases admitted to the medical outpatient clinic are psychiatric problems. Our department is able to see only approximately 20 per cent of the new cases. The remainder are carried by the internists under our supervision and guidance. Cases presenting good teaching and research problems are sent to the Psychopathic Hospital as these are desired by the staff of that unit.

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him to understand them by obtaining a thorough history and doing complete examinations. In order to emphasize this, we endeavor to evaluate our treatment accomplishments in terms of complaint changes. About two students out of each group of eight clerks desire to treat some of their cases. They are allowed to do so, always under the guidance of the psychiatrist. One morning a week, only cases previously examined are seen by the psychiatrist. This enables us to discuss perhaps eight or ten cases under treatment with each individual student, to explain what has been done in previous interviews, what we wish to accomplish at the present meeting, how we shall attempt to do it and then to allow him an opportunity to see the actual work. After the interview, a discussion of what we feel we have and have not accomplished and why is always held.

It has been very interesting to note how the students in their required medical, gynecologic, dermatologic and other examinations of patients throughout the dispensary are beginning to record more and more the real complaint of the patient and to evaluate the personality evolution. Now, after twenty months of activity, we notice that in a large majority of cases referred to us the student has already correctly evaluated the case and begun some psychotherapy prior to referral. This has begun to infect the busy visiting clinician, who now frequently comes, usually with his student group, to ask how he should proceed with "such and such a case" that he has in his private practice.

TEACHING THE STUDENT PSYCHIATRY IN THE GENERAL HOSPITAL

The case material and teaching of the students in the wards is handled in a somewhat similar fashion. In this instance we see only cases referred to us for consultation by the resident and visiting staffs. The only insistent requirement here made is that the intern write out a formal request for the psychiatric consultation, formulating the case, not in quasidiagnostic phraseology but in simple facts. As soon as the case is referred to us the student assigned to the case is automatically responsible for the incorporation of a full psychiatric work-up with his regular medical and surgical one. The case is seen either in the wards or in the liaison office and examined physically, neurologically and psychiatrically. The results of these examinations and those of other special tests or examinations are then formulated briefly, particular attention being paid to differential diagnostic points and treatment as outlined. The carrying out of therapy may follow one of three routes. The intern has first choice, if he wishes to try his hand he is allowed to do so with the requirement that he have daily conferences with the psychiatrist. The student may do likewise. If neither wishes to take an active part or if the psychiatrist feels that the problem is too difficult for them they are urged to observe and follow the treatment instituted by the psychiatrist. Once a week the psychiatrist accompanies the visiting internist and his resident staff on ward rounds. Following these rounds all repair to the liaison department offices where all cases are discussed as to points of interest, research problems, teaching, therapeutic opportunities, sociological involvements and means of accomplishing an end satisfactory to all.

Once weekly for two hours we meet the student clerks assigned to the medical wards. At these meetings the students present their cases. The cases are discussed and therapy evaluated. Care is taken to collaborate with the teachings of the internists and

surgeons when nonpsychiatric problems are encountered. A ward walk concludes the hour. At this time the student in charge of the given case is acting master of ceremonies in demonstrating the case and in applying the therapy decided on. The psychiatrist stands by to prevent difficulties from arising and to polish off the exercise. This tends to give the student clerk a feeling of security in himself and certainly a familiarity with the practical application of knowledge gained by other means.

LIAISON TEACHING THROUGH LECTURES

The more formal teaching of psychobiology and psychiatry, as applicable to general practice, is taken up in a lecture course held each week for one hour throughout the entire senior year. In this course the first trimester of twelve hours is spent in reviewing psychobiology and in weaving it into the general clinical and usual didactic courses. In these meetings, which are always accompanied with clinical demonstrations, the participations of the various somatic systems, organs and physiologic processes in personality function are discussed. The second and third trimester lectures are given over to discussions of treatment of the more usual reaction types occurring in the general hospital, dispensary and practice. Once a month, one of the internists joins the psychiatrist in presenting a clinic to the senior class. In this clinic the internist is given the floor for the purpose of emphasizing the importance of psychobiologic concepts and psychiatric principles in everyday medicine, and for emphasizing differential diagnostic points and his need for psychotherapeutic aids.

OTHER LIAISON TEACHING PROJECTS

There are other liaison teaching projects which are not to be considered less important merely because I mention them briefly in closing.

At Colorado University the second year medical student is first initiated into psychiatry through biweekly discussions at the Psychopathic Hospital. As a junior student he receives training in formal psychobiology and psychiatric procedures from Dr. Ebaugh. As a senior, his Psychopathic Hospital work allows for more personal clinical contact with patients through work in the wards and in demonstration clinics. It was necessary to weld this with the work in the General Hospital and to sensitize the junior student to the psychiatric problems common to general medicine and surgery that await him as a senior. In order to do this the liaison psychiatrist is occasionally invited to join Dr. Waring, the professor of medicine, in his regular medical clinic for juniors wherein the clinical demonstration is made of cases taken from the outpatient department and the wards of the General Hospital and showing psychiatric problems.

The psychiatrist of the liaison department once weekly, endeavors to take medical principles and practices and his experiences with psychiatric patients in the General Hospital to the wards of the psychopathic hospital by means of discussions with the physicians in the hospital.

THE SOCIOLOGICAL ASPECT

In an attempt to broaden the student's horizon to include the sociological factors and problems connected with the presenting act of the biologic drama of the patient and to acquaint the student with community resources at his disposal in caring for his patients, we instituted last year what we call "sociopsychiatric conferences." These conferences

were held at irregular intervals during the year and were open to students, nurses and staff members. Such topics as "Educational and Vocational Aspects of Feeblemindedness," "Physical-Medical Disabilities in Dollars and Cents," and "The Physician and the Court" were discussed by from four to six discussants mustered from industry and business, the legal profession, courts, school systems, various medical specialties, and governmental social agencies.

An attempt is being made to impregnate gradually the industries, schools, courts and social agencies with the medicopsychiatric needs of the community and state. A constant effort is made to sensitize the student and hospital physician to the sociological needs of the community, as to how some of the patients' symptoms are repercussions of general economic problems, as to his responsibility to his community and patient, and as to how he can utilize the available resources.

BEDSIDE TEACHING

CONSIDERATION OF THE PATIENT'S EMOTIONAL RESPONSE TO CASE DISCUSSION

EUGEN KAHN, M.D.
AND
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NEW HAVEN, CONN.

The use of the hospital ward and dispensary as the laboratory for the teaching of clinical medicine is a procedure with ancient and approved lineage—a descendant of the master-apprentice relationship which probably antedates formal academic disciplines. In modern times, bedside teaching of the medical student has been emphasized rather more in British than in continental schools, where the didactic lecture system was stressed.¹ In the United States, teaching in the medical schools was for many years largely by lectures and recitations. To Abraham Jacoby (1830-1919), nestor of American pediatrics, great credit is due for early attempts to break away from this method and establish clinical teaching in its laboratory—the bedside.

Reminiscing in 1917, Jacoby² wrote

If ever you will recall for yourself and your friends the first, the very first beginning of medical bedside instruction in America, please tell them of the small college on East 13th Street—I believe 118—which had to close its doors in 1864, a victim of the Civil War, which deprived us of our Southern students. That is part of your American medical history worth remembering. I was permitted to be quite active in that successful enterprise, and utilized my opportunities in preferring my pets, the young patients. My later experience will teach you that successful bedside teaching was almost exclusively pediatric. Thus pediatrics was the example of giving correct medical instruction.

However, it was with the launching of the Johns Hopkins Medical School in 1893 and the impetus given to educational procedures by the example and success of William Osler that clinical clerkships and bedside conferences were established as the sine qua non of clinical instruction.³ Recognition of Osler's important

share in this development in American medical education is evidenced in Cushing's dedication of his biography of Osler.

To Medical Students and particularly to those in America, lest it be forgotten who it was that made it possible for them to work at the bedside in the Wards.

In his valedictory address at Johns Hopkins University, Osler⁴ said

By far the greatest work of the Johns Hopkins Hospital has been the demonstration to the profession of the United States and to the public of this country of how medical students should be instructed in their art. I place it first because it was the most-needed lesson, I place it first because it has done the most good as a stimulating example, and I place it first because never before in the history of this country have medical students lived and worked in a hospital as part of its machinery, as an essential part of the work on the wards.

In saying this, heaven forbid that I should obliquely disparage the good and faithful work of my colleagues elsewhere. But the amphitheater clinic, the ward and dispensary classes are but bastard substitutes for a system which makes the medical student himself help in the work of the hospital as part of its human machinery. He does not see the pneumonia case in the amphitheater from the benches, but he follows it day by day, hour by hour, and he has his time so arranged that he can follow it, he sees and studies similar cases, and the disease itself becomes his chief teacher, and he learns its phases and variations as depicted in the living, and he knows under skilled direction when to act and when to refrain from action, he learns insensibly principles of practice, and he possibly escapes a nickel-in-the-slot attitude of mind, which has been the curse of the profession in the treatment of disease.

And the same with the other branches of the art, he gets a first-hand knowledge which, if he has any sense, may make him wise unto the salvation of his fellows. And all this has come about through the wise provision that the hospital was to be part of the medical school, and it has become for the senior students, as it should be, their college. Moreover, they are not in it on sufferance and admitted through side doors, but they are welcomed as important aids without which the work could not be done efficiently.

There can be no question of the essential value to the clinical student of teaching at the bedside. There the teacher-physician has the opportunity to observe his patient and convey his observations immediately to his student or apprentice, there the teacher can make his student or apprentice familiar with his methods of examination and the student is able to examine the patient under the direction and control of his teacher.

Such teaching developed in the homes of patients, in the hospitals in which patients were housed and nursed and in the dispensaries. One can easily picture one of the teachers in medicine expounding his observations to one student, or to a group of students, in the presence of the patient, and leading a discussion with the students about the condition of the patient, about the plan of therapy, and possibly about prognosis.

It is quite understandable that this technic would develop differently in the hands of different teachers. Even if the teaching physician understands perfectly his primary responsibility of helping his patient, as a teacher he also has another task, namely, to use his patient as "teaching material" for his students. These responsibilities are not wholly antagonistic, for undoubtedly the student by his examinations and laboratory investigations not only furnishes valuable concrete contributions to the "work-up" of the case but by his questions and comments stimulates his teacher to a more critical and searching appraisal of clinical data. Thus, the presence of a student "on the case" is often an asset.

From the Departments of Psychiatry and Pediatrics Yale University School of Medicine.

¹ Welch W. H. A Great Physician and Medical Humanist. A Review of Harvey Cushing's Life of Sir William Osler. Saturday Review of Literature. November 1925.

² Jacoby Abraham. History of Pediatrics in New York. Arch. Pediat. 34:1 (Jan) 1917.

³ Osler William. The Natural Method of Teaching the Subject of Medicine. J. A. M. A. 36:1673 (June 15) 1901.

⁴ Osler William. Valedictory Address at Johns Hopkins University. J. A. M. A. 44:705 (March 4) 1905.

of prime value in ascertaining knowledge of disease, the high position in which teaching hospitals are held in lay and professional regard is testimony to this fact.

However, this knowledge of disease which the student assists in acquiring and assembling is not always handled in such a way as to bring optimal benefit to the subject, too much is not known of the disease but too little is known of the patient and too little attention is given to satisfactory relating of patient and medical knowledge. The second responsibility of the clinical teacher, i. e., the use of the patient as teaching material, may quite obviously bring danger to the patient as well as influence harmfully the attitude of the physician-to-be, although the pedagogic procedure is an absolute necessity from the point of view of teaching the student it can be considered also as a necessary evil both from the point of view of the patient and from the point of view of the physician who in the first instance wants to help the patient and to avoid everything that might damage him.

The idea has been developing in medicine that physicians are not treating diseases but are dealing with diseased human beings. Doubtless considerable progress has been made along this line and the fundamental idea seems to be well understood, but in clinical pedagogy how is it possible to reconcile one's understanding of the patient as a human being with the teaching necessity of using him as "material"?

It is our impression that in teaching hospitals and dispensaries the majority of the patients concerned lend themselves to the teaching of their physicians with remarkable good will and grace. It is relatively rare that a patient rejects the suggestion of being shown and examined and possibly for a time treated under guidance by a student. This attitude, we want to stress, increases the physician's obligation when doing any bedside teaching to find the right way to satisfy both the students' needs and his patients' feelings.

In his preclinical years the student has been used to dealing with "material" of different kinds in a very free manner, he had the opportunity to discuss everything perfectly freely with his teacher individually or in a group regardless of the physical presence of the "material" concerned. When he comes into his clinical years he is confronted with a new situation. The connecting link between him and his teacher is no longer a guinea-pig, an anatomic or pathologic specimen, or a biochemical reaction, but another human being. The student is likely to throw himself on the patient with an eagerness similar to that which he displayed when taking hold of preclinical "material." Even if it is assumed that a goodly number of students bring with them to their clinical years sympathetic understanding and much tact the idea cannot be avoided that the development of their "bedside manners" will greatly depend on the bedside manners of their clinical teachers.

We have had the experience that some clinical teachers with the best of intentions, of course, are not dealing in the most desirable way with their patients when they are examining them in the presence of students. We have noted that for instance, the subject of blood pressure is freely discussed at the patient's bedside and have seen patients who heretofore were ignorant of their own blood pressure and of the conception of blood pressure for that matter worried for weeks about their alleged hypertension so that it became almost necessary to institute special psychotherapy. A remark may be made by the teacher or by the student

like this "I can feel his kidney." Even though it is possible afterward to explain to the patient that in certain lean people the normal kidney can be palpated, such a remark is, to say the least, entirely superfluous. But such mishaps are almost innocent in comparison with remarks about possible tuberculosis or tumor. Such remarks, especially if they are made with the well known "objectivity as to material," can hit the patient like a thunderbolt and can break down his morale and hope of recovery.⁵

A patient in a condition of anxious depression had a slight swelling of her finger on which she wore her wedding ring. A young doctor remarked that "the best thing would be to cut it off," meaning, of course, the ring. The patient, however, thinking he meant her finger, spent some days in agony lest the finger be amputated.

All manner of highly undesirable remarks and discussions are likely to occur if charts, specimens and roentgenograms are indiscriminately exhibited during bedside teaching. One has to realize that the patients or at least many patients, are under emotional stress in this situation and only too apt to listen anxiously and to interpret wrongly what they hear. It is, of course, another matter if the experienced physician purposely gives a patient, of whose sensible and understanding attitude he is sure, some appropriate information on, say, his temperature or his anatomy and physiology.

We think that it cannot be emphasized enough that the patient offers himself, in a sense, as a sacrifice when he lends himself to bedside teaching and that he is entitled to be dealt with in the gentlest and most considerate way. Whether or not he appears to be a sensitive person does not matter at all. Every patient ought to be treated as if he were sensitive, and every remark that might hurt a patient's sensitivity must needs be avoided if physicians want to carry on and further develop bedside teaching.

It is our opinion that the student must be made familiar with the considerate attitude toward a patient that is expected of him at a very early period of training. It is desirable to acquaint the student with this attitude before he goes into his clinical years. For this reason psychiatrists for years have urged that course be offered in introductory psychiatry or medical psychology or whatever one wants to call them—courses in which at the outset lectures are given to the student explaining what is understood under personality and emphasizing the necessity of dealing with patient assigned to him as human beings, forgetting that there ever existed the conception "clinical material." In such a course the first periods may be devoted to theoretical topics, but later the presentation of persons should be introduced. It is practical and promising first to show healthy and normal human beings, always having in mind, however, the fundamental idea that what must be brought home is the fact that the demonstrated person

⁵ Although we are principally concerned in this paper with situations involving student teaching we wish to inveigh again at this point under any circumstances of all considered tactless discussions of a patient's problems in his hearing. For example a thoughtless remark and physician were discussing the examination just made of a 4 year old child. The boy looked up from his supine position and with a sobbing voice said "I know what you are saying and it worries me." A loud voice in discussion in a room below that of the patient or heard whisperings outside a door may bring needless suffering. To practice in pediatric bedside teaching of discussions carried on in the hearing of very young children is usually considered harmful. It is said, "The child cannot understand what we are saying." It is not the fact, however, children often understand spoken language more adequately than adults imagine. But even if the child is not clearly understood what of the frown or shoulder shrug or face or ill timed smile or laugh? This sign language carries a message no less fraught with potentialities than the most direct communication with an adult.

is a human individual, a fact which, of course, implies that the subject is an individual belonging to a group, or rather to various groups small and large, to a family, to a community, and so on. It is necessary to develop the idea in front of the student that the patient has some sort of personality makeup which has been and still is developing in a certain social and cultural milieu. Later in the course, slightly "abnormal" and then seriously sick personalities may be demonstrated, after the demonstration, the patient's difficulties should be discussed in as detailed a way as possible, it being shown how they were bound to develop under the given circumstances and, further, how problems of disease entered into the picture and were dealt with by this specific human being. Problems of therapy may be left out in such a course altogether, but it may be useful in one or two of the later discussions to make reference to treatment and to expound in a very general way modern trends in that subject.

Needless to say, in such a course and ever after, discussion of the patient's problems in the presence of the patient himself ought to be scrupulously avoided. For a time it is necessary to call the attention of the students to this avoidance, but later it should become "second nature" to students and instructors alike. It is very easy in any clinical demonstration to let the patient leave the room before the teacher starts his discussion. It is equally easy for the teacher to leave the patient's bedside with his students after the examination has been accomplished and before he begins to discuss the patient with the student group. In every teaching hospital there are rooms to which the teacher may retire with his students and where he can discuss pathology and therapy to his heart's desire without hurting the feelings or threatening the interests of his patients.

One might say that most patients are naturally anxious to learn about the physician's conclusions as soon as possible. This is doubtless true and it belongs to the responsibility of the physician to give his patient all the information to which he is entitled. But this, in general, should not be done in the presence of other people. The relationship between patient and physician is a very subtle one, so subtle indeed that it can be disturbed by an inconsiderate word, which is much more difficult to avoid in the presence of a third party and which is more difficult to correct than when the patient and his physician work only with each other. It is necessary that in the discussions following the bedside teaching the student should be told how to approach the problem "What am I to say to my patient?" We realize that part of our students will learn this very fast. We realize, furthermore, that another part may never learn it satisfactorily. We trust, however, that if the clinical teachers are entirely aware of what they are doing, our students will acquire better "bedside manners" and our patients will profit by such an improvement.

We are not unmindful of the fact that nowadays when the newspapers print daily some sensational discussion of diseases and their treatment, and when the patients come for our help filled with "enlightenment" obtained from this and similar sources, the physician is often placed in a difficult position. However, we do not think that this position is too difficult to be mastered if we ourselves are conscious of our profound obligations toward those human beings who come to us as patients, and if we incessantly preach these obligations to those who will be our colleagues and successors in the profession.

ORAL COMPLICATIONS OF CHRONIC ALCOHOLISM

SIGNIFICANCE, RECOGNITION AND TREATMENT

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For this consideration we do not know whether the mouth lesions here to be described should be classed as complications of or as an essential part of the complex disease caused by the chronic use of alcohol. We know they occur very often and are the forerunner of a serious condition known as alcoholic pellagra, which is probably a deficiency disease. In that sense the mouth lesions are a complication. If, however, it is ultimately learned that all the important lesions of chronic alcoholism are due to the fact that the alcoholic addict substitutes "drink" for food or that alcohol so deranges his digestion that he cannot utilize food, either one or both devices may be present, then we should rightly say that these mouth lesions are an essential part of a complex deficiency disease known as chronic alcoholism.

No one will know the importance of deficiencies in the pathology of chronic alcoholism until early diagnosis is made and adequate treatment applied in a large group of cases. For that reason we present our observations on a series of patients so studied. The case material of this report is a group of seventy-three patients from Lakeside Hospital and the Cleveland City Hospital described¹ in 1933 as alcoholic pellagrins, and a second series of 125 cases² of pellagra, 95 per cent of which were known as chronic alcoholic addicts. In the first series 88 per cent had mouth lesions, in the second series, more than 50 per cent. The same lesions we have also seen in a large percentage of patients treated in the Cincinnati General Hospital, Division of Psychiatry, for delirium tremens, some of whom must be classed as mild pellagrins.

Because of the prevalence of these lesions, which can easily be found if looked for, we suggest that any one addicted to alcohol who comes complaining of weight loss, poor appetite or weakness should be so examined.

The tongue, lips and buccal membranes, gums and palate are all concerned and the term stomatitis covers the condition generally.

As to glossitis, the tongue becomes slightly swollen as evidenced at first by an increase in size and later by teeth impressions at the sides and tip (fig 1). This



Fig. 1.—Teeth impressions at sides and tip of tongue due to swelling.

From the Department of Internal Medicine, University of Cincinnati College of Medicine.

Read before the Section on Practice of Medicine at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

1. Spies, T. D. and DeWolf, H. F. Observations on the Etiological Relationship of Severe Alcoholism to Pellagra. *Am. J. M. Sc.* 186: 521 (Oct.) 1933.

2. Spies, T. D. The Treatment of Pellagra. *J. A. M. A.* 104: 1377 (April 20) 1935.

swelling is almost always associated with bright red discoloration or exaggeration of the normal color. It is remarkable how little of coating there may be, even though the patient eats poorly. As the process extends, more and more of the tongue is involved and there is an increase in the intensity of the red discoloration and in the swelling. If treatment is not given, ulcers may appear along the sides and tip rarely on top (fig 2).



Fig 2—Early ulceration of the tongue.

Often the tongue becomes semianesthetic, though occasionally it is hypersensitive. There is not so much complaint of sore tongue in the delirium tremens group as among the outspoken pellagrins.

Stomatitis follows a course similar to that of glossitis. The gums and mucous membranes become deeply red-

tender (fig 3). If left untreated, the process extends and often involves large areas, and here and there may appear ulceration of a mild form. The diffuse redness of buccal membranes and soft palate suggests that seen at the onset of influenza, except that there may be no conjunctivitis and no rhinitis. The gums are quite like any form of severe "pyorrhea" and the Vincent's organism is easily demonstrated. A publication by one of us (T D S) describing the relation of vitamin deficiency to Vincent's infection is soon to appear.

These lesions respond almost immediately to adequate specific therapy if such treatment is started early in the course of the disease. The methods of treatment which we found to be most efficacious in the treatment of pellagra have likewise proved to be beneficial in treating the glossitis and stomatitis complicating chronic alcoholism. These methods consist in the administration of a well balanced, highly nutritious diet of at least 4,000 calories a day, supplemented by 25 Gm of yeast or liver extract three times a day. Wheat germ administered in amounts of 50 Gm four times a day as a supplement to the diet is also very beneficial. Response to such methods of treatment is dramatic, marked improvement occurs in from twenty-four to thirty-six hours, and within a few days the tongue and mucous membranes have changed from dark red to grayish pink and have returned to their normal size.

Whether or not the glossitis and stomatitis observed in the chronic alcoholic addict and characterized by reddening, swelling and ulcerations of the tongue, gums

and oral mucous membranes would eventually develop into a condition recognizable as true pellagra is not pertinent to the welfare of the patient. The important thing is that the physician be constantly on the watch for such oral changes so that proper treatment may be administered in time to prevent the development of more serious conditions.

SUMMARY

In a series of over 200 patients suffering from chronic alcoholism and pellagra, approximately 60 per cent were found to have specific lesions of the mouth and tongue. Early treatment consisting of a nutritious diet of 4,000 calories and 75 Gm of yeast or liver extract daily caused the lesions to disappear. Such lesions frequently precede alcoholic pellagra and are considered to be manifestations of a serious deficiency state.

THE ETIOLOGY OF POLYNEURITIS IN THE ALCOHOL ADDICT

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That vitamin deficiency may be an etiologic factor in the development of polyneuritis in the alcohol addict was first mentioned on theoretical grounds by Shattuck¹ in 1928 and Minot² in 1929. The work of Wechsler,³ Minot, Strauss and Cobb,⁴ and Meyer⁵ indicates that the alcohol addict with polyneuritis has, as a rule, a qualitatively inadequate intake of food and vitamins and that the clinical manifestations and pathologic observations of beriberi and "alcoholic" polyneuritis are similar. These authors suggested, therefore, that vitamin B deficiency may be the decisive factor in producing polyneuritis in alcohol addicts. Strauss⁶ and Blankenhorn and Spies⁷ showed that patients having "alcoholic" polyneuritis improved if treated with a diet rich in all vitamins, supplemented by oral and parenteral administration of preparations rich in vitamin B, even while they were given from a pint to a quart of blended whisky daily. Strauss concluded that ingestion of whisky has no demonstrable toxic effect on the peripheral nerves.

Cowgill⁸ has shown that the vitamin B (B_1) requirement of man can be estimated by the formula

$$\frac{\text{Vitamin B mg equivalent}}{\text{Calories}} = 0.0000284 \text{ weight in grams}$$

This formula indicates that the vitamin B requirement of man is proportional to both caloric intake and body weight. From the nature of the equation, the expression $\frac{\text{Vitamin B mg equivalent}}{\text{Calories}}$ (hereafter referred to as the



Fig 3—Ulceration on dorsum of tongue and marked gingivitis.

Read before the Section on Practice of Medicine at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

From the Departments of Medicine and Psychiatry, New York University College of Medicine and the Psychiatric Medical Service of the Third (New York University) Medical Division, Bellevue Hospital.

1. Shattuck G C. Relation of Beriberi to Polyneuritis from Other Causes. *Am J Trop Med* 3: 539-543 (Nov.) 1928.

2. Minot G R. Some Fundamental Clinical Aspects of Deficiency. *Ann Int Med* 2: 216-229 (Sept.) 1929.

3. Wechsler I S. Unrecognized Cases of Deficiency Polyneuritis (Avitaminosis?). *M J & Rec* 131: 441-444 (May 7) 1931. *Br J Polyn Euritis Arch Neurol & Psychiat* 20: 813-877 (April) 1933.

4. Minot G R, Strauss M B and Cobb Stanley. *Alcoholic Polyneuritis Dietary Deficiency as a Factor in Its Production*. *England J Med* 208: 244-249 (June 15) 1933.

5. Meyer August. Ueber das Vorkommen von B-Avitarie bei den hiesigen Lebensbedingungen. *Schweiz med Wchnsch* 62: 1 (Dec 31) 1932.

6. Strauss M B. The Etiology of Alcoholic Polyneuritis. *Am J M Sc* 180: 378-382 (March) 1935.

7. Blankenhorn M A and Spies T D. Prevention Treatment and Possible Nature of the Peripheral Neuritis Associated with Pellagra and Chronic Alcoholism. *Tr A Am Phys* 50: 154-193.

8. Cowgill G R. The Vitamin B Requirement of Man. *New Hist Yale University Press* 1935.

vitamin/calory ratio) may be used as a quantitative expression, by reference to Congill's prediction chart,⁹ of the adequacy or inadequacy of the vitamin B content of the diet of an individual of known weight. Using this method in a recent study, we⁹ estimated the vitamin/calory content of the diets of forty-two alcohol addicts who gave reliable histories. By including in the estimation of the vitamin/calory ratio the first 1,600 calories derived from alcohol we demonstrated (1) that the diets of alcohol addicts with polyneuritis failed over an effective period of time to contain adequate quantities of vitamin B as compared with the predicted requirement of each patient, (2) that the diets of alcohol addicts without polyneuritis, though the addiction was of long duration, contained adequate quantities of vitamin B as compared with the predicted requirement, (3) that certain subjects without polyneuritis consumed enough alcohol over an adequate period of time to cause peripheral nerve involvement if alcohol per se was its cause. We present in this study additional evidence, in the form of therapeutic results, that vitamin B deficiency is the cause of polyneuritis in the alcohol addict. In presenting this evidence we are aware of the hazard of interpreting therapeutic results without a definite objective yardstick. Moreover, peripheral neuritis is a chronic disease, subject to wide variations in the degree of involvement, in which therapy effects complete cure only after a long period of time, with an occasional complete failure.¹⁰ These subjects frequently have a multiple rather than a single deficiency, and in some the pathologic changes may be so far advanced as to be irreversible. Even in experimental animals, maintained with a diet deficient only in vitamin B, therapy which is usually curative may fail completely.⁸ However, by the alternate case method of study we have obtained three groups of subjects of about equal severity of peripheral nerve involvement in whom we believe the therapeutic results may be compared.

METHODS OF STUDY

The alcohol addicts selected for this study had polyneuritis, as evidenced by symmetrical sensory changes in the peripheral nerve distribution of the lower extremities and as a rule by changes in the deep tendon reflexes. Patients having complications likely to increase the vitamin B requirement, or likely to prevent absorption from the gastro-intestinal tract or utilization of vitamins (pneumonia, tuberculosis, hyperthyroidism, delirium, vomiting, diarrhea, pellagra, clinical icterus, ascites), were excluded from this study. A palpable liver, dependent edema, low grade fever, achlorhydria, anemia, anorexia or a psychosis not associated with delirium did not cause exclusion. The selected patients were placed in rotation into groups A, B and C until twenty-three subjects were studied, then five successive patients were placed in group C, making a total of twenty-eight subjects. Certain subjects in groups A and C, following observation in their respective groups, received treatment designed to test a therapeutic agent. All subjects were given physical therapy, and symptomatic treatment was given as occasion required. Observations on changes in the neurologic status were made by the same observer at weekly inter-

vals, and in certain subjects daily. Because of variations in interpreting hyperactivity or sluggishness of tendon reflexes, they are reported only as being present or absent. For similar reasons, changes in skin sensitivity are reported as to extent but not degree. Changes in vibratory sense are reported as to extent of complete loss.

Group A. The seven patients in this group were given a basal diet¹¹ estimated to contain 2,190 calories and 3,680 mg equivalent (736 Sherman units) of vitamin B. The vitamin/calory ratio of this diet is 1.7, which is of borderline adequacy for subjects weighing from 58 to 63 Kg. Subject 5 weighed 56 Kg, and the remaining subjects weighed 58 Kg or more. Subjects 3, 4 and 6 received daily 18 Gm of vegex¹² which had been autoclaved on two successive days for four hours at 20 pounds pressure. This treatment, as shown by growth tests on rats, destroys the antineuritic vitamin B.

Group B. The eight patients in this group received the same basal diet as those in group A, but in addition they were given 18 Gm of unheated vegex daily. The vegex contains about 225 mg equivalent (45 Sherman units) of vitamin B per gram. This added 4,050 mg equivalent of vitamin B to the basal diet, making the vitamin/calory ratio 3.6, which is double the vitamin B requirement of a subject weighing 64 Kg.

Group C. The thirteen patients in this group received a vitamin rich diet estimated to contain 3,100 calories and 17,250 mg equivalent of vitamin B, resulting in a vitamin/calory ratio of 5.5. To this diet was added 18 Gm of vegex daily, bringing the vitamin/calory ratio up to 6.8. This ratio is almost twice that received by subjects in group B, and four times that received by subjects in group A.

RESULTS

Observations on the objective neurologic signs of peripheral nerve involvement in the seven patients in group A, and the results of maintaining them with a diet containing a vitamin/calory ratio of 1.7, are summarized in table 1. No patient showed objective signs of motor or sensory improvement. Subject 6, who weighed 90 Kg, developed a bilateral foot drop after twenty-nine days. Subjects 2, 3 and 4 showed advancement in the sensory abnormalities at the end of twenty-eight, thirty-three and twenty-seven days respectively of observation. Subjects 3, 4 and 6 received autoclaved vegex in addition to the basal diet, but, like the subjects who did not receive this supplement, they failed to improve.

Observations on the eight subjects in group B, maintained with the identical diet as the subjects in group A but with a supplement of 18 Gm of (unheated) vegex daily, are summarized in table 2. No subject became worse. Subject 9 failed to show either motor or sensory improvement after forty-four days. In three subjects (8, 11 and 15) sensory improvement was observed by the twenty-first day, in the remaining four sensory improvement was observed later. Six of the eight subjects in this group showed motor involvement by our criteria. Improvement in the motor phase was observed in three of these by the twenty-first day. In two (subjects 8 and 15) the motor improvement consisted of a return of knee jerks and in the third (subject 11) the bilateral foot drop disappeared. In no subject were

9 Jolliffe Norman, Colbert C N and Joffe P M. Observations on the Etiologic Relationship of Vitamin B (B₁) to Polyneuritis in the Alcohol Addict. *Am J M Sc* 191: 515-526 (April) 1936. Jolliffe Norman and Joffe P M. Relation of Vitamin B (B₁) Intake to Neurological Changes in the Alcohol Addict. *Proc Soc Exper Biol & Med* 32: 1161-1162 (April) 1935.

10 Verhaas, N G, Williams, R R and Williams R E. Studies on Crystalline Vitamin B₁: Experimental and Clinical Observations, *J A N A* 105: 1580-1584 (Nov 16) 1935.

11 The basal diet consisted of oatmeal 40 Gm, white bread 240 Gm, macaroni 30 Gm, milk 90 cc, meat (beef mutton or chicken) 150 Gm, white potatoes 150 Gm, vegetables (beets carrots onions) 100 Gm, stewed fruit (apples apricots) 150 Gm, butter 45 Gm, sugar 30 Gm.

12 Courtesy of Vegex Inc. New York.

absent ankle jerks noted to return within twenty-one days

Observations on the thirteen subjects in Group C, maintained with a vitamin rich diet containing a vitamin/calory ratio of 5.5 supplemented by 18 Gm of vegex daily, giving a total vitamin/calory ratio of

TABLE 1—Changes in Objective Neurologic Signs of Peripheral Nerve Involvement in Seven Subjects Maintained with a Diet Containing a Vitamin/Calory Ratio of 1.7

| Case | Age | Sex | Motor | | | | Sensory | | | | Results | | | | |
|------|-----|-----|----------------------|------|--------|---------|-----------|------------|-----------|----------|------------------|-------------------|-------------------|-------|---------|
| | | | Deep Tendon Reflexes | | | | Foot Drop | Wrist Drop | Vibratory | Position | Calf Tender-ness | Skin Sensi-tivity | Days of Treatment | Motor | Sensory |
| | | | Ankle | Knee | Biceps | Triceps | | | | | | | | | |
| 1 | 28 | ♂ | 0 | 0 | 0 | 0 | + | + | K | T | + | K | 0 | | |
| 2 | 30 | ♂ | + | + | + | + | N | N | N | T | + | A | 24 | U | U |
| 3 | 50 | ♂ | 0 | + | + | + | N | N | T | T | + | ML | 28 | U | W |
| 4 | 43 | ♀ | 0 | 0 | + | + | N | N | T | N | + | P | 32 | U | W |
| 5 | 44 | ♀ | 0 | 0 | 0 | 0 | + | N | Pel | T | + | ML | 0 | | |
| 6 | 44 | ♀ | 0 | 0 | 0 | 0 | + | N | Pel | A | + | P | 27 | U | W |
| 7 | 44 | ♂ | 0 | 0 | 0 | 0 | N | + | Pel | A | + | P | 39 | U | U |
| 8 | 44 | ♂ | 0 | 0 | 0 | 0 | + | + | Pel | T | + | ML | 0 | | |
| 9 | 44 | ♂ | 0 | 0 | 0 | 0 | + | + | Pel | T | + | ML | 29 | W | U |
| 10 | 44 | ♀ | 0 | 0 | + | + | + | N | K | N | + | K | 0 | | |
| 11 | 44 | ♀ | 0 | 0 | + | + | + | N | K | N | + | K | 74 | U | U |

In this and the following tables 0 = absent + = present N = normal T = absent in toes A = absent or abnormal in ankles and below ML = absent or abnormal below midleg K = absent or abnormal below knees MTh = absent or abnormal below midthigh Ped = absent or abnormal below pelvis P = abnormal on plantar surface G = abnormal in all extremities I = Improved U = unimproved W = worse

68 are summarized in table 3. No subject became worse. All the subjects in this group showed improvement in the sensory status, eleven of them within twenty-one days, while objective motor improvement was noted in ten subjects, all within twenty-one days. At the beginning of treatment the knee jerks were absent in ten subjects, they appeared in seven within twenty-one days. At the beginning of treatment ankle jerks were absent in all thirteen subjects, they appeared in five within twenty-one days. In the three subjects who showed no motor improvement the ankle jerks remained absent after thirty-eight, forty-eight and thirty-three days and the knee jerks after thirty-eight and thirty-three days of treatment.

Observations on the five subjects originally treated in group A or C but who later received different therapy are summarized in table 4. Subject 6, who grew worse after twenty-nine days in group A on the basal diet supplemented by 18 Gm of autoclaved vegex, was then placed in group C. No improvement was noted by the twenty-first day but by the thirty-fourth day the foot drop and wrist drop had disappeared and biceps jerks returned and sensory improvement was noted.

Subject 5 was treated for thirty-nine days in group A on the basal diet without motor or sensory improvement occurring. She was then given for seventy-two days 10,000 mg equivalent daily of a vitamin B concentrate¹³ by mouth. This supplement brought the vitamin/calory ratio up to 6.5. No objective motor or sensory improvement was observed during this time. A preparation of vitamin B for parenteral administration was not then available.

Subject 7 was treated for seventy-four days in group A on the basal diet without improvement occur-

ring. At this time there were absent ankle jerks, bilateral foot drop, and extreme skin hyperesthesia in the lower extremities. The patient was given by intravenous injection for five consecutive days 10 mg of crystalline vitamin B₁.¹⁴ Within forty-eight hours after 20 mg of crystalline vitamin B₁, the knee jerks had returned, the foot drop disappeared, and the sensory status was strikingly improved. By the sixth day after 50 mg of crystalline vitamin B₁, the patient was able to get out of bed for the first time in eight days. On the ninth day the diet was changed to the vitamin rich diet of those in group C supplemented by 18 G of vegex, but within a week (sixteenth day) the knee jerks had disappeared, the foot drop returned and the sensory abnormalities had recurred, though by no means as severely as previously. Continuing the vitamin rich diet and vegex, 10 mg of crystalline vitamin B₁ was given daily by intravenous injection for two days beginning on the seventeenth day. Dramatic improvement was again noted within forty-eight hours. The patient remained in the hospital seven days more, during which time the improvement was maintained, it has been maintained since then for eight months.

Subject 4 was observed for twenty-seven days in group A with the basal diet and a supplement of 18 G of autoclaved vegex. During this time, sensory abnormalities became worse. The patient was then given by intravenous injection for fourteen consecutive days 10 mg daily of crystalline vitamin B₁. Sensory improvement was noted on the third day. The knee jerks returned on the fourteenth day, and further sensory improvement was noted. The patient was placed on the vitamin rich diet used in group C, and there has been no regression up to the time of this writing twenty days later.

TABLE 2—Changes in Objective Neurologic Signs of Peripheral Nerve Involvement in Eight Subjects Maintained with a Diet Containing a Vitamin/Calory Ratio of 1.7 plus 18 Gm of Vegex

| Case | Age | Sex | Motor | | | | Sensory | | | | Days of Treatment | Motor | Sensory |
|------|-----|-----|----------------------|------|--------|---------|-----------|----------|-----------------|------------------|-------------------|-------|---------|
| | | | Deep Tendon Reflexes | | | | Vibratory | Position | Calf Tenderness | Skin Sensitivity | | | |
| | | | Ankle | Knee | Biceps | Triceps | | | | | | | |
| 8 | 42 | ♂ | 0 | 0 | + | + | N | N | + | I | 0 | I | I |
| 9 | 47 | ♀ | 0 | 0 | 0 | 0 | N | N | + | P | 0 | I | I |
| 10 | 39 | ♂ | 0 | 0 | 0 | 0 | + | + | + | K | 0 | I | I |
| 11 | 44 | ♀ | 0 | 0 | + | + | N | N | + | P | 0 | I | I |
| 12 | 47 | ♂ | 0 | 0 | 0 | 0 | N | N | + | P | 0 | I | I |
| 13 | 30 | ♂ | + | + | + | + | N | N | + | K | 0 | I | I |
| 14 | 40 | ♂ | + | + | + | + | N | N | + | ML | 0 | I | I |
| 15 | 33 | ♀ | 0 | 0 | + | + | N | N | + | P | 0 | I | I |

Subject 24 was treated in group C for eighty-two days, with good motor and sensory improvement. The sensory status at this time was normal but the knee and ankle jerks remained absent and the gait was widened base. She was then treated as in group A for 127 days taking an unweighed but vitamin rich diet supplemented by three level teaspoonfuls of vegex (about 18 Gm) daily. The knee and ankle jerks

¹³ Courtesy of Eli Lilly & Co., Indianapolis

¹⁴ Courtesy of Merck & Co., Inc., Rahway, N. J.

remained absent and the gait abnormal. The patient was then given 10 mg daily of crystalline vitamin B₁ by intravenous injection for nine consecutive days. During this time no change in reflexes was noted, but the patient experienced severe paresthesias of the toes

TABLE 3—Changes in Objective Neurologic Signs of Peripheral Nerve Involvement in Thirteen Subjects Maintained with a Diet Containing a Vitamin/Calory Ratio of 5.5 plus 18 Gm of Vegex

| Case | Age | Sex | Motor | | | | | | | Sensory | | | | | Results | |
|------|-----|-----|----------------------|------|--------|---------|-----------|------------|-----------|----------|------------------|------------------|-------------------|-------|---------|--|
| | | | Deep Tendon Reflexes | | | | Foot Drop | Wrist Drop | Vibratory | Position | Calf Tender-ness | Skin Sensitivity | Days of Treatment | Motor | Sensory | |
| | | | Ankle | Knee | Biceps | Triceps | | | | | | | | | | |
| 16 | 45 | ♀ | 0 | 0 | + | + | N | N | — | — | + | N | 20 | I | I | |
| 17 | 29 | ♂ | + | + | + | + | N | N | N | N | + | P | 0 | I | I | |
| 18 | 42 | ♂ | 0 | 0 | + | + | N | N | A | N | N | ML | 0 | U | I | |
| 19 | 48 | ♂ | + | + | + | + | N | N | N | N | + | ML | 0 | I | I | |
| 20 | 48 | ♂ | + | + | + | + | N | N | A | N | N | A | 0 | I | I | |
| 21 | 35 | ♀ | 0 | + | + | + | N | N | Pel | T | + | P | 0 | U | I | |
| 22 | 37 | ♀ | 0 | + | + | + | N | N | T | N | + | ML | 0 | I | I | |
| 23 | 40 | ♂ | 0 | 0 | + | + | N | N | K | T | + | K | 10 | I | I | |
| 24 | 34 | ♀ | 0 | 0 | + | + | N | N | K | T | + | K | 21 | I | I | |
| 25 | 52 | ♂ | 0 | 0 | + | + | N | N | A | N | + | P | 0 | I | I | |
| 26 | 39 | ♂ | 0 | + | + | + | N | N | A | N | + | P | 21 | I | I | |
| 27 | 40 | ♀ | 0 | 0 | 0 | + | N | N | T | N | N | ML | 21 | U | I | |
| 28 | 45 | ♀ | 0 | 0 | + | + | N | N | — | N | + | P | 20 | I | I | |

On the tenth day, however, the knee jerks were obtained, and they were still present thirty days later at the time of this writing

COMMENT
The etiology of polyneuritis in the alcohol addict is further clarified by the response of the subjects in this study to diets containing various quantities of vitamin B. The subjects in group A who received a diet of borderline adequacy in vitamin B or slightly less than their predicted requirement, depending on their weight, failed to show improvement. In some there was advancement in objective neurologic signs of peripheral nerve involvement. If alcohol per se were the cause of peripheral neuritis, the removal of alcohol from the daily regimen should have resulted in some of the subjects showing improvement during the period of observation, which varied from twenty-seven to seventy-four days. Their failure to improve when alcohol was withdrawn together with the observation of Strauss⁶ and of Blankenhorn and Spies⁷ that "alcoholic" polyneuritis will improve while patients consume from a pint to a quart of whisky daily if the diet is rich in vitamin B and together with the evidence of Jolliffe, Colbert and Joffe⁸ that alcohol addicts who maintain an adequate vitamin/calory ratio do not develop polyneuritis even though they consume large amounts of whisky over many years leads us to believe that alcohol

per se is not the direct cause of a symmetrical peripheral neuritis

In table 5 we have summarized the changes occurring within twenty-one days in the three groups of cases. The subjects in group A, given a basal diet containing a vitamin/calory ratio of 1.7, failed in every instance to show either motor or sensory improvement. The subjects in group B, given the same diet plus a supplement of vegex by mouth sufficient to increase the vitamin/calory ratio to 3.6, showed as a group definite but moderate improvement. The subjects in group C, who received a vitamin rich diet which, supplemented by vegex, contained a vitamin/calory ratio of 6.8, showed more rapid and decided improvement than the subjects in group B. The vitamin B adequacy of the three groups may be stated as follows: group A, borderline; group B, approximately twice the predicted requirement; group C, approximately four times the predicted requirement. The degree of improvement was therefore roughly proportional to the vitamin B intake. The contention that the amount of vitamin B intake decisively governs the degree of improvement is valid in groups A and B. The only difference in the

TABLE 4—Changes in Objective Neurologic Signs of Peripheral Nerve Involvement in Five Subjects on Various Forms of Therapy

| Case | Treatment | Day | Motor | | | | | | | Sensory | | | | | Results | |
|------|---|-----|----------------------|------|--------|---------|-----------|------------|-----------|----------|------------------|------------------|-------------------|-------|---------|--|
| | | | Deep Tendon Reflexes | | | | Foot Drop | Wrist Drop | Vibratory | Position | Calf Tender-ness | Skin Sensitivity | Days of Treatment | Motor | Sensory | |
| | | | Ankle | Knee | Biceps | Triceps | | | | | | | | | | |
| 6 | V/C 5.5 plus vegex | 0 | 0 | 0 | 0 | 0 | + | + | Pel | T | + | ML | 0 | I | I | |
| 5 | V/C 1.7 plus B ₁ concentrate | 72 | 0 | 0 | 0 | 0 | + | N | Pel | A | + | P | 0 | U | U | |
| 7 | V/C 1.7 plus 50 mg B ₁ | 2 | 0 | 0 | + | + | + | N | N | N | + | K | 0 | I | I | |
| | V/C 5.5 plus vegex | 10 | 0 | 0 | + | + | + | N | N | N | + | ML | 0 | U | U | |
| | V/C 5.5 plus vegex plus 20 mg B ₁ | 20 | 0 | + | + | + | N | N | N | N | + | N | 0 | I | I | |
| 4 | V/C 1.7 plus auto-claved vegex plus 140 mg B ₁ | 0 | 0 | 0 | + | + | N | N | Pel | T | + | ML | 0 | I | I | |
| | High vita-min diet plus vegex | 50 | 0 | 0 | + | + | N | N | N | N | + | N | 0 | U | U | |
| | High vitamin diet plus vegex plus 90 mg B ₁ | 107 | 0 | + | + | + | N | N | N | N | + | N | 0 | U | U | |

B₁ concentrate (Eli Lilly & Co.) 10,000 mg equivalent daily
Mg B₁ refers to crystalline B₁ (Merck & Co. Inc.)
Vegex always used in 18 Gm amounts daily

regimen of these two groups was that subjects in group B were given 18 Gm of vegex daily, while subjects in group A received either autoclaved vegex or no vitamin B supplement. Vegex is a complex preparation of autolyzed brewers' yeast containing, in addition to vitamin B, vitamin G, which now is thought¹⁵ to

15 Burch T W, Gyorgy Paul and Harris L J. The Vitamin B₂ Complex Differentiation of the Antiblacktongue and the P P Factors from Lactoflavin and Vitamin B₂ (So-Called Rat Pellagra Factor) Parts I VI Biochem. J 19 2830 2850 (Dec) 1935

consist of several fractions such as the pellagra preventive factor, the anti-black tongue factor, lactoflavin, and vitamin B₆. In autoclaving this product we may have destroyed or impaired another fraction in addition to vitamin B. It may be suspected that the failure of patients in group A, who received autoclaved vegex, to improve was due to the destruction of this other factor, and that the response of the subjects in group B was due to its presence in the unheated vegex. That this is not the true explanation is shown by the course of subjects 4 and 7, who responded with improvement when the basal diet, or the basal diet plus autoclaved vegex, was supplemented by crystalline vitamin B₁. If the improvement of patients in group B were due to another fraction than vitamin B, it would not have occurred in subjects 4 and 7. The failure of subject 7 (table 4) to maintain the improvement that occurred after 50 mg of crystalline vitamin B₁ was given with the basal diet, and her maintaining the improvement that occurred after 20 mg of crystalline vitamin B₁ was given with the vitamin rich diet supplemented by vegex, and the permanent improvement of subject 4 after 140 mg of crystalline vitamin B₁ was administered with the basal diet supplemented by autoclaved vegex suggests that some factor may be present in both autoclaved and unheated vegex which in itself is not curative but which, when present with adequate

experiments. When separate fractions of the vitamin B complex are added to a diet lacking in the entire vitamin B complex, there occurs a temporary increment in weight which is not maintained until all necessary factors are included in the diet.

It is difficult to account for the failure of subject 7 to maintain the improvement produced by 50 mg of crystalline vitamin B₁ administered by parenteral injection. Before and during this therapy the patient received the basal diet. From the day following the last administration of crystalline vitamin B₁ she was given the vitamin rich diet supplemented by vegex. In spite of this, regression occurred within a week. To the vitamin rich diet plus vegex we then added within two days 20 mg of crystalline vitamin B₁. The prompt improvement which followed this time has been maintained over a period of eight months of observation. Our previous suggestion that some factor may be present in both autoclaved and unheated vegex which while not curative in itself, augments the curative action of vitamin B may be the correct explanation of the relapse. On the other hand, the explanation may be a temporary failure of this patient to absorb the vitamin B given by mouth during the week between the end of the first and the beginning of the second period of crystalline vitamin B₁ therapy.

The failure of subject 5 to respond by improvement after seventy-two days of treatment with the basal diet supplemented by the oral administration of 10,000 mg equivalent of a vitamin B concentrate does not mean that this preparation is without value. We have treated two subjects¹⁷ having gestational polyneuritis, also due to vitamin B deficiency,¹⁸ with this preparation, with excellent results. Furthermore, subject 5 had a very severe polyneuritis and may represent a group of subjects in whom the pathologic changes have advanced so far as to be irreversible. Another explanation may be that her polyneuritis was on a different etiologic basis, a possibility to which we have referred in a previous study.⁹

Failure of the tendon reflexes to return after a few weeks or months of vitamin B therapy by mouth does not necessarily indicate that they will be permanently absent. The knee jerks in subject 24, after 221 days of known absence, returned when the vitamin rich diet was supplemented for nine successive days by the daily intravenous administration of 10 mg of crystalline vitamin B₁.

SUMMARY

We have observed twenty-eight alcohol addicts having uncomplicated polyneuritis who were given diet containing slightly inadequate or barely adequate quantities of vitamin B, or diets containing either approximately two times or four times the estimated vitamin B requirement. Those receiving borderline amounts of vitamin B showed no improvement in the objective signs of peripheral neuritis over a period of a month. Two of these subjects were then given crystalline vitamin B₁ by intravenous injection with dramatic response in one and a good response in the other. Subject treated with a vitamin B intake approximately twice their predicted requirement showed improvement but not as rapidly or in equal degree as those receiving four times their vitamin B requirement. We have discussed the relation of alcohol to the etiology of polyneuritis and the possibility of a fraction in the vitamin

TABLE 5—Summary of Changes in Objective Neurologic Signs of Peripheral Nerve Involvement in Groups A, B, and C Within Twenty-One Days

| | No of Cases | Vitamin/Calory Ratio of Diet | Worse | | Unimproved | | Improved | |
|---------|-------------|------------------------------|-------|---------|------------|---------|----------|---------|
| | | | Motor | Sensory | Motor | Sensory | Motor | Sensory |
| Group A | 7 | 1.7 | 1 | 3 | 6 | 4 | 0 | 0 |
| Group B | 8 | 3.6 | 0 | 0 | 3 | 1 | 3 | 7 |
| Group C | 13 | 6.8 | 0 | 0 | 3 | 2 | 10 | 11 |

amounts of vitamin B, augments the curative properties of the latter.

Patients in group C, whose vitamin B intake was approximately four times their requirement, showed more decided improvement than those in group B, who received only two times their vitamin B requirement. For example, in patients in group B, absent ankle jerks were not observed to return within twenty-one days, while in patients in group C, absent ankle jerks returned within twenty-one days in five of the thirteen subjects.

While we are justified in attributing the better response of patients in group B than those in group A to vitamin B, the still better response of the patients in group C cannot with certainty be attributed solely to the increase in vitamin B. The diet in group C contained 50 per cent more calories and an equal increase in protein. Vitamins A, D and C were also present in larger amounts than in the diet of groups A and B. When we increased the vitamin B content from around 3,000 mg equivalent in the diet of groups A and B to 17,000 mg equivalent in the diet of group C, we also increased other fractions of the vitamin B complex. In this connection the observation of Elsom¹⁹ is significant. Vitamin fractions contained in yeast were necessary in addition to preparations of vitamin B₁ and B₂ for complete relief from the changes which accompanied deficiency in the vitamin B complex. This clinical observation is confirmed by deficiency

¹⁷ From A. O. Experimental Study of Clinical Vitamin B Deficiency. J. Clin. Investigation 15: 4-51 (Jan.) 1935.

¹⁸ Strauss M. B. and McDonald W. J. Polyneuritis of Pregnancy. A Dietary Disorder. J. A. M. A. 100: 1329-1333 (April 29) 1931.

¹⁹ Unpublished observations.

B complex other than vitamin B itself augmenting the action of vitamin B on polyneuritis in the alcohol addict. We conclude that

1 Alcohol per se is not the cause of polyneuritis in the alcohol addict

2 Vitamin B deficiency is a cause of polyneuritis in the alcohol addict

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs BLANKENHORN AND SPIES AND
DRs JOLLIFFE AND COLBERT

DR. H. B. MULHOLLAND, University, Va. Until recently the etiology of polyneuritis in chronic alcoholism was thought to be due to the effect of the alcohol on the nervous tissues. The work of Strauss and others demonstrated an improvement in the symptoms and signs of nervous lesions occurring in alcoholic addicts in spite of the continuance of an average alcohol intake, when the patients were put on adequate diets. This is further amplified by these authors, who in a new and ingenious method of attack have apparently shown that vitamin B is quantitatively concerned in the etiology and cure of this condition. I am interested in the fact that in order to obtain satisfactory results it is often necessary to give patients many times the average requirement of vitamin B. This fact has been shown to be true in other deficiency syndromes. It is therefore possible that the factors of absorption and storage may play an important part in the development of deficiency states. An example is the case which responded to the intravenous administration of crystalline vitamin B₁ after not having shown any improvement on a very high intake by mouth. A case of chronic alcoholism recently observed in our hospital presented the picture of macrocytic anemia and symptoms of peripheral neuritis. The reflex changes were of a minor degree, and the lesions cleared up so promptly on the administration of liver and adequate diet that I believe this is another evidence of a deficiency neuritis complicating pernicious anemia in a chronic alcoholic patient. I wonder whether the authors have observed any such cases with macrocytic anemias in their series. The whole question of peripheral neuritis should be reopened and resurveyed in the light of recent work for instance, peripheral neuritis complicating diabetes and other diseases. The importance of mouth lesions occurring in deficiency diseases, particularly those associated with the vitamin B complex, has just recently been recognized. Indeed, in pellagra these lesions may be used as a guide to the efficacy of therapy. The authors have called attention to a common condition occurring in chronic alcoholic patients which if treated by adequate dietary measures, may preclude the advent of more serious deficiency states. The lesions described are certainly rather typical of pellagra as seen in the nonalcoholic patient. These two papers seem to carry important therapeutic implications in the treatment of chronic alcoholism.

DR. TOM SPIES, Cincinnati. I cannot agree with Drs. Jolliffe and Colbert that their conclusions concerning vitamin B have been established. The present status can be approached best from a historical standpoint. Lettsom in 1787 first described alcoholic polyneuritis and attributed it to a neurotoxic effect of the alcohol. This belief was not seriously questioned until 1928. The first controlled information occurred by accident when Dr. De Wolf and I were studying the relationship between chronic alcoholism and the development of alcoholic pellagra. We observed that the neuritis did not progress in patients taking large quantities of whiskey if they ate large amounts of food. Dr. Strauss using the same method, showed subsequently that alcoholic neuritis unaccompanied by pellagra responded in a similar manner. Later, Dr. Blankenhorn and I treated fifty cases of alcohol polyneuritis, some with and some without pellagra. Their cure was reported in May 1935. At that time we stressed the therapeutic value of a high caloric well balanced diet supplemented by large amounts of the vitamin B complex in the form of yeast, liver extract or wheat germ. Drs. Jolliffe and Colbert added the next step by attempting to establish a quantitative relationship between the number of calories and the amount of the vitamin B complex in the diets of these people. Such a relationship

had already been established in animals by Dr. Cowgill. In my opinion, Drs. Jolliffe and Colbert have not proved their point. First, their method of calculating the dietary intake is open to criticism. They failed to consider that the alcoholic addict is interested only in drink and will lie and throw food away to avoid eating. Second, they take alcohol away from people who are accustomed to large amounts. Third, they give these patients physical therapy, which in itself sometimes aids in the treatment of polyneuritis. Fourth, the studies are sufficiently long to allow a possible deficiency of certain other portions of the diet to arise. I believe that vitamin B₁ has something to do with alcoholic polyneuritis, but I also feel that it is not the only factor involved. From my studies it seems that the more restricted diets require larger supplements of the vitamin. The contribution of Drs. Jolliffe and Colbert is significant and I am sure that they will soon put the study on a more scientific basis.

DR. NORMAN JOLLIFFE, New York. In answer to Dr. Mulholland's question concerning macrocytic anemias in these patients, we found in 100 consecutive cases of polyneuritis that about one third showed a macrocytic anemia. As to the points made by Dr. Spies. We are aware that alcohol addicts as a group give unreliable histories, that they are liars, and that they frequently have memory impairment. For this reason I wish to reemphasize our method of judging the accuracy of histories. We chose patients that seemed to us likely to give a reliable history, and then only about one in ten would give us the same history on several successive days. If the history of those who did this could be confirmed by relatives or friends, we would accept that history as true. If our error in estimating the diet was as great as 50 per cent, in only one subject would the vitamin B intake be changed sufficiently to be an exception to our conclusions. As to physical therapy, all three groups received it, and this factor, if it played a curative role, was constant. The diet may be restricted, as Dr. Spies has brought out, so much that even crystalline vitamin B₁ will not cause a response. That was shown in one of our patients (case 7). This patient for seventy-four days was given the basal diet. Fifty milligrams of crystalline vitamin B₁ caused only a temporary though dramatic improvement. But 20 mg. of crystalline vitamin B₁ given to the same patient while on a vitamin rich diet was followed by permanent improvement. Another subject (case 4) who received the basal diet plus autoclaved vegex responded permanently following crystalline B₁. This leads us to believe, as Dr. Spies suggested, that other factors present in the B complex influence the curative response to crystalline B₁. This phenomenon occurs in the experimental animal that is deprived of the entire vitamin B complex. When separate fractions of the B complex are added, only a temporary response occurs. Add a second fraction, and again a temporary response follows. A permanent response is not established until all fractions of the vitamin B complex are added to the diet. I believe this is the explanation for the failure of crystalline vitamin B₁ to maintain a permanent response in subject 7 on the incomplete diet.

DR. M. A. BLANKENHORN, Cincinnati. I can construe Dr. Mulholland's discussion as a question directed to our paper about macrocytic anemia and answer it with practically the same answer that Dr. Jolliffe does, that is to say among our patients that were reported as having pellagra, a large number were found to have macrocytic anemia. I am grateful to Dr. Mulholland for making the statement that these mouth lesions in the condition we have described here greatly resemble the pellagra of the South. In presenting this question of sore mouth in chronic alcoholism, we have avoided almost too carefully the word 'pellagra' because of the psychology of medical minds. When we describe the condition as pellagra, the doctors of the North will say 'Pellagra is a disease of the South and we do not have it in this community and there is no use looking for it.' When we speak of this disease in the South the doctors say 'That is alcoholism, and it is quite different from the pellagra we have in the South.' We welcome the opinion, therefore, that the two conditions are identical. I will close by reiterating the point emphasized yesterday by Dr. Carlson that the early recognition of deficiency states is not scientific and is still in the realm of the practicing physician who sees and looks for minutiae.

sistently showing a hearing loss then receive a special examination of nose, throat and ears by the school medical inspector to eliminate impacted cerumen. A further check on hearing is made with the 2-A audiometer through cooperation with the Central Institute for the Deaf in St. Louis. The audiograms of these tests are filed with the school records and compared with subsequent audiograms. Parents are notified of the hearing loss and advised to consult an otologist for correction when possible. Meanwhile lip reading instructions are begun by teachers trained at the Central Institute for the Deaf of St. Louis.

After one or two years of such instruction, remarkable results were noticed in this group of children. The class room teachers and principals stated that the children were more attentive and had improved in reading,

the ability and progress of the child. A child's educational age should show a gain of at least twelve months in a year's time.

C A, or chronological age, is determined from the birth date. It automatically increases twelve months in a year.

I Q is the intelligence quotient, a ratio of the chronological age to the mental age. In normal children the intelligence quotient remains fairly constant throughout school life. A variation of from 5 to 10 points may be encountered. In cases in which no data are supplied, school records were incomplete.

The intelligence quotients prior to instruction in lip reading are generally lower in table 1 than in table 2, since the deafness in this first group was of longer duration.

TABLE 2—Group of Hard of Hearing Children with No Lip Reading Instruction

| Name | Grade in 1935-1936 | Repeated Grades or Conditioned | Prior to Lip Reading Instruction | | | | 12 or 3 Years Later | | | | 4 Years Later I Q | Hearing Loss | | Comment | |
|--------|--------------------|--------------------------------|----------------------------------|------|-----------------------|------------------------------------|---------------------|-----|-------|-----------------------|-------------------|------------------------------------|------|--|--|
| | | | I Q | C A | E A | Gain in E.A. During Preceding Year | Repeats | I Q | C.A | E A | | Gain in E.A. Preceding School Year | R. | | L. |
| 1 B J | IV | Repeat 2 conditioned 2 | 60 | 10-2 | 6-11 | 0 | Moved | | | | | 21 | 3 | Poor home conditions | |
| 2 J A | IV | None | 110 | 8-6 | 8-8 | 5 mos | None | 104 | 9-1 | 9-11 | 6 mos | deaf | 0 | Physician's son | |
| 3 W S | IV | Repeat 1 conditioned 1 | 124 | 8-2 | 7-6 | | Cond. 1 | 89 | 8-2 | 7-9 | 4 mos | 3 | 18 | Called lazy by teachers | |
| 4 C R. | V | Repeat 2 | 89 | 9-10 | 8-3 | 12 mos | Cond 1 | 76 | 10-10 | 9-4 | 13 mos | 18 | 9 | Antischool complex | |
| 5 G T | V | None | 111 | 8-3 | 7-4 | 10 mos | None | 88 | 9-10 | 10-1 | 6 mos | 18 | 6 | Introversion | |
| 6 G B | VI | Repeat 1 conditioned 2 | 95 | 8-11 | 7-9 | 10 mos | Cond 1 | 90 | 11-11 | 11-0 | 4 mos | 9 | 9 | Foster home | |
| 7 O P | VII | Repeat 2 | 67 | 11-9 | 8-8 | 0 mos | Repeat 1 | 68 | 14-0 | 9-4 | 3 mos | 12 | 9 | Enlarged tonsils adenoids | |
| 8 B O | VII | None | 124 | 9-4 | 11-5 | 16 mos | None | 111 | 11-5 | 14-1 | 14 mos | 27 | 0 | Upper social strata medical care | |
| 9 W W | VIII | None | 109 | 8-10 | 10-5 | 20 mos | None | 103 | 10-10 | 11-10 | 17 mos | deaf | 3 | Upper social strata medical care | |
| 10 A M | X | None | 106 | 11-4 | 10-6 | 12 mos | None | 98 | 14-0 | 13-7 | 12 mos | deaf | 6 | Nerve deafness | |
| 11 M H | X | Repeat 1 conditioned 1 | 83 | 13-1 | 9-6 | | None | 80 | 16-0 | 12-11 | 0 mos | 80 | 0 | Attended lip reading a few times—reluctantly | |
| 12 B V | X | None | 150 | 11-1 | 15-0 | 28 mos | None | 150 | 14-5 | 18-8 | 20 mos | 15 | 15 | Extreme introversion | |
| 13 K D | X | Repeat 2 | 87 | 10-9 | 11-6 | 6 mos | None | 89* | 11-6 | 15-3 | 9 mos | 77 | 15 | 9 | Extreme introversion |
| 14 M W | XII | No early data | 107 | | Middle third of class | | | 96 | | Lower third of class | | 84 | 0 | 15 | Introversion tuberculosis in first grade |
| 15 M S | XII | No early data | 105 | | Lowest third of class | | | 100 | | Middle third of class | | 87 | deaf | 0 | Personality problem |
| 16 F S | XII | Repeat 2 | 94 | | Lowest third of class | | | | | Lower third of class | | 85 | 15 | 18 | Behavior problem |

* Nine month period.

in other subjects and, no less important, in behavior. Teachers' marks showed an advance in a majority of the cases, a rather significant fact, since previous to lip reading training 37.5 per cent of these children had been retained in the same grade one or more years, and 31.2 per cent were conditioned.

TABLE 3—A Group of Seventeen Hard of Hearing Children Taking Lip Reading and Sixteen Hard of Hearing Children Not Taking Lip Reading

| | Lip Reading | | No Lip Reading | |
|-----------|-------------|----------|----------------|----------|
| | Number | Per Cent | Number | Per Cent |
| Boys | 8 | 47.0 | 0 | 0 |
| Girls | 9 | 41.1 | 3 | 18.7 |
| Classroom | 2 | 11.7 | 12 | 75.0 |
| No class | 0 | 0 | 1 | 6.2 |
| Lower | 13 | 76.4 | 3 | 18.7 |
| No data | 3 | 17.6 | 6 | 37.5 |
| | 1 | 5.8 | 6 | 37.5 |
| | 0 | 0 | 1 | 6.2 |

The accompanying tables are a comparison of a hard of hearing group of children who were instructed in lip reading, with a hard of hearing group who refused lip reading owing to lack of parental cooperation or to unwarranted prejudice or advice.

E A, or educational age, is the figure derived from a composite of subject ages on the Stanford achievement tests. It is probably the best measurement of

CONCLUSION

1 The education of the unassisted hard of hearing child is an interrupted learning, an imperfect acquisition of knowledge.

2 The hard of hearing child should not be segregated from the public school class room, but lip reading should be a part of the curriculum.

3 The hard of hearing child in a majority of cases has a low intelligence quotient because of lack of educational experience and not because of deficient mentality.

4 Lip reading was given in the public schools of Webster Groves, St. Louis County, to a group of hard of hearing children. After from one to three years 47 per cent showed an increase in their intelligence quotient, 41.1 per cent showed no change, and 11.7 per cent showed a drop in their intelligence quotient. In 76.4 per cent definite class room improvement was made, and all showed marked betterment in behaviorism.

5 In contrast, another group of hard of hearing children who refused lip reading showed no increase in their intelligence quotient during the same period, but 75 per cent showed a drop, only 18.7 per cent made class room improvement, and all were character problems.

COMMENT

I have tried by collecting these numerical data and by watching the change in this group of children for three or four years to establish an interest in the need for lip reading in the public schools. Its purpose will certainly be a benefit to the child himself, and secondarily, no less important, to the community. The cost of lip reading should not be considered, since each repeater is an expense of from \$80 to \$100 a year to a board of education. Therefore it is obvious that it will not take very many repeaters made into nonrepeaters to cover not only the cost of lip reading but very likely the cost of the entire school health program.

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ABSTRACT OF DISCUSSION

DR. HORACE NEWHART, Minneapolis. The otologist has long regarded the pediatrician as his closest ally in promoting deafness prevention and amelioration, because of his success in reducing the incidence of the diseases of childhood that cause impairment of hearing. I would emphasize two points related to this subject. The first is the importance of the early discovery of the potentially deafened child, who is most easily overlooked and neglected. The obviously hard of hearing receive attention as a matter of course. The young child having a slight but significant hearing impairment, which is often the cause of retardation, a speech defect, an inferiority complex or even unusual behavior is frequently overlooked by both parents and teachers. Only recently has the urgent need of discovering his defect in time to give him the benefit of early medical and educational corrective measures been realized. This has been made possible by the incorporation of the periodic testing of the hearing acuity by means of the audiometer in the school health program. In several hundred communities this has been undertaken with very satisfactory results. In Minneapolis where the tests have been made as a routine during the past nine years there has been noted a drop in the incidence of a significant hearing loss among the school population from 8 per cent to 4 per cent. This, we believe, is due largely to a growing ear-consciousness among parents. A second point to emphasize is the need of early detection of a severely handicapping hearing loss in the infant and the preschool child because of the educational problem involved. Here the physician carries a large responsibility. A survey of pupils in schools for the deaf in Minnesota by audiometric tests showed that a surprising number had residual hearing of such a degree that with early discovery and the help of a modern hearing aid they might have received their education in their home communities with normal hearing children and avoided the speech defects which made necessary their admission to special schools. Infants and young children who do not respond to the cochleo-palpebral test are mouth breathers, have a high palatal arch fail to acquire normal speech, have frequent colds or cervical adenopathy and should receive early otologic scrutiny. Parents of aurally handicapped children may obtain gratuitously helpful advice regarding their home care from our two national organizations for the deaf and hard of hearing—the American Society for the Hard of Hearing and the Volta Bureau both of Washington, D. C.

DR. HORTON R. CASPARIS, Nashville, Tenn. Dr. Hofsommer has brought to us a subject that is important even beyond the specific phase of it that she discussed, namely the difficulties arising out of hardness of hearing. We get children who are not recognized as deaf or hard of hearing who fail and have to turn to other channels because they can't keep up with their colleagues in school and that is difficult enough. But I think she struck a note that is broader and should appeal to pediatricians, namely that the mind must be exercised just as any other part of our body if it is to remain potent to the extent that there is a handicap we don't get the normal flow of physical activities and hence don't maintain the normal development of our mental functions which I think is important. We see it in other phases of handicap than deafness although deafness is a very severe one.

A CHILDREN'S HOSPITAL FOR NEUROLOGIC AND BEHAVIOR DISORDERS

CHARLES BRADLEY, M.D.

EAST PROVIDENCE, R. I.

In spite of an ever widening interest among pediatricians and neuropsychiatrists in the neurologic and behavior disorders of childhood, hospitals adequately equipped for the study and treatment of patients with such conditions are few and far between. The majority of general and children's hospitals, designed primarily for bed patients with acute disorders, are not prepared to go beyond the stage of diagnosis for children with many chronic neurologic complaints and make no pretense of dealing satisfactorily with active ambulatory children whose behavior demands prolonged treatment. A very limited number of psychiatric hospitals have during the past ten years done pioneer service by establishing wards for problem children.¹ However, no hospital planned and equipped especially for the care of children with neurologic and behavior disorders existed until the Emma Pendleton Bradley Home was opened in 1931 at East Providence, R. I. In this paper, I wish to deal briefly with the experiences encountered during the first five years' operation of this unique institution.

GENERAL DESCRIPTION OF THE EMMA PENDLETON BRADLEY HOME

A semirural location was judiciously selected for the site of the project. The hospital itself occupies an attractive colonial brick building of generous capacity constructed for the purpose and situated in the midst of a 40 acre tract of land largely wooded. Ample playing fields provide natural facilities for children's sports at all seasons, and the absence of close neighbors has eliminated many problems that might arise in congested quarters. Provision for equipment and staff to supply every need of normal child life, as well as the more orthodox clinical and laboratory requirements of a fifty-bed hospital, have made the institution virtually a complete children's community. Special features have been the inclusion of a psychologic laboratory adapted to the investigation of children's problems and a school staffed with specially trained teachers.

The Bradley Home was planned as a hospital for investigation and treatment as opposed to a home for custodial care or a training school. For this reason relatively few children with an obviously hopeless mental defect or with advanced deterioration have been admitted. Initial questions as to what types of patients would appear for treatment in such a hospital may now be answered in the light of considerable experience (table 1). Of 269 patients who have been admitted eighty have presented behavior problems, sixty-four convulsive disorders, forty birth injuries of the central nervous system, thirty-seven mental deficiency and the remainder a variety of disorders such as chorea, specific reading disability, postencephalitic syndrome and mus-

Read before the Section on Nervous and Mental Diseases at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1934.

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Klopff, H. J. The Children's Institute of the Allentown State Hospital. *Am. J. Psychiat.*, 34: 1107 (May) 1932.
List, W. E. and Rosenthal, Mrs. W. M. The Child Guidance Home as a Factor in Mental Hygiene. *Mod. Hosp.*, 42: 87 (April) 1934.
Hoffman, H. F. A Study of Fifty State Hospital Children. *Tr. Am. A. Ment. Def.*, 30: 273, 1934.
Potter, H. W. A Service for Children in a Psychiatric Hospital. *Psychiat. Quart.*, 8: 16 (Jan.) 1934.

cular dystrophy All were referred directly by physicians and the majority were patients for whom treatment had been tried unsuccessfully elsewhere

PATIENTS WITH NEUROLOGIC DISEASES

Convulsive Disorders—In reviewing experiences with various types of patients who have come under observation, those with convulsive disorders merit early consideration There are certainly a great many children in all walks of life with convulsive disorders who are being adequately and successfully treated at home without interfering with their schooling or social development There are others, however, for whom therapy is carried out at the expense of many childhood activities, and still others for whom no treatment in the community proves successful It is for patients of the latter two groups that a special children's hospital should have most to offer, and as a matter of fact it is mainly such children who have been treated at the Bradley Home Here hospitalization has not only permitted thorough medical and dietary treatment but has eliminated such precipitating psychogenic factors as may have been present in the patient's home Moreover, it has provided schooling and permitted full participation in other normal activities of childhood during the treatment period

Although the group treated has in general, consisted of patients for whom home treatment had failed, therapeutic results in the hospital have been reasonably encouraging Unfortunately, space does not permit me to present the detailed analysis which is quite necessary for any intelligent statistical discussion of such cases It may be noted in passing, however, that of fifty consecutive children with convulsive disorders for whom hospital treatment was completely carried out, nineteen were entirely free from seizures at the time of discharge, eleven were partially improved, and twenty did not respond to treatment

Cerebral Palsy—Recently the writings of Carlson² Doll³ and others have aroused considerable interest in the treatment and education of the so-called spastic group of birth injured children Patients of this type who are to receive treatment should be selected with great care, as even the most intensive efforts will be relatively unproductive of results if the child suffers from the mental deficiency so common in this group Accurate measurement of the intellectual status is often difficult because of the frequency with which motor and speech disturbances render customary psychometric tests unreliable for these children

In special quarters at the Bradley Home a relatively small group of carefully selected, intelligent children have been given prolonged and comprehensive treatment A wide use of playthings, apparatus and group games supplementing formal physical therapy, school and speech classes have rounded out training not only in motor control and strength but also in social adaptability and in finding satisfactory outlets for self expression The development of self confidence, which accompanies improvement is most important for the future progress of these children It is hard to visualize such thorough treatment being carried out elsewhere than in a specially adapted hospital or school with a staff of nurses selected for their technical skill, patience, optimism and ingenuity While no scale exists by which the relative value of this therapy can

be gaged, the response of these selected patients to such a program is by no means discouraging

Other Chronic Neurologic Disorders—Patients with a variety of other neurologic disorders and myopathies have come under observation, but in no single group large enough to warrant any conclusions from the treatment Research among these patients at the Emma Pendleton Bradley Home is particularly attractive because of the availability of the children for prolonged close observation Whether or not research or treatment is productive of results, the victims of these crippling diseases are meanwhile attending school and enjoying participation in normal childhood activities to a much greater extent than would have been possible at home in the community

BEHAVIOR PROBLEM CHILDREN

In turning to the hospital treatment of children whose difficulties lie in the field of behavior, it is possible to supplement the excellent discussions of Potter,¹ Lurie⁴ and others by presenting a few striking experiences

Value of Environment—There would seem to be little argument that in adequately providing for the care

TABLE 1—Primary Diagnoses of Patients Admitted to Bradley Home April 1931 to April 1936

| | |
|---|-----|
| Behavior problem | 60 |
| Convulsive disorder | 64 |
| Birth injuries of central nervous system | 40 |
| Mental deficiency | 77 |
| Chorea | 13 |
| Postencephalitic syndrome | 11 |
| Specific reading disability | 11 |
| Progressive muscular dystrophy | 8 |
| Encephalitis (Schluder's type) | 3 |
| Congenital syphilis | 3 |
| All others | 17 |
| Total primary diagnoses | 287 |
| Allowance for patients with more than one diagnosis | 18 |
| Total patients | 269 |

of ambulatory behavior problem children a great deal of attention should be focused on the environment This consists of far more than merely providing hygienic and attractive living quarters At the Emma Pendleton Bradley Home, where the semirural location at once offers a natural setting for many children's activities, every effort has been made to develop an environment and a program for its use, duplicating the best advantages of the modern community Specifically this has included not only ample provision for all outdoor sports but also complete school facilities with supervised recreation, including scouting activities for both boys and girls, educational trips to nearby points of interest, picnics and camping excursions, the use of a library, woodworking classes, a harmonica band, and many other features The nurses and teachers who have been of most assistance in developing and carrying out such a program have combined the rare endowment of an attractive, unruffled and ingenious personality with extensive experience among normal active children Probably only in the presence of the constructive attitudes that such a staff shows could this program surround the patient with a noninstitutional atmosphere which does not constantly remind him that he is ill, and also renders his transition into and out of the hospital as gentle as possible

² Carlson E. R. Neurological Aspects and Treatment of Birth Injuries. New York State J Med 34 831 (Oct) 1934
³ Doll E. A. Phelps W. M. and Melcher R. T. Mental Deficiency Due to Birth Injuries. New York Macmillan Company 1932

⁴ Lurie, L. A. The Mental Approach to the Study of Behavior Disorders of Children. Am J Psychiat 91 1379 (May) 1935

As an aid to psychiatric diagnosis such surroundings provide a natural setting wherein the physician may impartially observe and record the patient's reactions to normal childhood situations. These data may so supplement the physician's history and office contacts as to clarify vividly his understanding of a particular behavior problem. This has been repeatedly demonstrated in actual practice.

That this environment may be of direct therapeutic value by offering security, encouragement and an outlet for self expression to a problem child is suggested in a subsequent analysis of the results of treatment. It also makes another though more intangible contribution to the welfare of every patient regardless of diagnosis. This contribution is to the happiness and social development of the child during the long period he must spend in the hospital. The importance of this is apparent when it is noted that children treated at the Emma Pendleton Bradley Home usually remain in the hospital from six to eighteen months.

Individual Psychotherapy—Even the best environmental adjustment does not preclude the advisability of personal psychotherapy, particularly in cases in which

TABLE 2—*Analysis of Children with Behavior Problems, April 1931 to April 1936*

| | |
|---|----|
| Boys admitted for behavior problem | 60 |
| Girls admitted for behavior problem | 20 |
| Total admitted for behavior problem | 80 |
| Patients discharged following adequate treatment | 58 |
| Patients discharged following adequate treatment Improved | 43 |
| Patients discharged following adequate treatment unimproved | 15 |

TABLE 3—*Factors Responsible for Improvement of Forty-Three Patients with Behavior Problems*

| | |
|---|----|
| Number who improved primarily as result of environment | 31 |
| Number who improved primarily as result of individual psychotherapy | 12 |
| Total | 43 |

a rather exhaustive analysis and reconstruction of the patient's personality are indicated. The methods of conversational interview, play analysis and interpretation of artistic production have been freely used as dictated by the characteristics and needs of each child. In treating the child as an inpatient, the physician has been able to make his contacts as frequent and of whatever length he chooses. He has been able to alter at will the child's program of activities. Moreover, the hospital files have provided an accurate and permanent record of the patient's reactions to his treatment. Each of these items presents obvious advantages over what is possible in the average mental health clinic.

Analysis of Cases—In a brief and rather superficial analysis of the patients who have been under treatment for behavior disorders (table 2), it is interesting to note that there were exactly twice as many boys as girls in the group. Out of a total of eighty such children treatment was considered complete in fifty-eight cases. Forty-three of these (74 per cent) were distinctly improved at the time of discharge and fifteen (26 per cent) unimproved. While individual psychotherapy and all other necessary medical treatment was carried out in every case it is the opinion of the medical staff that environmental influences were more often than not the primary beneficial factors for those patients who responded favorably to their stay in the hospital (table 3). Thirty-one of the improved patients

(73 per cent) appeared to owe their improvement primarily to the hospital environment and only twelve (27 per cent) to have owed it to any specific therapy. These results are probably best interpreted as demonstrating what may be accomplished practically by adequate environmental treatment rather than indicating lack of success with personal psychotherapy in such children.

GENERAL COMMENT

In finally scanning the first five years' work of the Emma Pendleton Bradley Home, one is attracted by two or three other salient points.

This experience has lent no support to the theoretical criticism that it is unwise to treat together in a single group children with organic neurologic disorders and those with functional behavior problems only. Neither by imitation nor by irritation have members of either group seriously interfered with their own treatment or that of others. Moreover, the practical convenience of treating together all these patients with obviously similar needs for prolonged therapy, schooling and social development outweighs most theoretical objections to so doing.

Considering the fact that most of the children who were admitted to the hospital represented the more severe types of their particular disorders, it is encouraging that therapeutic results in general have been distinctly favorable.

The beneficial results of a carefully planned environment have been obvious, particularly in the field of behavior disorders. It seems significant that in actually developing this environment many more definite and workable suggestions were received from individuals intimately familiar with healthy children in schools, camps and the like than from those whose training and experience came only from the world of medicine. The implication that many physicians and nurses lack familiarity with the everyday life of active children has led to including prolonged daily contacts with the children in the psychiatric training of all who come to the Emma Pendleton Bradley Home for professional experience.

ABSTRACT OF DISCUSSION

DR. WILLIAM G. LENOX, Boston: I have visited the Bradley Home. I shall, however, speak only of the care of the epileptic patients. I see the Bradley Home against the background of a half million epileptic persons, 10,000 of whom are in colonies, 30,000 in state psychiatric institutions and almost all the rest of the 450,000 without any home to go to in case they need hospital or institutional care. The Bradley Home demonstrates the utility of small units, in which incipient or first stage cases of epilepsy can be given medical care in an environment which approximates that of the home. Certain European countries are far beyond us in providing interested care for early cases. In the second place the home as an experimental station can answer certain questions which need to have convincing answers. Here is a group of mentally normal epileptic patients in a good environment and associated with other patients who are mentally normal. Can Dr. Bradley give convincing evidence that epileptic patients are better as regards their mental health and their personality, than if they had been sent to some state colony or to a psychiatric hospital? On the other hand here is a group of other handicapped patients with a group of epileptic children among them. Can Dr. Bradley give convincing evidence that these other children are not harmed by being in contact with the epileptic children? In his paper he has given his affirmative opinion on these questions and it deserves to be widely respected. Yet I hope that in the course of years he can present statistical evidence that will point the way toward the better handling of the serious problem of the social and institutional care of epileptic patients.

DR. WILLIAM NELSON, St. Louis: I wouldn't limit my dealing with the epileptic children to the purely normal children.

so far as psychic capacity is concerned, because many of the children have certain limitations to mental development. I do not believe that the mental limitation is a handicap to social adjustment of the individual, if society recognizes its responsibility and understands the child. I would not relegate children who have lower levels of mentality to a program of nondevelopment, so far as vocation is concerned. One reason for Dr. Bradley's success in this hospital is his personal relationship with the patient. In any group, if the personal relationship and the actual problem of that individual child are removed so far as relationship to him as an individual is concerned, one is going to defeat the purpose of treatment ultimately. In other words, the temporary adjustment that one gets out of children from mere group treatment, without considering individually one's relationship to that child, is going to defeat one in the long run. If I understood Dr. Bradley correctly, he said that his patients stayed in the hospital from six to eighteen months. I can't conclude, after fourteen years of detailed dealing with these problems, that patients can be considered adjusted after eighteen months. Some of them require further care. In my community the project is carried on somewhat differently, with a shorter stay in the home. We are dealing with the problems that Dr. Bradley suggested here, that other people have failed on, the worst problems in our community. Our idea of keeping them in our home is for the purpose of study and treatment until they can adapt themselves in a more individualized sort of environment.

DR. CHARLES BRADLEY, East Providence, R. I. I wish to thank Dr. Lennox and Dr. Nelson for their discussion. I think our enterprise is too young to draw any conclusions, except that it has worked pretty well so far. As regards the time of treatment for behavior problem children, I like to look at institutional treatment as you do at any hospital treatment. The job of the physician is to get the patient out as soon as possible and, of course, to keep in touch with him and treat him as long as necessary thereafter.

MEDICAL ASPECTS OF ACCIDENT CONTROL

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The prevention and control of accidents depend on the cooperative efforts of public authorities, governmental agencies, industrial management and employees, insurance companies, technical societies, safety engineers, physicians and nurses, as well as on the public in general. Accidents must be combated in the home, in the school, in public places, in travel and in places of work. Administrative, statistical, medical, engineering and educational activities must be covered in any well rounded safety program.

Although much already has been accomplished in safety work, with a marked reduction in the incidence and severity of accidents, much still remains to be done particularly with reference to accidents in the home and in public places and travel. Most of the results during the last two decades in the prevention and control of accidents have been brought about in industries through the development of well organized industrial safety programs. Recent studies made by some of our operating telephone companies in the Bell System indicate that there are three or four times as many accidents to employees while off the job as there are while they are at work, and five or six times as many days lost on account of accidents occurring while away from work as there are while on the job. This emphasizes the need for a far reaching and forward looking program which will concentrate more and more

efforts on public and home safety without a let up in well established industrial safety activities. There is little wisdom in devoting time and money to an industrial safety service within an office or plant and forgetting the fact that most of the accidents to industrial employees now occur while they are away from their regular occupation. While it is realized that management has no supervision over employees while off duty, the industrial safety program so far as its educational aspects are concerned must "carry over" into the homes and leisure time of employees and must become closely integrated with all accident prevention activities of the community.

MEDICAL EXAMINATIONS

The physician's duties and responsibilities in an industrial safety program, while having to do somewhat with various administrative, statistical, inspectional and educational activities, necessarily must be related more specifically to preemployment and periodic physical examinations and to emergency medical and surgical examinations and treatment. While early diagnosis through medical examinations is one of the chief factors in the prevention and control of sickness among workers in industry, the inherent value of the preemployment physical examination so far as the prevention of accidents is concerned is in its potential power to make possible the proper placement of workers from the standpoint of accident hazards and prevent prolonged disability and loss of time from work. Good physical condition, as a rule, means more rapid recovery from accidental injuries, poor physical make up is conducive to slow convalescence. Of even more value than the preemployment physical examination, in the prevention and control of occupational diseases and accidents, is the periodic check up. For this reason all employees exposed to special occupational hazards of sickness or injury should have a periodic medical examination. Just as the newer public health and industrial health focus attention on personal hygiene as of equal value with environmental sanitation, so also a newer public safety and industrial safety must emphasize the make up of the individual worker as contrasted with his environment and mechanical equipment. Accident prevention is becoming recognized as being dependent more and more on medical and psychologic examinations and the proper follow up and placement of employees.

Each industrial organization must decide for itself as to the future development of new phases of preemployment and periodic medical examinations, including routine roentgenographing of the chest and such tests as pertain to the nervous and mental qualities of the prospective employee. Mental hygiene in industry is only on the threshold of development. As interest grows in this important subject, which underlies the whole realm of safety and physical health, more and more industries will be thinking in terms of mental and nervous system examinations in connection with their routine physical appraisals. Although the majority of industries do not include blood and other tests for venereal diseases in their routine preemployment or periodic physical examinations, more and more companies are beginning to recognize the hidden costs in money and disability from accidents and sickness to which these diseases give rise. The prevention and control of syphilis and gonorrhea constitute a health and safety measure which should be of vital concern to the whole community.

FIRST AID

First aid is the most important adjunct of accident prevention and control, its study and practice promote safety mindedness or safety consciousness. Physicians must assume the leadership in the teaching of first aid, which has been defined as a "special branch of practical medicine and surgery, by a knowledge of which trained persons are enabled to afford skilled assistance in cases of accident and sudden illness, and through which prolonged or permanent disability may be prevented and life often saved."

Without elaborating on its details, which are more or less self evident, the following may be listed as an outline of the fundamental elements of an adequate first aid service

A First aid treatment

- 1 Immediate reporting of injuries for diagnosis and treatment, together with complete records
- 2 Conveniently located first aid treatment facilities
- 3 First aid work carried on under trained and experienced personnel
- 4 Adequate follow up of each case.

B First aid instruction

- 1 Instruction on principles and practice of emergency first aid, including particularly artificial respiration and the control of bleeding
- 2 Printed publicity, group talks, moving and talking pictures and bulletins on subject of first aid
- 3 First aid training classes, teams and contests, when practicable and feasible.
- 4 First aid committees and special campaigns and rallies to stimulate group interest

The five general principles to be applied as they may be necessary in the practice or teaching of first aid work are

- 1 Obtaining a doctor's services
- 2 Stopping bleeding
- 3 Restoring breathing
- 4 Making the patient as comfortable as practicable
- 5 Doing no more than is actually needed

ACCIDENT PRONENESS

From various recent studies it is now well established that certain persons have a special liability to be the subjects of accidents just as some individuals are particularly susceptible to diseases. Not only may a small percentage of a working group show a very high percentage of the total sickness disability in the entire group, but it has been found that as little as 10 per cent of a group may be responsible for as much as 75 per cent of the accidents occurring among them. Recent medical research has shown that "accident proneness" may be an innate characteristic of some individuals and a personal phenomenon independent of any question of responsibility, conscious action or blameworthiness. It has been found that those who sustain an undue number of one kind of accident also sustain an undue number of other kinds and that accident proneness is a relatively stable quality obeying definite laws so that if those persons who have an excessive number of accidents in their first year of employment and exposure were eliminated the subsequent accident ratio of the group would be considerably diminished. Some have gone so far as to suggest the possible desirability of actually eliminating those who show an undue number of accidents in an initial period of employment in order to reduce the subsequent accident rate of the group and as an important method of accident prevention. While it appears reasonable that a person should be removed from a position in which he is a potential danger to himself and others, industries realizing their obligations to society in general undoubtedly will be slow to penal-

ize an individual because, through no fault of his own his mental and physical qualities are not equivalent to those of his fellow employees. In this connection the chief objective should be to see that these accident-prone individuals, who may make up as much as one fourth of a working group, are identified through medical and other examinations and are assigned to work in which the severity and danger of their potential accidents are reduced to a minimum. Moreover, the accident prone generally are the least healthy, indicating that the prevention of accidents may depend to a considerable degree on the prevention of sickness and emphasizing further the need for greater attention to the entire health program. Individual accident susceptibility may be based on such factors as (1) the effectiveness of the visual apparatus, (2) reaction times (3) reduced energy, (4) the intensive and extensive distribution of attention, and (5) certain kinesthetic impressions or sensations and nervous reflexes making possible more or less automatic performance. Newer developments in regard to the relation of some of these factors to the incidence of accidents should be mentioned briefly in passing.

VISION

Aside from various pathologic conditions there are two factors which in the past have served to determine whether or not the eyes of an individual are functioning properly, these are refraction and muscle balance. Recent studies by Ames¹ and his co-workers indicate that there is a third newly discovered factor of importance, that is, the relative size and shape of the ocular images of the two eyes, a difference in which constitutes a condition known as aniseikonia. In such a condition, depth perception or stereoscopic vision is seriously disturbed and it is conceivable that such impaired vision may be a very important element in the causation of accidents. To insure perfect single binocular vision it is imperative to detect, measure and correct aniseikonia, and this may come to be one of the newer requirements in the control of accidents from the standpoint of vision.

REDUCED ENERGY

Accident proneness, or individual accident susceptibility, at times has been explained on the basis of physical, mental or nervous fatigue, such fatigue usually being interpreted as reduced or impaired energy due to some particular type of work, labor or exertion. Recent studies by Haggard and Greenberg² seem to indicate that drops in efficiency and productivity may not necessarily be related to actual fatigue and weariness relieved by rest, but that many cases of so-called fatigue are nothing more than reduced energy due to the need for and relieved by food.

A recent study of personal injury accidents made by one of our companies shows that the great majority of accidents of this nature occur between 10 and 12 o'clock in the forenoon and 3 and 5 o'clock in the afternoon. As the work involved and the rest periods available preclude the possibility of so-called industrial fatigue, it is conceivable that these accidents were related to reduced energy, which may have taken place with the approach of meal time and the need for food. While preliminary experimental studies point to the possible value of extra feedings in the midforenoon and mid-afternoon, to prevent loss in efficiency, effort or production and possibly to reduce accident susceptibility.

¹ Ames, Adelbert Jr. Aniseikonia. A Factor in the Functioning of Vision. *Am. J. Ophthalm.* 18: 1014 (Nov.) 1935.
² Haggard, H. W. and Greenberg, L. A. Diet and Physical Efficiency. New Haven: Yale University Press, 1935.

it would seem wise before attempting the expense and trouble of providing extra feedings as a routine to be sure that the industrial worker, the school child and the housewife have the necessary knowledge as to their average food needs for a day and that they become thoroughly acquainted with the fact that breakfast should be something more than a cup of coffee and that a sandwich is not a complete lunch, all of which, in the interest of safety as well as of health, argues for more instruction on diet and nutrition not only for household members but for school children and industrial workers. What first may be necessary is not more but better balanced meals, and this is largely a matter of education. Before advocating an increase in the number of meals per day, as some have done, it would be wise to make certain that the three regular meals are what they should be in quality and quantity.

NERVOUS REFLEXES

"The car went out of control" has been the explanation of many automobile accidents in the past. According to the recent suggestion of Henderson³ it often in reality is the motorist "who goes out of control," thus emphasizing further the fact that the newer public safety must concentrate more and more on the human element, including individual nervous reflexes and reactions. The so-called self-righting reflex caused by a sudden upset of equilibrium in an emergency and the more or less unconscious "extensor thrust" of the legs and feet are instinctive reactions which may result in a sudden pressure on the accelerator pedal of an automobile, thus causing a serious accident although the car itself and its motor, brakes and steering gear are in perfectly good order. All of which is a further indication that machines and equipment should be fashioned for the human individual and his safety, based on a complete knowledge of his physical requirements and nervous reflexes, which can be determined only by suitable medical examinations. Compulsory periodic testing of automobiles already is in effect in some states, required periodic medical examinations of all licensed vehicle operators should be the next step in highway safety.

HOME AND SCHOOL SAFETY

It is becoming more and more apparent that safety in the home should be the central objective and influence from which radiates safety in all other walks of life. To this end, instruction in safety practice is of paramount importance in the home. In this great work, no individuals are in a more strategic position to accomplish results through practical teaching than are the physician and the nurse.

Safety in industry, in the school, in public places and in travel has been built largely on the combined foundations of enforced regulations and education. In the home, on the other hand, most of our results in reducing accidents must be accomplished through education alone. Home accidents, as a rule, are due to ignorance, indifference or inadequate equipment. Both the human element and the home environment are the factors to be considered. To a large degree, the problem is one of education of individuals, preferably in family and home groups. Ignorance and indifference must be dispelled and proper methods of using home facilities and equipment must be taught.

Health and welfare problems more and more are being solved with the family and home as the unit to

be considered. So also the problems of safety must be approached through the home, not only for the benefit of the home itself, but also in the interest of furthering all phases of human safety. The family doctor in carrying on his functions as a teacher of health and a healer of disease should grasp every opportunity to teach the facts with reference to accident causation and prevention to the children and adults with whom he comes in contact. Moreover, medical examinations of individuals in family and school groups should be of as much value as examinations of industrial workers in bringing to light the accident prone and in serving as a background for safety education. Such medical examinations in industry, in the school and in the home will contribute also to the control and prevention of accidents in public places and in travel.

TRAINING OF PHYSICIANS

Finally, it may be stated that better facilities should be developed in our medical schools for teaching the medical aspects of accident prevention and of safety, and adequate graduate instruction should be made more generally available for those planning to specialize in these fields. Prospective doctors, many of whom eventually will be called on to render service particularly in the field of industrial accidents and safety, should be taught the principles of court procedure and testimony, the many aspects of liability and compensation, and the fundamentals of personnel administration and industrial relations. The medical curriculum is in need of various modern amendments to permit it to keep pace with the growing demands made on the intelligence and ability of the present-day physician. In no field are these demands greater than in that of preventive and industrial medicine, public health and safety.

195 Broadway

ABSTRACT OF DISCUSSION

DR. JOHN H. OGILVIE, Kansas City, Mo. I was interested to see that Dr. Bristol's problems in the prevention of accidents have been very similar to mine in a work that is entirely dissimilar to his, that is, the same factors are present in Dr. Bristol's work and in mine. I should like to show some results of this individual whom he calls the accident-prone individual. He is a very potent source of expense in industry. Years ago I began a study to see what I could do to reduce my medical costs. Some interesting things were found. First, the medical cost and the proportion of serious accidents were in direct proportion to the number of minor accidents; second, that 16 per cent of individuals were contributing about 66 per cent of the accidents, so I began a study of this small group of individuals. After suggestions from medical men and safety engineers, and all the safety devices we could devise, I found that the proportion of accidents was still too high. I began a further study to determine the cause of these accidents and came to the conclusion to which Dr. Bristol has come, that there is an individual who is accident prone. I find that this individual falls into three classes: (1) the individual who is hindered by some major or minor physical defect, (2) the individual who is in a job that is not suitable to him and (3) the individual who is accident prone simply because he cannot be educated. He is the person who is involved in a great many of the major accidents. He is analogous to the man who walks across the street through a stream of traffic reading his newspaper. In the first group I found that by repeated examinations during the course of employment that individual could be eliminated, that is, by sending him to his local doctor and making suggestions to him, I could correct him. In the second group by being fitted into a job which was suitable for him, the individual could be corrected. In the third group, individuals who could not be educated in spite of an educational campaign and safety hazards education, the only thing that had any effect was disciplinary measures. Only 30 per cent of the accidents to

³ Henderson, Landell. How Cars Go Out of Control. Analysis of the Driver's Reflexes. Science 82: 603 (Dec. 27) 1935.

which I have been referring that occurred ten years ago are now happening. I am glad that Dr. Bristol has drawn attention to these things that are associated with this accident-prone individual.

DR. LOUIS J. HIRSCHMAN, Detroit: I offer an apology for speaking at this meeting because I practice clinical medicine, however, I am a member of the Michigan State Council of Health and I am interested in public health as well as in the individual. I also come from a city where the most dangerous weapon on which man has his hands—the automobile—is manufactured. It is said that automobile accidents are responsible for more lives lost than any other one class of hazards. Much is heard about the drastic action of courts on careless drivers, but it seems to me that a leaf should be taken from the book of the Department of Commerce in connection with the rigid examinations of airplanes as well as of pilots. There should be in a lesser degree, some definite method of periodic examination of automobiles with regard to brake control as well as an examination of the weakest part of the automobile, that is 'the nut at the wheel.' There should be some way of examining him before he receives his driver's license—an examination by his family physician the same as in the case of the locomotive engineer, the bus driver and the taxi driver. If definite action could be taken by which municipalities would insist on more than a cursory examination of drivers and the physically and mentally unfit eliminated, a great deal would be done toward improving the medical aspect of accident control.

DR. STANLEY H. OSBORN, Hartford, Conn.: I think that the last speaker has landed in the middle of an interesting problem. I should like to make a motion that the incoming chairman of the section appoint a committee on accident control and safety to study the medical aspects of accident control and make recommendations to the next annual meeting.

EXPERIMENTAL PRODUCTION OF MALIGNANT GROWTHS IN MICE BY ESTROGENIC CHEMICALS

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The role of chemical stimulation in the development of mammary tumors postulated clearly by Loeb¹ in 1919 has been demonstrated experimentally by several investigators.² The present report summarizes additional experiments on the effect of several different chemical stimulants (estrogenic hormones³) on the development of mammary carcinomas and of subcutaneous sarcomas in three different strains of mice.

As new features may be listed: (1) the development of sarcomas at the sites of injections in nongenital tissues following treatment with estrogenic hormones⁴ which have formerly been considered specific stimulants to the genital tissues, (2) the production of mammary cancers in mice by four different estrogenic

chemicals (theelin, keto-estrin benzoate, hydroxyestrin benzoate and equilin benzoate), (3) the production of mammary carcinomas in an inbred strain of mice which had previously been considered relatively cancer resistant.

One or two estrogenic chemicals have been injected for periods exceeding 125 days into 126 mice of three strains as follows: eighty-six mice of the A strain, twenty-seven mice of the C₃H strain, and thirteen mice

Summary of Experiments with Concentrated Estrogens in Mice

| Strain | Sex | No of Mice Treated | No of Mammary Tumors | No of Sarcomas | No Still Living With Tumors | Percentage Dying with Tumors |
|------------------|-----|--------------------|----------------------|----------------|-----------------------------|------------------------------|
| A | ♀ | 20 | 7 | 0 | 1 | 37 |
| | ♂ | 66 | 0 | 1 | 16 | 18 |
| C ₃ H | ♀ | 9 | 2 | 0 | 4 | 40 |
| | ♂ | 18 | 8 | 6 | 0 | 77 |
| CBA | ♀ | 8 | 2 | 0 | 5 | 100 |
| | ♂ | 5 | 0 | 0 | 3 | 0 |
| Totals | | 120 | 28 | 7 | 29 | |

of the CBA strain, both males and females as shown in the table. Untreated breeding female mice of the A and C₃H strains normally develop a high percentage of mammary tumors, while those of the CBA strain very seldom develop such tumors.

Up to the present time a total of twenty-eight mice receiving estrogenic hormones have developed mammary tumors and seven have developed spindle-cell sarcomas in intimate relation with retained oil cysts at the sites of injection.

STRAIN A

Sixteen mammary tumors have been observed in the eighty-six mice of strain A which have been treated for 125 days or more, seven of these occurring in non-breeding females and nine in males. The tumor incidence in virgin females of this strain has not been determined but the injected female mice, when injections of large amounts of estrogenic hormone are started in the first week or two of life, might be considered as equivalent to ovariectomized females because the ovaries remain very small and mature follicles or corpora lutea do not form. Tumors have developed in both male and female mice of this strain receiving keto-estrin benzoate, hydroxyestrin benzoate and equilin benzoate. Mice receiving theelin, theelin or equilin have not developed mammary tumors up to this time. All but one of the mice developing mammary tumors received 500 international units of estrogenic chemical or 0.1 mg of equilin benzoate weekly, the injections starting at from 1 to 119 days of age and continuing for periods up to one year. The estrogenic activity of the amounts of theelin, theelinol and equilin injected have been smaller than those of the other estrogenic chemicals.

A spindle-cell sarcoma developed in association with a retained oil cyst at the site of injections in a male mouse receiving keto-estrin benzoate (British Drug House).

STRAIN C₃H

Nine female and eighteen male mice of the C₃H strain have received either keto-estrin benzoate, hydroxyestrin benzoate, theelin or theelin in combination with keto-estrin benzoate. One male receiving theelin and seven males receiving weekly injections of 500 international units of keto-estrin benzoate developed mammary tumors. No tumors developed in three females receiving similar treatment. Two of six

From the Department of Anatomy, Yale University School of Medicine. Acknowledgment is made to the International Cancer Research Foundation, the Fuller Fund and the Committee for Research in Problems of Sex of the National Research Council for support of various phases of the work summarized here.

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7. The theelin and theelinol used in these investigations was supplied by Parke, Davis & Co. to the courtesy of Dr. O. Hamann. Dr. Girard of Paris supplied the crystalline equilin and equilin benzoate. The keto-estrin benzoate and hydroxyestrin benzoate were obtained from the British Drug House and the Liberatorie française de chimie pharmaceutique.
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virgin females receiving 100 international units of hydroxyestrin benzoate weekly developed mammary tumors

Spindle-cell sarcomas developed in the five male mice which received theelin in aqueous solution followed by keto-estrin benzoate in oil, and a sarcoma developed in one of the eleven mice receiving only keto-estrin benzoate in oil

STRAIN CBA

Keto-estrin benzoate and hydroxyestrin benzoate have been given at the rate of 500 international units weekly to eight female and five male mice of strain CBA. Two of the female mice have developed mammary cancers. Eight of the thirteen mice are still living without tumors, though four of these have been treated for over one year

SUMMARY

A total of 126 mice of three inbred strains have received estrogenic hormones for periods of 125 days or more. Twenty-eight mice have developed one or more mammary carcinomas and seven more have developed spindle-cell sarcomas as local reactions in relation to retained oil cysts at the sites of injection. Mammary cancers have developed in male mice receiving theelin, equilin benzoate, keto-estrin and hydroxy-estrin benzoate. Mammary tumors have occurred in two of three females of the relatively tumor-resistant CBA strain

Clinical Notes, Suggestions and New Instruments

FURTHER REPORT ON CASE OF REMOVAL OF RIGHT CEREBRAL HEMISPHERE

JOHN D O'BRIEN M.D. CANTON OHIO
Attending Neuropsychiatrist Mercy Hospital

In September 1932 I¹ presented the report of a case in which the right cerebral hemisphere was removed. Subsequently Dr W James Gardner² of Cleveland, who performed the operation, presented a further report. A married woman, aged 31, mother of two children, had generalized convulsions for ten years, occurring from two to four times a year. Later they assumed a jacksonian type and involved the left side of the body. The attacks were preceded by a sensory aura of intense burning in the palm of the left hand. For two months prior to observation, blurring of vision, beginning left paresis, headache, vomiting and a marked disturbance in the emotional sphere were noticed. The examination revealed clonic convulsions affecting the left side of the face and neck and occasionally the left arm. Bilateral papilledema was present, with a complete left homonymous hemianopia. Left hemiparesis affected the face, arm and leg. For the sensory component, tactile perception was greatly impaired over the entire left side of the body. Pain, thermal position and vibratory perception appeared to be entirely lost. The spinal fluid pressure was 300 mm. of water. The clinical diagnosis was tumor of the right temporoparietal region.

Aug 31, 1931, Dr Gardner performed excision of the right hemisphere. The patient's convalescence was indeed gratifying. She was able to return to her home and family later to assume the duties of her household, gaining strength and considerable weight, and remaining entirely free from convulsions. The deformity existing prior to the operation, left hemiparesis, slight facial asymmetry and sensory disturbance, remained with her to the end. In the mental sphere she appeared stabilized, and there was no evidence of emotional instability. She did appear to the casual observer to be slightly apathetic at times,

but to her intimate friends I am unable to learn of any evidence of mental deterioration or marked personality change.

Two questions frequently asked were whether there was any change in her appreciation of distances and whether she had the same sense of the passage of time. I was unable to detect any abnormality at any time in this direction. Her memory for recent and past events was good, and she read constantly in spite of her eye difficulty. The sense of smell on the right side was lost, because the right olfactory bulb was destroyed. The sense of hearing in the right ear with the audiometer was undisturbed.

She took the usual interest in her children and attended very well to her household duties. She inquired and was anxious to know all the details of her operation, which was explained to her, and she was extremely grateful for what had been done for her.

Nov 20, 1935, while about her home, she tripped and fell a distance of about 20 feet. She was able to get up and go about for a few days, when she collapsed. Following this she became very apathetic, presenting marked delay in all mental reactions, it was necessary to feed her, and memory for both past and recent events was very much disturbed. Involuntaries appeared and the spatial sense was quite disturbed, in addition to a marked disturbance of vision.

Lumbar puncture revealed bloody fluid, and it was felt that she had a subdural hematoma on the left side. Dr Purdy trephined over the left parietal eminence, under local anesthesia, and considerable clotted blood was removed. A lumbar puncture needle was inserted in the old trephine opening in the right cranial cavity, and the removal of about 50 cc of bloody spinal fluid caused the brain to collapse and later appear in the field of operation. Simultaneously she complained of headache and at this moment appeared talkative and very responsive to all stimuli. She appeared to be in good condition for several days, when she lapsed into her former apathetic state. Repeated puncture through the original trephine opening in the right cranial cavity and the withdrawal of about 20 cc. of blood-tinged spinal fluid caused her to appear brighter and more interested for brief intervals, until this finally failed to affect a change in her condition.

Bedridden, decidedly apathetic, with involuntaries, aroused only with great difficulty, giving the appearance of one decerebrated, she died March 4, 1936.

Strenuous efforts to obtain an autopsy were met with absolute refusal on the part of the family. This I regret very much to report, as we were interested to learn the exact pathologic condition present. Several questions remain unanswered. Did the fall and subsequent hemorrhage cause her death? or did the fall bring about a recurrence of the growth and its subsequent extension and rapid growth play a part in her death? An autopsy would have answered both questions.

Excision of the right hemisphere is not a very common procedure, it is an operation of great magnitude. From what I can gather in medical history this patient survived longer than any who have undergone a similar operation, in addition it provided this woman with almost five years of happiness with her family. Her death, having all the characteristics of an accident, leads one to wonder how long she might have lived if the accident had not occurred.

A most striking feature in this case, the operation of unusual magnitude attended with a minimum amount of disability, would lead to the consideration of the importance of the basal ganglions and the care exercised to avoid injuring them—a triumph for surgery.

Medical Arts Building

Temperature in the Stratosphere—The temperature of the atmosphere dropped gradually during ascent from 0 F at 16,700 feet to -71 F at 37,600 feet, where the balloon entered the stratosphere. As the balloon continued to ascend, the temperature curve fluctuated sharply over a small range and the lowest temperature, -81 F, was recorded when the balloon was at 68,000 feet and descending. At 37,600 feet during descent, as the balloon left the stratosphere, the temperature began to rise steadily and rose from -70 F to about +30 F at 2000 feet altitude.—Armstrong, H G. The Medical Aspects of the National Geographic Society-U S Army Air Corps Stratosphere Expedition of Nov 11, 1935, *J Aviation Med* 7 55 (June) 1936.

¹ O'Brien J D. Removal of the Right Cerebral Hemisphere. Ohio State M J 28 645 (Sept) 1932.

² Gardner W J. Removal of the Right Cerebral Hemisphere for Infiltrating Glioma, J A M A 101:823 (Sept. 9) 1933.

Council on Pharmacy and Chemistry

PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
PRELIMINARY REPORTS

PUBLISHED BY PAUL NICHOLAS LEECH, Secretary

TRICHOPHYTIN AND OIDIOMYCIN

Preliminary Report of the Council on Pharmacy and Chemistry

In 1932 the Council issued a preliminary report on Trichophyton Extract (Trichophytin-Metz) stated to be a mixture of various species of trichophyton, postponing consideration of that product to await development of further clinical evidence for the value of trichophyton therapy from the work of American dermatologists (THE JOURNAL, Nov. 10, 1932 p. 1779).

Last year the Lederle Laboratories, Inc., requested Council consideration of its Trichophytin and Oidiomycin.

Trichophytin is defined as "The soluble broth culture products of Trichophyton interdigitale" and is prepared for use as a desensitizing agent in chronic ringworm infection due to Trichophyton interdigitale.

Oidiomycin is defined as "The soluble broth culture products of Monilia albicans" and is prepared for use as a desensitizing agent in chronic ringworm due to Monilia albicans.

The firm submitted trade packages of the preparations both for diagnosis and for treatment. The Council found the trade packages unobjectionable, but some criticisms of an advertising circular were transmitted to the firm. These were submitted by the firm to Dr. M. B. Sulzberger and on the basis of his reply the differences of the firm and the Council in this matter were ironed out.

In support of the claim for recognition of Trichophytin and Oidiomycin, Lederle Laboratories, Inc. furnished references and several reports. Of course, much work on intradermal tests and intradermal therapy, using extracts of various fungi, has been carried on for some years, notably by Jadassohn, Bloch and their pupils in the Breslau and Zurich dermatologic clinics. In this country Sulzberger and Wise, Williams, Peck, Hopkins and others have also made many contributions. This entire subject is well summarized by Kerr, Pascher and Sulzberger (*J. Allergy* 5:288 [March] 1934), who state that work has been done to show that patients hypersensitive to trichophyton extracts may be desensitized by repeated intradermal tests—a certain number of whom are remarkably benefited. A certain number that seem to be refractory to trichophyton desensitization will be found to be suffering from a monilia infection. These fungi are found on all skins, on the hair and nails and in the mouth and gastro-intestinal tract, they may cause eczematous eruptions and will show positive patch tests (Ravaut, Sulzberger, Wise, White, Becker, Shelmire). The authors, therefore, recommend the use not only of trichophyton extracts (Trichophytin) in dermatomycoses but in many instances also the use of monilia extracts.

These investigators employed for preparations of oidiomycin a pathogenic strain of Monilia albicans from a severe moniliasis of the skin and for the trichophytin a strain of Epidermophyton interdigitale from a severe eczematous mycosis of the feet. They found it normal for a patient to have a slight to moderate reaction to 0.1 cc. of oidiomycin in a dilution of from 1:500 to 1:100. The Council believes this makes it difficult to justify the use of such a test by the practitioner not versed in the work. The authors believe a trichophytin hypersensitivity and an oidiomycin hypersensitivity are to be separate and distinct. In both cases it must be recognized that while a positive test is specific and indicates that the patient at some time or other in the past has had an infection yet the test is not necessarily diagnostic of the present condition. The authors used this material for treatment of puzzling eczematous ringworm principally of the hands and feet. Diagnoses were made clinically and by intradermal tests. In the twelve cases reported in some instances the eruptions "flared up" as a result of the

injections, indicating the specificity. Asthmatic symptoms even were noted following injection in one case. It was shown that desensitization was possible in some of the cases and the authors recommend combined trichophytin and oidiomycin desensitization in persistent cases of eczematous hand and foot eruptions due to fungi.

The Council's referee reported on an unpublished manuscript submitted by the firm, "Trichophytin and Monilia Extracts in Allergic Eczemas," by Edna S. Pennington, M.D., Department of Medicine, Vanderbilt University Medical School. The patients reported on in this article were questioned and tested for personal and family allergy and examined for evidence of ringworm infection (whether there was cultural and microscopic investigation is not stated), and the skin was tested with the two extracts. With the oidiomycin in a dilution of 1:100 were used Trichophytin-Lederle 1:30 and Trichophytin-Metz 1:50, in doses of 0.1 and 0.5 cc. Reactions locally were either immediate wheal reaction or delayed, reaching their height in from twenty-four to forty-eight hours. Trichophytin-Lederle and Trichophytin-Metz gave parallel results. Thirty-three cases are reported. In the first group of twelve no treatment except injection of trichophytin and oidiomycin was used and of these subjects nine are reported as completely cured, one definitely improved and two unimproved. In some of these cases skin lesions had been present for twelve years or longer. The second group, in which other measures were used, are, of course, for the purpose of this consideration, valueless.

Robinson and Grauer (*Arch. Dermat. & Syph.* 32:787 [Nov.] 1935) also report on the use of autogenous and stock fungus extracts in the treatment of mycotic infections. They make the following statement (p. 789):

While it is not the rule it is possible for persons not infected either with Trichophyton or with Monilia to give a positive cutaneous reaction to the extracts of these fungi. Hence a certain degree of error results when such persons are considered to be infected with fungi in the absence of proof obtained by culture. Conversely, it does not follow that in all cases fungous infection produces a state of demonstrable sensitization. It was fairly common in our series for a mycotic infection to be present without a positive cutaneous reaction to the autogenous extract.

Dr. Sulzberger, the consultant of Lederle Laboratories, Inc., states that this quotation should read:

While it is not the rule it is possible for persons at the time presenting a manifest infection either with Trichophyton or with Monilia to give a positive cutaneous reaction to the extracts of these fungi. The finding of fungi in culture in a focus is no proof that the distant dermatosis is actually attributable to the fungi found in the focus. Hence, a certain degree of error results when such persons are considered to be infected with fungi in the absence of proof obtained by culture.

The Council makes no objection to the revised version of the statement, it points out that the first quoted statement is taken verbatim from the Robinson and Grauer article.

Robinson and Grauer report a series of cases treated with autogenous extracts, many of them of long duration, and a fair proportion they considered cured. Also a further group, in which no culture was grown, was treated with stock material and sixteen out of twenty-three are reported as cured. They give warning as to the necessity of regulating the intradermal dose for the sensitization of the particular patient.

Tolmach and Traub (*Arch. Dermat. & Syph.* 28:560 [Oct.] 1933) discuss epidermophytid and the trichophytin reaction. Sensitization is accepted as the factor in the production of secondary fungus eruptions.

Most of the concomitant eruptions on the hands in patients suffering from dermatomycosis of the feet are supposed to be epidermophytids. As the authors state, the diagnosis of epidermophytids is based on the following criteria: "(1) the findings of fungi in the lesions on the feet (2) the absence of fungi in the lesions on the hands and (3) a positive reaction to the intradermal injection of trichophytin." In a carefully studied group of thirty-eight cases microscopic and cultural studies being made, they found: (1) no relation between the severity of the infection and the response to injections of trichophytin (2) only twenty-three out of the thirty-eight cases showing a positive reaction to trichophytin (3) Monilia occurring in five cases four of which reacted to trichophytin (4) eight cases having demonstrable fungi in lesions of the feet gave negative

responses to trichophytin, (5) patients giving negative reaction to repeated injections of trichophytin if different sites were used, a positive reaction occurring frequently when the site of a previous injection was used. The authors doubt the specificity of trichophytin. In discussion of the paper, Williams of New York stated that the whole question is still obscure.

Study of the literature as illustrated by the excerpts given, and consideration of the data furnished by Lederle Laboratories, Inc, force the Council to conclude that while there seems to be a certain amount of specificity in the intradermal tests and therapy with trichophytin and oidiomycin in dermatomycoses, nevertheless it has not yet reached the place where it can be unreservedly recommended to the general medical profession.

The Council therefore voted to postpone consideration of Trichophytin and Oidiomycin of the Lederle Laboratories, Inc, to await confirmatory evidence of their value.

IGOL ORAL AND IGOL G U NOT ACCEPTABLE FOR N N R

Igol is the proprietary brand name under which Surgident, Ltd, West Hollywood, Calif, markets a series of iodine preparations. The firm presented Igol Oral and Igol G U for the Council's consideration. Two additional preparations mentioned in the advertisements but not in the presentation are Dental Igol 10% and Igol Surgical Dressing (a vaseline ointment).

According to the information submitted by the manufacturer, the Igol preparations are mixtures of iodine, gallotannic acid, glycerol, phenol and other ingredients to be mentioned later. The chemical synonym is said to be "Glycerodigallophenodin." That this is a name without significance is admitted by the firm in the following sentence in the firm's presentation: "by this name it is not meant to infer that the active ingredient is a chemical individual of known composition. This name was given to indicate the various constituents." The firm states, however, that "on the advice of our consulting chemists in making up future labels and literature this synonym is to be dropped as connoting unestablished definiteness of chemical structure."

The Igols are recommended as antiseptics for the treatment of a variety of bacterial infections of the skin, mucous membranes and wounds. Different preparations have been devised for application to different parts of the body.

It is claimed that the treatment of glycerol with iodine vapor produces an "impregnation of the glycerin molecule with nascent iodine to any desired concentration up to 30%." The activity of Igol is attributed to "free iodine in equilibrium with an unstable iodine compound whose composition has not yet been determined."

The firm has submitted samples of Igol Oral and Igol G U (Genito-Urinary) and the following documents:

- I A volume containing typewritten reports on
 - 1 The Characteristics of a New Group of Antiseptic Preparations Known Commercially as Igols by Leo T. Samuels, Ph.D.
 - 2 Pathologic reports on tissues treated with Igols and other disinfectants (illustrated) by Dr. Howard A. Ball.
 - 3 Preliminary Clinical Report on Igol G U, by Dr. Waldo Pendleton.
- II A folder entitled Igol Surgical Dressing
- III A folder entitled Igol 10%
- IV A circular in the form of a single sheet entitled Dental Igol 10% and Igol Surgical Dressing.

The composition of the Igols is variable. Some of this variation is intentional, some appears to be due to uncontrolled iodination of the glycerin. Igol Oral is said to contain approximately 10 per cent iodine, Igol G U approximately 6 per cent iodine. Igol 10% "iodine elemental 2%, organic iodates 8%", Igol Surgical Dressing "elemental iodine not less than 1.5%, combined iodine 2.5%."

Dr. Samuels' analysis is said to show that the preparation contains "iodine in the form of a compound which readily releases more iodine as that in the free state is removed." This was determined by successive shaking of Igol with carbon tetra-

chloride. The special method used by Dr. Samuels for these determinations is not accepted by the A. M. A. Chemical Laboratory without further evidence. If the preparation were to be recommended for acceptance, this problem would be studied by the A. M. A. Chemical Laboratory. The Council's referee reported that he was not convinced by the descriptions that Igol contains an iodine compound in unstable equilibrium which gives off free iodine (at least in appreciable amounts) as the previously present free iodine is removed.

The bacteriologic tests with cultures of *B. typhosus* and *Staphylococcus aureus* indicate that the phenol coefficients of several Igol preparations are 0.78 and 0.79, while that of U. S. P. tincture of iodine was found to be 11.1.

Igol Oral sterilized infected rabbit skin in five minutes or longer in a number of trials but was considerably inferior to tincture of iodine. An "Igol alcohol-aqueous" preparation used in these tests, though it was not mentioned in the presentation, appeared to be almost as effective as a skin disinfectant as tincture of iodine. Considering that both are alcoholic solutions of iodine, this result is not astonishing.

Claims are made that the Igols are less irritant and less destructive of tissue than U. S. P. tincture of iodine. The pathologic reports support this statement. Diluted tincture of iodine might be equally nonirritant. Persons sensitive to iodine would no doubt be affected by Igol. Dr. Pendleton records a case of "first degree burn" due to the application of Igol.

Claims that the Igols promote healing of wounds and are beneficial in the treatment of Vincent's angina, infected tooth sockets, pyorrhea, genito-urinary infections and infected wounds are not substantiated by any of the material submitted by the firm.

Igol was submitted to the Council on Dental Therapeutics. The excellent report of this body was courteously made available to the Council. The Council is indebted to it for the following information:

1 U. S. Patent 1,896,171 agrees essentially with the claims for Dental Pyodin, which was previously considered by the Council on Dental Therapeutics and denied acceptance for Accepted Dental Remedies.

2 The composition of Dental Pyodin is similar to that stated for Igol.

3 From these facts the referee for the dental council concluded that Igol was produced in the effort to continue the promotion of Dental Pyodin under another name.

4 Iodotannic Syrup, N. F., is somewhat analogous in composition to Igol.

5 The referee for the Council on Dental Therapeutics who made chemical tests of Igol obtained results which made him skeptical of the claims for Igol and its supposed ability to liberate free iodine available for action on bacteria under conditions existing in living infected tissues.

The firm informed the Council that Igols were being distributed only to physicians through the usual recognized channels and that there has been no advertising or sale to the public. The advertising has been done by mailing of the circulars referred to. The Council is not clear about the firm's meaning here, as the circulars are marked "Package or Professional Distribution." In addition to their content in unestablished claims, these circulars contain references to diseases by name. They are quite unacceptable, especially as package circulars.

The name Igol is uninformative, the firm states it is coined from I for iodine, G for gallotannic acid, OL for glycerol.

The Council declared Igol Oral and Igol G U unacceptable for inclusion in New and Nonofficial Remedies because they are preparations of uncertain composition and of needless complexity, marketed with unwarranted therapeutic claims under an uninformative proprietary name.

The foregoing report was submitted to the firm before publication. The firm replied, objecting to the reports of the Council on Pharmacy and Chemistry and of the Council on Dental Therapeutics. Additional material was submitted by the firm in support of its objections. A review of this does not sub-

stantiate the objections to the reports, in the opinion of the Council. The firm, having apparently failed to consider the nature of the objection to the name, requested its reconsideration. The Council did not feel that reconsideration was in order and authorized publication of this report.

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

FRANKLIN C. BING, Secretary

LIBBY'S HAWAIIAN PINEAPPLE JUICE OMITTED FROM THE LIST OF ACCEPTED FOODS

The Hawaiian Pineapple Juice of Libby, McNeill & Libby, Chicago, was accepted by the Council Aug. 31, 1934, with the permissible claim that it contains from 9 to 11 Sherman units of vitamin C per ounce and that it is practically equivalent to fresh fruit juice in nutritional values (vitamin C slightly reduced). In December 1935 the following statement was received from the concern together with the request that acceptance be withdrawn:

The company contemplates no change in its methods of manufacturing Pineapple Juice and there is no intention on our part to deviate from the principles embodied in the rules and general decisions of the Council as we understand them.

In good faith, therefore, the Council drew up an announcement of withdrawal of acceptance based on the request of the manufacturer. Since that time, however, advertising for the product which has appeared in publications such as the *Saturday Evening Post* obliges the Council to recast its previous statement and to inform the medical profession of the status of the product in the light of the claims now advanced. In general, the product is being advertised both as a drink to yield energy and as a food to be used in the ever popular reducing diet propaganda. The following statements are illustrative:

We need a quick energy breakfast drink in Hawaii.
It supplies us morning energy.

Accompanied by an illustration of a slender young woman measuring her girth around the hips are these comments:

Go down weight!
Ever hear of a reducing diet which didn't call for pineapple juice?
Libby's natural juice is a satisfying liquid—always tempting, never fattening! It helps you cut down on heavy food. It's a source of vitamins A, B and C, iron and copper. All these help you keep going on a reduced diet.

It is noted that the "body-building" motif has been incorporated in the copy. Thus, Libby's Pineapple Juice is recommended:

To keep the sniffles away. There's nothing better than the fruit tonics in a pure natural juice to build up your resistance. If you already have a cold or feel one coming on, drink 2 or 3 large glasses daily. It furnishes extra energy, vitamins and other protective factors you need to combat colds.

Accompanying the picture of an elderly gentleman are the following suggestions:

"Good bye morning acidity! And its effect on your body is to build up your alkaline reserve. High in alkalizing factors, science commends it to help you avoid acidity in a way that's really pleasant."

This advertising appears to be an artfully designed piece of deception to enmesh those uninformed in nutrition. Libby's Pineapple Juice cannot be considered a "quick energy drink" any more than many other foods. The expression "quick energy" is misinformative and therefore misleading. The claim that Libby's Juice is "never fattening" conflicts of course with the claim that it yields "morning energy." The reader would be led to believe that Libby's Pineapple Juice should be included in reducing diets because of its vitamins A, B and C, iron and copper. This pineapple juice is no more effective for reducing

weight than are many common foods. The amount of iron in Libby's Pineapple Juice, 37 parts per million, is too small to warrant mention as an iron-containing food. As far as available evidence shows, the necessity of copper in human nutrition has not been established, claims that copper need be particularly considered in the selection of foods are therefore not acceptable.

The maintenance of resistance and health are dependent on adequate nutrition, exercise, rest, hygienic environment and sound habits plus other intangible prerequisites which are difficult to define. It is ludicrous to suppose that Libby's Pineapple Juice would keep one from getting colds. The usual well balanced diet includes many alkali yielding foods—milk in its various forms, fruits and vegetables. Acid-forming diets are not a practical nutritional problem because a good modern mixed diet adequate in minerals and vitamins can scarcely be potentially acid. Stress on "alkaline reserve" claims therefore is unwarranted.

This advertising is reminiscent of the blatant "patent medicine" and nostrum blurbs of the past. The advertising treats an ordinary food as a therapeutic agent, which it is not. Perversions of advertising of this character bring good advertising into disrepute and harm the majority of the food trade that conscientiously attempts to deal fairly.

The company, when informed of the objectionable nature of these claims, replied in part:

As for our Pineapple Juice advertising we believe that the statements made are warranted both as to fact and language and are necessary to express those facts to the lay public.

The company was requested to consider the foregoing report and to present any evidence which it might have in support of the claims made. In reply, the company furnished a statement by Dr. John A. Killian, Ph.D., formerly director of biochemistry, New York Post-Graduate Medical School and Hospital, and now a private chemist in New York, is the same Dr. Killian mentioned in the reports by the Bureau of Investigation of the American Medical Association on *Scot Tissue* (THE JOURNAL, July 16, 1932, p. 241) and *Croxon Cream* (Aug. 20, 1932, p. 672).

The type of argument presented by Dr. Killian is illustrated by the following quotations:

A ketosis is indicated whenever the respiratory quotient falls to a level of 0.76. Ketosis is characterized by subnormal physical efficiency, subnormal mental efficiency and an inability to get going and it may progress to the degree of resulting in stupor or even coma. Frequency of respiratory quotients below 0.80 in the morning after a night's fast indicates a state of actual ketosis or on the borderline of ketosis. Through its effect upon the alkaline reserve of the blood plasma and the antiketogenic effect of these carbohydrates the pineapple juice relieves promptly morning ketosis. A glass of pineapple juice consumed the first thing in the morning will promptly relieve i. e. within 30 minutes the ketosis described above.

In the opinion of the Council, the exploitation of the antiketogenic effect of pineapple juice is unjustified. There are many foods containing dextrose or other sugars which are just as capable as pineapple juice of elevating the respiratory quotient.

In the opinion of the Council these and the other comments offered by Dr. Killian do not warrant any alteration of the report. Claims that the consumption of pineapple juice builds up the resistance of the body against infections of the upper respiratory tract and that Libby's Pineapple Juice is of particular significance in the reduction of weight are no more warranted than the fantastic claim that the consumption of pineapple juice will "sweep aside morning acidity."

A further communication from the company states in part: "We have given careful consideration however to the Committee's ideas and it may be our future advertisements will more nearly meet the Committee's line of thinking." Such action would be highly commendable. In view of the present evidence however the Council voted that Libby's Pineapple Juice be removed from the list of accepted foods because the product is promoted in conflict with the Council's rules by the use of grossly exaggerated and unjustifiable claims which are believed to be seriously misleading to the public.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

DATA FOR THE ACADEMIC YEAR 1935-1936 PRESENTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The report presented herewith for the academic year 1935-1936 contains statistical data and editorial comment regarding existing medical schools approved by the Council on Medical Education and Hospitals¹. Included are revised lists of hospitals approved for internships and residencies in specialties. Also reproduced in the following pages are the Essentials of an Acceptable Medical School, the Essentials of an Acceptable School of Occupational Therapy (adopted by the House of Delegates in 1935), the Essentials of an Acceptable School for Physical Therapy Technicians and the Essentials of an Acceptable School for Clinical Laboratory Technicians (adopted by the House of Delegates in 1936). The Council's first inspection of schools for physical therapy and laboratory technicians based on the last two named essentials has been completed and lists of schools already found acceptable appear in the following pages. The publication of a list of acceptable schools of occupational therapy has been postponed until after Jan. 1, 1939, to allow time for certain schools to make the necessary changes.

Seventy-seven medical schools in the United States and ten in Canada, 705 hospitals approved for internships and 410 hospitals offering approved residencies in specialties are referred to in the tabulations presented.

These data are based on official reports from the institutions listed. Acknowledgment is tendered the officers of the bodies mentioned and others for their ready cooperation in supplying the facts included in this presentation as well as for other material furnished throughout the year enabling the Council to maintain its medical student and hospital registers efficiently.

SURVEY OF MEDICAL EDUCATION

Visitation of the schools has been completed and the compilation of data is in progress. Attention may again be directed to the overcrowding and understaffing of many of the schools. Speaking generally, the problem of securing clinical facilities adequate in kind and amount, under university control, so far as the appointment of clinical teachers is concerned, has not been satisfactorily solved. Correlation of the training and experience of teachers with the degree of responsibility assumed has still to be achieved. The selection of students, on a qualitative rather than a purely quantitative basis, is a problem calling for the best efforts of admission authorities.

From our observations it is evident that medical libraries need to be still further developed. Research needs greater encouragement. Salary scales, in the lower brackets, must be revised. Didactic methods of teaching in the clinical subjects prevail to an unwarranted extent. Substantial improvement along these and other lines will involve considerably greater financial support. The public should be brought to a realization of the fact that the well trained physician is a

costly product and that, unless medical education receives adequate public support, inferior medical service will be the inevitable result.

PREMEDICAL EDUCATION

The minimum of collegiate credit required for entrance to medical schools in order to meet the Council's standards since 1918 has been two full academic years, including English and theoretical and practical courses in physics and biology and in general and organic chemistry, completed in institutions approved by accrediting associations acceptable to the Council. These agencies are:

- Association of American Universities
- Middle States Association of Colleges and Secondary Schools
- New England Association of Colleges and Secondary Schools
- North Central Association of Colleges and Secondary Schools
- Northwest Association of Secondary and Higher Schools
- Southern Association of Colleges and Secondary Schools

Since 1915 the Council has published a list of approved colleges of arts and sciences and junior colleges as a guide to medical schools in the selection of students and also to assist the prospective medical student in choosing a college for his premedical training.

Medical schools are privileged to accept applicants who have fulfilled the requirement in American and Canadian institutions not approved by the agencies mentioned, provided the applicant gives evidence of superior ability.

The preliminary prerequisite of the Council is outlined in detail in the Essentials of an Acceptable Medical School, which appears on page 684.

The Council's requirements and those of the Association of American Medical Colleges, in which practically all approved medical schools hold membership, do not materially differ.

The College Association also endorses the list of evaluating agencies mentioned before but in addition recognizes the colleges approved by a state university.

College grades, the medical aptitude test and personal interviews serve as a basis for selection. The House of Delegates of the American Medical Association at the Kansas City session recently transmitted to the Council the recommendation included in a resolution, which was adopted, that entrance requirements to the medical courses of the educational institutions of the United States be conditioned on the character, personality, adaptability, social fitness and motivations of the applicant as well as on his academic training.

The organizations interested in the improvement of medical education do not attempt to outline courses that should be taken in the secondary school.

For the session 1936-1937, forty-five medical schools in the United States have adopted requirements in excess of the minimum, i. e., four require a degree, thirty-six require three years, one requires four years, three schools will admit students with three years of

¹ Including three schools which are not fully approved. See footnotes to table 1, page 663.

(Continued on page 666)

TABLE 1—Statistics of Recognized Medical Schools in the United States and Canada

| No. | Name and Location of School | Length of Course Since Accredited | Students by Classes Session 1924-1925 | Totals | Graduates Since July 1, 1923 | Session 1924-1925 | | Applications for Admission to the 1st Year | Executive Officer | Marginal No. |
|-----|--|-----------------------------------|---------------------------------------|--------|------------------------------|-------------------|---------|--|---|--------------|
| | | | | | | 1st Year | 2d Year | | | |
| 1 | University of Alabama School of Medicine University (Tuscaloosa) | 3 | 54 | 53 | 112 | 45 | 45 | Sept 9 | Stuart Graves, M.D., Dean | 1 |
| 2 | University of Arkansas School of Medicine Little Rock | 2 | 4 | 4 | 239 | 49 | 49 | Sept 30 | Frank Vinsonhaler M.D. Dean | 2 |
| 3 | University of California Medical School Berkeley San Francisco | 1 | 5 | 5 | 238 | 61 | 61 | Aug 24 | W McKim Marriott M.D. Dean | 3 |
| 4 | College of Medical Practitioners, Anna Linda Los Angeles | 2 | 5 | 107 | 110 | 104 | 104 | May 1 | F H Riley, M.D. Dean Anna Linda W F | 4 |
| 5 | University of Southern California School of Medicine Los Angeles | 3 | 5 | 51 | 46 | 47 | 46 | Sept 21 | Macpherson, M.D. Associate Dean Los Angeles | 5 |
| 6 | Stanford University School of Medicine San Francisco | 3 | 5 | 60 | 60 | 62 | 62 | Sept 22 | Paul S McKibben Ph.D. Dean | 6 |
| 7 | University of Colorado School of Medicine, Denver | 3 | 4 | 53 | 45 | 52 | 50 | Sept 23 | Loren Roscoe Chandler M.D., Dean | 7 |
| 8 | Yale University School of Medicine New Haven | 3 | 4 | 53 | 54 | 47 | 47 | Sept 23 | Maurice H Rees, M.D., Dean | 8 |
| 9 | Georgetown University School of Medicine Washington | 3 | 4 | 100 | 112 | 123 | 134 | Sept 21 | Stanhope Bayne-Jones M.D., Dean | 9 |
| 10 | George Washington University School of Medicine Washington | 2 | 4 | 65 | 63 | 62 | 63 | Sept 23 | Dayid V McCauley, S.J. Ph.D., Dean | 10 |
| 11 | Harvard University College of Medicine Washington | 2 | 4 | 39 | 32 | 34 | 37 | Sept 26 | Earl B McKinley M.D. Dean | 11 |
| 12 | Emory University School of Medicine Atlanta | 3 | 4 | 62 | 62 | 60 | 63 | Sept 23 | Numa P G Adams, M.D., Dean | 12 |
| 13 | University of Georgia School of Medicine, Augusta | 3 | 4 | 41 | 37 | 32 | 33 | Sept 21 | Russell H Oppenheimer, M.D. Dean | 13 |
| 14 | Loyola University School of Medicine Chicago | 3 | 5 | 147 | 129 | 121 | 110 | Sept 23 | G Lomhard Kelly M.D., Dean | 14 |
| 15 | Northeastern University Medical School Chicago | 3 | 5 | 125 | 119 | 104 | 103 | Sept 23 | Louis D Moorhead M.D. Dean | 15 |
| 16 | University of Chicago, Rush Medical College | 3 | 5 | 149 | 149 | 149 | 149 | Oct 1 | Irving S Cutter M.D., Dean | 16 |
| 17 | University of Chicago, The School of Medicine of the Division of the Biological Sciences | 3 | 5 | 180 | 162 | 140 | 135 | Oct 1 | W H Tallentire Ph.D. Dean | 17 |
| 18 | University of Illinois College of Medicine Chicago | 2 | 5 | 100 | 100 | 100 | 100 | Sept 23 | B O H Harvey M.D. Dean of Students | 18 |
| 19 | Indiana University School of Medicine, Bloomington Indianapolis | 3 | 4 | 122 | 99 | 105 | 106 | Sept 15 | David J Davis M.D. Dean | 19 |
| 20 | State University of Iowa College of Medicine Iowa City | 2 | 4 | 120 | 102 | 79 | 92 | Sept 21 | Burton D Myers M.D. Dean Bloomington | 20 |
| 21 | University of Kansas School of Medicine Lawrence-Kansas City | 2 | 4 | 83 | 70 | 70 | 72 | Sept 17 | Willis D Gatch M.D. Dean Indianapolis | 21 |
| 22 | University of Louisville School of Medicine Louisville | 2 | 4 | 92 | 73 | 90 | 87 | Sept 17 | Ewen Murchison MacKewen, M.D., Dean | 22 |
| 23 | Louisiana State University Medical Center New Orleans | 3 | 5 | 107 | 88 | 75 | 45 | Sept 14 | H R Wahl M.D. Dean | 23 |
| 24 | Tulane University of Louisiana School of Medicine New Orleans | 2 | 4 | 130 | 113 | 113 | 115 | Sept 25 | Jahn Walker Moore, M.D. Dean | 24 |
| 25 | Johns Hopkins University School of Medicine Baltimore | 4 | 69 | 63 | 63 | 63 | 63 | Sept 29 | Arthur Vidrine M.D. Dean | 25 |
| 26 | University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore | 2 | 4 | 95 | 101 | 118 | 100 | Sept 22 | Charles O Bass M.D., Dean | 26 |
| 27 | Boston University School of Medicine Boston | 3 | 4 | 120 | 102 | 79 | 92 | Sept 21 | Alan M Chenev, M.D., Dean | 27 |
| 28 | Harvard University Medical School Boston | 2 | 4 | 120 | 102 | 79 | 92 | Sept 21 | J M H Rowland M.D., Dean | 28 |
| 29 | Tufts College Medical School Boston | 4 | 123 | 113 | 110 | 110 | 110 | Sept 23 | Alexander S Begg M.D. Dean | 29 |
| 30 | University of Michigan Medical School Ann Arbor | 3 | 4 | 138 | 124 | 100 | 119 | Sept 23 | Charles Sidney Burwell, M.D., Dean | 30 |
| 31 | Wayne University College of Medicine Detroit | 3 | 5 | 67 | 70 | 79 | 84 | Sept 24 | A Warren Stearns M.D., Dean | 31 |
| 32 | University of Minnesota Medical School Minneapolis | 2 | 5 | 130 | 140 | 124 | 114 | Sept 24 | Albert Carl Furstenberg M.D., Dean | 32 |
| 33 | University of Mississippi Medical School, University | 3 | 2 | 19 | 19 | 19 | 19 | Sept 23 | Raymond B Allen M.D. Dean | 33 |
| 34 | University of Missouri School of Medicine Columbia | 3 | 2 | 43 | 37 | 125 | 124 | Sept 18 | Harold S Diehl M.D. Dean | 34 |
| 35 | University of Nebraska School of Medicine Omaha | 2 | 4 | 146 | 109 | 93 | 93 | Sept 14 | B S Guyton M.D. Dean | 35 |
| 36 | Washington University School of Medicine St. Louis | 4 | 83 | 77 | 97 | 93 | 93 | Sept 17 | Dudley S Canley M.D., Dean | 36 |
| 37 | Catholic University School of Medicine, Omaha | 2 | 4 | 80 | 70 | 69 | 73 | Sept 22 | Adrian M Schwilkin S.J. Ph.D. Dean | 37 |
| 38 | University of Nebraska College of Medicine Omaha | 2 | 4 | 84 | 73 | 83 | 73 | Sept 21 | Albion P Barr M.D. Chairman of the Administrative Committee | 38 |
| 39 | Dartmouth Medical School Hanover | 3 | 2 | 23 | 23 | 23 | 23 | Sept 17 | Bryan M Riley M.D. Dean | 39 |
| 40 | University of Iowa College of Medicine Iowa City | 2 | 4 | 120 | 102 | 79 | 92 | Sept 21 | C W M Foynter M.D. Dean | 40 |
| 41 | University of Kansas School of Medicine Lawrence-Kansas City | 2 | 4 | 83 | 70 | 70 | 72 | Sept 17 | John P Bowler M.D. Dean | 41 |
| 42 | University of Louisville School of Medicine Louisville | 2 | 4 | 92 | 73 | 90 | 87 | Sept 17 | | 42 |
| 43 | Louisiana State University Medical Center New Orleans | 3 | 5 | 107 | 88 | 75 | 45 | Sept 14 | | 43 |
| 44 | Tulane University of Louisiana School of Medicine New Orleans | 2 | 4 | 130 | 113 | 113 | 115 | Sept 25 | | 44 |
| 45 | Johns Hopkins University School of Medicine Baltimore | 4 | 69 | 63 | 63 | 63 | 63 | Sept 29 | | 45 |
| 46 | University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore | 2 | 4 | 95 | 101 | 118 | 100 | Sept 22 | | 46 |
| 47 | Boston University School of Medicine Boston | 3 | 4 | 120 | 102 | 79 | 92 | Sept 21 | | 47 |
| 48 | Harvard University Medical School Boston | 2 | 4 | 120 | 102 | 79 | 92 | Sept 21 | | 48 |
| 49 | Tufts College Medical School Boston | 4 | 123 | 113 | 110 | 110 | 110 | Sept 23 | | 49 |
| 50 | University of Michigan Medical School Ann Arbor | 3 | 4 | 138 | 124 | 100 | 119 | Sept 23 | | 50 |
| 51 | Wayne University College of Medicine Detroit | 3 | 5 | 67 | 70 | 79 | 84 | Sept 24 | | 51 |
| 52 | University of Minnesota Medical School Minneapolis | 2 | 5 | 130 | 140 | 124 | 114 | Sept 24 | | 52 |
| 53 | University of Mississippi Medical School, University | 3 | 2 | 19 | 19 | 19 | 19 | Sept 23 | | 53 |
| 54 | University of Missouri School of Medicine Columbia | 3 | 2 | 43 | 37 | 125 | 124 | Sept 14 | | 54 |
| 55 | University of Nebraska School of Medicine Omaha | 2 | 4 | 146 | 109 | 93 | 93 | Sept 17 | | 55 |
| 56 | Washington University School of Medicine St. Louis | 4 | 83 | 77 | 97 | 93 | 93 | Sept 21 | | 56 |
| 57 | Catholic University School of Medicine, Omaha | 2 | 4 | 80 | 70 | 69 | 73 | Sept 22 | | 57 |
| 58 | University of Nebraska College of Medicine Omaha | 2 | 4 | 84 | 73 | 83 | 73 | Sept 21 | | 58 |
| 59 | Dartmouth Medical School Hanover | 3 | 2 | 23 | 23 | 23 | 23 | Sept 17 | | 59 |

| NEW YORK | | | | | | | | | | | | | | | |
|----------|--|-----------------|------------|---|-----|-----|-----|-----|-----|------------------|----------------------|----------|--------|--|----|
| 40 | Albany Medical College | Albany | Degrees | 4 | 27 | 25 | 22 | 20 | 100 | 25 | Sept 28 | June 14 | July | Thomas Ordway M.D., Dean | 40 |
| 41 | Long Island College of Medicine | Brooklyn | 2 1/2 | 4 | 97 | 92 | 84 | 104 | 333 | 104 | Sept 28 | June 3 | June | Wade W. Oliver, M.D., Acting Dean | 41 |
| 42 | Long Island College of Medicine | Brooklyn | 2 1/2 | 4 | 75 | 62 | 64 | 64 | 293 | 62 | Sept 28 | June 3 | Sept | Edward W. Koch, M.D., Dean | 42 |
| 43 | Cornell University Medical College | Ithaca New York | 3 & Degree | 4 | 73 | 68 | 64 | 64 | 290 | 64 | Sept 29 | June 16 | Sept | William S. Ladd, M.D., Dean | 43 |
| 44 | Cornell University Medical College | Ithaca New York | 3 & Degree | 4 | 73 | 68 | 64 | 64 | 290 | 64 | Sept 29 | June 16 | Dec | Willard O. Rappaport, M.D., Dean | 44 |
| 45 | Columbia University College of Physicians and Surgeons | New York | 3 | 4 | 112 | 99 | 83 | 88 | 302 | 85 | Sept 17 | June 1 | Sept | Claude A. Burrell, M.D., Dean | 45 |
| 46 | Columbia University College of Physicians and Surgeons | New York | 3 | 4 | 72 | 74 | 87 | 82 | 315 | 77 | Sept 14 | June 8 | Sept | John Wyckoff, M.D., Dean | 46 |
| 47 | New York University College of Medicine | New York | 3 & Degree | 4 | 130 | 112 | 147 | 129 | 521 | 131 | Sept 10 | June 9 | March | George Hoyt Whipple, M.D., Dean | 47 |
| 48 | New York University College of Medicine | New York | 3 & Degree | 4 | 130 | 112 | 147 | 129 | 521 | 131 | Sept 10 | June 9 | March | George Hoyt Whipple, M.D., Dean | 48 |
| 49 | University of Rochester School of Medicine | Rochester | 2 | 4 | 47 | 44 | 39 | 41 | 174 | 45 | Sept 21 | May 31 | May | H. G. Weiskotten M.D., Dean | 49 |
| 50 | Syracuse University College of Medicine | Syracuse | 2 | 4 | 48 | 40 | 41 | 45 | 188 | 45 | Sept 24 | May 31 | May | H. G. Weiskotten M.D., Dean | 50 |
| 51 | University of North Carolina School of Medicine | Chapel Hill | 3 | 2 | 39 | 35 | | | 74 | | Sept 17 | June 8 | Sept | O. S. Mangum M.D., Dean | 51 |
| 52 | Duke University School of Medicine | Durham | 2 | 0 | | | | | 301 | 29 th | Oct 5 | June 12 | Sept | Wilbur C. Davidson, M.D., Dean | 52 |
| 53 | Wake Forest College School of Medicine | Waks Forest | 2 | 2 | 25 | 31 | | | 56 | | Sept 15 | June 1 | July | O. C. Carpenter, M.D., Dean | 53 |
| 54 | University of North Dakota School of Medicine | Grand Forks | 3 | 2 | 33 | 23 | | | 59 | | Sept 15 | June 8 | | H. E. French M.D., Dean | 54 |
| 55 | University of North Dakota School of Medicine | Grand Forks | 3 | 2 | 33 | 23 | | | 59 | | Sept 15 | June 8 | | H. E. French M.D., Dean | 55 |
| 56 | University of Cincinnati College of Medicine | Cincinnati | 3 | 5 | 76 | 70 | 72 | 63 | 259 | 60 | Sept 21 | June 4 | Feb | Alfred Friedlander M.D., Dean | 56 |
| 57 | Western Reserve University School of Medicine | Cleveland | 3 & Degree | 4 | 75 | 67 | 62 | 57 | 261 | 57 | Sept 24 | June 10 | Sept | Torrid Sollmann M.D., Dean | 57 |
| 58 | Ohio State University College of Medicine | Columbus | 3 | 4 | 103 | 87 | 69 | 62 | 381 | 52 | Sept 29 | June 14 | June | J. H. J. Upham M.D., Dean | 58 |
| 59 | University of Oklahoma School of Medicine | Oklahoma City | 2 | 4 | 68 | 50 | 59 | 59 | 240 | 53 | Sept 14 | June 7 | July | Robert U. Patterson, M.D., Dean | 59 |
| 60 | University of Oklahoma School of Medicine | Oklahoma City | 2 | 4 | 68 | 50 | 59 | 59 | 240 | 53 | Sept 14 | June 7 | July | Robert U. Patterson, M.D., Dean | 60 |
| 61 | University of Oregon Medical School | Portland | 3 | 4 | 65 | 53 | 54 | 57 | 234 | 55 | Oct 5 | June 10 | July | Richard B. Dillehunt, M.D., Dean | 61 |
| 62 | Hahnemann Medical College and Hospital of Philadelphia | Philadelphia | 2 | 4 | 105 | 139 | 122 | 68 | 524 | 68 | Sept 28 | June 10 | | William A. Pearson, Ph.D., Dean | 62 |
| 63 | Jefferson Medical College of Philadelphia | Philadelphia | Degrees | 4 | 132 | 129 | 133 | 133 | 533 | 133 | Sept 21 | June 4 | | Ross V. Patterson, Ph.D., Dean | 63 |
| 64 | Temple University School of Medicine | Philadelphia | 3 | 4 | 112 | 108 | 118 | 127 | 405 | 124 | Sept 28 | June 10 | May | William N. Parkinson M.D., Dean | 64 |
| 65 | University of Pennsylvania School of Medicine | Philadelphia | 3 | 4 | 120 | 117 | 137 | 141 | 515 | 140 | Sept 28 | June 9 | March | William Pepper M.D., Dean | 65 |
| 66 | Woman's Medical College of Pennsylvania | Philadelphia | 3 | 4 | 29 | 30 | 27 | 33 | 110 | 33 | Sept 23 | June 2 | Sept | Martha Tracy M.D., Dean | 66 |
| 67 | University of Pittsburgh School of Medicine | Pittsburgh | 2 | 4 | 55 | 65 | 71 | 01 | 252 | 60 | Sept 21 | June 9 | May | R. R. Huggins M.D., Dean | 67 |
| 68 | Medical College of the State of South Carolina | Charleston | 3 | 4 | 42 | 33 | 47 | 33 | 160 | 33 | Sept 24 | June 3 | Sept | Robert Wilson M.D., Dean | 68 |
| 69 | University of South Dakota School of Medicine | Vermillion | 2 | 2 | 25 | 29 | | | 54 | | Sept 10 | June 7 | July | J. O. Ohlmacher M.D., Dean | 69 |
| 70 | University of Tennessee College of Medicine | Memphis | 2 | 4 | 120 | 86 | 111 | 100 | 429 | 102 | July 9 th | June 12 | | O. W. Hymann, Ph.D., Dean | 70 |
| 71 | Nicholls Medical College | Nashville | 2 | 4 | 67 | 60 | 53 | 52 | 183 | 32 | Oct 1 | May 20 | Oct | John J. Mullooney M.D., President | 71 |
| 72 | Vanderbilt University School of Medicine | Nashville | 3 | 4 | 50 | 50 | 51 | 52 | 203 | 52 | Sept 23 | June 9 | | Waller S. Leathers M.D., Dean | 72 |
| 73 | Baylor University College of Medicine | Dallas | 2 | 4 | 103 | 88 | 79 | 80 | 350 | 79 | Oct 1 | May 31 | June | W. H. Mourand M.D., Dean | 73 |
| 74 | University of Texas School of Medicine | Galveston | 2 | 4 | 116 | 84 | 81 | 74 | 355 | 75 | Oct 1 | May 31 | June | W. S. Currier M.D., Dean | 74 |
| 75 | University of Utah School of Medicine | Salt Lake City | 3 | 2 | 30 | 23 | | | 53 | | Sept 24 | June 5 | Feb | L. L. Dalnes M.D., Dean | 75 |
| 76 | University of Vermont College of Medicine | Burlington | 2 | 4 | 40 | 40 | 50 | 41 | 171 | 41 | Sept 17 | June 14 | June | James N. Jenne M.D., Dean | 76 |
| 77 | University of Virginia Department of Medicine | Charlottesville | 2 | 4 | 66 | 64 | 64 | 61 | 245 | 60 | Sept 17 | June 15 | July | J. Carroll Ellipin M.D., Dean | 77 |
| 78 | Medical College of Virginia | Richmond | 3 | 4 | 51 | 73 | 81 | 75 | 309 | 73 | Sept 11 | June 1 | | Lee E. Sutton M.D., Dean | 78 |
| 79 | West Virginia University School of Medicine | Morgantown | 3 | 2 | 25 | 41 | | | 60 | | Sept 14 | June 8 | Sept | Edward J. Van Lister M.D., Acting Dean | 79 |
| 80 | University of Wisconsin Medical School | Madison | 3 | 4 | 109 | 90 | 49 | 53 | 337 | 51 | Sept 23 | June 21 | March | William S. Middleton, M.D., Dean | 80 |
| 81 | Marquette University School of Medicine | Milwaukee | 2 | 5 | 96 | 70 | 70 | 64 | 611 | 306 | Sept 23 | June 10 | | Eben J. Carey M.D., Dean | 81 |
| 82 | University of Alberta Faculty of Medicine | Edmonton, Alta | 2 | 0 | 27 | 44 | 35 | 33 | 194 | 21 | Sept 21 | April 30 | Sept | Allan O. Rankin, M.D., Dean | 82 |
| 83 | University of Manitoba Faculty of Medicine | Winnipeg, Man | 2 | 5 | 54 | 60 | 51 | 46 | 201 | 50 | Sept 21 | May 8 | Sept | A. J. Mathers, M.D., Dean | 83 |
| 84 | Dalhousie University Faculty of Medicine | Halifax, N. S. | 2 | 5 | 49 | 40 | 33 | 29 | 157 | 20 | Sept 8 | May 11 | August | H. G. Grant, M.D., Dean | 84 |
| 85 | Queen's University Faculty of Medicine | Kingston, Ont | 2 | 0 | 60 | 59 | 51 | 55 | 405 | 318 | Sept 21 | May 15 | Sept | F. J. H. Campbell, M.D., Dean | 85 |
| 86 | University of Western Ontario Medical School | London, Ont | 3 | 0 | 38 | 39 | 32 | 33 | 218 | 23 | Sept 21 | May 15 | Sept | W. E. Gailie, M.D., Dean | 86 |
| 87 | University of Toronto Faculty of Medicine | Toronto, Ont | 3 | 0 | 102 | 157 | 154 | 120 | 853 | 126 | Sept 29 | June 1 | March | A. Grant Fleming M.D., Dean | 87 |
| 88 | McGill University Faculty of Medicine | Montreal, Que | 3 | 0 | 88 | 87 | 90 | 112 | 123 | 93 | Sept 2 | June 15 | March | Telephore Parizeau M.D., Dean | 88 |
| 89 | University of Montreal Faculty of Medicine | Montreal, Que | 1 | 5 | 61 | 37 | 39 | 50 | 183 | 42 | Sept 15 | June 31 | Sept | P. O. Dagneneu M.D., Dean | 89 |
| 90 | Laval University Faculty of Medicine | Quebec, Que | 2 | 5 | 85 | 62 | 59 | 41 | 225 | 38 | Sept 15 | May 14 | Sept | W. S. Lindsay, M.D., Dean | 90 |
| 91 | University of Saskatchewan School of Medical Sciences | Saskatoon | 2 | 2 | 27 | 24 | | | 51 | | Sept 25 | May 14 | August | W. S. Lindsay, M.D., Dean | 91 |

* On probation from May 10 1933

** Approval withdrawn Feb 12 1933 without prejudice to the students then enrolled. In September 1933 recognition was accorded to the first year class of 1933-1934. In December 1935 recognition was accorded to the sophomore students enrolled during 1933-1934 and in February 1936 protection was granted for the session 1936-1937

*** Approval withdrawn Feb 17, 1933 without prejudice to the students then enrolled. In February 1933 protection was extended to students enrolled during the session 1933-1934 and those who may be enrolled in the first year class in 1933-1937

† Fifth year (internship) enrollment not included in the total column
‡ Sixth year enrollment Alberta, 21 Queen's 47 Western Ontario 28 Toronto 131
Students admitted at different times of the year Stanford second year January 4 Northwestern beginning of any quarter Rush March 29 Minnesota January 5 Tennessee, September 23 1937, January 4 and March 25, 1937

of Students

| Marginal Number | Minnesota | Mississippi | Missouri | Montana | Nebraska | Nevada | New Hampshire | New Jersey | New Mexico | New York | North Carolina | North Dakota | Ohio | Oklahoma | Oregon | Pennsylvania | Rhode Island | South Carolina | South Dakota | Tennessee | Texas | Utah | Vermont | Virginia | Washington | West Virginia | Wisconsin | Wyoming | U S Possessions | Canada | Foreign | Totals | Marginal Number | | |
|-----------------|-----------|-------------|----------|---------|----------|--------|---------------|------------|------------|----------|----------------|--------------|------|----------|--------|--------------|--------------|----------------|--------------|-----------|-------|------|---------|----------|------------|---------------|-----------|---------|-----------------|--------|---------|--------|-----------------|-----|----|
| 1 | 1 | | | | | | | 5 | | 18 | 1 | | 4 | | | 6 | | | | | | | | 1 | | | | | | | | 112 | 1 | | |
| 2 | 2 | | | | | | | 9 | | 33 | | | 3 | | | 12 | | | | | | | | 1 | | | | | | | | 259 | 2 | | |
| 3 | 3 | | | | | | | 15 | | 15 | | | 4 | | | 8 | | | | | | | | 1 | | | | | | | | 233 | 3 | | |
| 4 | 4 | | | | | | | 7 | | 20 | | | 7 | | | 10 | | | | | | | | 2 | | | | | | | | 304 | 4 | | |
| 5 | 5 | | | | | | | 11 | | 10 | | | 7 | | | 6 | | | | | | | | 3 | | | | | | | | 190 | 5 | | |
| 6 | 6 | | | | | | | 6 | | 11 | | | 7 | | | 5 | | | | | | | | 4 | | | | | | | | 234 | 6 | | |
| 7 | 7 | | | | | | | 14 | | 10 | | | 13 | | | 0 | | | | | | | | 5 | | | | | | | | 205 | 7 | | |
| 8 | 8 | | | | | | | 75 | | 43 | | | 10 | | | 77 | | | | | | | | 1 | | | | | | | | 266 | 8 | | |
| 9 | 9 | | | | | | | 11 | | 17 | | | 8 | | | 28 | | | | | | | | 2 | | | | | | | | 7 | 474 | 9 | |
| 10 | 10 | | | | | | | 2 | | 33 | | | 1 | | | 13 | | | | | | | | 3 | | | | | | | | 17 | 268 | 10 | |
| 11 | 11 | | | | | | | 4 | | 13 | | | 5 | | | 1 | | | | | | | | 1 | | | | | | | | 39 | 142 | 11 | |
| 12 | 12 | | | | | | | 1 | | 5 | | | | | | 2 | | | | | | | | 1 | | | | | | | | 1 | 223 | 12 | |
| 13 | 13 | | | | | | | 14 | | 28 | | | 31 | | | 19 | | | | | | | | 2 | | | | | | | | 2 | 148 | 13 | |
| 14 | 14 | | | | | | | 4 | | 5 | | | 20 | | | 0 | | | | | | | | 2 | | | | | | | | 2 | 507 | 14 | |
| 15 | 15 | | | | | | | 8 | | 40 | | | 12 | | | 12 | | | | | | | | 1 | | | | | | | | 14 | 564 | 15 | |
| 16 | 16 | | | | | | | 1 | | 15 | | | 6 | | | 1 | | | | | | | | 1 | | | | | | | | 15 | 821 | 16 | |
| 17 | 17 | | | | | | | 4 | | 21 | | | 13 | | | 3 | | | | | | | | 2 | | | | | | | | 1 | 811 | 17 | |
| 18 | 18 | | | | | | | 5 | | 8 | | | 4 | | | 1 | | | | | | | | 1 | | | | | | | | 53 | 637 | 18 | |
| 19 | 19 | | | | | | | 6 | | 1 | | | 3 | | | 2 | | | | | | | | 1 | | | | | | | | 7 | 432 | 19 | |
| 20 | 20 | | | | | | | 5 | | 5 | | | 3 | | | 1 | | | | | | | | 1 | | | | | | | | 11 | 303 | 20 | |
| 21 | 21 | | | | | | | 8 | | 21 | | | 21 | | | 7 | | | | | | | | 1 | | | | | | | | 2 | 342 | 21 | |
| 22 | 22 | | | | | | | 5 | | 8 | | | 1 | | | 6 | | | | | | | | 1 | | | | | | | | 4 | 315 | 22 | |
| 23 | 23 | | | | | | | 7 | | 8 | | | 13 | | | 2 | | | | | | | | 1 | | | | | | | | 10 | 470 | 23 | |
| 24 | 24 | | | | | | | 14 | | 33 | | | 6 | | | 39 | | | | | | | | 1 | | | | | | | | 11 | 414 | 24 | |
| 25 | 25 | | | | | | | 23 | | 32 | | | 1 | | | 2 | | | | | | | | 1 | | | | | | | | 5 | 271 | 25 | |
| 26 | 26 | | | | | | | 3 | | 70 | | | 2 | | | 10 | | | | | | | | 1 | | | | | | | | 11 | 414 | 26 | |
| 27 | 27 | | | | | | | 15 | | 14 | | | 37 | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 248 | 27 | |
| 28 | 28 | | | | | | | 14 | | 53 | | | 1 | | | 3 | | | | | | | | 1 | | | | | | | | 2 | 529 | 28 | |
| 29 | 29 | | | | | | | 2 | | 14 | | | 2 | | | 1 | | | | | | | | 1 | | | | | | | | 6 | 474 | 29 | |
| 30 | 30 | | | | | | | 2 | | 81 | | | 24 | | | 8 | | | | | | | | 1 | | | | | | | | 29 | 300 | 30 | |
| 31 | 31 | | | | | | | 1 | | 5 | | | 9 | | | 1 | | | | | | | | 1 | | | | | | | | 2 | 513 | 31 | |
| 32 | 32 | | | | | | | 2 | | 2 | | | 1 | | | 2 | | | | | | | | 1 | | | | | | | | 3 | 19 | 32 | |
| 33 | 33 | | | | | | | 18 | | 90 | | | 82 | | | 2 | | | | | | | | 1 | | | | | | | | 3 | 504 | 33 | |
| 34 | 34 | | | | | | | 1 | | 12 | | | 4 | | | 2 | | | | | | | | 1 | | | | | | | | 15 | 885 | 34 | |
| 35 | 35 | | | | | | | 7 | | 40 | | | 10 | | | 7 | | | | | | | | 1 | | | | | | | | 2 | 237 | 35 | |
| 36 | 36 | | | | | | | 1 | | 6 | | | 3 | | | 3 | | | | | | | | 1 | | | | | | | | 8 | 325 | 36 | |
| 37 | 37 | | | | | | | 2 | | 12 | | | 1 | | | 4 | | | | | | | | 1 | | | | | | | | 1 | 43 | 37 | |
| 38 | 38 | | | | | | | 3 | | 78 | | | 3 | | | 1 | | | | | | | | 1 | | | | | | | | 8 | 100 | 38 | |
| 39 | 39 | | | | | | | 1 | | 312 | | | 4 | | | 6 | | | | | | | | 1 | | | | | | | | 24 | 333 | 39 | |
| 40 | 40 | | | | | | | 2 | | 224 | | | 3 | | | 14 | | | | | | | | 1 | | | | | | | | 8 | 268 | 40 | |
| 41 | 41 | | | | | | | 3 | | 181 | | | 4 | | | 10 | | | | | | | | 1 | | | | | | | | 1 | 266 | 41 | |
| 42 | 42 | | | | | | | 56 | | 230 | | | 10 | | | 7 | | | | | | | | 1 | | | | | | | | 1 | 315 | 42 | |
| 43 | 43 | | | | | | | 34 | | 239 | | | 4 | | | 5 | | | | | | | | 1 | | | | | | | | 1 | 43 | 43 | |
| 44 | 44 | | | | | | | 40 | | 402 | | | 16 | | | 7 | | | | | | | | 1 | | | | | | | | 20 | 621 | 44 | |
| 45 | 45 | | | | | | | 6 | | 89 | | | 2 | | | 4 | | | | | | | | 1 | | | | | | | | 1 | 168 | 45 | |
| 46 | 46 | | | | | | | 128 | | 1 | | | 2 | | | 4 | | | | | | | | 1 | | | | | | | | 7 | 174 | 46 | |
| 47 | 47 | | | | | | | 5 | | 64 | | | 1 | | | 1 | | | | | | | | 1 | | | | | | | | 6 | 74 | 47 | |
| 48 | 48 | | | | | | | 17 | | 25 | | | 6 | | | 2 | | | | | | | | 1 | | | | | | | | 1 | 210 | 48 | |
| 49 | 49 | | | | | | | 40 | | 38 | | | 1 | | | 27 | | | | | | | | 1 | | | | | | | | 1 | 56 | 49 | |
| 50 | 50 | | | | | | | 1 | | 9 | | | 238 | | | 2 | | | | | | | | 1 | | | | | | | | 1 | 280 | 50 | |
| 51 | 51 | | | | | | | 3 | | 15 | | | 166 | | | 23 | | | | | | | | 1 | | | | | | | | 2 | 201 | 51 | |
| 52 | 52 | | | | | | | 4 | | 16 | | | 204 | | | 12 | | | | | | | | 1 | | | | | | | | 12 | 381 | 52 | |
| 53 | 53 | | | | | | | 1 | | 1 | | | 4 | | | 5 | | | | | | | | 1 | | | | | | | | 3 | 1 | 240 | 53 |
| 54 | 54 | | | | | | | 3 | | 3 | | | 8 | | | 69 | | | | | | | | 1 | | | | | | | | 7 | 11 | 234 | 54 |
| 55 | 55 | | | | | | | 7 | | 47 | | | 13 | | | 319 | | | | | | | | 1 | | | | | | | | 6 | 624 | 55 | |
| 56 | 56 | | | | | | | 1 | | 35 | | | 16 | | | 2 | | | | | | | | 1 | | | | | | | | 14 | 533 | 56 | |
| 57 | 57 | | | | | | | 43 | | 23 | | | 14 | | | 324 | | | | | | | | 1 | | | | | | | | 5 | 463 | 57 | |
| 58 | 58 | | | | | | | 30 | | 20 | | | 2 | | | 311 | | | | | | | | 1 | | | | | | | | 18 | 516 | 58 | |
| 59 | 59 | | | | | | | 7 | | 20 | | | 5 | | | 46 | | | | | | | | 1 | | | | | | | | 10 | 116 | 59 | |
| 60 | 60 | | | | | | | 1 | | 1 | | | 2 | | | 232 | | | | | | | | 1 | | | | | | | | 2 | 262 | 60 | |
| 61 | 61 | | | | | | | 2 | | 4 | | | | | | 1 | | | | | | | | 1 | | | | | | | | 5 | 160 | 61 | |
| 62 | 62 | | | | | | | 8 | | 7 | | | 1 | | | 6 | | | | | | | | 1 | | | | | | | | 1 | 54 | 62 | |
| 63 | 63 | | | | | | | 13 | | 0 | | | 6 | | | 9 | | | | | | | | 1 | | | | | | | | 4 | 429 | 63 | |
| 64 | 64 | | | | | | | 3 | | 0 | | | 1 | | | 2 | | | | | | | | 1 | | | | | | | | 12 | 183 | 64 | |
| 65 | 65 | | | | | | | 4 | | 24 | | | 1 | | | 10 | | | | | | | | 1 | | | | | | | | 1 | 203 | 65 | |
| 66 | 66 | | | | | | | 2 | | 4 | | | 4 | | | 3 | | | | | | | | 1 | | | | | | | | 16 | 200 | 66 | |
| 67 | 67 | | | | | | | 1 | | 1 | | | 8 | | | 1 | | | | | | | | 1 | | | | | | | | 6 | 853 | 67 | |
| 68 | 68 | | | | | | | 3 | | 84 | | | | | | 2 | | | | | | | | 1 | | | | | | | | 2 | 58 | 68 | |
| 69 | 69 | | | | | | | 7 | | 6 | | | 2 | | | 2 | | | | | | | | 1 | | | | | | | | 4 | 171 | 69 | |
| 70 | 70 | | | | | | | 3 | | 31 | | | 3 | | | 19 | | | | | | | | 1 | | | | | | | | 1 | 24 | | |

(Continued from page 661)

college work if the baccalaureate degree is conferred in absentia at the end of the first year in medicine, and one school has a requirement equivalent to two and one-half years. The medical schools in Canada also vary in their preliminary requirement. One requires a degree, one has a three year prerequisite, three require two years, one requires one year, and four schools have a six year medical course including premedical studies.

While the two year minimum college prerequisite has been exacted by the Council for eighteen years, there are still eight states which have not revised or amended their statutes to conform, although these same states, with possibly one or two exceptions, do not license other than graduates of approved schools.

MEDICAL COURSE DURATION

The medical course in the United States in general is taught in four years of approximately thirty-two weeks each. The medical schools of the universities of Minnesota, Duke and Tennessee operate on the quarter plan, enabling the student by utilizing the summer months to complete the course in three calendar years. The medical schools of the University of Chicago permit a student to progress as rapidly as he desires. Fourteen medical schools in the United States require a year of internship or research as a part of the medical course, thereby lengthening the course to five years, the degree of Doctor of Medicine being conferred after completion of the internship. Duke University requires a two year internship. Ten schools offer only a two year course.

Five of the medical schools of Canada offer a five year course, four have a six year course including premedical subjects, and the University of Saskatchewan offers courses in the medical sciences only which are covered in two years. Four Canadian schools require an internship for graduation.

These data are included in table 1.

CURRICULUM

The medical curriculum, as outlined in the Essentials of an Acceptable Medical School, published on pages 684, consists of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours a year and grouped under nine headings, namely, anatomy (including embryology and histology), physiology, biochemistry, pathology, bacteriology and immunology, pharmacology, hygiene and sanitation, general medicine, general surgery, and obstetrics and gynecology. A certain percentage of hours of the whole number of hours in the courses is required in each of these groups. The Association of American Medical Colleges maintains the same standard with respect to the curriculum.

STATISTICS OF MEDICAL SCHOOLS

Table 1 pages 662 and 663, lists the medical schools in the United States and Canada approved by the Council on Medical Education and Hospitals of the American Medical Association during 1935-1936 and contains figures regarding the premedical requirement for entrance for the session 1936-1937, length of the medical course by years enrolment by classes for the session 1935-1936, including fifth year students interning or engaged in research, number of graduates since July 1, 1935, dates of the beginning and ending of the forthcoming session, and the month until which applicants for admission to the freshman class are received. Changes in the classification that have taken place since

the publication of the educational statistics in 1935² can be noted in the footnotes at the bottom of the table and refer to those schools which are marked by asterisks preceding the name. Also contained in the footnotes are references to the fifth and sixth year enrolments and those schools which admit students at varying times during the year. Duke University and the two medical schools of the University of Chicago do not report their students by classes and in this tabulation, therefore, only the total enrolment is given.

The data presented in this table constitute the basis also for several of the subsequent tabulations. Beginning on page 686 are given historical information and essential facts concerning the schools arranged by states.

Seventy-seven institutions in the United States and ten in Canada are listed. With the exception of three, all these schools at the present time are approved by the Council. In eighty-four schools there were 6,646 freshman students enrolled, 6,060 sophomores, 5,755 juniors, 5,554 seniors, 380 fifth year and 227 sixth year students, during the session just ended. In the two medical schools of the University of Chicago and Duke University School of Medicine there were 851 students enrolled, making a total of 25,473 in the eighty-seven schools listed. In the United States there were 6,005 freshmen, 5,458 sophomores, 5,230 juniors, 5,020 seniors, and the 851 students from the schools just mentioned, a total of 22,564. The total students registered by classes in the United States was 21,713. The enrolment in the ten Canadian schools was as follows: first year, 641, second year, 602, third year, 525, fourth year, 534, fifth year, 380, and sixth year, 227, a total of 2,909. The 25,473 medical students enrolled do not include 1,213 in the United States and 124 in Canada interning as a requirement for the degree of Doctor of Medicine.

Since July 1, 1935, 5,656 received M.D. degrees, 5,183 from schools in the United States and 473 from Canadian institutions.

In addition, there were 130 part-time, 267 special and 751 graduate students studying in medical schools.

Ten medical schools had an enrolment of less than 100 students. None of the schools comprising this figure give the complete medical course. Fourteen schools matriculated fewer than 200 but more than 100, twenty-four less than 300, nineteen fewer than 400, nine less than 500 and 600, respectively. Two schools matriculated more than 600 students. The smallest enrolment (nineteen) was at the University of Mississippi School of Medicine, which for the session 1935-1936 did not offer instruction to freshmen. Not being a complete medical school, the figure given represents sophomore students only. The greatest number (853) were enrolled in the University of Toronto Faculty of Medicine, which has a six year course including premedical subjects. The corresponding high figure among schools in the United States was (637) at the University of Illinois College of Medicine. The lowest enrolment among four year colleges in the United States was (100) at Albany Medical College. This school likewise awarded M.D. degrees to the smallest group (twenty-five) since July 1, 1935. The school graduating the greatest number was Northwestern University Medical School, which awarded 160 diplomas.

The majority of schools will begin the session 1936-1937 about the middle of September and end early in June.

Of sixty-seven schools that replied to the inquiry regarding the month until which applications for admission to the first year class will be received, two replied February, ten March, seven April, six May, ten June, eight July, five August, seventeen September and one each gave October and December.

The name of the dean or administrative officer of each institution is also given in table 1.

BIRTHPLACE OF STUDENTS

In table 2, pages 664 and 665, the birth state of students in attendance in medical schools during 1935-1936 is shown by schools. The state furnishing the greatest number of students according to state of birth was New York 3,469, followed by Pennsylvania with 2,125, Illinois with 1,524 and Massachusetts with 947.

From the twelve states in which no medical schools are located there were enrolled as students the following

| | Number Enrolled | Number of Schools |
|--------------|-----------------|-------------------|
| Arizona | 37 | 19 |
| Delaware | 39 | 16 |
| Florida | 116 | 34 |
| Idaho | 94 | 33 |
| Maine | 121 | 30 |
| Montana | 79 | 32 |
| Nevada | 27 | 16 |
| New Jersey | 853 | 65 |
| New Mexico | 37 | 19 |
| Rhode Island | 146 | 36 |
| Washington | 233 | 44 |
| Wyoming | 24 | 18 |
| | 1,806 | |

There were 112 born in the United States possessions and 795 in foreign countries. In addition, 2,478 Canadians were also studying medicine, 115 of whom

TABLE 3—Students Classified by Birthplace

| State | Number of Schools | Attending School in State of Birth | Birthplace Elsewhere |
|----------------------|-------------------|------------------------------------|----------------------|
| Alabama | 1 | 49 | 63 |
| Arkansas | 1 | 195 | 94 |
| California | 4 | 360 | 696 |
| Colorado | 1 | 161 | 44 |
| Connecticut | 1 | 41 | 165 |
| District of Columbia | 3 | 112 | 762 |
| Georgia | 2 | 253 | 118 |
| Illinois | 5 | 1,105 | 1,175 |
| Indiana | 1 | 342 | 90 |
| Iowa | 1 | 305 | 68 |
| Kansas | 1 | 184 | 111 |
| Kentucky | 1 | 194 | 149 |
| Louisiana | 2 | 813 | 472 |
| Maine | 2 | 265 | 420 |
| Massachusetts | 3 | 621 | 630 |
| Michigan | 2 | 386 | 395 |
| Minnesota | 1 | 456 | 68 |
| Mississippi | 1 | 17 | 2 |
| Missouri | 3 | 296 | 643 |
| Montana | 2 | 292 | 323 |
| Nebraska | 1 | 2 | 41 |
| Nevada | 9 | 1,833 | 724 |
| New Hampshire | 3 | 160 | 189 |
| New Jersey | 1 | 38 | 21 |
| New Mexico | 3 | 688 | 240 |
| New York | 1 | 167 | 83 |
| North Carolina | 1 | 99 | 135 |
| North Dakota | 0 | 1,531 | 674 |
| Ohio | 1 | 160 | 10 |
| Oklahoma | 1 | 32 | 22 |
| Oregon | 3 | 260 | 555 |
| Pennsylvania | 2 | 518 | 187 |
| Rhode Island | 1 | 43 | 15 |
| South Carolina | 1 | 77 | 94 |
| South Dakota | 2 | 291 | 263 |
| Tennessee | 1 | 60 | 7 |
| Texas | 2 | 332 | 231 |
| Utah | 10 | 2,203 | 546 |
| Vermont | 1 | | |
| Virginia | 2 | | |
| Washington | 1 | | |
| West Virginia | 2 | | |
| Wisconsin | 1 | | |
| Totals | 87 | 14,720 | 10,734 |

were matriculated in schools in the United States and 2,363 in Canadian schools.

This table is being reproduced for the second time. A similar tabulation in previous years recorded the home state or residence, of medical students. Since, however, there is no uniformity among schools or students in the meaning attached to the word residence,

an effort to ascertain whether students go to schools outside their home state to study has been made in the manner presented in this issue. Very few schools have defined the terms "resident" and "nonresident" in such a way as to make them of real value in the classification of students. Indiana and Michigan have legally defined the term.

In table 3 the classification of students is further classified by birthplace, indicating that 14,739 are study-

TABLE 4—Schools, Students, and Graduates by States*

| State | Schools | Students | Graduates |
|----------------------|---------|----------|-----------|
| Alabama | 1 | 112 | |
| Arkansas | 1 | 289 | 48 |
| California | 4 | 1,046 | 217 |
| Colorado | 1 | 205 | 50 |
| Connecticut | 1 | 206 | 44 |
| District of Columbia | 3 | 674 | 238 |
| Georgia | 2 | 371 | 90 |
| Illinois | 5 | 2,340 | 591 |
| Indiana | 1 | 432 | 108 |
| Iowa | 1 | 393 | 94 |
| Kansas | 1 | 200 | 72 |
| Kentucky | 1 | 342 | 87 |
| Louisiana | 2 | 785 | 161 |
| Maine | 2 | 685 | 163 |
| Massachusetts | 3 | 1,271 | 312 |
| Michigan | 2 | 761 | 187 |
| Minnesota | 1 | 513 | 126 |
| Mississippi | 1 | 19 | |
| Missouri | 3 | 939 | 212 |
| Montana | 2 | 615 | 147 |
| New Hampshire | 1 | 42 | |
| New York | 9 | 2,607 | 635 |
| North Carolina | 3 | 349 | 38 |
| North Dakota | 1 | 59 | |
| Ohio | 3 | 928 | 215 |
| Oklahoma | 1 | 240 | 53 |
| Oregon | 1 | 234 | 55 |
| Pennsylvania | 6 | 2,407 | 668 |
| South Carolina | 1 | 160 | 32 |
| South Dakota | 1 | 54 | |
| Tennessee | 3 | 816 | 186 |
| Texas | 2 | 705 | 154 |
| Utah | 1 | 68 | |
| Vermont | 1 | 171 | 41 |
| Virginia | 2 | 554 | 123 |
| West Virginia | 1 | 66 | |
| Wisconsin | 2 | 613 | 111 |
| Totals | 77 | 22,564 | 5,183 |

* Excluding fifth or intern year students.

ing in the state of their birth and 10,734 elsewhere. This is particularly significant in Illinois, where, of the 2,340 students in five schools, 1,175 were born outside the state.

More than 800 born elsewhere are studying in Pennsylvania, while 724 in this group are in New York schools. Altogether, 42.1 per cent are studying in schools located in other than their birth state. Eliminating the 1,806 born in states having no medical school, there are still 8,928 of the total number of students, 25,473, studying outside their birth state.

A perusal of table 3 will show many instances wherein the number studying elsewhere far exceeds the number attending school in the state of birth. It also shows some states in which the contrary is the case, notably Indiana, Iowa, Minnesota, Ohio, South Carolina and Texas.

It is conceded that this tabulation does not present an absolutely true picture in that all those studying in schools located in states other than their birthplace cannot be classed as nonresidents, since they may have established their homes in other states. It is believed, however, that the table reveals a trend which may be of interest.

SCHOOLS, STUDENTS AND GRADUATES BY STATES

The number of schools, students and graduates for each state are given in table 4. New York, with the largest number of schools, nine, naturally had the greatest number of students and graduates, 2,607 and

635 respectively Pennsylvania with six schools had 2,405 students and 588 graduates Illinois with five schools, 2,340 students and 591 graduates ranks in the third largest group In four schools in California there were 1,056 students and 217 graduates while in three schools in Massachusetts there were 1,251 students and 312 graduates Other states had fewer than 1,000 medical students and 300 graduates In the seventy-seven medical schools in the United States, including those that offer only preclinical courses, there were 22,564 students and 5,183 graduates Students interning as a requirement for the degree, or fifth year students, are not included in the figure 22,564 Also excluded are part-time, special and graduate students

REQUIRED HOSPITAL INTERNSHIPS

In tables 5 and 6 are listed the medical schools and state licensing boards now requiring internships for the M D degree and state licensure respectively Some medical schools will accept research or other clinical

TABLE 5—Internship Required by Medical Schools

| | Effective Date |
|---|----------------|
| United States | |
| University of California Medical School | 1919 |
| College of Medical Evangelists | 1927 |
| University of Southern California School of Medicine | 1933 |
| Stanford University School of Medicine | 1919 |
| Loyola University School of Medicine | 1922 |
| Northwestern University Medical School | 1920 |
| University of Chicago Rush Medical College | 1919 |
| University of Chicago The School of Medicine of the Division of the Biological Sciences | 1930 |
| University of Illinois | 1923 |
| Louisiana State | 1934 |
| Wayne University | 1924 |
| University of Minnesota | 1916 |
| Duke University School of Medicine* | 1932 |
| University of Cincinnati College of Medicine | 1926 |
| Marquette University School of Medicine | 1920 |
| Canada | |
| University of Manitoba Faculty of Medicine | |
| Dalhousie University Faculty of Medicine | |
| McGill University Faculty of Medicine** | |
| University of Montreal Faculty of Medicine | |

* Requires a two year internship
Effective revision 1926-1937

TABLE 6—Internship Required by Medical Licensing Boards

| Effective Date | Effective Date |
|----------------------|----------------|
| Alaska | 1917 |
| Delaware | 1924 |
| District of Columbia | 1930 |
| Illinois | 1923 |
| Iowa | 1924 |
| Michigan | 1922 |
| New Jersey | 1916 |
| North Dakota | 1918 |
| Oklahoma | 1933 |
| Oregon | 1933 |
| Pennsylvania | 1914 |
| Rhode Island | 1917 |
| South Dakota | 1925 |
| Utah | 1920 |
| Vermont | 1934 |
| Washington | 1919 |
| West Virginia.. | 1932 |
| Wisconsin | 1927 |
| Wyoming | 1931 |

work in lieu of the internship The effective date of the requirement is shown in both tables Fifteen schools in the United States and three in Canada exact the internship requisite The M D degree has been conditioned on an internship at the University of Minnesota Medical School since 1915 McGill University Faculty of Medicine has announced the reorganization of its medical curriculum into a course of five years including an internship The new plan, which goes into effect in September, will replace the present undergraduate course now spread over five academic years of seven and a half months each, by a course covering four years of nine months each The fifth year may be spent in an internship in an approved hospital or in further medical study at McGill or at another medical school approved by it

As revealed in table 6, seventeen states, Alaska and the District of Columbia require that applicants for licensure possess a hospital internship The first state exacting the internship was Pennsylvania in 1914 and the last one Vermont, affecting the graduates of 1934 and thereafter

During 1935-1936 there were 1,213 students of the United States and 124 in Canada reported as interns, a total of 1,337

Duke University School of Medicine grants the degree after the completion of the senior year, but all graduates are required to spend at least two years in hospital or laboratory work after graduation

While some of the medical schools and licensing boards may have their own list of hospitals recommended for intern training, generally the Council's list of hospitals approved for internships is followed A revised edition will be found beginning on page 693

NECROPSIES IN HOSPITALS APPROVED FOR INTERNSHIPS

Publication of the list of approved internship hospitals most successful in necropsy performance has had several salutary results In this way it is possible to assign credit to hospitals for meritorious, scientific interest and accomplishment Also it has strengthened the opinion that any hospital conducted under any aus

TABLE 7—Approved Internship Hospitals with Highest Necropsy Percentages, 1935

| | Control | Deaths | Necropsies | Necropsy Percentage |
|---|---------|--------|------------|---------------------|
| 1 Kansas City General Hosp Kansas City Mo | Olty | 823 | 761 | 92.5 |
| 2 Columbus Hospital Chicago | Church | 43 | 40 | 93.0 |
| 3 Research and Educational Hospital Chicago | State | 223 | 197 | 88.3 |
| 4 Mary Hitchcock Memorial Hospital Hanover N H | NPA** | 114 | 10 | 87.8 |
| 5 St Luke's Hospital Kansas Olty, Mo | Church | 140 | 123 | 87.9 |
| 6 William Beaumont General Hospital El Paso Texas | Army | 26 | 22 | 84.6 |
| 7 St Joseph Hospital, Kansas Olty Mo | Church | 213 | 179 | 84.0 |
| 8 Univ of Kansas Hosps Kansas City Kan | State | 238 | 216 | 90.8 |
| 9 Colorado General Hospital Denver | State | 210 | 170 | 81.0 |
| 10 Johns Hopkins Hospital Baltimore | NPA** | 628 | 506 | 80.6 |
| 11 Station Hospital San Antonio Texas | Army | 80 | 64 | 80.0 |
| 12 University of Nebraska Hospital, Omaha | State | 137 | 107 | 78.1 |
| 13 Santa Fe Coast Lines Hospital Los Angeles | NPA** | 70 | 59 | 75.5 |
| 14 U S Marine Hospital Norfolk Va | USPHS | 82 | 62 | 75.6 |
| 15 Trinity Hospital Minot N D | Church | 142 | 106 | 74.6 |
| 16 U S Marine Hospital Seattle | USPHS | 124 | 12 | 74.2 |
| 17 Letterman General Hospital San Francisco | Army | 8 | 63 | 71.1 |
| 18 St Mary's Hospital Duluth Minn | Church | 200 | 197 | 73.5 |
| 19 Bon Secours Hospital Baltimore | Church | 74 | 54 | 73.0 |
| 20 Research Hospital Kansas City Mo | NPA** | 170 | 124 | 72.9 |

NPA** nonprofit association USPHS U S Public Health Service.

TABLE 8—Necropsy Performance in Approved Hospitals

| Percentage | Number of Hospitals | | |
|--------------|---------------------|------|------|
| | 1926 | 1930 | 1931 |
| 15 to 29 | 146 | 24 | 371 |
| 30 to 49 | 69 | 164 | 279 |
| 50 to 69 | 21 | 56 | 171 |
| 70 and above | 14 | 19 | 25 |

pices and in any community can, by industry and cooperation, develop a beneficial necropsy program

In spite of the vast improvement in necropsy performance demonstrated in this select group of hospitals (table 8), about one half are still below 30 per cent, which is the figure considered procurable in every hospital if consent for postmortem study is requested as a routine

GRADUATES AND INTERNSHIPS

Table 9 contains figures regarding graduates of the United States and Canada from July 1, 1934, to July 1, 1935, who have obtained internships during the period July 1, 1935, to July 1, 1936. Included also are figures

TABLE 9—*Graduates from July 1, 1934, to July 1, 1935 Who Have Obtained Internships During the Period July 1 1935 to July 1, 1936*

| School | Number Graduates | Number Interning |
|-------------------------------------|------------------|------------------|
| University of Arkansas | 42 | 39 |
| University of California | 56* | 58 |
| College of Medical Evangelists | 92* | 92 |
| University of Southern California | 30* | 30 |
| Stanford University | 45* | 45 |
| University of Colorado | 47 | 47 |
| Yale University | 47 | 47 |
| Georgetown University | 113 | 112 |
| George Washington University | 71 | 68 |
| Howard University | 55 | 52 |
| Emory University | 54 | 54 |
| University of Georgia | 34 | 32 |
| Loyola University | 98* | 98 |
| Northwestern University | 140* | 140 |
| Rush Medical College | 140* | 140 |
| Division of the Biological Sciences | 40* | 40 |
| University of Illinois | 135* | 135 |
| Indiana University | 93 | 92 |
| State University of Iowa | 63 | 61 |
| University of Kansas | 67 | 67 |
| University of Louisville | 79 | 74 |
| Louisiana State University | 50* | 50 |
| Tulane University | 125 | 120 |
| Johns Hopkins University | 60 | 67 |
| University of Maryland | 103 | 103 |
| Boston University | 55 | 55 |
| Harvard University | 137 | 135 |
| Tufts College | 119 | 117 |
| University of Michigan | 105 | 98 |
| Wayne University | 71* | 71 |
| University of St. Louis | 139* | 139 |
| St. Louis | 110 | 100 |
| Washington | 92 | 91 |
| Crelghton University | 69 | 69 |
| University of Nebraska | 77 | 77 |
| Albany Medical College | 23 | 23 |
| Long Island College of Medicine | 98 | 87 |
| University of Buffalo | 66 | 62 |
| Cornell University | 64 | 64 |
| Columbia University | 97 | 96 |
| New York Medical College | 63 | 57 |
| New York University | 126 | 125 |
| University of Rochester | 47 | 47 |
| Syracuse University | 45 | 45 |
| Duke University | 30† | 30 |
| University of Western Res. | 63* | 63 |
| Ohio State | 71 | 71 |
| University of Ohio | 86 | 86 |
| University of Ohio | 53 | 55 |
| University of Ohio | 54 | 54 |
| Hahnemann Medical College | 102 | 102 |
| Jefferson Medical College | 142 | 142 |
| Temple University | 100 | 100 |
| University of Pennsylvania | 134 | 134 |
| Woman's Medical College | 32 | 32 |
| University of Pittsburgh | 65 | 60 |
| Medical College of South Carolina | 41 | 40 |
| University of Tennessee | 92 | 87 |
| McHarr Medical College | 40 | 39 |
| Vanderbilt University | 51 | 51 |
| Baylor University | 79 | 79 |
| University of Texas | 83 | 81 |
| University of Vermont | 35 | 31 |
| University of Virginia | 54 | 53 |
| Medical College of Virginia | 70 | 71 |
| University of Wisconsin | 55 | 54 |
| Marquette University | 61* | 61 |
| University of Alberta | 29 | 29 |
| University of Manitoba | 54* | 54 |
| Dalhousie University | 29* | 29 |
| Queen's University | 43 | 44 |
| University of Western Ontario | 34 | 30 |
| University of Toronto | 110 | 104 |
| McGill University | 108 | 106 |
| University of Montreal | 41* | 41 |
| Laval University | 32 | 13 |
| Totals | 5 611 | 5 491 |

* Completed medical course. Internship or other acceptable clinical work is a requirement for the M.D. degree.

† Two year internship requirement after graduation.

for those schools which require the internship or other acceptable clinical work as a requirement for graduation. There were 5,491 fifth year students or graduates serving internships during the period July 1, 1935, to July 1, 1936. The number of graduates or those who completed the medical course during the period

from July 1, 1934, to July 1, 1935, was 5,611. Of this figure 120 either were not successful in securing or did not desire internships. In the Canadian schools, of the 483 graduates or intern students, 449 were serving internships and thirty-four are unaccounted for. In the United States there were 5,128 graduates or students, of whom 5,042 were interning, leaving eighty-six not serving internships during this period.

Of the 5,491 interns, 1,213 in the United States and 124 in Canada were fulfilling the intern requirement for the M.D. degree, a total of 1,337, and 4,154 of the 4,274 M.D. graduates were also interning, of whom 359 were Canadian graduates and 325 interns, and 3,915 graduates of United States schools and 3,829 interns.

With the exception of one in Canada, every school in the list has more than 90 per cent of its graduates serving internships, and in twenty-three schools 100 per cent interned. Excluding those schools that require the internship for graduation, ninety-eight per cent of all graduates here listed have this added experience.

WOMEN IN MEDICINE IN THE UNITED STATES

As shown in table 10, the number of women students has been rather constant since 1920, although in 1936 there were more than in any one year. During the past

TABLE 10—*Women in Medicine in the United States*

| Year | Women Students | Percentage of All Students | Women Graduates | Percentage of All Graduates |
|------|----------------|----------------------------|-----------------|-----------------------------|
| 1905 | 1 073 | 4.1 | 219 | 4.0 |
| 1910 | 807 | 4.0 | 116 | 2.6 |
| 1915 | 592 | 4.0 | 92 | 2.0 |
| 1920 | 818 | 5.5 | 122 | 4.0 |
| 1925 | 910 | 5.0 | 204 | 5.1 |
| 1926 | 935 | 5.0 | 212 | 5.4 |
| 1927 | 964 | 4.9 | 189 | 4.7 |
| 1928 | 929 | 4.5 | 207 | 4.9 |
| 1929 | 925 | 4.4 | 214 | 4.8 |
| 1930 | 935 | 4.4 | 204 | 4.5 |
| 1931 | 990 | 4.5 | 217 | 4.6 |
| 1932 | 955 | 4.3 | 208 | 4.2 |
| 1933 | 1 056 | 4.7 | 214 | 4.4 |
| 1934 | 1 070 | 4.5 | 211 | 4.2 |
| 1935 | 1 077 | 4.7 | 207 | 4.1 |
| 1936 | 1 133 | 5.0 | 216 | 4.7 |

year there were 1,133 women studying medicine in the United States, fifty-eight more than last year. The percentage of women to all students for the academic year 1935-1936 was 5.0 as compared with 4.7 in 1935. There were 246 graduates, thirty-nine more than last year. Of all the women matriculants, 116 students were enrolled at the one medical college for women, while 1,017 were matriculated in sixty-seven coeducational schools. From the Woman's Medical College of Pennsylvania, thirty-three were graduated, while 213 secured their degrees from coeducational institutions.

DISTRIBUTION BY SEX

Students and graduates classified by sex are shown in table 11. There were seventy-five schools which had both men and women students in the United States and Canada, of which fifty-nine had women graduates. Altogether there were 24,219 men and 1,254 women students, and 5,388 men and 268 women graduates. There is one medical college for women, the Woman's Medical College of Pennsylvania, which had 116 students and thirty-three graduates, leaving 1,140 women students pursuing their medical education and 235 who completed the course in coeducational institutions. Of the 25,473 students enrolled in all medical schools, there were 21,431 men and 1,133 women studying in the United States, and 2,788 men and 121 women

in Canadian schools. An average of seventeen women students were enrolled in the seventy-five coeducational institutions in the United States and Canada. There was an average of four graduates from sixty schools.

TABLE 11—Distribution by Sex

| School | Students | | Graduates | |
|-----------------------------------|----------|-------|-----------|-------|
| | Men | Women | Men | Women |
| University of Alabama | 108 | 4 | | |
| University of Arkansas | 277 | 12 | 47 | 1 |
| University of California | 108 | 40 | 51 | 6 |
| College of | 365 | 29 | 70 | 15 |
| University of | 182 | 8 | 29 | 1 |
| Stanford University | 224 | 10 | 44 | 1 |
| University of Colorado | 100 | 15 | 47 | 3 |
| Yale University | 188 | 18 | 39 | 5 |
| Georgetown University | 474 | | 134 | |
| George Washington University | 235 | 23 | 63 | 4 |
| Howard University | 185 | 7 | 32 | 8 |
| Emory University | 223 | | 33 | |
| University of Georgia | 144 | 4 | 36 | 1 |
| | 457 | 20 | 93 | 5 |
| | 550 | 14 | 155 | 5 |
| | 311 | 10 | 143 | 6 |
| | 274 | 37 | 38 | 2 |
| University of Illinois | 601 | 36 | 141 | 3 |
| Indiana University | 417 | 15 | 107 | 1 |
| State University of Iowa | 377 | 16 | 91 | 3 |
| University of Kansas | 280 | 15 | 71 | 1 |
| University of Louisville | 335 | 7 | 87 | |
| Louisiana State University | 290 | 16 | 48 | 1 |
| Tulane University | 458 | 12 | 108 | 4 |
| Johns Hopkins University | 246 | 25 | 57 | 9 |
| University of Maryland | 465 | 0 | 97 | |
| Boston University | 220 | 28 | 57 | 6 |
| Harvard University | 629 | | 134 | |
| Tufts College | 455 | 19 | 112 | 3 |
| University of Michigan | 446 | 35 | 109 | 7 |
| Wayne University | 286 | 14 | 71 | |
| University of Minnesota | 492 | 21 | 121 | 5 |
| University of Mississippi | 17 | 2 | | |
| University of Missouri | 78 | 2 | | |
| St. Louis University | 604 | | 116 | |
| Washington University | 336 | 19 | 91 | 5 |
| Cleveland University | 252 | 5 | 77 | |
| University of Nebraska | 322 | 6 | 69 | 1 |
| Dartmouth Medical School | 43 | | | |
| Albany Medical College | 64 | 6 | 24 | 1 |
| Long Island College of Medicine | 364 | 19 | 99 | 5 |
| University of Buffalo | 253 | 15 | 57 | 5 |
| Cornell University | 255 | 31 | 60 | 4 |
| Columbia University | 333 | 39 | 74 | 11 |
| New York Medical College | 294 | 21 | 70 | 7 |
| New York University | 490 | 31 | 121 | 10 |
| University of Rochester | 168 | 10 | 39 | 3 |
| Syracuse University | 169 | 5 | 43 | 2 |
| University of North Carolina | 65 | 9 | | |
| Duke University | 215 | 4 | 38 | |
| Wake Forest College | 55 | 1 | | |
| University of North Dakota | 69 | | | |
| University of Cincinnati | 273 | 13 | 65 | 1 |
| Western Reserve University | 250 | 11 | 56 | 1 |
| Ohio State University | 363 | 18 | 69 | 3 |
| University of Oklahoma | 226 | 14 | 54 | 4 |
| University of Oregon | 217 | 17 | 49 | 6 |
| Hahnemann | 624 | | 98 | |
| Jefferson | 133 | | 133 | |
| Temple University | 438 | 27 | 117 | 7 |
| University of Pennsylvania | 500 | 15 | 137 | 3 |
| Woman's Medical College | | 116 | | 83 |
| University of Pittsburgh | 240 | 12 | 58 | 2 |
| Medical College of South Carolina | 156 | 4 | 32 | |
| University of South Dakota | 54 | | | |
| University of Tennessee | 414 | 15 | 101 | 1 |
| McHarr Medical College | 176 | 7 | 22 | |
| Vanderbilt University | 191 | 12 | 48 | 4 |
| Baylor University | 237 | 13 | 77 | 2 |
| University of Texas | 330 | 25 | 68 | 7 |
| University of Utah | 55 | 3 | | |
| University of Vermont | 165 | 6 | 40 | 1 |
| University of Virginia | 235 | 10 | 47 | 3 |
| Medical College of Virginia | 286 | 23 | 68 | 5 |
| West Virginia University | 64 | 2 | | |
| University of Wisconsin | 285 | 22 | 45 | 6 |
| Marquette University | 262 | 4 | 58 | 2 |
| University of Alberta | 185 | 9 | 21 | |
| University of Manitoba | 157 | 14 | 50 | 6 |
| Dalhousie University | 152 | 5 | 25 | 1 |
| Queen's University | 218 | | 41 | |
| University of Western Ontario | 20 | 12 | 3 | 2 |
| University of Toronto | 704 | 50 | 119 | 7 |
| McGill University | 432 | 17 | 45 | 5 |
| University of Montreal | 152 | 1 | 41 | 1 |
| Laval University | 255 | | 38 | |
| University of Saskatchewan | 47 | 4 | | |
| Total* | 24,219 | 1,254 | 5,275 | 268 |

PART-TIME GRADUATE AND SPECIAL STUDENTS

In fifty-four medical schools of the United States and Canada during 1935-1936 there were, in addition to the regularly enrolled students, 1,148 part-time special and graduate students pursuing medical subjects. The group consisted of 130 part-time, 267 special and 751

graduate students. The 130 part-time students were enrolled in twenty-one schools, the greatest number (thirty-one) were at Wayne University College of Medicine. The University of Minnesota Medical School had nineteen such students, while St. Louis University School of Medicine had fourteen. Of the special students, the greatest number (fifty-seven) were at Northwestern University Medical School, while Vanderbilt University School of Medicine enrolled thirty-seven and at the School of Medicine of the Division of the Biological Sciences of the University of Chicago there were twenty-three. The 267 special students represented thirty-six schools. Students pur-

TABLE 12—Part-Time Graduate and Special Students in Medical Schools 1935-1936

| | Part time Students | Special Students | Graduate Students |
|-----------------------------------|--------------------|------------------|-------------------|
| University of Arkansas | | 3 | |
| University of California | | | 23 |
| University of Southern California | | 18 | 12 |
| Stanford University | 1 | | |
| University of Colorado | | | 31 |
| Georgetown University | | 2 | |
| Howard University | | 1 | |
| University of Georgia | | 0 | |
| Division of Biological Sciences | | 23 | |
| Loyola University | | 2 | |
| Northwestern University | | 57 | 10 |
| Rush Medical College | | 4 | 6 |
| University of Illinois | | 10 | 61 |
| Indiana University | 3 | 1 | |
| State University of Iowa | 5 | | 8 |
| University of Kansas | 5 | 8 | 12 |
| Louisiana State University | 7 | 1 | |
| Johns Hopkins University | 3 | 11 | 3 |
| University of Maryland | | 1 | |
| Boston University | 8 | 3 | |
| Tufts College | | 4 | |
| University of Michigan | | 7 | 1 |
| Wayne University | 31 | | |
| University of Minnesota | 19 | | |
| St. Louis University | 14 | | |
| Washington University | | | 155 |
| Cleveland University | | 5 | |
| University of Nebraska | 2 | | 10 |
| Albany Medical College | | 1 | |
| University of Buffalo | | 5 | 45 |
| Cornell University | | 4 | 11 |
| Columbia University | | | 41 |
| New York Medical College | | | 77 |
| New York University | 7 | 11 | 52 |
| University of Rochester | | 1 | |
| University of North Carolina | | 1 | |
| Duke University | | 1 | |
| University of Cincinnati | | 8 | 34 |
| Western Reserve University | 2 | 1 | |
| University of Oklahoma | 1 | | |
| University of Oregon | | 7 | 10 |
| Woman's Medical College | | 1 | 4 |
| Medical College of South Carolina | 1 | | |
| University of Tennessee | | 6 | 5 |
| Vanderbilt University | 2 | 37 | 3 |
| University of Texas | | 2 | |
| University of Utah | 7 | | |
| University of Wisconsin | | 2 | |
| Marquette University | 3 | | 3 |
| University of Manitoba | | 3 | 2 |
| University of Western Ontario | | 6 | |
| University of Toronto | 7 | | 25 |
| McGill University | 1 | | 9 |
| Laval University | 1 | | |
| Total* | 130 | 267 | 751 |

sung subjects leading to higher degrees were studying in twenty-six schools. Altogether, there were 751 such, 185 of whom were at Washington University School of Medicine, seventy at Northwestern University Medical School and sixty-four at the University of Illinois College of Medicine. Both part-time, special and graduate students were studying at the University of Kansas, Johns Hopkins, New York University and Vanderbilt. Among Canadian schools nine part-time, nine special and thirty-six graduate students were enrolled. These data are included in table 12.

MED GRADUATES HOLDING DEGREES IN ARTS OR SCIENCE

From the figures contained in table 13 it can be noted that 4,195 of the 5,656 graduates of medical schools during 1935-1936 hold baccalaureate degrees in

addition to the medical degree. Figures are not available to show how many of these graduates obtained their degrees subsequent to beginning the medical course. Only five schools in the United States and Canada require a degree for admission, while one requires four

TABLE 13—*M.D. Graduates Holding Degrees in Arts or Science*

| | Number of Graduates | Number Holding Degrees |
|---|---------------------|------------------------|
| University of Arkansas School of Medicine | 48 | 29 |
| University of California Medical School | 57 | 55 |
| College of Medical | 83 | 40 |
| University of South | 30 | 29 |
| Stanford University | 45 | 45 |
| University of Colorado School of Medicine | 50 | 28 |
| Yale University School of Medicine | 44 | 43 |
| Georgetown University School of Medicine | 134 | 101 |
| George Washington University School of Medicine | 69 | 36 |
| Howard University College of Medicine | 33 | 27 |
| Emory University School of Medicine | 53 | 31 |
| University of Georgia School of Medicine | 37 | 15 |
| Loyola University School of Medicine | 98 | 72 |
| Northwestern University Medical School | 100 | 115 |
| University of Chicago Rush Medical College | 140 | 149 |
| University of Chicago Div. of the Biological Sciences | 40 | 40 |
| University of Illinois College of Medicine | 144 | 106 |
| Indiana University School of Medicine | 108 | 91 |
| State University of Iowa College of Medicine | 94 | 34 |
| University of Kansas School of Medicine | 72 | 61 |
| University of Louisville School of Medicine | 87 | 58 |
| Louisiana State University Medical Center | 49 | 25 |
| Tulane University of Louisiana School of Medicine | 112 | 58 |
| Johns Hopkins University School of Medicine | 66 | 66 |
| | 97 | 50 |
| | 63 | 39 |
| | 134 | 129 |
| | 115 | 98 |
| | 116 | 90 |
| | 71 | 71 |
| | 120 | 100* |
| | 116 | 84 |
| | 90 | 87 |
| | 77 | 60 |
| | 70 | 24 |
| | 23 | 25 |
| | 104 | 99 |
| | 62 | 34 |
| | 85 | 34 |
| Cornell University Medical College | 64 | 63 |
| New York Medical College | 77 | 61 |
| New York University | 131 | 125 |
| | 42 | 38 |
| | 45 | 31 |
| | 38 | 17 |
| | 60 | 51 |
| | 57 | 57 |
| | 92 | 71 |
| | 58 | 56 |
| | 55 | 55 |
| | 58 | 52 |
| University of Philadelphia School of Medicine | 133 | 133 |
| | 124 | 63 |
| | 140 | 129 |
| | 38 | 25 |
| | 60 | 45 |
| | 82 | 19 |
| | 102 | 41 |
| | 82 | 28 |
| | 62 | 62 |
| | 70 | 30 |
| | 75 | 48 |
| | 41 | 27 |
| | 50 | 25 |
| | 73 | 63 |
| | 61 | 51 |
| | 60 | 48 |
| University of Alberta Faculty of Medicine | 21 | 7 |
| University of Manitoba Faculty of Medicine | 56 | 13 |
| Dalhousie University Faculty of Medicine | 26 | 14 |
| Queen's University Faculty of Medicine | 41 | 2 |
| University of Western Ontario Medical School | 38 | 7 |
| University of Toronto Faculty of Medicine | 120 | 25 |
| McGill University Faculty of Medicine | 93 | 51 |
| University of Montreal Faculty of Medicine | 42 | 37 |
| Laval University Faculty of Medicine | 38 | 33 |
| Totals | 5,636 | 4,195 |

* Estimated figure

University, University of Oregon and Vanderbilt University is three years of college work, their entire graduating class for the past session hold baccalaureate degrees. The same is true of the Universities of Oklahoma and Wisconsin, which have only a two year premedical requirement. Since the Division of the Biological Sciences and the Universities of Oklahoma and Wisconsin offer the B.S. degree in Medicine during the medical course, this may account for the fact that all their graduates hold degrees. Among the eight schools that require a degree, three years of college work and a degree after the first medical year, or four years premedical training, only five report that their complete graduating class hold degrees. It may be that the prerequisite was raised in recent years.

MEDICAL SCHOOLS STUDENTS AND GRADUATES IN THE UNITED STATES 1905-1936

The number of medical schools, students and graduates in the United States for each five year period from 1905 to 1920, and for each year since, is shown in table 14. The total number of undergraduate medical students for the college session 1935-1936 was 22,564, a decrease of 324 from the preceding session. In 1905,

TABLE 14—*Schools, Students and Graduates in the United States—1905-1936*

| Year | No. Schools | Students* | Graduates |
|------|-------------|-----------|-----------|
| 1905 | 160 | 26,147 | 5,606 |
| 1910 | 131 | 21,526 | 4,440 |
| 1915 | 90 | 14,891 | 3,536 |
| 1920 | 85 | 13,798 | 3,047 |
| 1921 | 83 | 14,466 | 3,186 |
| 1922 | 81 | 16,635 | 2,520 |
| 1923 | 80 | 16,900 | 3,120 |
| 1924 | 79 | 17,728 | 3,562 |
| 1925 | 80 | 18,200 | 3,974 |
| 1926 | 79 | 18,840 | 3,962 |
| 1927 | 80 | 19,662 | 4,033 |
| 1928 | 80 | 20,545 | 4,262 |
| 1929 | 78 | 20,878 | 4,440 |
| 1930 | 76 | 21,607 | 4,565 |
| 1931 | 76 | 21,982 | 4,735 |
| 1932 | 76 | 22,135 | 4,936 |
| 1933 | 77 | 22,466 | 4,693 |
| 1934 | 77 | 22,729 | 5,035 |
| 1935 | 77 | 22,858 | 5,101 |
| 1936 | 77 | 22,564 | 5,183 |

* Includes figures for schools offering preclinical courses

26,147 were in attendance at the 160 medical schools then existing. This tabulation includes data for only those taking medical courses leading to the M.D. degree. They do not include part time and special students even though their work may later be accepted for the M.D. degree, since at the time they are reported as part time and special students rather than as candidates for a medical degree. Omitted from these statistics also are university graduate students majoring in the medical school but not candidates for the M.D. degree. In 1905 there were 26,147 students. The next fifteen years shows a steady decrease in enrollment, while from 1921 to 1935 there was a continuous increase. The Council a year ago issued a general warning against the admission of larger classes than can properly be accommodated or than can reasonably be expected to satisfy approved scholastic standards. Several schools immediately decreased their freshman enrollment and others have indicated adherence to the Council's principles as soon as practicable.

As shown in table 14, the total number of graduates was 5,183, an increase of eighty-two over the preceding session. With the exception of the slight decrease in the number of graduates in 1933, as compared with previous years, there has been a steady increase since 1926. As will be noted, there were marked increases

years and three admit students with three years of college work if the baccalaureate degree is conferred in absentia at the end of the first year in medicine. Thirty-one schools offer a B.S. in medicine degree at sometime during the medical course. While the entrance requirement of Stanford, the School of Medicine of the Division of the Biological Sciences of the University of Chicago, Rush Medical College, Wayne

in 1923, 1924 and 1925. In the seventy-seven recognized medical schools in the United States during 1935-1936 there were 22,564 students, including those having an incomplete medical course, and 5,183 graduates.

In this connection it is interesting to note the number enrolled in the various classes in the United States for each session from 1930-1931 to 1935-1936 inclusive, as shown in table 15. The total attendance for the first year for the session 1935-1936 was 6,005, or 351 fewer than the number enrolled for the session 1934-1935, which in turn was 101 fewer than the number enrolled in 1933-1934. The total attendance for the remainder of the classes was, respectively, 5,458, 5,230, 5,020 and 1,213. The two medical schools of the University of Chicago are not operated under the promotion by class system but on an individual plan. It is not possible, therefore, to group them into the figures given. This is likewise true of the enrolment at Duke University. They are, however, included in the totals. There were 219 students enrolled at Duke, 311 at the School of Medicine of the Division of the Biological Sciences of the University of Chicago and 321 at Rush Medical College, a total of 851. There were 344 fewer students enrolled than in 1934-1935 and 770 more than were enrolled in 1930-1931. Only one new medical school has been opened since that session, namely, the Louisiana State University Medical Center, which had an enrolment of 315 for the session of 1935-1936. Excluding the students of this university, there were 455 more students enrolled during the college session just ended than in the seventy-six medical schools that existed in 1931. For the session 1935-1936 the freshman and sophomore enrolments decreased 351 and 166 respectively, while the junior and senior year enrolment was increased by 88 and 115 students respectively, exclusive of the figures for the three schools previously mentioned in this paragraph. The intern year decreased by twenty.

The Association of American Medical Colleges³ reports that there were 34,427 applications for admission to the 1935 freshman class, representing 12,740 applicants, and of these 6,900 were accepted and 5,840 rejected. However, as already indicated 6,005 actually enrolled for the freshman year, exclusive of the University of Chicago and Duke University enrolment. It

TABLE 15—Students in the United States Shown by Class—1930-1936

| | 1st Year | 2d Year | 3d Year | 4th Year | 5th Year† | Total |
|-----------|----------|---------|---------|----------|-----------|--------|
| 1930-1931 | 6,436 | 5,573 | 5,680 | 4,908 | 1,025 | 23,007 |
| 1931-1932 | 6,260 | 5,462 | 4,932 | 4,885 | 1,067 | 23,302 |
| 1932-1933 | 6,426 | 5,470 | 5,017 | 4,943* | 1,106 | 23,572 |
| 1933-1934 | 6,471 | 5,571† | 4,981 | 4,937 | 1,183 | 23,082 |
| 1934-1935 | 6,371 | 5,671 | 5,142 | 4,801 | 1,223 | 24,121 |
| 1935-1936 | 6,005 | 5,458 | 5,230 | 5,020 | 1,213 | 23,777 |

Enrolment for the two medical schools of the University of Chicago not included.

† Enrolment for the two medical schools of the University of Chicago and Duke University not included.

Intern year.

may be noted that 895 were accepted by medical schools who did not enroll in a medical school in 1935-1936 because of multiple application. The College Association has ascertained from its survey that about 1 to 2 per cent of those accepted drop out within the first week or two.

NEGRO STUDENTS AND GRADUATES

Negro medical students for the session 1935-1936 are recorded by classes in table 16. Totals for the

college sessions 1934-1935 are shown for comparison. There were 369 such students and seventy-three graduates, a decrease of thirty-three students and thirty-one graduates respectively. The only medical school strictly for Negro youth, Meharry Medical College, organized in 1876, matriculated 183 students and had thirty-two graduates. At Howard University College of Medicine, organized in 1869, they compose a majority of those

TABLE 16—Negro Students and Graduates

| Name of School | Enrolment by Classes During 1935-1936 | | | | | Graduates |
|--|---------------------------------------|---------|---------|----------|--------|-----------|
| | 1st Year | 2d Year | 3d Year | 4th Year | Totals | |
| College of Medical Evangelists | | | | | | |
| Howard University College of Medicine | 37 | 28 | 33 | 3 | 133 | 31 |
| Loyola University School of Medicine | | 1 | | | 1 | |
| University of Chicago Division of Biological Sciences | 1 | | 1 | 2 | 4 | |
| University of Illinois College of Medicine | 1 | 1 | 1 | 1 | 4 | |
| Indiana University School of Medicine | | 1 | | 2 | 3 | 2 |
| University of Kansas School of Medicine | 1 | 1 | | | 2 | |
| Boston University School of Medicine | 1 | 1 | | | 2 | |
| Tufts College Medical School | | | 1 | | 1 | |
| Wayne University College of Medicine | 4 | 1 | | | 5 | |
| University of Michigan Medical School | 1 | | 1 | | 2 | |
| University of Nebraska College of Medicine | 1 | | | | 1 | |
| Columbia University College of Physicians and Surgeons | | | | 1 | 1 | 1 |
| New York Medical College | | | 1 | 1 | 2 | 1 |
| University of Cincinnati College of Medicine | | | | | | |
| Western Reserve University School of Medicine | 1 | | | | 1 | |
| Ohio State University College of Medicine | 1 | 2 | 2 | 1 | 6 | 1 |
| Temple University School of Medicine | | | 1 | | 1 | |
| University of Pennsylvania School of Medicine | | 1 | 1 | | 2 | |
| Woman's Medical College of Pennsylvania | | 1 | | | 1 | |
| Meharry Medical College | 57 | 56 | 33 | 3 | 183 | 32 |
| University of Vermont College of Medicine | | 1 | | | 1 | |
| University of Toronto Faculty of Medicine | 1 | | | | 1 | |
| McGill University Faculty of Medicine | | 1 | 1 | 2 | 4 | 2 |
| University of Montreal Faculty of Medicine | | | 1 | | 1 | |
| Totals during 1934-1935 | 107 | 93 | 84 | 78 | 369 | 73 |
| | 125 | 90 | 80 | 107 | 402 | 101 |

* Includes fifth year enrolment of two.

in attendance and for the session 1935-1936, 133 students of a class of 142 and thirty-three of the thirty-five graduates were Negroes. These two schools graduated the majority of the Negro students. All other schools graduated a total of eight. In twenty schools in the United States, forty-five Negro students were enrolled and six were graduated. There were eight Negro students in three Canadian schools and in one there were two graduates. The enrolment by classes in all schools was first year 107, second year 98, third year 84 and fourth year 78, a total of 369. In 1934-1935 corresponding figures were 125, 90, 80 and 107, a total of 402. In 1935 there were 104 graduates and this session only 73.

FEES

In table 17 the eighty-seven medical schools of the United States and Canada have been grouped according to the tuition fees charged. To arrive at the figures listed, an average was computed of the fees for each school. Included in these fees are the various minor charges, such as for matriculation, breakage, diploma and graduation. Four schools have fees of less than \$100. These were Louisiana State University, University of North Dakota, University of Oklahoma and the University of Texas. The first three schools named, however, charge an additional fee of \$300, \$85 and \$200 for nonresidents. The University of Texas does not accept nonresidents. The eleven schools having

fees over \$500 are Yale, George Washington, Johns Hopkins, Columbia, Cornell, Long Island College, New York Medical College, New York University, Syracuse, Buffalo and the University of Pennsylvania. Thirty-one schools in the United States and three in Canada made an additional yearly charge for nonresidents ranging from \$50 by the Universities of Mississippi, Missouri, Nebraska, Cincinnati (nonresidents of Cincinnati) and Virginia to \$300 exacted by the University of California and Louisiana State University.

The lowest nonresident fee was charged by the University of Kansas (\$43 for the first year, \$62 for the second year and \$88 for the third and fourth years). No noticeable increase or decrease has been noted in the fees charged by medical schools, there being four in the group having less than a \$100 a year fee, one more than during 1934-1935, ten had fees ranging from \$100 to \$200, one less than the previous college session, the number in the group between \$200 and \$300 remained the same (twenty-six), fifteen charged between \$300 to \$400 a year, while in 1934-1935 there were sixteen in this group, from \$400 to \$500 there were twenty-one, also in last session, and in the last group, \$500 or over, there were eleven schools, one more than in 1934-1935. The fees are not listed in these statistics by individual schools other than in the descriptions beginning on page 686. Provision is made

TABLE 17—Fees 1935-1936—United States and Canada*

| | Schools |
|----------------|---------|
| Under \$100 | 4 |
| \$100 to \$200 | 10 |
| 200 to 300 | 26 |
| 300 to 400 | 15 |
| 400 to 500 | 21 |
| 500 or over | 11 |
| Total | 67 |

*Based on fees charged resident students

also by most schools for scholarships and loan funds for deserving students. The average fee charged by all schools was \$329.

INSTRUCTION IN MEDICAL SCHOOLS REGARDING ORGANIZED MEDICINE

Resolutions were presented for official consideration to the House of Delegates at the recent session in Kansas City by the medical societies of Arkansas and Ohio through the Board of Trustees of the Association reading in substance as follows:

WHEREAS It has been noted with disappointment that some of the graduates of medical schools and colleges in recent years apparently are unfamiliar with the objectives and activities of organized medicine and lack a clear understanding of the benefits to be derived through membership in local, state and national medical societies be it

Resolved By the House of Delegates of the Ohio State Medical Association Oct. 24 1935 that the administrative officials of all accredited American medical colleges be respectfully requested to provide instruction for senior students on the activities services and benefits of organized medicine be it further

Resolved That a resolution be transmitted to the dean of each of the accredited medical colleges of America the Council on Medical Education and Hospitals and the Board of Trustees of the American Medical Association and the secretary of each constituent state medical society

The Reference Committee on Reports of Board of Trustees and Secretary, to which this resolution was referred, endorsed the request of the Board of Trustees in presenting the resolutions for consideration. They are reproduced in this issue, as it contains a summary of events of the year. It is to be hoped that graduates can in some way be made familiar with the objectives and activities of organized medicine.

CITIZENS OF THE UNITED STATES ENROLLED IN MEDICAL FACULTIES ABROAD

A study of the number of citizens of the United States enrolled in medical faculties abroad will be found in table 18. This tabulation covers the academic year

TABLE 18—Citizens of the United States Enrolled in Medical Faculties Abroad

| Academic Year | Enrolled | Completed Course |
|---|----------|------------------|
| | | |
| Austria | | |
| Medizinische Fakultät der Universität Wien | 10 | 0 |
| Belgium | 7 | 3 |
| | 21* | 8* |
| Brazil | | |
| Faculdade de Medicina do Parana Curitiba | 4 | 1 |
| | 4 | 2 |
| China | | |
| Pennsylvania Medical School Shanghai | 1 | 0 |
| | 12 | 1 |
| Czechoslovakia | | |
| Univerzita | 4 | 1 |
| Deutsche | 3 | 1 |
| England | | |
| University of Birmingham | 54 | 30 |
| University of Bristol | 3 | 2 |
| University of Durham, Newcastle-upon Tyne | 5 | 0 |
| University of Liverpool | 3 | 2 |
| University of London | 1 | 0 |
| Charing Cross Hospital Medical School | 7 | 2 |
| King's College Hospital Medical School | 7 | 6 |
| Middlesex Hospital Medical School | 1 | 1 |
| London (Royal Free Hospital) School of Medicine for Women | 1 | 0 |
| St. Bartholomew's Hospital Medical College | 11 | 2 |
| St. George's Hospital Medical School | 5 | 4 |
| St. Mary's Hospital Medical School | 0 | 8 |
| Westminster Hospital Medical School | 0 | 2 |
| University of Oxford | 2 | 0 |
| University of Sheffield | 8 | 1 |
| France | | |
| | 4 | 1 |
| | 2 | 0 |
| | 63* | 2 |
| Germany | | |
| | 62* | 13* |
| | 27 | 2 |
| | 1 | 0 |
| | 1 | 0 |
| Switzerland | | |
| Universität Bern | 10 | 1 |
| Universität Basel | 9 | 2 |
| Universität Zürich | 1 | 0 |
| Universität Köln | 3 | 0 |
| Universität Bonn | 7 | 0 |
| Albertus Universität Königsberg | 4 | 0 |
| Universität Leipzig | 3 | 1* |
| | 3 | 0 |
| | 32 | 2 |
| | 4 | 1 |
| Hungary | | |
| Magyar | | |
| Magyar | 4 | 0 |
| Szeged | 5 | 0 |
| Ireland | | |
| University of Dublin School of Physic | 7 | 4 |
| Italy | | |
| Regia Università di Padova | 4 | 0 |
| Regia Università di Bologna | 6 | 0 |
| Regia Università di Firenze | 2 | 0 |
| Regia Università di Napoli | 2 | 0 |
| Regia Università di Palermo | 63** | 4** |
| Regia Università di Perugia | 3 | 0 |
| Regia Università di Roma | 4 | 2 |
| | 128 | 33 |
| Lithuania | | |
| Vytauto Didžiojo Universiteto Kaunas | 2 | 0 |
| Poland | | |
| Universtyet Poznański | 5 | 0 |
| Universtyet Jozefa Pilsudskiego Warszawa | 2 | 0 |
| Scotland | | |
| Universtyet Glasgow | 2 | 1 |
| | 207 | 20 |
| | 24 | 7 |
| | 43 | 7 |
| | 55** | 0** |
| Switzerland | | |
| University of Glasgow | 13 | 5 |
| University of St. Andrews (St. Andrews) | 10 | 9 |
| Switzerland | | |
| Universität Basel | 293 | 69 |
| Universität Bern | 87 | 8 |
| Universität de Geneve | 93 | 30 |
| Universität Zürich | 43* | 11* |
| | 6 | 20 |
| Syria | | |
| American University of Beirut | 15 | 3 |
| Yugoslavia | | |
| Beogradskog Univerziteta | 8 | 0 |
| | 6 | 0 |
| Totals by countries | 1617 | 242 |

* 1934-1935 figures.

** 1935-1936 figures.

1935-1936 In a few cases because figures were not available it was necessary to reproduce figures from previous sessions for several schools known to have large numbers of citizens of the United States enrolled. Including these figures there were 1,517 students and 242 graduates or those who completed their medical training in sixty-six schools. This study has been carried on since 1931, when it became evident that great numbers of Americans were going to Europe to study. The files of the Association of American Medical Colleges indicate that the application record of many of these students show that they have made application to medical schools in the United States without success. A study has also been conducted of the license record of foreign physicians.⁴ The following tabulation (representing both American and foreign born physicians) of the number examined in six years and the percentage failing is of interest:

| | Number Examined | Passed | Percentage Failed |
|------|--------------------|--------|----------------------|
| 1930 | 167 | 92 | 44.9 |
| 1931 | 158 | 91 | 42.4 |
| 1932 | 182 | 96 | 47.3 |
| 1933 | 200 | 129 | 35.5 |
| 1934 | 285 | 170 | 40.2 |
| 1935 | 437 | 302 | 30.9 |

In addition to the figures given, a number are periodically licensed in New York without examination—by endorsement of their foreign credentials, which are equivalent to licensure in this country. In 1935, sixty-nine were so registered in New York.

TABLE 19—Citizens of the United States Reported Enrolled in Medical Faculties Abroad—1930-1936

| | Students 1930-1931 | | Students 1931-1932 | | Students 1932-1933 | | Students 1933-1934 | | Students 1934-1935 | | Students 1935-1936 | |
|---------------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|
| | Enrolled | Completed Course | Enrolled | Completed Course | Enrolled | Completed Course | Enrolled | Completed Course | Enrolled | Completed Course | Enrolled | Completed Course |
| Austria | 114 | 3 | 175 | 6 | 271 | 3 | 272 | 4 | 253 | 11 | 248 | 11 |
| Belgium | 3 | 0 | 4 | 1 | 10 | 1 | 11 | 0 | 19 | 3 | 8 | 3 |
| Brazil | | | | | | | 2 | 1 | 1 | 0 | 1 | 0 |
| Chile | | | | | 12 | 0 | 15 | 0 | 18 | 1 | 12 | 1 |
| Colombia | | | | | | | 1 | 0 | | | | |
| Czechoslovakia | 2 | 0 | 4 | 0 | 19 | 0 | 2 | 0 | 10 | 0 | 7 | 2 |
| Dominican Republic | | | | | | | | | 1 | 0 | | |
| England | 52 | 2 | 61 | 4 | 57 | 1 | 69 | 4 | 78 | 21 | 64 | 30 |
| Finland | 1 | 0 | | | | | | | | | | |
| France | 25 | 2 | 62 | 6 | 78 | 5 | 86 | 2 | 89 | 3 | 69 | 3 |
| Germany | 2 | 1 | 189 | 5 | 439 | 42 | 331 | 8 | 240 | 25 | 107 | 23 |
| Greece | | | | | 4 | 1 | 6 | 0 | | | | |
| Hungary | 9 | 1 | 15 | 2 | 13 | 1 | 25 | 1 | 21 | 0 | 9 | 0 |
| Ireland | 14 | 1 | 21 | 0 | 20 | 0 | 4 | 1 | 6 | 1 | 7 | 4 |
| Italy | 78 | 11 | 165 | 4 | 282 | 14 | 252 | 21 | 288 | 33 | 230 | 44 |
| Japan | | | 1 | 0 | | | | | | | | |
| Lithuania | | | 4 | 0 | 4 | 0 | 2 | 0 | 2 | 0 | 2 | 0 |
| Mexico | 1 | 0 | 1 | 1 | | | | | | | | |
| Netherlands India | | | | | 1 | 0 | 1 | 0 | 1 | 0 | | |
| Netherlands | | | | | | | 1 | 0 | | | | |
| Philippine Islands | | | | | 2 | 0 | 2 | 0 | 7 | 0 | | |
| Poland | 2 | 0 | 3 | 0 | 0 | 0 | 14 | 4 | 12 | 1 | 5 | |
| Portugal | | | | | | | 1 | 0 | 1 | 0 | | |
| Scotland | 256 | 19 | 286 | 25 | 416 | 9 | 474 | 45 | 476 | 71 | 354 | 49 |
| South Africa | | | 1 | 0 | | | | | | | | |
| Union of Soviet Republics | | | | | | | | | 63 | 24 | | |
| Switzerland | 6 | 4 | 214 | 1 | 405 | 10 | 211 | 8 | 252 | 52 | 203 | 69 |
| Syria | 16 | 2 | | 0 | 7 | 0 | 11 | 3 | 17 | 2 | 15 | 3 |
| Yugoslavia | | | 2 | 1 | 5 | 1 | 7 | 0 | 13 | 0 | 6 | 0 |
| Totals | 710 | 46 | 1,206 | 57 | 2,064 | 85 | 1,940 | 104 | 1,971 | 245 | 1,517 | 242 |

The increase in the number examined in 1935 represents mostly the Americans who began the study of medicine in 1930. In 1933 the Federation of State Medical Boards adopted a resolution to the effect that no student matriculating in a European medical school subsequent to the academic year of 1932-1933 will be

admitted to any state medical licensing examination who does not present satisfactory evidence of premedical education equivalent to the requirements of the Association of American Medical Colleges and the Council on Medical Education and Hospitals, and graduation from a European medical school after four academic years of attendance, and further submits evidence of having satisfactorily passed the examination to obtain a license to practice medicine in the country in which the medical school from which he is graduated is located. This policy of the federation has been made effective by individual action on the part of some of the state licensing bodies and the National Board of Medical Examiners.

Two years ago the governments of several European countries sent representatives to this country to discuss appropriate standards for students from the United States. Through conferences with the officers of the Council and of the Association of American Medical Colleges a much better understanding of the problem was gained.

The enrolment of students in foreign faculties as reported for each session since 1930-1931 is shown in table 19. The largest numbers were enrolled in Austria, Germany, Italy, Scotland and Switzerland. Those enrolled in 1930-1931 will for the greater part finish or have finished their courses this year and are already presenting a problem to hospitals where they are applying for internships and to state boards for licensure. To assist hospitals, as well as to safeguard them, the Council in February 1936 passed the following resolution:

Resolved That when suitable graduates of class A schools of the United States and Canada are not available hospitals approved for intern training may accept graduates of European schools who have passed parts I and II of the examinations of the National Board of Medical Examiners.

Furthermore, the House of Delegates of the American Medical Association adopted the following resolutions at its recent meeting in Kansas City:

WHEREAS Through the initiation, support and watchfulness of organized medicine, standards of medical education and medical practice have rapidly and continuously advanced and

WHEREAS There is a serious danger of this most satisfactory state of progress being undermined and weakened by the registration to practice of graduates of medical schools of foreign countries and

WHEREAS There are at the present time more than 1,500 American students attending medical schools in foreign countries many of them not having satisfactory credentials for admission to American medical schools and

WHEREAS There is in the files of the Council on Medical Education and Hospitals of the American Medical Association, and the Federation of State Medical Boards evidence that many of the foreign medical schools do not consistently maintain and enforce the same high standards as are maintained in the medical schools of the United States therefore be it

Resolved That each applicant for medical license in the United States in order to adjust this inequality and to show a knowledge of acceptable medical practice should be required before being admitted to a written examination before a properly constituted examining board to hold a license to practice in the country of his graduation and a certificate that he has completed a year's work as an intern in a hospital approved for internship training or should complete the fourth year in an American class A medical college and be it further

Resolved That the House of Delegates of the American Medical Association approve the foregoing and that a copy be sent to the properly constituted officers of each examining board of the United States and to the Federation of State Medical Boards with the request that they consider seriously urgent need for the adoption of such rules and/or legislation necessary to put the purposes of these resolutions into effect.

It is to be hoped that licensing boards will more uniformly adopt measures to ensure that foreign graduates will be admitted to the licensing examination on the basis of a professional training which is not inferior to that required in the United States.

TABLE 20—Graduate Medical Instruction by Universities in the United States and Canada, 1935-1936*

| Medical Schools | Type of Instruction Offered | | | Graduate School Students Under Direction of Medical School Faculty |
|-------------------------------------|--|--|-----------------------|--|
| | Organized Courses | Residencies Fellowships Etc. | Extension Teaching | |
| University of Alabama | 0 | + | 0 | + |
| University of Arkansas | 0 | 0 | 0 | 0 |
| University of — | 0 | + | + | + |
| College of Med | 0 | Residencies | 0 | 0 |
| University of | + | + | + | + |
| Stanford University | 0 | + | 0 | + |
| University of Colorado | + | + | 0 | + |
| Yale University | + | + | 0 | + |
| Georgetown University | 0 | + | 0 | + |
| George Washington University | 0 | 0 | 0 | + |
| Howard University | 0 | + | + | + |
| Emory University | + | + | + | + |
| University of Georgia | 0 | + | 0 | + |
| Loyola University | + | + | 0 | + |
| Northwestern University | 0 | + | 0 | + |
| Rush Medical College | Otolaryngology Ophthalmology and Radiology | + | 0 | 0 |
| Division of the Biological Sciences | 0 | | 0 | + |
| University of Illinois | + | + | + | + |
| Indiana University | + | + | + | + |
| State University of Iowa | Orthopedic Surgery | Residencies | + | + |
| University of Kansas | + | + | + | + |
| University of Louisville | 0 | + | 0 | + |
| Louisiana State University | 0 | 0 | 0 | + |
| Tulane University of Louisiana | + | + | + | + |
| Johns Hopkins University | 0 | + | 0 | + |
| University of Maryland | 0 | + | + | + |
| Boston University | 0 | | | + |
| Harvard University | + | + | 0 | + |
| Tufts College | 0 | + | | 0 |
| University of Michigan | Medicine | Lectures Clinics and Demonstrations | + | + |
| Wayne University | 0 | 0 | 0 | + |
| University of Minnesota | Graduate School of Medicine | + | + | 0 |
| University of Mississippi | 0 | | 0 | 0 |
| University of Missouri | + | + | 0 | + |
| St. Louis University | + | + | 0 | + |
| Washington University | 0 | + | 0 | + |
| Creighton University | 0 | Graduate Assistantship | 0 | + |
| University of Nebraska | 0 | 0 | 0 | + |
| Dartmouth Medical School | 0 | + | + | 0 |
| Albany Medical College | 0 | + | 0 | 0 |
| Long Island College | + | + | 0 | 0 |
| University of Buffalo | + | + | + | + |
| Cornell University | 0 | + | 0 | + |
| Columbia University | + | + | + | + |
| New York Medical College | + | 0 | 0 | + |
| New York University | + | + | 0 | + |
| University of Rochester | Ophthalmology | + | + | + |
| Syracuse University | 0 | + | 0 | + |
| University of North Carolina | 0 | 0 | 0 | + |
| Duke | 0 | + | 0 | + |
| Wake | 0 | | | |
| Univer | 0 | + | 0 | + |
| University of Cincinnati | 0 | + | 0 | + |
| Western Res--- | 0 | + | 0 | + |
| Ohio State | 0 | + | 0 | + |
| University c | + | 0 | + | + |
| University o Oregon | 0 | + | 0 | + |
| Hahnemann Medical College | 0 | + | 0 | + |
| Jefferson Medical College | 0 | 0 | 0 | 0 |
| Temple University | 0 | + | 0 | 0 |
| University of Pennsylvania | Graduate School of Medicine | + | + | + |
| Woman's Medical College | 0 | + | 0 | 0 |
| University of Pittsburgh | 0 | 0 | 0 | 0 |
| Medical College of South Carolina | 0 | Residencies | 0 | 0 |
| University of South Dakota | 0 | | 0 | 0 |
| University of Tennessee | 0 | + | 0 | + |
| Meharry Medical College | 0 | 0 | 0 | + |
| Vanderbilt University | + | 0 | 0 | 0 |
| Baylor University | 0 | + | 0 | + |
| University of Texas | 0 | 0 | 0 | + |
| University of Utah | 0 | Residencies | 0 | 0 |
| University of Vermont | 0 | | 0 | 0 |
| University of Virginia | 0 | + | + | + |
| Medical College | + | + | 0 | + |
| West Virginia | 0 | 0 | 0 | + |
| University of V " " | 0 | + | + | + |
| Marquette University | 0 | 0 | 0 | + |
| University of Alberta | Basic Medical Sciences | 0 | 0 | + |
| University of Manitoba | 0 | 0 | 0 | |
| Dalhousie University | 0 | 0 | 0 | 0 |
| Queen's University | + | 0 | + | |
| University of Western Ontario | 0 | + | + | 0 |
| University of Toronto | + | + | + | + |
| McGill University | 0 | + | + | + |
| University of Montreal | 0 | + | 0 | + |
| Laval University | 0 | + | 0 | 0 |
| University of Saskatchewan | 0 | 0 | 0 | |

* Institutions offering graduate medical courses other than universities are not included in this tabulation
+ yes 0 no

plan for the establishment of standards, ratings and inspections of training schools in physical therapy be effected providing that the expense of such inspection be borne by the school requesting the same

The Board of Trustees designated the Council on Medical Education and Hospitals as the proper body to proceed in making such a survey. Inspections of thirty-five schools for physical therapy technicians were made in connection with the regular field work of the Council's staff. Complete information was secured regarding the organization, faculty, prerequisites, curriculum, physical plant, records and affiliations for each school.

In an analysis of the inspection reports the following items were of special interest:

1 *Directors of Schools*—In twenty-four schools the directors were doctors of medicine, and in the remainder academic teachers, registered nurses or physical education instructors.

2 *Prerequisite for Admission*—Thirteen schools placed their requirement at high school graduation. However, seven of these were regular college courses. In eight schools there was no minimum educational requirement, these represented mainly schools of the commercial type. Candidates having two years of physical education are admitted to four courses of training, and three schools limit their students to registered nurses.

3 *Duration*—The duration of the training varies greatly, from a few weeks in some schools to eighteen months in others. In seven instances the courses conducted by a university or college require four years. Seven schools conduct twelve-month courses of training, ten schools have nine month courses, ten schools have less than nine-month courses, and one school has courses of nine, twelve and eighteen months.

4 *Affiliations*—Affiliations for practice training exist in connection with twenty schools. General hospitals are used mainly, with special hospitals, clinics and institutions of various types in use in many instances. Fifteen of the schools have no affiliations to provide clinical material for practice training, in these schools the students either practice on one another or have no practical training at all.

5 *Number of Students*—The enrolment varies from one to twelve in thirty-two schools, the average being approximately six students. Three commercial schools reported attendances of twenty-five, fifty and one hundred students.

6 *Tuition*—Fees vary extensively. The average fee lies between \$100 and \$200 for nine and twelve month courses. Six schools require tuition fees of \$300 and one of \$400.

7 *Certification*—On satisfactory completion of the course of training, each school endorses the graduate by means of a letter of recommendation, certificate, diploma or degree, as the case may be.

The cooperation of the Council on Physical Therapy, the American Congress of Physical Therapy and the American Physiotherapy Association was secured in determining minimum education requirements for physical therapy technicians. The following "Essentials of an Acceptable School for Physical Therapy Technicians" were adopted by the Council on Medical Education and Hospitals and passed by the House of Delegates of the American Medical Association at the Kansas City meeting, May 9, 1936.

ESSENTIALS OF AN ACCEPTABLE SCHOOL FOR PHYSICAL THERAPY TECHNICIANS

I ORGANIZATION

1 A school for physical therapy technicians should be incorporated as or under a nonprofit institution. Its board of trustees should be composed of public spirited men or women having no financial interest in the operations of the school. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, that fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

2 Affiliation with a college, university or medical school is highly desirable but is not an absolute requirement.

II FACULTY

3 The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough education and training and successful teaching experience. Nominations for faculty positions should be made in accordance with academic custom. The staff should include not less than one qualified salaried instructor and in each institution where practical training is carried on not less than one qualified physical therapist. The question of full time and part time appointments is not as important as the qualifications of the instructors, who should be specialists or exceptionally well trained and well qualified in the lines they are teaching.

III PLANT

4 The school should own, or enjoy the use of, buildings sufficient in size to provide adequate lecture rooms, class laboratories and administration offices. Adequate equipment should include anatomic charts, manikins, models, stereopticons and other aids to effective teaching. It is suggested that dissecting materials should be provided to enable each student to dissect or have the benefit of demonstration of dissection of at least the lateral half of the human cadaver. Skeletons and disarticulated bones should be supplied. There should be a library receiving regularly all the scientific periodicals pertaining to physical therapy, current numbers of which should be easily accessible to the students.

IV CLINICAL FACILITIES

5 Provision should be made for each student to receive practice training adequate in kind and amount under competent supervision in physical therapy in a hospital or other institution acceptable to the Council on Medical Education and Hospitals of the American Medical Association.

V RESOURCES

6 Experience has shown that a modern school of physical therapy cannot as a rule be maintained by the income from students' fees. No physical therapy school, therefore, should expect to secure approval which does not have a substantial income in addition to students' fees.

VI ADMINISTRATION

7 There should be careful and intelligent supervision of the entire school by an executive officer who, by training and experience, is fitted to interpret the prevailing standards in physical therapy education, and who is clothed with sufficient authority to carry them into effect.

8 There should be satisfactory records, showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Except for good cause, such as for illness, no credit should be given for any course when the attendance has been less than 90 per cent of the full time.

VII REQUIREMENTS FOR ADMISSION

9 Candidates for admission should be able to satisfy one of the following requirements:

- (a) Two years or sixty semester hours of college, including courses in physics and biology.
- (b) Graduation from an accredited school of nursing.
- (c) Graduation from an accredited school of physical education.

Courses in general physics, chemistry and biology are highly recommended for all who seek to enter training in physical therapy.

10 The admission of students to the physical therapy school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the physical therapy school is an integral part of the university, this work usually devolves on the university examiner.

11 Advanced standing may be granted to students for work done in other acceptable physical therapy schools or hospital departments, provided the entrance requirements and other essentials herein set forth have been complied with. Official

verification of the student's previous physical therapy work should be obtained by direct correspondence with the schools previously attended, and his preliminary qualifications should also be verified and recorded the same as for first-year students

12 Complete physical examination of each student admitted should be conducted under the auspices of the school

VIII PUBLICATIONS

13 The school should issue, at least annually, a bulletin setting forth the character of the work which it offers. Such announcement should contain a list of the members of the faculty with their respective qualifications

Suggested electives asepsis, bandaging, first aid, history of physical therapy, hygiene, joint measurements, office routine, occupational therapy, records, social service.

All subjects should be taught by qualified teachers
Length of course Not less than nine months

According to the foregoing standard the following schools have been found to comply. Several others are now in the process of making the necessary changes to fulfil the requirements.

The list of schools approved for physical therapy technicians will be maintained as a permanent part of

Schools for Physical Therapy Technicians Conforming to the Standard Adopted by the American Medical Association in 1936

| School | Director | Prerequisite for Admission | Length of Course | Student Capacity | Tuition | Certificate Diploma Degree |
|---|----------------------------------|--------------------------------------|------------------|------------------|----------------------|-----------------------------------|
| Children's Hospital Los Angeles ¹ | Miss L. H. Graham R.N. | (a) R.N. (b) Grad phys ed | 12 mos | 6 | \$125 | Diploma |
| Stanford University Hospitals San Francisco | H. L. Langnecker M.D. | (a) R.N. (b) Grad phys ed | 12 mos | 9 | \$175-\$250 | Certificate |
| Walter Reed General Hospital Washington D.C. ² | Maj. W. W. McCaw M.D. | Grad phys ed | 12 mos | 10 | None | Certificate |
| Northwestern University Medical School Chicago ³ | J. S. Conlter M.D. | (a) R.N. (b) Grad phys ed | 9 mos | 12 | \$300 | Certificate |
| Bouve Boston School of Physical Education Boston ⁴ | Miss C. K. Greene P.T. in charge | Grad high school | 3 and 4 yrs | 10 | \$400 per yr | Diploma (3 yrs.) B.S. (4 yrs.) |
| Harvard Medical School Course 410 Boston ⁵ | F. R. Ober M.D. | (a) R.N. (b) Grad phys ed | 9 mos | 16 | \$150 | Certificate |
| Boston University Sargent College of Physical Education Cambridge Mass ⁶ | Prof. E. Hermann, Dean | Grad high school | 4 yrs | 29 | \$360 per yr | B.S. |
| Battle Creek College Battle Creek Mich ⁷ | Paul Roth M.D. | (a) R.N. (b) Grad phys ed | 12 mos | | \$180 per yr | B.S. |
| St. Louis University School of Nursing St. Louis ⁸ | A. J. Kotkis M.D. | Grad high school | 4 yrs | 6 | \$200 per yr | B.S. |
| University of Buffalo Buffalo ⁹ | G. G. Martin M.D. | R.N. | 18 mos | 6 | \$10 per univ credit | B.S. |
| D. T. Watson School of Physiotherapy Leetsdale Pa. ¹⁰ (affiliated with the Univ. of Pittsburgh School of Medicine) | Jessie Wright M.D. | (a) Grad phys ed (b) 3 yrs premed | 22 mos | 8 | None | Diploma |
| College of William and Mary Richmond, Va. ¹¹ | Thomas Wheeldon M.D. | (a) R.N. (b) Grad phys ed | 9 mos | 6 | Coll fee | Certificate |
| University of Wisconsin Madison, Wis. ¹² | E. A. Pohle M.D. | (a) R.N. (b) Grad. phys ed | 12 mos | 20 | Univ fee | Certificate |

Notes

- a Four year course leads to B.S. degree from Simmons College
b M.S. degree for advanced work

Affiliated Clinical Facilities

- 1 Cedars of Lebanon Hospital Good Hope Clinic and Los Angeles County Hospital, Los Angeles and Glendale Sanitarium and Hospital, Glendale
- 2 Weightmann School for Crippled Children Washington D.C.
- 3 Illinois Central Hospital Michael Reese Hospital Montgomery Ward Medical Clinics Passavant Memorial Hospital and St. Luke's Hospital Chicago
- 4 Boston City Hospital Children's Hospital, Massachusetts General Hospital and Robert Breck Brigham Hospital Boston Cambridge Hospital, Cambridge and New England Peabody Home for Crippled Children and Newton Hospital Newton

- 5 Boston Home for Incurables Convalescent Home of the Children's Hospital Children's Hospital, Harvard Infantile Paralysis Commission Industrial School for Crippled and Deformed Children, Massachusetts General Hospital Perkins Institute for the Blind and Robert Breck Brigham Hospital, Boston and Cambridge Hospital Cambridge
- 6 Massachusetts General Hospital, Massachusetts Memorial Hospitals and Industrial School for Crippled and Deformed Children, Boston and Cambridge Hospital Cambridge
- 7 Ann J. Kellogg School and Battle Creek Sanitarium Battle Creek
- 8 Franklin DeJonge Hospital St. Louis
- 9 Buffalo City Hospital, Buffalo
- 10 Allegheny General Hospital Children's Hospital Falk Clinic Industrial Home for Crippled Children and St. Francis Hospital Pittsburgh
- 11 Sheltering Arms Hospital and Stuart Circle Hospital Richmond
- 12 State of Wisconsin General Hospital Madison

IX MINIMUM CURRICULUM

| Subjects | Theory | Hours Laboratory and Practice Training |
|--|-------------|--|
| Anatomy (including applied anatomy demonstration on cadaver and lecture) | 210 | 400 |
| Clinical practice | 30 | 45 |
| Electrotherapy | 5 | |
| Ethics and administration | 5 | 15 |
| Hydrotherapy | 15 | 45 |
| Massage | 30 | |
| Pathology | 30 | 45 |
| Physiology | 30 | |
| Principles of physical therapy as applied to | | |
| Medicine | 15 | 30 |
| Neurology | 10 | 15 |
| Orthopedics | 15 | 30 |
| Surgery (including surgical observation) | 15 | 30 |
| Psychology | 15 | |
| Therapeutic exercise | 30 | 75 |
| Electives | 45 | |
| | <u>470</u> | <u>730</u> |
| | 1,200 hours | |

the Council's work and revisions will be made from time to time. New schools will be considered for approval on application to the secretary of the Council on Medical Education and Hospitals of the American Medical Association.

The American Congress on Physical Therapy, organized in 1921, has done a great deal to advance the scientific knowledge of the specialty. In 1935, with the aid of the Council on Medical Education and Hospitals, the congress established the American Registry of Physical Therapy Technicians. The objects of the Registry among others are:

'To maintain the minimum standards of educational and technical qualifications as given by the Council on Medical Education and Hospitals of the American

Medical Association for technicians administering physical therapy in hospitals, clinics and physicians' offices

"To cooperate with the Council on Medical Education and Hospitals of the American Medical Association in its investigation, classification and periodic inspection of schools which conduct training courses for physical therapy technicians"

The American Registry of Physical Therapy Technicians has indicated that graduates from schools approved by the Council on Medical Education and Hospitals will be admitted to its examinations. The offices of the American Registry of Physical Therapy Technicians are at 30 North Michigan Avenue, Chicago, and the registrar is Miss Marion G. Smith.

SURVEY OF SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS

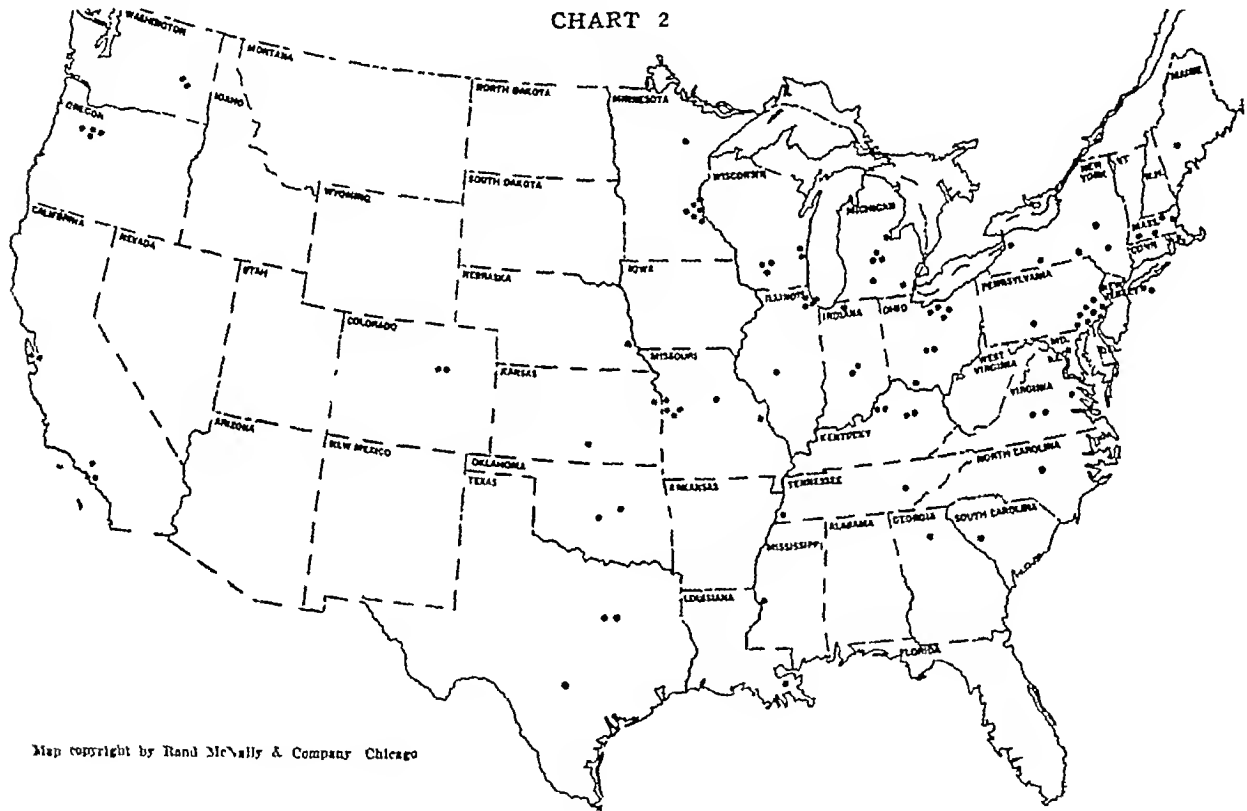
The first serious effort made to elevate the standards of education for clinical laboratory technicians was made in 1928, when the American Society of Clinical Pathologists established its Board of Registry. At first, admission to the Registry was based on credentials and recommendations. In 1933 a more accurate system of identifying those qualified for registration was instituted by placing in operation the examination system

of hospital standards, it decided to make a comprehensive survey of the situation.

One hundred and ninety-six schools have been visited by members of the Council staff. They are of three general types:

1 *The College or University Course*—Instruction in these courses is based on regular standard entrance requirements of the particular college or university and

CHART 2



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Geographic distribution of schools for clinical laboratory technicians which conform to the standard adopted by the American Medical Association.

At the same time the board made a questionnaire survey of schools for laboratory technicians and set up a minimum standard for approved schools. The first list of schools published under the Board of Registry appeared in 1933.

Since the beginning of the Registry there has existed an active cooperation between the Board of Registry and the Council on Medical Education and Hospitals. Realizing the need for inspection of schools seeking approval the board in 1933 informally requested the aid of the Council in making such inspections in connection with its regular hospital survey work. Since the Council considered this training as a special type of medical education definitely related to the improve-

ments are exchangeable with other schools of the same standing. The fourth year is usually given over to instruction and practice training in a hospital laboratory department affiliated with the educational institution. As a rule, on completion of the fourth year, a Bachelor of Science Degree in Medical Technology is conferred. Several schools continue throughout the four years with didactic training incorporating such courses as bacteriology, clinical microscopy, organic chemistry, physiologic chemistry, and physiology, in lieu of a year of practice training in a hospital laboratory.

2 *Hospital Laboratory Departments Offering Courses on the Apprenticeship Basis*—This group is by far the largest. Students are admitted on one, two, three

(Continued on page 682)

Schools for Clinical Laboratory Technicians Conforming to the Standard adopted by the American Medical Association in 1936

| Name and Location of School | Director | Entrance Requirement | Hospital Bed Capacity | Occupancy | Staff | Duration of Course | Number of Students | Tuition | Certificate or Diploma Degree |
|--|-------------------------|----------------------|-----------------------|-----------|------------------|--------------------|--------------------|-----------|-------------------------------|
| CALIFORNIA | | | | | | | | | |
| 1 Children's Hospital, Los Angeles | C M Hayward M.D. | Coll grad | 180 | 120 | 4 | 12 mos | 3 | None | None |
| 2 Los Angeles County Hospital, Los Angeles | N G Evans M.D. | Coll grad | 3,266 | 2,287 | 12 | 12 mos | 8 | \$40 | Certificate B.S. |
| 3 Mount St. Mary's College, (St Vincent's Hospital), Los Angeles | F M Butt M.D. | High sch grad | 900 | 118 | Dir and coll fac | 4 yrs | | Inc board | 3 |
| 4 Huntington Memorial Hospital, Pasadena | A G Food M.D. | 2 yrs coll | 186 | 94 | 0 | 12 mos | 3 | None | Certificate |
| 5 Mary's Hospital, San Francisco | L J Boll M.D. | 2 yrs coll | 120 | 80 | 3 | 18 mos | 2 | None | None |
| 6 University of California Hospital, San Francisco | J C Behrman M.D. | 2 yrs coll | 264 | 182 | 0 | 10 mos | 4 | None | None |
| 7 Children's Hospital, Denver | E J Doherty M.D. | 2 yrs coll | 240 | 114 | 4 | 12 mos | 1 | None | Certificate |
| 8 University of Denver, Denver | Philip Harkowitz M.D. | High sch grad | 100 | 400 | 10 | 4 yrs | 21 | \$22.50 | B.S. |
| 9 Emory University, (Emory University Hospital), Emory University | Roy R Kracke M.D. | B.S. | 225 | 85 | 8 | 18 mos | 9 | \$22.50 | M.B. |
| 10 Michael Reese Hospital, Chicago | K M Howell M.D. | 2 yrs coll | 560 | 431 | 12 | 12 mos | 12 | \$100 | Certificate |
| 11 St. John's Hospital, Chicago | I Davidson M.D. | 2 yrs coll | 163 | 116 | 7 | 18 mos | 5 | \$125 | Diploma |
| 12 Northwestern University, (University of Mary and Joseph Hospital), Chicago | H L Alt M.D. | 2 yrs coll | 200 | 170 | 12 | 12 mos | 8 | \$40 | Certificate |
| 13 St. John's Hospital, Springfield | F W Light M.D. | R.N. or 2 yrs coll | 607 | 417 | 4 | 12 mos | 4 | \$40 | Certificate |
| 14 St. John's Hospital, Waukegan | F Pribram M.D. | 2 yrs coll | 135 | 50 | 4 | 12 mos | 2 | \$60 | Diploma |
| ILLINOIS | | | | | | | | | |
| 15 Indianapolis City Hospital, Indianapolis | H C Thornton M.D. | 2 yrs coll | 533 | 420 | 7 | 12 mos | 1 | \$40 | None |
| 16 Methodist Hospital, Indianapolis | H M Banks M.D. | 2 yrs coll | 330 | 330 | 8 | 24 mos | 2 | None | Certificate |
| 17 South Bend Medical Laboratory, South Bend | A S Giordano M.D. | 2 yrs coll | 280 | 164 | 4 | 18 mos | 2 | \$12.50 | None |
| 18 University of Kansas Hospital, Kansas City | C J Leitch M.D. | B.S. | 228 | 180 | 6 | 12 mos | 180 | 0 | None |
| 19 St. Francis Hospital, Wichita | O A Hellwig M.D. | R.N. or 1 yr coll | 270 | 140 | 5 | 12 mos | 4 | \$150 | Diploma |
| KENTUCKY | | | | | | | | | |
| 20 St. Joseph's Hospital, Lexington | F S Maxwell M.D. | 2 yrs coll | 187 | 115 | 6 | 12 mos | 3 | \$150 | Certificate |
| 21 University of Kentucky, (Good Samaritan Hospital), Lexington | H Scheraga D.V.M. | High sch grad | 200 | 150 | 4 | 4 yrs | 21 | 4 | B.S. |
| 22 St. Joseph's Hospital, Louisville | H M Weaver M.D. | 1 yr coll | 320 | 172 | 4 | 12 mos | 22 | \$170 | None |
| 23 State Board of Health, (Louisville City Hospital), Louisville | L H South M.D. | 1 yr coll | 628 | 336 | 8 | 12 mos | 10 | \$300 | Diploma |
| LOUISIANA | | | | | | | | | |
| 24 Loyola University, New Orleans | John G Arnold Jr. Ph.D. | High sch grad | 348 | 200 | Univ fac | 4 yrs | 0 | \$120.00 | B.S. |
| MAINE | | | | | | | | | |
| 25 Central Maine General Hospital, Lewiston | J Gottlieb M.D. | A.B. or B.S. | 175 | 141 | 7 | 12 mos | 1 | None | None |
| MARYLAND | | | | | | | | | |
| 26 Mercy Hospital, Baltimore | H T Collenberg M.D. | R.N. or 1 yr coll | 275 | 260 | 18 | 18 mos | 15 | \$150 | Certificate |
| MASSACHUSETTS | | | | | | | | | |
| 27 Simmons College, (Faulkner Hospital), Boston | C M Hilliard A.B. | 4 yrs coll | 130 | 119 | 4 | 12 mos | 5 | \$250 | Certificate |
| 28 Mercy Hospital, Springfield | V F Dwyer M.D. | 1 yr coll | 330 | 200 | 4 | 12 mos | 5 | None | Certificate |
| 29 Worcester City Hospital, Worcester | R H Goodale M.D. | R.N. or 1 yr coll | 330 | 334 | 5 | 12 mos | 0 | None | Certificate |
| 30 Worcester State Hospital, Worcester | J M Looney M.D. | B.S. | 2,210 | 2,204 | 20 | 12 mos | 2 | None | Certificate |
| MICHIGAN | | | | | | | | | |
| 31 Jella Y. Post Montgomery Hospital, Battle Creek | A A Humphrey M.D. | 2 yrs coll | 168 | 78 | 3 | 12 mos | 2 | None | None |
| 32 Mercy Hospital, Bay City | W G Gamble Jr. M.D. | 2 yrs coll | 122 | 75 | 3 | 12 mos | 2 | \$1.00 | Certificate |
| 33 Grace Hospital, Detroit | O I Owen M.D. | R.N. or 2 yrs coll | 483 | 324 | 5 | 12 mos | 6 | \$160 | Diploma |
| 34 Henry Ford Hospital, (Wayne University), Detroit | F W Hartman M.D. | B.A. or B.S. | 800 | 404 | 20 | 18 mos | 8 | None | M.S. |
| 35 Providence Hospital, Detroit | J E Davis M.D. | 2 to 4 yrs coll | 572 | 250 | 7 | 12 mos | 2 | None | Certificate |
| MINNESOTA | | | | | | | | | |
| 36 College of St. Scholastica, (St. Mary's Hospital), Duluth | G L Berdez M.D. | High sch grad | 250 | 187 | 16 | 4 yrs | 6 | Coll fee | B.S. |
| 37 Swedish Hospital, Minneapolis | C R Drake M.D. | 1 yr coll | 271 | 151 | 8 | 24 mos | 8 | \$2.00 | Certificate |
| 38 University of Minnesota, (University Hospitals), Minneapolis | W A O'Brien M.D. | High sch grad | 420 | 315 | Univ fac | 4 yrs | 182 | Univ fee | B.S. |
| 39 Charles L. Miller Hospital, St. Paul | Kano Ikeda M.D. | 1 yr coll | 109 | 123 | 6 | 12 mos | 6 | \$100 | Certificate |
| MISSISSIPPI | | | | | | | | | |
| 40 Vicksburg Sanitarium and Crawford Street Hospital, Vicksburg | L S Lippincott, M.D. | 1 yr coll | 75 | 33 | 6 | 24 mos | 6 | None | Certificate |
| MISSOURI | | | | | | | | | |
| 41 University of Missouri, (University Hospitals), Columbia | M P Neal M.D. | 1 yr coll | 100 | 60 | 10 | 4 yrs | 2 | 0 | B.S. |
| 42 Kansas City Health Department Laboratory, (Kansas City General Hospital), Kansas City | R W Kerr M.D. | 1 yr coll | 430 | 352 | 18 | 18 mos | 15 | None | Certificate |
| 43 General Hospital, Kansas City | R Koritschoner M.D. | 2 yrs coll | 181 | 143 | 8 | 16 mos | 4 | None | None |
| 44 St. Joseph Hospital, Kansas City | F O Nair M.D. | 2 yrs coll | 260 | 143 | 9 | 24 mos | 6 | None | None |
| 45 St. Joseph Hospital, Kansas City | F O Johnson M.D. | Coll grad | 235 | 115 | 9 | 24 mos | 4 | None | Certificate |
| 46 St. Joseph Hospital, Kansas City | F O Helwig M.D. | 2 yrs coll | 203 | 118 | 9 | 16 mos | 7 | None | None |
| 47 St. Louis | W D Collier M.D. | High sch grad | 223 | 170 | Univ fac | 4 yrs | 23 | \$200.00 | B.S. |
| NEBRASKA | | | | | | | | | |
| 48 University of Nebraska Hospital, Omaha | J P Tollman M.D. | 2 yrs coll | 220 | 168 | Univ fac | 12 mos | 8 | None | Certificate |

NEW YORK

| | | | | | | | | | | | |
|----|---|----------------------|--------------------|-------|-----|----|-----------|----|----------|-------------|----|
| 40 | Kilmer Pathological Laboratory (Binghamton City Hospital) Binghamton | V W Bergstrom M D | R N or 1 yr coll | 400 | 301 | 8 | 12 mos | 3 | \$25 | Certificate | 40 |
| 41 | St. Joseph's Hospital Brooklyn | M Lederer, M D | Coll grad | 541 | 377 | 0 | 18 mos | 6 | None | None | 50 |
| 42 | St. John's Hospital Brooklyn | T J Curphy M D | 1 yr coll | 204 | 180 | 3 | 18 mos | 3 | \$75 | None | 51 |
| 43 | Buffalo City Hospital (University of Buffalo) Buffalo | E B Hann M D | 2 yrs coll | 1 025 | 907 | 10 | 12 21 mos | 16 | 1 | None | 52 |
| 44 | St. Joseph's Hospital Elmira | L F Beyer M D | 1 yr coll | 100 | 151 | 3 | 12 mos | 2 | \$75 | Certificate | 53 |
| 45 | Mary Immaculate Hospital Jamaica, L I | Emil Koch M D | 2 yrs coll | 234 | 231 | 10 | 12 mos | 6 | None | Diploma | 54 |
| 46 | St. John's Hospital Schenectady | E Keller M D | R N or 1 yr coll | 245 | 210 | 7 | 12 mos | 6 | None | None | 55 |
| 47 | Duke Hospital Durham | D T Smith M D | 2 yrs coll | 400 | 277 | 17 | 15 mos | 13 | \$50 | Certificate | 56 |
| 48 | City Hospital Akron | E L Saylor M D | B S or D A | 312 | 213 | 6 | 12 mos | 1 | None | Certificate | 57 |
| 49 | Indiana Pathology Western Reserve University (University Hospitals) Cleveland | H Goldblatt, M D | 1 yr coll | 813 | 462 | 15 | 12 mos | 15 | None | None | 58 |
| 50 | St. Vincent's Hospital Cleveland | H S Kline M D | 1 yr coll | 223 | 147 | 7 | 12 mos | 6 | \$250 | Certificate | 59 |
| 51 | St. Vincent's Hospital Columbus | H L Rehbar, M D | B S or D A | 233 | 163 | 5 | 12 mos | 2 | None | None | 60 |
| 52 | St. Vincent's Hospital Columbus | H S Fidler M D | B S | 246 | 141 | 5 | 12 mos | 2 | None | None | 61 |
| 53 | College of Mount St. Joseph on the Ohio (Good Samaritan Hospital Cincinnati) | R J Norris, M D | R N or B S | 405 | 341 | 4 | 12 mos | 3 | \$150 | M S | 62 |
| 54 | Youngstown Hospital, Youngstown | G B. Kramer M D | 2 yrs coll | 370 | 270 | 6 | 12 mos | 2 | None | None | 63 |
| 55 | University Hospital Oklahoma City | Hugh Jeter M D | Coll grad | 485 | 447 | 8 | 12 mos | 3 | None | None | 64 |
| 56 | St. Vincent's Hospital, Tulsa | H S Nuebel M D | 1 yr coll | 223 | 144 | 5 | 12 mos | 1 | \$150 | Certificate | 65 |
| 57 | St. Vincent's Hospital, Portland | H H Fokett, M D | Coll grad | 230 | 183 | 6 | 12 mos | 2 | \$130 | None | 66 |
| 58 | St. Vincent's Hospital, Portland | G H Kneave, M D | 1 yr coll | 310 | 104 | 6 | 12 mos | 4 | \$150 | None | 67 |
| 59 | University of Oregon Portland | T D Robertson M D | 1 yr coll | 238 | 324 | 6 | 12 mos | 4 | None | None | 68 |
| 60 | University of Oregon Portland | E B Orsod M D | 1 yr coll | 375 | 322 | 13 | 12 mos | 4 | None | Certificate | 69 |
| 70 | Arlington Memorial Hospital, Arlington | John Piman, M D | 1 yr coll | 242 | 168 | 0 | 13 mos | 2 | None | None | 70 |
| 71 | St. Luke's Hospital, Richmond | J A Rothrock, Jr M D | 2 yrs coll | 300 | 143 | 4 | 12 mos | 2 | \$-0 | Diploma | 71 |
| 72 | St. Luke's Hospital, Richmond | P J Kennedy M D | 1 yr coll | 210 | 60 | 3 | 12 mos | 2 | \$100 | Certificate | 72 |
| 73 | St. Luke's Hospital, Richmond | G R Koutit, M D | 1 yr coll | 210 | 108 | 8 | 12 mos | 6 | None | None | 73 |
| 74 | St. Luke's Hospital, Richmond | H Hout, M D | High sch grad | 103 | 121 | 6 | 4 1/2 yrs | 2 | Univ fee | B S | 74 |
| 75 | St. Luke's Hospital, Richmond | H L Crawford M D | 1 yr coll | 331 | 430 | 12 | 12 mos | 6 | \$100 | Certificate | 75 |
| 76 | St. Luke's Hospital, Richmond | S V. Williams M D | 1 yr coll | 238 | 187 | 7 | 12 mos | 4 | \$25 | Certificate | 76 |
| 77 | St. Luke's Hospital, Richmond | D B Morris M D | 1 yr coll | 231 | 187 | 12 | 12 mos | 17 | \$125 | Certificate | 77 |
| 78 | St. Luke's Hospital, Richmond | J H Smith M D | 1 yr coll | 233 | 230 | 7 | 12 mos | 6 | \$20 | Certificate | 78 |
| 79 | St. Luke's Hospital, Richmond | L A. Soloff M D | 1 yr coll | 150 | 30 | 4 | 12 mos | 4 | \$100 | Certificate | 79 |
| 80 | Temple University (Temple University Hospital), Philadelphia | V W Konzelmann M D | High sch grad | 402 | 313 | 14 | 4 yrs | 30 | \$300 | B S | 80 |
| 81 | Spartanburg General Hospital, Spartanburg | R. Mosteller M D | 2 yrs coll | 284 | 173 | 4 | 18 mos | 3 | None | Diploma | 81 |
| 82 | St. Paul's Hospital, Knoxville | R H Monger M D | 1 yr coll | 340 | 152 | 3 | 12 mos | 3 | None | Diploma | 82 |
| 83 | Memphis General Hospital, Memphis | H Schmetzer M D | B S or B A | 304 | 377 | 13 | 12 mos | 3 | None | None | 83 |
| 84 | St. Paul's Hospital, Dallas | J M Hill, M D | 2 yrs coll | 200 | 268 | 10 | 18 mos | 11 | \$100 | Certificate | 84 |
| 85 | St. Paul's Hospital, Dallas | I L Goforth M D | R N or coll degree | 240 | 184 | 8 | 12 mos | 2 | \$100 | Certificate | 85 |
| 86 | Robert B Green Memorial Hospital, San Antonio | R E Scott M D | 2 yrs coll | 130 | 100 | 4 | 12 mos | 7 | None | Certificate | 86 |
| 87 | U. S. Marine Hospital, Norfolk | P O Smith M D | 1 yr coll | 300 | 212 | 8 | 12 mos | 4 | None | Certificate | 87 |
| 88 | College of William and Mary (Stuart Circle Hospital) Richmond | R O Beck M D | High sch grad | 81 | 56 | 4 | 4 yrs | 3 | Coil fee | B S | 88 |
| 89 | Medical College of Virginia Hospital Division Richmond | W B Porter M D | 2 yrs coll | 421 | 335 | 12 | 12 mos | 4 | \$100 | Certificate | 89 |
| 90 | Sacred Heart Hospital Spokane | M M Patton M D | 2 yrs coll | 270 | 216 | 3 | 12 mos | 2 | \$115 | None | 90 |
| 91 | St. Luke's Hospital Spokane | R. E. Stier M D | 2 yrs coll | 173 | 112 | 0 | 12 mos | 2 | None | Certificate | 91 |
| 92 | Madison General Hospital, Madison | L. McGary M D | R N or 2 yrs coll | 135 | 118 | 2 | 12 mos | 2 | None | Certificate | 92 |
| 93 | St. Mary's Hospital, Madison | S. D. Fiehn M D | 1 yr coll | 175 | 110 | 7 | 18 mos | 4 | None | Diploma | 93 |
| 94 | Wisconsin General Hospital, Madison | W D. Stoen M D | 2 yrs coll | 630 | 611 | 11 | 12 mos | 14 | \$25 | Certificate | 94 |
| 95 | St. Joseph's Hospital, Milwaukee | John Gril M D | 2 yrs coll | 325 | 121 | 5 | 12 mos | 3 | None | Certificate | 95 |
| 96 | Waukegan County General Hospital, Waukegan | John Gril M D | 2 yrs coll | 1 060 | 740 | 8 | 24 mos | 4 | None | Certificate | 96 |

Notes

- Regular four year course leading to a B S degree
- Postgraduate course leading to an M S or M A degree
- Charged on basis of so much per credit hour
- Students in state for year out of state students \$120 year
- Course includes twelve months x ray training
- Some accept for medical students
- Course includes six months x ray training
- Course includes four months x ray training
- Ten dollars per credit hour

Notes

- Four college chemistry and biology
- Plus and one-half year course leading to a B S degree.
- Additional Affiliations
- St. Anthony's Hospital Denver—143 occupancy
- St. Anthony's Hospital Denver—182 beds 100 occupancy
- Greely Hospital Greeley—83 beds 63 occupancy
- Sanatorium of the Jewish Consumptives Relief Society
- Silver Lake—200 beds 104 occupancy
- St. Joseph's Hospital South Bend—156 beds 73 occupancy
- St. Joseph's Hospital South Bend—125 beds 73 occupancy

- Hotel Dieu Hospital New Orleans—230 beds 139 occupancy
- St. Mary's Hospital, New Orleans—118 beds 70 occupancy
- Boston Dispensary and State Laboratory Boston
- Minneapolis General Hospital, Minneapolis—607 beds 482 occupancy
- Mississippi State Charity Hospital Vicksburg—100 beds 73 occupancy
- Doernbecher Memorial Hospital for Children, Portland—75 beds 48 occupancy
- Multnomah Hospital Portland—300 beds 274 occupancy

or four years of college training, including basic sciences or graduation from an accredited nursing school. The work is not highly organized, as the majority of the schools have from two to four students enrolled each year. Students attend lectures with nurses or separately. Text assignments, demonstrations and examinations are regularly scheduled.

3 Commercial Schools—The large tuition fees always required by commercial schools constitute the main admission requirement. Students are recruited through extravagant advertising in newspapers and magazines or by a series of follow-up letters, which are often so worded as to imply that employment is secured for graduates at attractive salaries. Since such schools depend on a continuous and expensive campaign of advertising, they are tempted to admit whatever candidates apply regardless of adequate preparation. For the same reason, there is a tendency to admit students whenever they apply. The Council's continuous contact with hospital laboratories and pathologists throughout the country has provided incontrovertible evidence that graduates of commercial schools are not as a class the most desirable.

The survey of schools included twenty-six universities and colleges, 149 hospital laboratory schools, twelve independent laboratories and nine schools of commercial type, operating independently of hospitals or educational institutions. The inspection reports include the following data: organization, teaching staff, clinical facilities, physical equipment, records, entrance requirements, curriculum, library and affiliations. Copies of these reports have been supplied to the Board of Registry for its use in evaluating the training provided by the various schools.

After a careful study of the data gathered in the survey, minimum standards for the approval of schools for clinical laboratory technicians were formulated. It was mutually agreed in conference with members of the Board of Registry that the Council on Medical Education and Hospitals would maintain a list of approved schools for clinical laboratory technicians in operation throughout the United States and would maintain a continuous contact with and inspection of such approved schools.

The essentials were adopted by the Council on May 10, 1936, and after having been approved by the Board of Registry of the American Society of Clinical Pathologists were passed on by the House of Delegates at the Kansas City session May 11-15, 1936. It will be noted that these essentials do not differ greatly from those formerly adopted by the Board of Registry.

ESSENTIALS OF AN ACCEPTABLE SCHOOL FOR CLINICAL LABORATORY TECHNICIANS

I ORGANIZATION

1 Acceptable schools for training laboratory technicians may be conducted by general hospitals, colleges or universities. Consideration may be given to courses operated by public health laboratories or by pathologists.

2 Responsibility for courses in hospitals should be placed on the hospital administration rather than the laboratory director. In colleges and universities this responsibility is on the controlling board as for other courses.

3 Resources for continued operation of the school should be insured through regular budgets, gifts or endowments, but not entirely through students' tuition fees. Experience has shown

that commercial schools operated for profit frequently do not adhere to proper ethical and educational standards and are, as a rule, not considered acceptable.

4 There must be available transcripts of high school, college work and other credentials. Attendance and grades of students shall be carefully recorded, by means of which an exact knowledge may be obtained regarding each student's work.

II FACULTY

5 The school should have a competent teaching staff. The director must be a graduate in medicine and a pathologist or clinical pathologist of recognized ability. He shall take part in and be responsible for the actual conduct of the training course. He shall be in daily attendance for sufficient time to supervise properly the laboratory work and teaching.

6 In laboratory practice the enrollment shall not exceed one student to each member of the teaching staff. The staff should include not less than one salaried instructor who is a registered technician or eligible for registration, in addition to the laboratory director.

III CLINICAL FACILITIES

7 Each student should receive practice training adequate in kind and amount, under competent supervision, in a hospital laboratory. The hospital should be registered by and be otherwise acceptable to the Council on Medical Education and Hospitals of the American Medical Association and have a minimum of 2000 yearly admissions.

8 Adequate space, light and modern equipment shall be provided in the laboratory department. A library containing up-to-date references, texts and scientific periodicals pertaining to clinical laboratory work and pathology should be maintained.

9 Satisfactory record systems shall be provided for all work carried on in the department. Monthly and annual classifications of the work of the department should be prepared.

IV CURRICULUM

10 A Candidates for admission should be able to satisfy one of the following requirements:

1 One year of college work, including chemistry and biology from a recognized college or university. Jan. 1, 1938, this requirement is to be raised to two years of college work.

2 Graduation from a school of nursing recognized by the state board of nurse examiners, and in addition college chemistry.

B The course of training shall be not less than twelve months in duration and shall include the following divisions:

- 1 Biochemistry
- 2 Hematology
- 3 Bacteriology
- 4 Parasitology
- 5 Histologic technique
- 6 Serology

The instruction shall include:

- 1 Text assignments
- 2 Lectures
- 3 Demonstrations
- 4 Quizzes
- 5 Examinations—written, oral and practical

V ETHICS

11 Exorbitant fees and commercial advertising shall be considered unethical.

12 Schools conducted for the purpose of substituting students for paid technicians will not be considered for approval.

The Board of Registry to which full credit must be given for the splendid pioneering work in this field is made up of six members, two of whom are elected annually by the American Society of Clinical Pathologists.

gists and serve for a term of three years. The following members comprise the present board: Philip Hillkowitz, M D, chairman, Denver; Kano Ikeda, M D, secretary, St. Paul; Israel Davidsohn, M D, Chicago; H. H. Foskett, M D, Portland, Ore.; Roy R. Kracke, M D, Atlanta, Ga.; and Asher Yaguda, M D, Newark, N. J.

According to the Registry, over 3,500 members were enrolled June 1, 1936. This number approximates one third of the clinical laboratory technicians in the United States and Canada.

Applicants for registration may secure blanks and information from the registrar, Mrs. Anna R. Scott, 234 Metropolitan Building, Denver, Colorado.

ESSENTIALS OF AN ACCEPTABLE SCHOOL OF OCCUPATIONAL THERAPY

I ORGANIZATION

1 A school of occupational therapy should be incorporated under the laws regulating associations which are operated not for profit. The control should be vested in a board of trustees rather than an individual. This board should be composed of public spirited men or women receiving no financial benefits from the operations of the schools. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, this fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

2 Affiliation with a college, university or medical school is highly desirable but is not an absolute requirement.

3 Schools of occupational therapy should not be operated by hospitals independently. It is understood, however, that hospitals are needed for practice training and especially for graduate training in the special branches of occupational therapy.

II FACULTY

1 The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough education and training and successful teaching experience. Nominations for faculty positions should be made in accordance with academic custom. The staff should include not less than one regular salaried instructor and one registered occupational therapist. The question of full time and part time appointments is not as important as the qualifications of the instructors, who should be specialists or exceptionally well trained and well qualified in the lines they are teaching.

III PLANT

1 The school should own, or enjoy the use of, buildings sufficient in size to provide adequate lecture rooms, class laboratories and administration offices. Equipment should be adequate for teaching and training. Anatomic charts, manikins and dummies should also be provided. There should be a library receiving regularly all the leading periodicals pertaining to occupational therapy, current numbers of which should be easily accessible to the students.

IV ADMINISTRATION

1 *Supervision*—There should be careful and intelligent supervision of the entire school by the dean, director or other executive officer, who, by training and experience, is fitted to interpret the prevailing standards and who is clothed with sufficient authority to carry them into effect.

2 *Records*—There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Schools should require that students be in actual attendance within the first week of each annual session and thereafter. Except for good cause, no credit should be given for any course when attendance has been less than 80 per cent.

3 *Credentials*—The admission of students to the occupational therapy school must be in the hands of a responsible committee or examiner whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the occupational therapy school is an integral part of the university, this work usually devolves on the examiner or registrar.

4 *Advanced Standing*—At the discretion of the administration, advanced standing may be granted for work required in the occupational therapy curriculum which has been done in other accredited institutions. Official verification of previous work should be obtained by direct correspondence. Preliminary qualifications should also be verified and recorded.

5 *Number of Students*—The number of students admitted to the training course should not be excessive. In practical work of a laboratory nature the number of students that can be adequately supervised by a single instructor is, in general experience, about fifteen; in lectures the number may be much larger. A close personal contact between students and members of the teaching staff is essential.

6 *Discipline*—All training schools reserve the right to drop a student at any time for any cause which the school authorities deem sufficient.

7 *Publications*—The school should issue, at least biennially, a bulletin setting forth the character of the work which it offers. Such an announcement should contain a list of the members of the faculty with their respective qualifications.

V PREREQUISITES FOR ADMISSION

Requirements for admission should be:

1 *Age*—The admission of candidates should be governed by the fact that it is required that each student be not less than 21 years old at graduation.

2 *Education*—All candidates must furnish proof of having completed a high school education or its equivalent. In addition, it is desirable that all candidates, except those for the degree course, shall have had at least one year, and preferably two years, of further education or successful experience in college, art school, social service, nurse's training or the commercial field.

Candidates for admission to a training course in a college or university which is combined with work leading to a bachelor's degree should be required to comply with the regular entrance requirements of the institution concerned.

3 *Character*—All candidates should be required to present evidence of good character and general fitness, the evidence of which should be investigated and duly weighed by the school concerned.

4 *Health*—All students should be given a physical examination under the supervision of the school as soon as practicable after admission, and this examination should be repeated annually. The first examination, at least, should include a roentgen examination of the chest.

VI CURRICULUM

1 *Length of Course*—The minimum length of the course should be twenty-five calendar months (100 weeks) of full time training. The course should include not less than sixteen months (sixty-four weeks) of theoretical and technical work, and not less than nine months (thirty-six weeks) hospital practice-training under competent supervision, all as set forth in detail in succeeding sections.

2 *Distribution of Time*—The two years devoted to theoretical training should include not less than sixty semester hours, of which not less than thirty semester hours should consist of systematic instruction and not less than twenty-five hours of laboratory procedures. In special cases a variation of 10 per cent is permissible.

a The hours devoted to theoretical training should be still further subdivided as follows

| (1) Biologic Sciences include | Semester Hours |
|--|----------------|
| Anatomy Physiology Neurology Kinesiology Psychology Psychiatry | 15 |
| (2) Social Sciences | 4 |
| (3) Theory of Occupational Therapy | 4 |
| (4) Clinical Subjects include | |
| Orthopedics Tuberculosis Cardiac Diseases Blindness and Deafness Contagious Diseases (including Bacteriology if this subject is not given elsewhere) General Medical and Surgical Conditions | 4 |
| (5) Electives | 3 |
| Total | 30 |

b Practical work in the various occupations should be allotted not less than twenty-five semester hours. The following subjects should be covered

| | |
|-------------------------------------|--|
| Design Textiles Wood Metal | Leather Plastic Arts Recreation Miscellaneous |
|-------------------------------------|--|

c. The time devoted to hospital practice training shall be not less than nine months spent in the following types of hospitals

| | |
|--|--------------------------|
| Mental Hospitals | Not less than two months |
| Tuberculosis Hospitals and Sanatoriums | Not less than one month |
| General Hospitals | Not less than one month |
| Children's Hospitals or Services | Not less than one month |
| Orthopedic Hospitals or Services | Not less than one month |

The remaining three months optional

3 The curriculum outlined above should be in effect not later than Jan 1, 1939

ESSENTIALS OF AN ACCEPTABLE MEDICAL SCHOOL

I ORGANIZATION

A medical school should be incorporated as a nonprofit institution. Its board of trustees should be composed of public spirited men or women having no financial interest in the operations of the school or its associated hospitals. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, that fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

II ADMINISTRATION

There should be careful and intelligent supervision of the entire school by the dean or other executive officer who by training and experience, is fitted to interpret the prevailing standards in medical education, and who is clothed with sufficient authority to carry them into effect.

There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of students at the teaching hospitals and dispensaries and the maternity and post-mortem cases attended.

The school should require that students be in actual attendance within the first week of each annual session and thereafter. Except for good cause such as for illness, no credit should be given for any course when the attendance has been less than 80 per cent of the full time.

The school should issue, at least annually, a bulletin setting forth the character of the work which it offers. Such announcement should contain a list of the members of the faculty with their respective qualifications. The courses available should be set forth by departments (anatomy, physiology, etc.) showing for each course its number, subject, content, character (lecture, recitation, laboratory or clinic), length of time when where and by whom given and the amount of credit allowed. Information should be given regarding entrance requirements and tuition fees. The names of the students enrolled during the current or previous sessions should also be included.

The number of students to whom an adequate medical education can be given by a college is related approximately to the laboratory and hospital facilities available and to the size and qualifications of the teaching staff. A close personal contact between students and members of the teaching staff results in an efficiency which is not possible in an institution where the number of students is excessive.

Advanced standing may be granted to students for work done in other acceptable medical schools and in granting advanced standing there should be no discrimination against

the school's full course students. Official verification of the student's previous medical work should be obtained by direct correspondence with the schools previously attended, and his preliminary qualifications should also be verified and recorded the same as for freshmen students.

The admission of students to the medical school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the medical school is an integral part of the university, this work usually devolves on the university examiner. Unless the university examiner and his records are closely accessible, however, some officer at the medical school should obtain and keep on file documentary evidence of each student's preliminary education, including both high school and collegiate work. The records must show especially that the required amount of work in the premedical sciences, including laboratory experiments, has been completed.

III FACULTY

The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough training, successful teaching experience, ability in research, and willingness to pursue an academic career. In the clinical departments this does not exclude men who are in the active practice of medicine and surgery. Nominations for faculty positions should originate in the faculty, usually being made by the dean in consultation with the department heads or a committee of the faculty. Reasonable security of tenure must be assured in order that the personnel of the faculty may have adequate stability. In the preclinical sciences the faculty should include at least ten qualified persons of professional rank¹ devoting their entire time to teaching and to that research without which they cannot well keep up with the rapid progress of medical science. For each twenty-five students in a class there should be at least one full-time assistant in each of the preclinical departments. Salaries should be sufficient to enable members of the faculty to support themselves and their families without the necessity of devoting time and energy to other occupations.

IV PLANT

The school should own or enjoy the assured use of, modern fireproof buildings sufficient in size to provide lecture rooms, class laboratories, small laboratories for the members of the teaching staff and advanced students, administrative offices and a medical library. Equipment should be adequate both for student use and for research. A trained librarian should be employed to supervise the operation and development of the library which should include the more modern text and

¹ Professorial rank as here used includes professors, associate professors and assistant professors.

reference books with the *Quarterly Cumulative Index Medicus*, the *Index Catalogue of the Library of the Surgeon-General's Office* and serviceable card indexes. The library should receive regularly all of the leading medical periodicals, the current numbers of which should be in racks or on tables easily accessible to the students. At the end of each year these periodicals should be bound and added to the files of bound periodicals.

There should be a medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that they may be easily found and employed for teaching purposes. With each pathologic specimen coming from postmortems there should also be kept the record of the postmortem, the clinical history of the patient on whom the necropsy was held, and microscopic slides showing the minute structure of the disease shown in the gross specimen. The museum furnishes an excellent means of correlating the work of the department of pathology with that of the clinical departments.

There should be sufficient dissecting material to enable each student to dissect at least the lateral half of the human cadaver, to provide cross-sections and other demonstration material and to allow a thorough course for each senior in operative surgery on the cadaver.

For experimental laboratory work, as well as for medical research, a supply of animals is essential. Proper provision is necessary also for the housing and care of such animals. In any use made of animals every precaution should be taken to prevent suffering, and work by students should be carefully supervised.

Each school should have such useful auxiliary apparatus as stereopticons, reflectoscopes, microprojectors, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, roentgen-ray apparatus, and other aids to effective teaching.

V CLINICAL FACILITIES

The school may own or control a general hospital. By control is meant the unquestioned right to appoint the attending staff. In this event the students come into close and extended contact with patients under adequate supervision. In the event that a medical school depends for clinical teaching on an independent hospital, it is essential that the clinical teachers, either on nomination by the school or by agreement in conference between school and hospital, be appointed by the hospital trustees to appropriate positions on the hospital staff. Such hospitals should be in close proximity to the school and have a daily average of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the students to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material, bedside and ward clinics should be developed for sections of from five to ten students, and patients in medicine, surgery and the specialties should be assigned to each student under a well supervised clinical clerk system. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, the resident or the attending staff of the hospital. The use of existing municipal or state hospitals for teaching purposes is also advised.

The school should also own or control ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

The school should own or control a well ordered dispensary or outpatient department with a daily average attendance of at least 100 patients (visits). Good histories and records of the patients should be kept and the material used in medical instruction. The attending staff should be drawn largely from the faculty, including those of highest rank.

At least fifteen maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the clinical instructor. A carefully prepared report of each case should be handed in by the student.

Facilities should be provided for at least fifty necropsies during each school session which are attended and participated in

by students. These should be performed by the professor of pathology or a member of his staff. The material thus secured should be used in connection with clinical pathologic conferences.

VI RESOURCES

Experience has shown that modern medicine cannot be acceptably taught by a school which depends solely on the income from students' fees. No medical school, therefore, should expect to secure approval which does not have a substantial income in addition to students' fees. This statement carries double weight if the school finds it necessary to maintain its own teaching hospital.

VII REQUIREMENTS FOR ADMISSION

1 The minimum of collegiate credit required for entrance to approved medical schools shall be not less than two full academic years, which shall include English, theoretical and practical courses in physics and biology, and general and organic chemistry, completed in institutions approved by accrediting agencies acceptable to the Council.

2 Admission to approved medical schools may also be by examination under the following conditions:

(a) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high order, but who lack credits in not more than two of the required subjects, may be admitted on passing examinations in these subjects.

(b) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credit in any or all of the required subjects, may be admitted on passing examinations in these subjects.

A list of colleges of arts and sciences approved by the various national and regional standardizing agencies has been prepared by the Council for the guidance of medical schools in the selection of students. Exception may be made in that any school may admit applicants who have fulfilled the requirement in American or Canadian institutions not approved by such accrediting agencies, provided the applicant gives evidence of superior ability.

All collegiate instruction given in satisfaction of this requirement must be based on the same entrance requirements and must be of the same quality and standard of instruction as that required for a baccalaureate degree in the institution in which the candidate receives his preparation.

VIII. CURRICULUM

The entire course of four years shall consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours per year, and shall be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated:

| | |
|--|------------|
| 1 Anatomy including Embryology and Histology | 14 — 18½ % |
| 2 Physiology | 4½ — 6 % |
| 3 Biochemistry | 3½ — 4½ % |
| 4 Pathology, Bacteriology and Immunology | 10 — 13 % |
| 5 Pharmacology | 4 — 5 % |
| 6 Hygiene and Sanitation | 3 — 4 % |
| 7 General Medicine | 20 — 26½ % |
| Neurology and Psychiatry | |
| Pediatrics | |
| Dermatology and Syphilis | |
| 8 General Surgery | 13 — 17½ % |
| Orthopedic Surgery | |
| Urology | |
| Ophthalmology | |
| Otolaryngology | |
| Roentgenology | |
| 9 Obstetrics and Gynecology | 4 — 5 % |
| Total | 76 — 100 % |
| Electives | 24 — 0 % |

When the teaching conditions demand it, a subject may be transferred from one division to another.

Several of the medical schools now require an internship for graduation. Where it is not obligatory it is strongly urged and graduates should be assisted in securing internships in hospitals approved by the Council on Medical Education and Hospitals of the American Medical Association.

DESCRIPTION OF MEDICAL COLLEGES

ALABAMA

University

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868 inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are ninety semester hours of collegiate work. The course of study covers two years of thirty six weeks each. The faculty includes 14 professors and 13 instructors assistants etc. a total of 27. The tuition fees are \$271 each year. Each class is limited to fifty students. Total registration for 1935 1936 was 112. The next session begins Sept 9 1936 and ends May 26 1937. The Dean is Stuart Graves M D.

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE 300 West Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 29 professors and 65 lecturers and assistants total 94. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work. The B S degree in medicine is conferred at the end of the second year. The fees for the four years for residents of Arkansas are \$230 nonresidents are charged \$150 additional each year. The total registration for 1935 1936 was 239 graduates 48. The next session begins Sept 30 1936 and ends June 7 1937. The Dean is Frank Vinson M D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL University Campus Berkeley Medical Center, San Francisco.—Organized in 1862 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 by legislative enactment the College of Medicine of the University of Southern California at Los Angeles became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work is required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 130 professors and 256 associates and assistants a total of 386. The course covers four years of eight months each and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years respectively for residents of California are \$277 \$240 \$235 and \$235 nonresidents are charged \$300 additional each year. Total registration for 1935 1936 was 238 graduates 57. The next session begins Aug 24 1936 and ends May 22 1937. The Dean is W. Melvin Marriott M D. San Francisco.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of 59 professors and 240 associates assistants and instructors a total of 299. The course covers a period of five years including one year of internship. During the second year the students are in school twelve months. This is accomplished by means of the cooperative plan the student spending alternate months in an approved hospital in practical lines of medical training. The first third and fourth years each cover ten months of continuous school work. Sixty four semester hours of collegiate work are required for admission. The total fees for the four years respectively are \$470 \$375 \$485 and \$475. The total registration for 1935 1936 was 394 graduates 85. The next session begins Sept. 1 1936 and ends June 13 1937. The Dean is E. H. Risley M D. Loma Linda California and the Associate Dean is W. E. Macpherson M D. Los Angeles California.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE 3551 University Avenue.—Organized in 1888 as the University of Southern California College of Medicine. First class graduated in 1888. In 1903 it became the Medical Department of the University of California at Los Angeles. In 1909 the College of Physicians and Surgeons established in 1904 became the Medical Department of the University of Southern California. Its activities were suspended in 1920 reorganized in May 1924 under present name. The faculty consists of 144 professors and 135 instructors assistants and others a total of 279. An

internship is required for graduation. Three years of collegiate work is required for admission. Coeducational since organization. Annual fees amount to \$450. The total registration for 1935 1936 was 190 graduates 30. The next session begins Sept 21 1936, and ends June 5 1937. The Dean is Paul S. McKibben Ph D.

San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE 2398 Sacramento Street San Francisco.—Organized in 1908 when, by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 103 professors and 156 lecturers assistants and others a total of 264. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each plus a fifth year of intern work. The fees for the four years respectively are \$470, \$446, \$364 and \$364. The total registration for 1935 1936 was 234 graduates 45. The next session begins Sept 29 1936 and ends June 9 1937. The Dean is Loren Roscoe Chandler, M D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan 1 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers instructors and assistants a total of 187. The course covers four years of nine months each. The entrance requirements are three years of collegiate work. The fees for residents of Colorado for each of the four years are respectively \$253 \$243 \$223 and \$233. Nonresidents are charged \$165 additional each year. The total registration for 1935 1936 was 205 graduates 50. The next session begins Sept 28 1936 and ends June 14 1937. The Dean is Maurice H. Rees M D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812 instruction began in 1813 first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884 the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887 Yale College became Yale University. Coeducational since 1916. The faculty consists of 130 professors and 229 lecturers and assistants a total of 359. The requirements for admission are three years of collegiate work. The course covers four years of nine months each. The fees for the four years respectively are \$505, \$500, \$500 and \$520. The total registration for 1935 1936 was 206 graduates, 44. The next session begins Sept. 28 1936 and ends June 16 1937. The Dean is Stanhope Bayne Jones, M D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE 3900 Reservoir Road N W.—Organized 1851. First class graduated in 1852. The faculty is composed of 57 professors 43 associate professors 19 assistant professors and 118 instructors total 237. Required for admission three years of collegiate work. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions respectively are \$465 \$460 \$410 and \$450. The total registration for 1935 1936 was 474 graduates 134. The next session begins Sept 21 1936 and ends June 14 1937. The Dean is David V. McCauley S. J. Ph D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 11th Street N W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838 and 1861 to 1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904 by an act of Congress the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 55 professors and 115 instructors demonstrators and assistants a total of 170. Two years of collegiate work is required for admission. The course covers four years of thirty two weeks each. The fees for the four years respectively are \$550 \$500 \$500 and \$500. The total registration for 1935 1936 was 258 graduates 69. The next session begins Sept 23 1936 and ends June 6 1937. The Dean is Earl B. McKinley M D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE Fifth and W Streets N W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Twenty students comprise a majority of those in attendance. The faculty comprises 29 professors and 84 lecturers and assistants 113 in all. The admission requirements are at least two years of collegiate work. The course covers four years of thirty three weeks each. The fees for each of the four sessions respectively are \$269, \$269, \$259 and \$266. Registration for 1935 1936 was 142 graduates 35. The next session begins Sept 26 1936 and ends June 11 1937. The Dean is Numa P. G. Adams M D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE 50 Armstrong Street and Druid Hills—Organized in 1854 as the Atlanta School of Medicine. Classes graduated 1855 to 1861 when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878) taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905) reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915 assumed present title in 1917. Two years of collegiate work is required for admission. The faculty consists of 18 professors and 177 associates and assistants, a total of 195. The course of study is four years of thirty-two weeks each. The fees for each of the four years are \$300. Total registration for 1935-1936 was 223 graduates 53. The next session begins Sept. 28 1936 and ends June 7 1937. The Dean is Russell H. Oppenheimer M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place—Organized in 1828 as the Medical Academy of Georgia the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia the name being changed July 1 1933 to University of Georgia School of Medicine. Property transferred to university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 50 professors and 35 assistants 85 in all. Three years of collegiate work is required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are \$185 for residents of Georgia and \$365 each year for nonresidents. The total registration for 1935-1936 was 148 graduates 37. The next session begins Sept. 23 1936 and ends June 7 1937. The Dean is G. Lombard Kelly M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE 706 South Lincoln Street—Incorporated in 1915 as the Bennett Medical College and operated as an organic part of Loyola University by virtue of an agreement entered into with the trustees of Bennett Medical College. Present title assumed in 1917. The Chicago College of Medicine and Surgery was purchased in 1917. The first class graduated in 1916. Coeducational. Three years of collegiate work is required for admission. The course of study is five years including an internship. The B.S. degree in medicine is conferred at the end of the third year. The faculty is composed of 138 in professorial rank and 163 others a total of 301. The fees for each year are \$371 \$407 \$336 and \$298 respectively. The total enrollment for 1935-1936 was 507 graduates 98. The next session begins Sept. 28 1936 and ends June 12 1937. The Dean is Louis D. Moorhead M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891 when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 129 professors 303 associates and instructors a total of 432. The requirement for admission is three years of collegiate work. The B.S. degree in medicine may be conferred before the end of the senior year. The course covers four years of eight and one-half months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are \$365 each year. The total registration for 1935-1936 was 564 graduates 160. The next session begins Sept. 29 1936 and ends June 12 1937. The Dean is Irving S. Cutter M.D.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE 1853 West Polk Street—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912 and was restored in March 1913 when the present title was assumed. Coeducational since 1898. Two years of collegiate work is required for admission. The curriculum covers four years of thirty-two weeks each and a year of internship in an approved hospital. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 118 of professorial rank and 249 associates instructors and assistants a total of 367. The tuition is \$150 a year for students who are residents of Illinois \$225 a year for nonresident students. The total registration for 1935-1936 was 637 graduates 144. The next session begins Sept. 28 1936 and ends June 11 1937. The Dean is David John Davis M.D.

THE UNIVERSITY OF CHICAGO MEDICAL SCHOOLS—The Medical Schools include (a) The School of Medicine of the Division of Biological Sciences and (b) Rush Medical College, both of which are organized within the Division of Biological Sciences. The first two years of the medical course for both are given in the School of Medicine of the Division of Biological Sciences on the University Quadrangles and the last two years are given either in the School of Medicine on the University Quadrangles or in Rush Medical College on the West Side.

The School of Medicine of the Division of Biological Sciences Fifty Ninth Street and Ellis Avenue—Organized in 1924. The work of the first two years of the medical course has been given on the Quadrangles since 1899 in cooperation with Rush Medical College and that of the third and fourth clinical years has been given since 1924 with the

organization of this medical school and the construction on the Quad ranges of the University hospitals and clinics. Coeducational. The faculty is composed of 98 professors 132 associates instructors and others a total of 230. The requirements for admission are three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers twelve quarters of work. Students are admitted at the beginning of the autumn quarter. The tuition fee for each of the four years is \$450. Total registration for 1935-1936 was 311 graduates 40. The next session begins Oct. 1 1936 and ends June 16 1937.

Rush Medical College 1758 West Harrison Street—Chartered in 1837 held first class in 1843. First class graduated in 1844. In 1887 the college became the medical department of Lake Forest University retaining however its self government. This relation was dissolved in April 1898 and in the same month affiliation with the University of Chicago was established. Coeducational since 1898. Since that time the work of the first two years has been given on the University Quadrangles. In May 1924 by a new contract the University of Chicago took over the work of Rush Medical College as a department of the University. Thereafter only clinical work has been offered by Rush Medical College. Since 1914 the course has included a fifth year consisting of a hospital internship or of a fellowship in one of the departments. Three years of collegiate work is required for admission. The year is divided into four quarters of twelve weeks each the completion of the work of three of these quarters gives credit for a college year. The faculty is composed of 139 professors 149 associates instructors and others a total of 288. The tuition fee is \$375 a year until 1938. Effective Autumn 1938 it will be increased to \$450 for juniors and in Autumn 1939 for juniors and seniors. Total registration for 1935-1936 was 321 graduates 149. The next session begins Oct. 1 1936 and ends June 16 1937. The school is in session all year except the month of September.

All correspondence relating to general policies should be addressed to W. H. Taliaferro Ph.D. Dean of the Division of Biological Sciences or to A. C. Bachmeyer M.D. Associate Dean of the Division that relating to Rush Medical College should be addressed to Emmet B. Bay M.D. Associate Dean of the Division of Biological Sciences (Rush Medical College) and that pertaining to student questions should be addressed to B. C. H. Harvey, M.D. Dean of Students.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons the complete course in medicine was offered. In 1908 the Indiana Medical College which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878) the Central College of Physicians and Surgeons (organized in 1879) and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors lecturers associates and assistants. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The regular fee for the medical course for all four years is \$205 a year for residents of Indiana and \$410 for nonresidents. The total registration for 1935-1936 was 432 graduates 108. The next session begins Sept. 15 1936 and ends June 14 1937. The Dean at Bloomington is Burton D. Myers M.D. and the Dean at Indianapolis is Willis Dew Gatch M.D.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE University Campuses—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 46 professors 63 lecturers demonstrators and assistants a total of 109. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred. The course of study covers four years of thirty-four weeks each. The tuition fee is \$192 each year for residents of Iowa and \$456 for nonresidents. Total registration for 1935-1936 was 393 graduates 94. The next session begins Sept. 21 1936 and ends June 7 1937. The Dean is Ewen Murchison MacEwen M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE—Organized in 1880. It offered only the first two years of the medical course until 1905 when it merged with the Kansas City (Mo.) Medical College founded in 1869 the College of Physicians and Surgeons founded in 1894 and the Medico-Chirurgical College founded in 1897. Absorbed Kansas Medical College in 1913. First class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 59 professors and 136 instructors assistants and others a total of 195. The requirement for admission is two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are respectively \$126 \$113 \$117 and \$120. For nonresidents the fees are \$168 \$174 \$205 and \$207. The total registration for 1935-1936 was 295 graduates 72. The next session begins Sept. 17 1936 and ends June 7 1937. The Dean is H. R. Wahl M.D., Kansas City.

KENTUCKY**Louisville**

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE First and Chestnut Streets—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838 and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department. In 1908 the Louisville Medical College the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work is the minimum requirement for admission. The faculty numbers 72 professors and 85 assistants instructors and others a total of 157. Course covers four years of thirty-two weeks each exclusive of vacations and examinations. Fees for four years are respectively \$404 \$404 \$409 and \$419. Total registration for 1935-1936 was 342 graduates 87. The next session begins Sept. 17, 1936 and ends June 5, 1937. The Dean is John Walker Moore, M.D.

LOUISIANA**New Orleans**

LOUISIANA STATE UNIVERSITY MEDICAL CENTER 1542 Tulane Avenue—Organized January 1931. Coeducational. First session October, 1931 with students of first and third years. Faculty comprises 30 professors and 129 assistant professors instructors and assistants a total of 159. Course covers four years of no less than 32 weeks each and one year of general rotation or laboratory internship in approved hospital. A minimum of three years collegiate work is required for admission. Total fees \$92 each year for residents of Louisiana additional tuition of \$300 each year for nonresidents. Total registration for 1935-1936 was 315 graduates, 49. The next session begins Sept. 14, 1936 and ends May 29, 1937. The Dean is Arthur Vidrine, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865 inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 30 professors and 136 associate and assistant professors instructors and assistants, a total of 166. The course covers four years of thirty-two weeks each. A minimum of two years of collegiate work is required for admission. Total fees for each of the four years, respectively are \$350 \$340 \$330 and \$360. The total registration for 1935-1936 was 470 graduates 112. The next session begins Sept. 25, 1936 and ends June 9, 1937. The Dean is Charles Cassidy Bass, M.D.

MARYLAND**Baltimore**

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets—Organized in 1887. Offered preliminary course only until 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 69 professors and 312 instructors assistants and others a total of 381. The requirement for admission is a collegiate degree. The course extends over four years of eight and one-half months each. The total fees for each year are respectively \$621 \$620 \$620 and \$620. Total registration for 1935-1936 was 271 graduates 66. The next session begins Sept. 29, 1936 and ends June 8, 1937. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS Lombard and Greene Streets—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 46 professors 66 associate and assistant professors and 178 instructors and assistants a total of 290. Two years of collegiate work is required for admission. The course covers four years of eight months each. The fees for the four years respectively are \$435 \$425 \$425 and \$440 for residents of the state for nonresidents the fees are \$200 additional each year. Total registration for 1935-1936 was 414 graduates 97. The next session begins Sept. 22, 1936 and ends June 5, 1937. The Dean is J. M. H. Rowland, M.D.

MASSACHUSETTS**Boston**

BOSTON UNIVERSITY SCHOOL OF MEDICINE 80 East Concord Street—Organized in 1873 as a Homeopathic institution. In 1874 the New England Female Medical College founded in 1848 was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work is required for admission. The faculty includes 26 professors 148 associates and others a total of 174. The course covers four years. Total fees for each of the four years respectively are \$426 \$421 \$421 and \$415. Total registration for 1935-1936 was 438 graduates 63. The next session begins Sept. 24, 1936 and ends June 1, 1937. The Dean is Alexander S. Lee, M.D.

HARVARD UNIVERSITY MEDICAL SCHOOL 25 Shattuck Street—Organized in 1782. The first class graduated in 1787. It has a faculty of 147 professors and 166 other instructors and assistants a total of 313.

Two years of collegiate work is required for admission. The total fee for each of the four years is \$400 plus \$5 the first year for matriculation. The total registration for 1935-1936 was 529 graduates 134. The next session begins Sept. 28, 1936, and ends June 24, 1937. The Dean is Charles Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 69 professors and 273 assistant professors and others a total of 342. A bachelor's degree is required for admission. The course covers four years of eight months each. The total fees for each of the four years are \$412 \$407, \$407 and \$417. Total registration for 1935-1936 was 474 graduates 115. The next session begins Sept. 23, 1936 and ends June 14, 1937. The Dean is A. Warren Stearns, M.D.

MICHIGAN**Ann Arbor**

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 26 professors 13 associate professors 28 assistant professors 152 assistants instructors and lecturers a total of 219. The entrance requirements are ninety semester hours. The curriculum covers four years of nine months each. The total fees for Michigan students are \$220 for each of the four years, respectively for nonresidents \$350 a year. The total registration for 1935-1936 was 481 graduates 117. The next session begins Sept. 28, 1936 and ends June 19, 1937. The Dean is A. C. Furstenberg, M.D.

Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE, 1516 St. Antoine Street—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College organized in 1868 and the Michigan College of Medicine, organized in 1880. Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by the action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit City Colleges into a university system. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with combined degree guaranteed by school of arts and sciences. The faculty consists of 31 professors 159 lecturers and others, a total of 190. The course covers four years of nine months each and a fifth year of intern work. The total fees for each of the first four years are for Wayne County residents \$283 for nonresidents who reside in Michigan \$383 and for nonresidents from outside the state \$408. For the fifth or intern year the resident student fee is \$50 the non-resident fee is \$85. The total registration for 1935-1936 was 300 graduates 71. The next session begins Sept. 24, 1936, and ends June 19, 1937. The Dean is Raymond B. Allen, M.D.

MINNESOTA**Minneapolis**

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL—Organized in 1883 as the University of Minnesota College of Medicine and Surgery reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons organized in 1883 was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 90 professors and 238 instructors a total of 328. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work which must include six semester credits of rhetoric eight semester credits of physics thirteen credits of general chemistry qualitative and quantitative analysis and organic chemistry eight credits of zoology and a reading knowledge of scientific German with a C average in all subjects and in the sciences. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Students are graduated at the end of any quarter in which work is completed and examinations passed. Total fees are \$243 for residents and \$318 for nonresidents each year of three quarters. The total registration for 1935-1936 was 503 graduates 126. The next session begins Sept. 28, 1936 and ends June 14, 1937. The Dean is Harold S. Diehl, M.D.

MISSISSIPPI**University**

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE—Organized in 1933. Coeducational since organization. Gives only the first two years of the medical course. A clinical department was established at Vicksburg in 1903 but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirement is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The faculty includes 2 professors 1 assistant professor and 9 instructors a total of 12. The total fees for the first year are \$338 and for the second

year \$345 The nonresident fee is \$50 additional per year The total registration for 1935 1936 was 19 The next session begins Sept 18 1936 and ends May 31 1937 The Dean is B S Guyton M D

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St Louis in 1845 was discontinued in 1855 but was reorganized at Columbia in 1872 Teaching of the clinical years was suspended in 1909 Coeducational since 1872 The faculty includes 13 professors and 16 assistant professors lecturers and others a total of 29 The entrance requirements are 90 semester hours of collegiate work The B S degree in medicine is conferred at the end of the second year Total fees for the first year are \$182 for the second \$200 Nonresidents of the state pay \$25 per semester extra Total registration for 1935 1936 was 80 The next session begins Sept. 14 1936 and ends June 9, 1937 The Dean is Dudley S Conley M D

St. Louis

ST LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard.—Organized in 1901 as the Marion Sims Beaumont Medical College by union of Marion Sims Medical College organized in 1890 and Beaumont Hospital Medical College organized in 1886 First class graduated in 1902 It became the Medical School of St Louis University in 1903 The faculty is composed of 76 professors and 244 instructors and assistants a total of 320 The requirement for admission is a qualitative standard of two years of collegiate study in the customary subjects but applicants presenting meritorious credit in excess of the two year minimum are accepted by preference The B S degree in medicine is conferred at the end of the second year The curriculum covers four years of thirty two weeks each The summer is optional and offers courses academically equivalent to those in the regular session The total fees for the four years respectively are \$425 \$420 \$420 and \$455 The total registration for 1935 1936 was 504 graduates 116 The next session begins Sept 17 1936 and ends June 1 1937 The Dean is Alphonse M Schwitalla S J Ph.D

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University The first class graduated in 1843 In 1855 it was chartered as an independent institution under the name of St Louis Medical College In 1891 it became the Medical Department of Washington University In 1899 it absorbed the Missouri Medical College Coeducational since 1918. The faculty comprises 107 professors and 203 lecturers instructors and others a total of 310 Four years of collegiate work is required for admission. The B S degree in medicine is conferred at the end of the third or fourth year The course is four years of eight months each The total fees for the four years are respectively \$425 \$419, \$419 and \$424 The total registration for 1935 1936 was 355 graduates 96 The next session begins Sept 24 1936 and ends June 8 1937 The chairman of the Administrative Committee is David P Barr M D

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street.—Organized in 1892 as the John A Creighton Medical College The first class graduated in 1893 Present title in 1921 Coeducational since organization It has a faculty of 67 professors and 70 instructors lecturers and assistants a total of 137 Two years of collegiate work required for admission The B S degree in medicine is conferred at the end of the second year The curriculum covers four years of eight months each The total fees each year for the four years are respectively \$393 \$393 \$348 and \$356 Total registration for 1935 1936 was 287 graduates 77 The next session begins Sept 22 1936 and ends June 3 1937 The Dean is Bryan M Riley M D

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882 It became the Medical Department of Omaha University in 1891 In 1902 it affiliated with the University of Nebraska with the present title The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913 when the work of all four years was transferred to Omaha Coeducational since 1882 The faculty is composed of 64 professors and 60 lecturers and instructors a total of 124 Sixty five semester hours of collegiate work is required for admission The B S degree in medicine is conferred at the end of the second year The fees for each of the four years respectively are \$219 \$214 \$214 and \$214 Total registration for 1935 1936 was 328 graduates 70 The next session begins Sept 21 1936 and ends June 7 1937 The Dean is C W M Poynter M D

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized by Dr Nathan Smith in 1797 The first class graduated in 1798 It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914 The faculty consists of 16 professors and 10 instructors a total of 26 Three years of collegiate work is required for admission The course covers nine calendar months in each year or eight months of actual teaching Candidates for the A.B degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department The fees for the first year are \$410 and \$400 for the second year The total registration for 1935 1936 was 43 The next session begins Sept. 17 1936 and ends June 11 1937 The Dean is John P Bowler M D

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838 The first class graduated in 1839 It became the Medical Department of Union University in 1873 In 1915 Union University assumed educational control Coeducational since 1915 The faculty is composed of 28 professors and 63 instructors assistants and others a total of 91 A collegiate degree is required for admission The curriculum covers four years of eight months each The total fees for four years respectively are \$445, \$420 \$405 and \$405 The total registration for 1935 1936 was 100 graduates 25 The next session begins Sept. 28, 1936, and ends June 14 1937 The Dean is Thomas Ordway M D

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Organized in 1858 as the Long Island College Hospital The first class graduated in 1860 and the last class in 1930 Reorganized with a new charter in 1930 as the present institution The first class graduated in 1931 Coeducational It has a faculty of 123 professors associate assistant clinical and assistant clinical professors and 175 lecturers associates instructors assistants and others a total of 298 Seventy two semester hours of collegiate work is required for admission The course covers four years (first, second and fourth years of eight months each and the third year of nine months) The total fee for each of the four years is \$610 Total registration for 1935 1936 was 383 graduates 104 The next session begins Sept 28 1936, and ends June 3, 1937 The Acting Dean is Wade W Oliver, M D

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE 24 High Street.—Organized in 1846 The first class graduated in 1847 It absorbed the Medical Department of Niagara University in 1898 Coeducational since organization The faculty is composed of 91 professors and 164 associates assistants and others a total of 255 Two years of collegiate work is required for admission The course covers four years of eight months each The total fees for each of the four years are respectively \$530 \$525 \$520 and \$530 Total registration for 1935 1936 was 268 graduates 62 The next session begins Sept 28 1936 and ends June 5 1937 The Dean is Edward W Koch M D

Ithaca-New York

CORNELL UNIVERSITY MEDICAL COLLEGE York Avenue and Sixty Ninth Street New York.—Organized in 1898 The work of the first year may be taken either in Ithaca or New York Coeducational since organization The faculty is composed of 115 professors and 269 assistants lecturers instructors and others a total of 384 All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the bachelor degree on the completion of the first year's work. The fees for each of the four years are respectively \$510 \$500 \$510 and \$525 Total registration for 1935 1936 was 286 graduates 64 The next session begins Sept 28 1936 and ends June 16, 1937 The Dean is William S Ladd M D

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS 630 West One Hundred and Sixty Eighth Street.—The medical faculty of Columbia College then known as King's College was organized in 1767 Instruction was interrupted by the War of the Revolution The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons which had received an independent charter in 1807 In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College This merger became permanent by legislative enactment in 1891 Columbia College became Columbia University in 1896 The medical school has been coeducational since 1917 The faculty is composed of 190 professors and 316 instructors demonstrators and others a total of 506 Three years of collegiate work is required for admission The work covers four years of eight months each The total fees for the four years respectively are \$545 \$530 \$530 and \$550 Total registration for 1935 1936 was 392 graduates 85 The next session begins Sept 17 1936 and ends June 1 1937 The Dean is Willard C Rappleye M D

NEW YORK MEDICAL COLLEGE AND FLOWER HOSPITAL 450 East Sixty Fourth Street.—Organized in 1858 Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869 the title New York Homeopathic Medical College and Flower Hospital in 1908 present title May 11 1936 The first class graduated in 1861 Coeducational since 1919 Two years of collegiate work is required for admission The course covers four years of eight months each It has a faculty of 64 professors and associate professors 21 assistant professors and 188 lecturers and assistants a total of 273 The total fees for the four years are respectively \$540 \$530 \$530 and \$560 Total registration for 1935 1936 was 315 graduates 77 The next session begins Sept 14 1936 and ends June 8 1937 The Dean is Claude A Burrett M D

NEW YORK UNIVERSITY COLLEGE OF MEDICINE, 477 First Avenue.—Organized in 1898 by the union of the New York University Medical College organized in 1841 and the Bellevue Hospital Medical College organized in 1861 Named University and Bellevue Hospital Medical College from 1898 to February 1935 when it was changed to New York University College of Medicine. First class graduated in 1899 Coeducational since 1919 The faculty is composed of 137 professors associate assistant, clinical and assistant clinical professors and 299 lecturers

instructors and others a total of 436. The course covers four years. Entrance requirements are that all candidates must be graduates of approved colleges or scientific schools or seniors in good standing in approved colleges or scientific schools on condition that their faculty will permit them to substitute the first year in the New York University College of Medicine for the fourth year of their college course and will confer the bachelor's degree on the satisfactory completion of the year's work. The fees for each of the four years is \$600. The next session begins Sept 16 1936 and ends June 9 1937. Total registration for 1935 1936 was 521 graduates, 131. The Dean is John Wyckoff M D.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Avenue and Crittenden Boulevard—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 60 professors 169 lecturers assistants instructors and others a total of 229. The work embraces a graded course of four years of nine months each. Three years of collegiate work is required for admission. The total fees for each year are \$400. The total registration for 1935 1936 was 168 graduates 42. The next session begins Sept 21 1936 and ends June 19 1937. The Dean is George Hoyt Whipple, M D.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE 309 311 South McBride Street—Organized in 1872 when the Geneva Medical College chartered in 1834 was removed to Syracuse, under the title The College of Physicians and Surgeons of Syracuse University. Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 46 professors and 149 associate and assistant professors lecturers and instructors a total of 195. Two years of a recognized college course is required for admission. The course covers four years of thirty-four weeks each. The fee for each of the first three years is \$500 for the fourth year \$510. The total enrollment for 1935 1936 was 174 graduates, 45. The next session begins Sept 24 1936, and ends May 31 1937. The Dean is H G Weiskotten M D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE—Organized in 1890. Until 1902 this school gave only the work of the first two years when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of collegiate work is required for admission. The B S degree in medicine is conferred at the end of the first year. The faculty is composed of 12 professors and 4 instructors a total of 16. The fees for each year are \$250 for residents nonresidents an additional fee of \$100. The total registration for 1935 1936 was 74. The next session begins Sept 17 1936 and ends June 8, 1937. The Dean is C S Mangum M D.

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE—Organized in 1925. The first class was admitted Oct 1 1930. Coeducational. The faculty is composed of 10 professors and 87 associate and assistant professors, lecturers instructors and assistants a total of 97. The entrance requirements are seventy hours of collegiate work. The academic year consists of four quarters of eleven weeks each. Students either may study four quarters each year after the first year and if satisfactory will receive the M D certificate after three and one quarter calendar years or three quarters in each year and if satisfactory will be graduated after four calendar years. The B S degree in medicine is conferred after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are \$450 for each year of three quarters. Total registration for 1935 1936 was 219 graduates 38. The next session begins Oct 5 1936 and ends June 12 1937. The Dean is Wilbur C. Davison M D.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE—Organized in 1902. The faculty numbers 11 professors 5 instructors and 8 undergraduate assistants. Ninety semester hours of collegiate work are required for admission. Each annual course extends over nine months. The fees for each of the first two years are \$300. The total registration for 1935 1936 was 56. The next semester begins Sept. 15 1936 and ends June 1 1937. The Dean is C C Carpenter M D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE—Organized in 1915. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts is required for admission. The B S degree in medicine is conferred at the end of the second year. The faculty consists of 5 professors and 8 instructors a total of 13. The fees are \$75 each year for resident students and \$165 for nonresidents. The total registration for 1935 1936 was 59. The next session begins Sept 15 1936 and ends June 8 1937. The Dean is H E Frerking M D.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement March 2 1909, the Miami Medical College also merged into the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours. The B S degree in medicine is conferred at the end of the first year. The faculty consists of 126 professors and 266 associates, assistants etc. a total of 392. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for the four years are respectively \$360 \$365 \$360 and \$370, and if not legal citizens of Cincinnati \$50 additional. The total registration for 1935 1936 was 286 graduates 66. The next session begins Sept. 21 1936, and ends June 4, 1937. The Dean is Alfred Friedlander M D.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE 2109 Adelbert Road—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 75 professors and 194 lecturers, assistants and others a total of 269. The curriculum covers three years of nine months each and one year of ten months. Three years of collegiate work is required for admission. The total fees for each of the four years are respectively \$446 \$433 \$415 and \$425. The total registration for 1935 1936 was 261 graduates 57. The next session begins Sept. 24 1936 and ends June 16 1937. The Dean is Torald Sollmaas M D.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleven Avenues—Organized in 1907 as the Starling Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College which was chartered March 3 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 51 professors associate and assistant professors 95 lecturers instructors demonstrators and others a total of 146. Three years of collegiate work is required for admission. The course covers four years of thirty-four weeks each. Tuition fees are \$246 \$231, \$231 and \$231 each year respectively for residents of Ohio, and \$150 additional for nonresidents. The total registration for 1935 1936 was 381 graduates 92. The next session begins Sept 29 1936 and ends June 14 1937. The Dean is J H J Upham M D.

OKLAHOMA

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910 when a clinical department was established at Oklahoma City. The first class graduated in 1911. Coeducational since organization. Since September 1928 the entire course has been given at Oklahoma City. It has a faculty of 30 professors 24 associate professors 17 assistant professors 8 associates 4 lecturers 53 instructors and 13 assistants a total of 149. Two years of collegiate work is required for admission. The B S in Medicine degree is conferred at the end of the second year. The course covers four years of nine months each. The total fees for the four years are respectively \$128 \$85, \$48 and \$58. For students residing outside the state of Oklahoma there is an additional fee of \$200 a year. The total registration for 1935 1936 was 240 graduates 58. The next session begins Sept 14 1936 and ends June 7 1937. The Dean is Robert U Patterson, M D.

OREGON

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill—Organized in 1887. The first class graduated in 1888 and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 71 professors and 190 lecturers assistants and others a total of 261. Entrance requirements are three years of collegiate work. The course covers four years of thirty-three weeks each. The total fees for the four years are respectively \$260 \$255 \$250 and \$250 for residents of Oregon and \$60 a year additional for nonresidents. The total registration for 1935 1936 was 234 graduates 55. The next session begins Oct 5 1936 and ends June 10 1937. The Dean is Richard B Dillehunt M D.

PENNSYLVANIA

Philadelphia

HANNAH MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA 235 North Fifteenth Street—Organized in 1848 as the Hannah Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Two years of collegiate

work is required for admission. It has a faculty of 77 professors and 126 lecturers, instructors and others in all 203. The work covers four years of eight and one-half months each. Fees for each of the four years are respectively \$450 \$427 \$427 and \$450. The total registration for 1935-1936 was 524 graduates. The next session begins Sept. 28, 1936 and ends June 10, 1937. The Dean is William A. Pearson, Ph.D.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate university charter was granted without change of title since which time it has continued under the direction of its own board of trustees. It has a faculty of 70 professors, associate and assistant professors and 172 associates, lecturers, demonstrators and instructors, a total of 242. Four years of college work and a bachelor's degree are required for admission. The course of study covers four years of eight and one-half months each. The total fees for the four years are respectively \$445 \$435 \$425 and \$425. The total registration for 1935-1936 was 533 graduates, 133. The next session begins Sept. 21, 1936 and ends June 4, 1937. The Dean is Ross V. Patterson, M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE Broad and Ontario Streets.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 34 professors and 208 associates, assistants and others, a total of 242. Three years of collegiate work is required for admission. The fees for each of the four years respectively are \$485 \$455 \$435 and \$455. The total registration for 1935-1936 was 465 graduates, 124. The next session begins Sept. 23, 1936 and ends June 10, 1937. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE Thirty Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779 inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 93 professors, associate and assistant professors and 310 lecturers, associates, instructors and others, a total of 403. Three years of collegiate work is required for admission. The course covers four years of thirty-three weeks each. The tuition fee is \$500 each year with a deposit fee of \$15, a student health fee of \$10 and a matriculation fee of \$5. Total registration for 1935-1936 was 515 graduates, 140. The next session begins Sept. 28, 1936 and ends June 9, 1937. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 49 professors and 63 assistants, lecturers and others, in all 112. Three years of collegiate work is required for admission. The curriculum covers four years of eight months each. Total fees for each of the four years are, respectively \$440 \$433 \$433 and \$455. The total registration for 1935-1936 was 116 graduates, 33. The next session begins Sept. 23, 1936 and ends June 2, 1937. The Dean is Martha Tracy, M.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 27 professors and 253 associates, assistants and others, 280 in all. Entrance requirements are two years of collegiate work. The course of study is four years of eight and one-half months each. The total fees for the four years respectively are \$500 \$500 \$400 and \$415. The total registration for 1935-1936 was 252 graduates, 60. The next session begins Sept. 21, 1936 and ends June 9, 1937. The Dean is R. R. Huggins, M.D.

SOUTH CAROLINA

Charleston

MEOICAL COLLEGE OF THE STATE OF SOUTH CAROLINA 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865 inclusive. In 1913 by legislative enactment it became a state institution. Coeducational from 1895 to 1912 when privileges for women were withdrawn, being restored in 1917. It has a faculty of 37 professors and 38 lecturers, instructors and others, a total of 75. The course covers four years of eight months each. Two years of collegiate work is required for admission. The total fees are \$270 each year. Fees for nonresidents of the state \$420 each year. Total enrollment for 1935-1936 was 160 graduates, 32. The next session begins Sept. 24, 1936 and ends June 3, 1937. The Dean is Robert Wilson, M.D.

SOUTH DAKOTA

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE—Organized in 1907. Coeducational since organization. Offers only the first two years of the medical course. Two years work in a college of liberal arts is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The faculty numbers 11. The fees are \$100

each year for residents and \$200 for nonresidents. The total registration for 1935-1936 was 54. The next session begins Sept. 16, 1936 and ends June 7, 1937. The Dean is J. C. Ohlmacher, M.D.

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877 and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 91 professors and 116 assistants, instructors and others, a total of 207. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are for the first quarter \$136, second to sixth quarters \$116 each, seventh to ninth quarters \$111 each, tenth to twelfth quarters \$121 each. For residents of the state the charge is reduced \$50 each quarter. Total registration for 1935-1936 was 429 graduates, 102. During the academic year of 1936-1937 the quarters begin July 9, Sept. 28, Jan. 4 and March 25 and end Sept. 26, Dec. 16, March 24 and June 12. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue North and Heffernan Street.—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 25 professors and 24 instructors, demonstrators, lecturers and others, 49 in all. Two years work in a college of liberal arts is required for admission. The curriculum covers four years of thirty-two weeks each. Tuition fees are, respectively \$270 \$250 \$250 and \$260 each year. Total registration for 1935-1936 was 183 graduates, 32. The next session begins Oct. 1, 1936 and ends May 20, 1937. The President is John Mullowney, M.D.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty First Street at Edgehill.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September 1925. The faculty numbers 215. For matriculation students must be graduates of collegiate institutions of recognized standing or seniors in absentia who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees for the four years respectively are \$315 \$315 \$315 and \$320. The total registration for 1935-1936 was 203 graduates, 52. The next session begins Sept. 23, 1936 and ends June 9, 1937. The Dean is Waller S. Leathers, M.D.

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 69 professors and 85 instructors and assistants, a total of 154. Entrance requirements are two years of collegiate work. The course covers four years of eight months each. The fees for each of the four years respectively are \$364 \$354 \$349 and \$374. Total registration for 1935-1936 was 350 graduates, 79. The next session begins Oct. 1, 1936 and ends May 31, 1937. The Dean is W. H. Mouroum, M.D.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 42 professors and 15 lecturers and instructors, a total of 57. The curriculum covers four years of eight months each. The entrance requirement is two years of collegiate work. The total fees for the four years respectively are \$92 \$94 \$98 and \$104. There is a matriculation fee of \$50 for each year. Total registration for 1935-1936 was 355 graduates, 75. The next session begins Oct. 1, 1936 and ends May 31, 1937. The Dean is W. S. Carter, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each school year covers thirty-six weeks. Three years of collegiate work is required for admission. The medical faculty consists of 7 professors and 16 lecturers and assistants, a total of 23. The fees are \$228 per year. There is a nonresident fee of \$25 per quarter. Total registration for 1935-1936 was 58. The next session begins Sept. 24, 1936 and ends June 5, 1937. The Dean is L. L. Daines, M.D.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street College Park—Organized with complete course in 1822. Coeducational since 1920. It has a faculty of 34 professors and 28 lecturers-instructors preceptors and others a total of 62. Two years of collegiate work is required for admission. The course of study covers four years of nine months each. For residents of Vermont the tuition fee is \$300 each session. Nonresidents are charged an additional \$75 each session. A student activity fee of \$30 is charged all students not holding academic degrees or in attendance four years previously and a \$25 fee for the Doctor's degree. The total registration for 1935-1936 was 171 graduates 41. The next session begins Sept. 17, 1936, and ends June 14, 1937. The Dean is J. N. Jenne, M.D.

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE—Organized in 1827. Coeducational since the session of 1920-1921. It has a faculty of 33 professors and 36 lecturers-instructors assistants and others a total of 69. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year when special requirements are fulfilled. For residents of Virginia the total fees for the four years respectively are \$379, \$356, \$331 and \$326. Nonresidents are charged an additional \$50 each year. The total registration for 1935-1936 was 245 graduates 50. The next session begins Sept. 17, 1936, and ends June 15, 1937. The Dean is J. Carroll Flippin, M.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA Twelfth and Clay Streets—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 61 professors and 92 lecturers-instructors and others a total of 153. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each. Total fees for the four years respectively are \$335, \$335, \$320 and \$350. Nonresidents are charged an additional \$125 each year. The total registration for 1935-1936 was 309 graduates, 73. The next session begins Sept. 11, 1936, and ends June 1, 1937. The Dean is Lee E. Sutton, Jr., M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE—Organized in 1902 gives the first two years of the medical course. Coeducational since organization. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. Session extends through nine months. Faculty numbers 24. Fees for residents of the state \$254, nonresidents \$404 each year. The total registration for 1935-1936 was 66. The next session begins Sept. 14, 1936, and ends June 8, 1937. The Acting Dean is Edward J. Van Lere, M.D.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street—Organized in 1907. Gave only the first two years of the medical course until 1925 when the clinical years were added. Coeducational since organization. Three years of collegiate work are required for admission. The B.S. degree in medical science is conferred at the end of the first year. It has a faculty of 64 professors and 67 lecturers, instructors and others a total of 131. The fees for each year are respectively \$212, \$192, \$165 and \$110. An additional fee of \$200 each year is charged nonresidents. The total registration for 1935-1936 was 307 graduates 51. The next session begins Sept. 23, 1936, and ends June 21, 1937. The Dean is Wm. S. Middleton, M.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 158. Two years of collegiate work is required for admission. The curriculum covers four years of eight and a half months each and one year's internship in an approved hospital. The fees for the four years respectively are \$392, \$353, \$383 and \$368. The total registration for 1935-1936 was 306 graduates 60. The next session begins Sept. 28, 1936, and ends June 16, 1937. The Dean is Ellen J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 8 full-time and 64 part-time professors-instructors assistants and others a total of 72. Fees for the six years are \$150 for the second third and fourth years \$215 for the fifth and sixth years \$225. The registration for 1935-1936 was 154 graduates 21. The next session begins Sept. 21, 1936, and ends April 1, 1937. The Dean is Allen Coats Rankin, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Corner of Emily and Bannatyne Winnipeg—Organized in 1883 as Manitoba Medical College first class graduated in 1886 and a class graduated each subsequent year. Assumed present title in 1919. Coeducational since organization. The faculty includes 30 professors and 74 instructors and assistants total of 104. Two years of collegiate work is required for admission. The course extends over four years of eight months each and a hospital internship. The total fees for the five years respectively are \$266, \$266, \$266, \$266 and \$115. Total registration for 1935-1936 was 201 graduates, 56. The next session begins Sept. 21, 1936, and ends May 8, 1937. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Halifax—Organized in 1867. First class graduated in 1872. Coeducational since 1881. It has a faculty of 24 professors and 43 demonstrators lecturers and others a total of 67. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are \$312, \$312, \$302 and \$302 for each year respectively, \$200 additional registration fee payable by students outside the British Empire. The total registration for 1935-1936 was 157 graduates 26. The next session begins Sept. 8, 1936, and ends May 11, 1937. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston—Organized 1854 first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 56. The fee for the first year is \$175 and \$220 for each of the other five years. The course covers six years of thirty teaching weeks each. The total registration for 1935-1936 was 318 graduates 41. The next session begins Sept. 24, 1936, and ends May 26, 1937. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Ottawa Avenue London—Organized in 1881 as the Western University Faculty of Medicine first class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 63. The course of study covers six years of eight months each. The total fees to residents of Canada for the last four years respectively are \$225, \$225, \$233 and \$258. The registration for 1935-1936 was 218 graduates, 28. The next session begins Sept. 21, 1936, and ends May 15, 1937. The Dean is F. J. H. Campbell, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto—Organized in 1843. Coeducational since 1903. The course of study covers six years of eight months each. The B.S. degree in medicine is conferred at the end of the third or sixth year. It has a faculty of 66 professors and 254 lecturers associates and others a total of 320. The fees are \$192 for the first year for the second \$370, \$265 for the third year \$290 for the fourth and fifth years and \$322 for the sixth year. The total registration for 1935-1936 was 853 graduates 126. The next session begins Sept. 29, 1936, and ends May 15, 1937. The Dean is W. E. Gallie, M.D.

Quebec

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street Montreal—Founded in 1823. Coeducational since 1919. Three years of collegiate work is required for admission. The length of the medical course is five years beginning with the session 1936-1937 it will be four years followed by one year of internship. The faculty consists of 56 professors and 152 lecturers and others a total of 208. The total fees for each of the five medical years are \$193. The total registration for 1935-1936 was 469 graduates, 95. The next session begins Sept. 2, 1936, and ends June 1, 1937. The Dean is A. Grant Fleming, M.D.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, 1265 St. Denis Street Montreal—Organized in 1843. Coeducational since 1925. The faculty numbers 122. One year of premedical college work is required for admission to a five-year medical course. The total fees for each of the five years respectively are \$253, \$229, \$243 and \$218. The total registration for 1935-1936 was 183 graduates 42. The next session begins Sept. 15, 1936, and ends June 15, 1937. The Dean is Telephore Parizeau, M.D.

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec—Organized in 1848. The faculty numbers 88. The fees for each of the medical years are \$160, \$170, \$160, \$160 and \$180 for residents of Canada. Nonresidents are charged an extra fee of \$190 each year. The premedical requirement is a B.A. degree. Total registration for 1935-1936 was 265 graduates 38. The next session begins Sept. 15, 1936, and ends May 31, 1937. The Dean is P. C. Dagneau, M.D.

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon—Organized in 1926. Coeducational. Offers the first two years of the medical course. Students require three more years of medicine for graduation. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The medical faculty includes 7 professors and 3 lecturers and assistants a total of 10. The fees are \$150 for each year. The total registration for 1935-1936 was 51. The next session begins Sept. 25, 1936, and ends May 14, 1937. The Dean is W. S. Linday, M.B.

HOSPITALS APPROVED FOR TRAINING INTERNS

The following general hospitals containing 216 494 beds are considered in position to furnish acceptable internships for medical graduates

HOSPITALS, 705 INTERNSHIPS, 6,759

The terms used in the column 'Type of Internship' are defined as follows:
1 Rotating internships include services in medicine surgery pediatrics obstetrics and in the clinical and x ray laboratories

2 Straight internships are limited to a single field
3 Mixed internships are those comprising more than one service but which do not include all of the six branches which constitute a rotating internship

ABBREVIATIONS

Army
CyCo
Corp

United States Army
City and County
Corporation unrestricted
as to profit

Fed
Frat
Indlv
NPAsen
Op

Federal
Fraternal
Individual
Nonprofit association
Optional

Part
Req
USPHS

Partnership
Required
United States Public
Health Service

| Name of Hospital | Location | Control | Capacity | Classification of Patients | | | | Type of Internship | Number of Interns | Length of Service in Months | Service Commences | Affiliated Service | Outpatient Service | Autopsy Percentage | Salary per Month |
|--|----------------------------|---------|----------|----------------------------|----------|----------|------------------------|--------------------|-------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|------------------|
| | | | | Free | Part Pay | Full Pay | Total Patients Treated | | | | | | | | |
| ALABAMA | | | | | | | | | | | | | | | |
| Hillman Hospital | Birmingham | County | 474 | 100 | | | 12,295 | Rotating | 16 | 12 | July | No | Req | 26 | No |
| Norwood Hospital | Birmingham | NPAsen | 226 | 8 | 61 | 31 | 3,933 | Rotating | 2 | 12 | July | No | Req | 25 | \$25 |
| Employees Hospital of the Tennessee Coal Iron and Railroad Company | Fairfield | NPAsen | 810 | | | 100 | 6,029 | Rotating | 8 | 12 | July | No | Req | 45 | \$25 |
| John A. Andrew Memorial Hosp ¹ (col) | Tuskegee Inst ¹ | NPAsen | 96 | 40 | 40 | 20 | 1,934 | Rotating | 2 | 12 | June & Sept | No | Req | 67 | \$36 |
| ARIZONA | | | | | | | | | | | | | | | |
| St Joseph's Hospital | Phoenix | Church | 190 | | | | 5,782 | Rotating | 4 | 12 | July | No | None | 33 | \$25 |
| ARKANSAS | | | | | | | | | | | | | | | |
| Baptist State Hospital | Little Rock | Church | 800 | 3 | 23 | 69 | 3,454 | Rotating | 4 | 12 | July | No | None | 35 | \$25 |
| Little Rock City Hospital | Little Rock | City | 176 | 100 | | | 1,935 | Mixed | 5 | 12 | July | No | Req | 49 | \$25 |
| St Vincent Infirmary | Little Rock | Church | 160 | 23 | 14 | 63 | 3,519 | Rotating | 4 | 12 | June | No | None | 15 | \$25 |
| CALIFORNIA | | | | | | | | | | | | | | | |
| Fresno County General Hospital | Fresno | County | 520 | 93 | 2 | | 7,624 | Rotating | 10 | 12 | July | No | Req | 39 | \$25 |
| Glendale Sanitarium and Hospital ¹ | Glendale | Church | 244 | 2 | 23 | 75 | 2,850 | Mixed | 4 | 12 | July | No | Op | 23 | \$2.50(a) |
| Loma Linda Sanitarium and Hospital | Loma Linda | Church | 124 | 2 | | 88 | 2,345 | Mixed | 8 | 12 | July | (3) | Req | 17 | \$55(n) |
| California Hospital ¹ | Los Angeles | Church | 292 | 2 | 5 | 93 | 9,135 | Rotating | 10 | 12 | Jan & July | No | Req | 25 | \$25 |
| Cedars of Lebanon Hospital | Los Angeles | NPAsen | 238 | 22 | 8 | 70 | 7,043 | Rotating | 9 | 12 | July | No | Req | 40 | \$20 |
| Hollywood Hospital | Los Angeles | Corp | 278 | | | 100 | 6,192 | Mixed | 4 | 12 | July | No | None | 41 | \$35 |
| Los Angeles County Hospital ¹ | Los Angeles | County | 3,410 | 100 | | | 56,363 | Mixed | 125 | 12 & 24 | (1 a) | No | Req | 59 | No |
| St Vincent's Hospital | Los Angeles | Church | 250 | 4 | 5 | 91 | 4,313 | Rotating | 3 | 12 | July | No | None | 34 | \$40 |
| Santa Fe Coast Lines Hospital | Los Angeles | NPAsen | 160 | | | | 2,030 | Rotating | 5 | 12 | July | (4) | Req | 73 | \$25 |
| Whitt Memorial Hospital ¹ | Los Angeles | Church | 120 | | 23 | 76 | 3,501 | Rotating | 12 | 12 | July & Sept. | (27) | Req | 22 | \$40(a) |
| Alameda County Hospitals | Oakland | County | 416 | 100 | | | 11,179 | Rotating | 24 | 12 | July | (5) | None | 40 | \$25 |
| Orange County Hospital | Orange | County | 341 | 93 | 2 | | 3,067 | Rotating | 8 | 12 | July | No | Req | 70 | \$15-20 |
| Collins P. and Howard Huntington Memorial Hospital | Pasadena | NPAsen | 210 | 4 | 14 | 82 | 4,231 | Rotating | 4 | 12 | July | (6) | Req | 69 | \$30 |
| Sacramento County Hospital | Sacramento | County | 630 | 100 | | | 5,159 | Rotating | 10 | 12 | July | No | Req | 32 | \$35 |
| San Bernardino County Charity Hosp | San Bernardino | County | 374 | 100 | | | 3,522 | Rotating | 8 | 12 | July | (3) | Req | 42 | \$25 |
| San Diego County General Hospital | San Diego | County | 693 | 100 | | | 6,588 | Rotating | 12 | 12 | July | No | Req | 43 | \$15-20 |
| French Hospital | San Francisco | Frat | 322 | | | 100 | 3,756 | Mixed | 6 | 12 | July | No | Req | 39 | \$30(h) |
| Hospital for Children ² | San Francisco | NPAsen | 250 | 13 | 23 | 64 | 4,304 | Rotating | 9 | 12 | July | No | Req | 28 | No |
| Letterman General Hospital | San Francisco | Army | 600 | 100 | | | 3,512 | Rotating | 5 | 12 | July | No | Req | 74 | (d) |
| Mary's Help Hospital | San Francisco | Church | 145 | 11 | 23 | 66 | 3,799 | Rotating | 5 | 12 | July | No | Req | 43 | \$25 |
| Monot Zion Hospital ¹ | San Francisco | NPAsen | 189 | 18 | 13 | 69 | 3,953 | Rotating | 6 | 12 | June | No | Req | 45 | \$15 |
| St Joseph's Hospital ¹ | San Francisco | Church | 232 | 3 | 5 | 92 | 6,331 | Mixed | 5 | 12 | July | No | None | 22 | \$20 |
| St Luke's Hospital | San Francisco | Church | 225 | 6 | 9 | 83 | 4,864 | Rotating | 4 | 12 | July | No | Op | 22 | \$15(c) |
| St Mary's Hospital | San Francisco | Church | 323 | | 11 | 89 | 7,650 | Rotating | 7 | 12 | July | No | Req | 22 | \$25 |
| San Francisco Hospital ¹ | San Francisco | CyCo | 1,457 | 100 | | | 11,919 | Rotating | 43 | 12 | July | (7) | Op | 53 | \$0 |
| Southern Pacific General Hospital | San Francisco | NPAsen | 400 | | | | 4,120 | Rotating | 15 | 12 | July | (8) | Req | 39 | \$30 |
| Stanford University Hospitals ¹ (Incl. log Lane Hospital) | San Francisco | NPAsen | 324 | 6 | 39 | 55 | 9,321 | Straight | 13 | 12 | July | No | Req | 53 | No |
| U S Marine Hospital | San Francisco | USPHS | 493 | 100 | | | 4,274 | Rotating | 10 | 12 | July | (9) | Op | 35 | (d) |
| University of California Hospital ¹ | San Francisco | State | 293 | 63 | | 32 | 6,465 | Straight | 21 | 12 | June | No | Req | 73 | No |
| St Helena Sanitarium and Hospital ¹ | Sanitarium | Church | 148 | | | | 1,941 | Mixed | 2 | 12 | July | (10) | None | 57 | \$50(a) |
| Santa Clara County Hospital | San Jose | County | 493 | 93 | 2 | | 6,292 | Rotating | 9 | 12 | July | No | Req | 39 | (e) |
| St Francis Hospital | Santa Barbara | Church | 100 | 9 | 13 | 73 | 1,670 | Mixed | 3 | 12 | July | (11) | Req | 45 | \$70 |
| Santa Barbara Cottage Hospital ¹ | Santa Barbara | NPAsen | 210 | | | | 8,320 | Rotating | 5 | 12 | July | No | Op | 54 | \$20 |
| Santa Barbara General Hospital | Santa Barbara | County | 216 | 95 | 4 | 1 | 2,183 | Rotating | 5 | 12 | July | (12) | Req | 58 | \$16 |
| COLORADO | | | | | | | | | | | | | | | |
| Boulder Colorado Smit and Hosp ¹ | Boulder | Church | 107 | 4 | 11 | 85 | 1,312 | Mixed | 1 | 12 | July | No | Req | 27 | \$35 |
| Beth El General Hospital | Colorado Springs | Church | 137 | 6 | 7 | 65 | 2,337 | Rotating | 2 | 12 | June | (13) | Req | 23 | No |
| St Francis Hospital and Sanitarium | Colorado Springs | Church | 150 | 6 | 50 | 45 | 1,250 | Mixed | 1 | 12 | July | No | None | 35 | \$25 |
| Colorado General Hospital ¹ | Denver | State | 118 | 90 | 10 | | 3,449 | Rotating | 12 | 12 | July & Aug | No | Req | 81 | \$20 |
| Denver General Hospital | Denver | CyCo | 569 | 100 | | | 17,838 | Rotating | 15 | 12 | Jan & July | No | Req | 38 | \$30 |
| Mercy Hospital | Denver | Church | 225 | 11 | 33 | 51 | 4,600 | Rotating | 4 | 12 | July | No | None | 24 | \$25 |
| Presbyterian Hospital | Denver | Church | 175 | 2 | 10 | 83 | 4,150 | Mixed | 4 | 12 | July | No | None | 23 | \$25 |
| St Anthony's Hospital | Denver | Church | 212 | 9 | 89 | 2 | 2,765 | Rotating | 4 | 12 | July | No | None | 23 | \$25 |
| St Joseph's Hospital | Denver | Church | 260 | 44 | 14 | 42 | 4,639 | Rotating | 4 | 12 | July | No | None | 23 | \$25 |
| St Luke's Hospital | Deover | Church | 249 | | | 45 | 6,114 | Rotating | 6 | 12 | July | No | Req | 23 | \$25 |
| St Mary Hospital | Pueblo | Church | 162 | 34 | 53 | 13 | 3,155 | Rotating | 2 | 12 | July | No | None | 21 | (f) |
| CONNECTICUT | | | | | | | | | | | | | | | |
| Bridgeport Hospital | Bridgeport | NPAsen | 400 | 50 | | 50 | 10,024 | Rotating | 8 | 12 | July | No | None | 50 | No |
| St Vincent's Hospital | Bridgeport | Church | 260 | 12 | 41 | 47 | 5,707 | Rotating | 6 | 12 | July | No | Req | 17 | \$20 |
| Danbury Hospital | Danbury | NPAsen | 135 | 13 | 64 | 13 | 2,424 | Rotating | 2 | 12 | July | No | Req | 24 | \$40 |
| Hartford Hospital | Hartford | NPAsen | 750 | 6 | 53 | 26 | 15,341 | Rotating | 24 | 24 | June | No | None | 52 | (g) |
| Municipal Hospitals | Hartford | City | 823 | 100 | | | 5,211 | Rotating | 10 | 24 | July | No | Req | 39 | \$10 |
| St Francis Hospital | Hartford | Church | 225 | 33 | 17 | 50 | 9,053 | Rotating | 9 | 12 | July | No | Req | 22 | No |
| Meriden Hospital | Meriden | NPAsen | 138 | | | | 3,620 | Rotating | 4 | 12 | July | No | Req | 33 | \$15(h) |

Numerical and other references will be found on pages 701 and 702.

| Name of Hospital | Location | Control | Capacity | Classification of Patients | | | | Type of Internship | Number of Interns | Length of Service in Months | Service Commences | Affiliated Service | Outpatient Service | Percentage Autopsy | Salary per Month | |
|--|------------------|---------|----------|----------------------------|----------|----------|------------------------|--------------------|-------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|------------------|----|
| | | | | Free | Part Pay | Full Pay | Total Patients Treated | | | | | | | | | |
| CONNECTICUT—Continued | | | | | | | | | | | | | | | | |
| Middlesex Hospital | Middletown | NPAssn | 160 | 12 | 41 | 47 | 3,367 | Rotating | 8 | 12 | (1 b) | No | None | 18 | \$20(1) | |
| New Britain General Hospital | New Britain | NPAssn | 243 | 2 | 82 | 16 | 4,718 | Rotating | 6 | 12 | July | No | Op | 18 | \$30 | |
| Grace Hospital | New Haven | NPAssn | 267 | 17 | 39 | 44 | 6,424 | Rotating | 8 | 24 | July | No | Req | 23 | \$10 | |
| New Haven Hospital ¹ | New Haven | NPAssn | 611 | 37 | 37 | 26 | 8,993 | Mix&Str | 84 | 12-20 | (1 c) | No | Req | 57 | No | |
| Lawrence and Memorial Associated Hospitals | New London | NPAssn | 234 | 25 | 18 | 57 | 3,337 | Rotating | 4 | 12 | July | No | Req | 29 | \$22.10 | |
| Norwalk General Hospital | Norwalk | NPAssn | 165 | 15 | 69 | 26 | 3,488 | Mixed | 2 | 12 | Jan & July | No | Op | 29 | \$20 | |
| William W. Backus Hospital | Norwich | NPAssn | 160 | 5 | 83 | 12 | 2,650 | Rotating | 2 | 12 | July & Sept | No | Req | 86 | \$10 | |
| Stamford Hospital | Stamford | NPAssn | 268 | 7 | 74 | 19 | 4,506 | Rotating | 6 | 12 | Jan & July | No | Req | 19 | \$45 | |
| St. Mary's Hospital | Waterbury | Church | 264 | 19 | 64 | 27 | 8,005 | Rotating | 6 | 12 | July | No | Req | 35 | \$25 | |
| Waterbury Hospital | Waterbury | NPAssn | 367 | 16 | 77 | 7 | 5,937 | Rotating | 7 | 12 | July & Oct | No | Req | 42 | \$25 | |
| DELAWARE | | | | | | | | | | | | | | | | |
| Delaware Hospital | Wilmington | NPAssn | 213 | 53 | 10 | 37 | 4,240 | Rotating | 6 | 12 | July | No | Req | 25 | \$25 | |
| Homoeopathic Hospital | Wilmington | NPAssn | 195 | 50 | 10 | 40 | 3,986 | Rotating | 6 | 12 | July | No | Req | 20 | \$25 | |
| Wilmington General Hospital | Wilmington | NPAssn | 103 | 55 | 1 | 44 | 2,719 | Rotating | 4 | 12 | July | No | Req | 40 | \$25(1) | |
| DISTRICT OF COLUMBIA | | | | | | | | | | | | | | | | |
| Central Disp. and Emergency Hospital | Washington | NPAssn | 270 | 18 | 14 | 63 | 7,928 | Mixed | 18 | 12 | July | (14) | Req | 49 | \$10 | |
| Freedmen's Hospital ¹ (col) | Washington | Fed | 376 | 86 | 14 | 4 | 5,270 | Rotating | 24 | 12 | July & Oct | No | Req | 49 | \$10 | |
| Gallinger Municipal Hospital ¹ | Washington | City | 1,220 | 100 | | | 18,457 | Rotating | 24 | 12 | July | No | None | 34 | \$15 | |
| Garfield Memorial Hospital ¹ | Washington | NPAssn | 311 | 1 | 25 | 74 | 5,884 | Mixed | 10 | 12 | July | No | Req | 88 | \$10(1) | |
| Georgetown University Hospital | Washington | NPAssn | 261 | 6 | 34 | 60 | 5,084 | Rotating | 7 | 12 | July | (15) | Req | 29 | \$10 | |
| George Washington University Hosp ¹ | Washington | NPAssn | 113 | 18 | 87 | 2 | 2,425 | Mixed | 4 | 12 | July | No | Req | 37 | \$15 | |
| Providence Hospital | Washington | Church | 255 | 5 | 60 | 35 | 5,201 | Rotating | 8 | 12 | July | No | Req | 23 | \$10 | |
| St. Elizabeths Hospital Medical and Surgical Department ¹ | Washington | Fed | 446 | 100 | | | 1,429 | Rotating | 6 | 24 | July & Oct | (16) | Req | 66 | (d) | |
| Sibley Memorial Hospital | Washington | Church | 310 | 2 | 60 | 38 | 9,037 | Rotating | 7 | 12 | July | No | Op | 21 | \$7 | |
| Walter Reed General Hospital | Washington | Army | 1,266 | 100 | | | 7,984 | Rotating | 6 | 12 | July | No | None | 75 | (d) | |
| Washington Sanitarium and Hospital ¹ | Washington | Church | 182 | 15 | 30 | 55 | 2,951 | Mixed | 2 | 12 | July | No | Req | 41 | \$50(a) | |
| Takoma Park | Washington | Church | 182 | 15 | 30 | 55 | 2,951 | Mixed | 2 | 12 | July | No | Req | 41 | \$50(a) | |
| FLORIDA | | | | | | | | | | | | | | | | |
| Brewster Hospital (col) | Jacksonville | Church | 75 | 6 | 59 | 35 | 911 | Mixed | 1 | 12 | July | No | Req | 17 | \$25 | |
| Duval County Hospital | Jacksonville | County | 210 | 100 | | | 3,724 | Rotating | 8 | 24 | July | No | Req | 40 | \$15-20 | |
| St. Luke's Hospital | Jacksonville | NPAssn | 175 | 16 | | | 2,028 | Rotating | 4 | 12 | July | No | Req | 20 | \$25 | |
| St. Vincent's Hospital | Jacksonville | Church | 246 | 11 | 3 | 86 | 3,164 | Rotating | 3 | 12 | July | No | None | 17 | \$30 | |
| James M. Jackson Memorial Hospital | Miami | City | 360 | 50 | | | 9,829 | Rotating | 12 | 12 | July | No | Req | 17 | \$25 | |
| Tampa Municipal Hospital | Tampa | City | 185 | 46 | | | 5,074 | Rotating | 6 | 12 | July & Oct | No | Req | 16 | \$25 | |
| GEORGIA | | | | | | | | | | | | | | | | |
| Georgia Baptist Hospital | Atlanta | Church | 189 | 11 | 16 | 73 | 6,216 | Mixed | 7 | 12 | July | (17) | Op | 17 | \$30 | |
| Grady Hospital | Atlanta | City | 325 | 100 | | | 10,857 | Rotating | 24 | 12 | July | No | Req | 20 | \$15 | |
| Grady Hospital Emory University Division (Colored Unit) | Atlanta | City | 275 | 100 | | | 9,049 | Rotating | 12 | 12 | July | No | Req | 20 | \$15 | |
| Piedmont Hospital | Atlanta | Corp | 185 | | | | 100 | Rotating | 4 | 12 | July | No | None | 35 | \$25 | |
| University Hospital ¹ | Augusta | City | 300 | 52 | 5 | 43 | 7,547 | Rotating | 10 | 12 | July | No | Req | 27 | \$10(k) | |
| Emory University Hospital | Emory University | NPAssn | 180 | 8 | 18 | 84 | 3,790 | Rotating | 6 | 12 | July | (17) | None | 38 | \$30 | |
| Macon Hospital | Macon | City | 202 | 75 | 25 | 25 | 4,823 | Rotating | 5 | 12 | July | No | Req | 22 | \$25(m) | |
| ILLINOIS | | | | | | | | | | | | | | | | |
| Alexian Bros. Hosp. (male patients only) | Chicago | Church | 257 | 17 | 29 | 54 | 2,763 | Rotating | 7 | 12 | July | (18) | None | 18 | \$10 | |
| American Hospital ¹ | Chicago | NPAssn | 150 | 2 | 7 | 91 | 2,018 | Rotating | 4 | 12 | June | No | Req | 36 | No | |
| Angustana Hospital | Chicago | Church | 350 | 12 | 36 | 62 | 4,544 | Mixed | 10 | 16 | Jan & July | No | Req | 26 | No | |
| Chicago Memorial Hospital | Chicago | NPAssn | 108 | 34 | 22 | 42 | 2,553 | Rotating | 4 | 12 | July | No | Req | 44 | \$25 | |
| Columbus Hospital | Chicago | Church | 174 | 12 | 69 | 19 | 3,174 | Rotating | 4 | 12 | July | No | None | 89 | \$25 | |
| Edgewater Hospital | Chicago | NPAssn | 188 | 13 | 7 | 80 | 3,329 | Rotating | 5 | 12 | July | No | None | 25 | \$10 | |
| Englewood Hospital | Chicago | NPAssn | 128 | 20 | 49 | 31 | 2,760 | Rotating | 4 | 12 | Jan & July | No | Req | 32 | \$30 | |
| Evangelical Hospital | Chicago | Church | 260 | 12 | 10 | 78 | 5,905 | Mixed | 6 | 12 | July | No | None | 18 | \$25 | |
| Frances E. Willard Hospital ¹ | Chicago | NPAssn | 140 | 2 | 96 | 2 | 3,569 | Rotating | 6 | 12 | Jan & July | No | None | 25 | No | |
| Garfield Park Community Hospital | Chicago | NPAssn | 182 | 10 | 20 | 70 | 3,425 | Mixed | 6 | 12 | July | No | Req | 30 | No | |
| Grant Hospital | Chicago | NPAssn | 270 | 17 | 83 | 5,486 | Rotating | 7 | 12 | July | No | Req | 22 | No | | |
| Heuro Hospital | Chicago | NPAssn | 122 | 10 | 20 | 70 | 2,582 | Rotating | 3 | 12 | (1 d) | (19) | Req | 34 | No | |
| Holy Hospital | Chicago | Church | 109 | 10 | 20 | 70 | 3,646 | Rotating | 4 | 12 | July | No | Op | 20 | \$10 | |
| Hopli Hospital | Chicago | Church | 240 | 4 | 7 | 89 | 4,936 | Rotating | 6 | 18 | (1-d) | No | None | 21 | \$10(a) | |
| Illinois Hospital | Chicago | NPAssn | 255 | 1 | 35 | 64 | 6,390 | Rotating | 8 | 12 | (1-d) | No | Req | 25 | No | |
| Illinois Hospital | Chicago | Frat | 159 | 14 | 86 | 2,357 | Rotating | 5 | 12 | Jan & July | No | Req | 32 | No | | |
| Jackson Park Hospital | Chicago | NPAssn | 265 | 18 | 3 | 79 | 3,773 | Rotating | 5 | 12 | Feb & July | (20) | Req | 27 | \$10 | |
| Lake View Hospital | Chicago | Corp | 140 | 3 | 14 | 83 | 1,567 | Rotating | 4 | 12 | July | No | Req | 59 | \$25 | |
| Lutheran Deaconess Home and Hospital | Chicago | Church | 216 | 4 | 19 | 77 | 4,290 | Mixed | 5 | 12 | July | No | None | 22 | \$15 | |
| Lutheran Memorial Hospital ¹ | Chicago | Church | 175 | 10 | 90 | 2 | 3,365 | Mixed | 4 | 12 | July | No | None | 17 | \$25 | |
| Mercy Hospital | Chicago | Church | 360 | 18 | 22 | 60 | 5,826 | Rotating | 12 | 12 | July | No | Req | 10 | No | |
| Michael Reese Hospital ¹ | Chicago | NPAssn | 626 | 48 | 29 | 23 | 16,327 | Rotat&Str | 32 | 12-24 | Jan & July | (21) | Op | 51 | No | |
| Mother Cabrini Memorial Hospital | Chicago | Church | 140 | 54 | 63 | 11 | 3,510 | Rotating | 4 | 12 | July | No | None | 30 | \$25 | |
| St. Francis Hospital | Chicago | NPAssn | 204 | 64 | 6 | 30 | 6,032 | Rotating | 12 | 24 | June | (22) | Req | 44 | No | |
| St. Joseph Hospital | Chicago | NPAssn | 180 | 4 | 4 | 92 | 3,350 | Rotating | 6 | 12 | Apr & July | No | Req | 33 | \$20 | |
| St. Mary's Hospital | Chicago | NPAssn | 165 | 5 | 1 | 94 | 4,195 | Mixed | 6 | 12 | (1 b) | No | None | 60 | No | |
| St. Mary's Hospital | Chicago | Church | 433 | 24 | 47 | 29 | 10,921 | Mix&Str | 27 | 12-20 | (1-e) | No | Op | 57 | No | |
| St. Mary's Hospital | Chicago | NPAssn | 165 | 18 | 6 | 76 | 2,450 | Rotating | 6 | 12 | July & Oct | No | Req | 22 | No | |
| St. Mary's Hospital | Chicago | NPAssn | 165 | 5 | 15 | 80 | 5,440 | Rotating | 6 | 12 | July | No | Op | 57 | No | |
| St. Mary's Hospital | Chicago | State | 352 | 100 | | | 5,791 | Rotating | 12 | 18 | July | No | Req | 28 | \$15 | |
| St. Mary's Hospital | Chicago | Corp | 133 | 13 | 14 | 73 | 3,177 | Rotating | 4 | 12 | July | No | Req | 28 | \$15 | |
| St. Anne's Hospital | Chicago | Church | 250 | 12 | 49 | 29 | 6,163 | Rotating | 7 | 12 | July | No | None | 31 | No | |
| St. Bernard's Hospital | Chicago | Church | 250 | 15 | 16 | 64 | 5,554 | Rotating | 6 | 12 | July | No | None | 22 | No | |
| St. Elizabeth Hospital | Chicago | Church | 320 | 7 | 23 | 65 | 3,424 | Rotating | 7 | 12 | July | No | Req | 22 | No | |
| St. Joseph Hospital | Chicago | Church | 250 | 7 | 23 | 65 | 3,424 | Rotating | 7 | 12 | July | No | Req | 22 | No | |
| St. Luke's Hospital | Chicago | NPAssn | 639 | 4 | 20 | 76 | 9,706 | Rotating | 24 | 12 | Apr & July | (1-d) | No | Req | 40 | No |
| St. Mary of Nazareth Hospital | Chicago | Church | 309 | 13 | 4 | 78 | 4,733 | Rotating | 6 | 12 | July | No | None | 22 | No | |
| Swedish Covenant Hospital | Chicago | Church | 217 | 1 | 10 | 89 | 3,920 | Rotating | 6 | 12 | Apr & July | No | Req | 17 | \$15 | |
| St. Mary's Hospital | Chicago | USPHS | 243 | 100 | | | 2,832 | Rotating | 6 | 12 | July | (23) | Req | 25 | (d) | |
| St. Mary's Hospital | Chicago | Corp | 125 | 7 | 7 | 86 | 1,421 | Rotating | 3 | 12 | July | No | Req | 23 | \$15 | |
| University of Chicago Clinics ¹ | Chicago | NPAssn | 250 | 26 | 69 | 5 | 7,375 | Straight | 32 | 12 | Jan & July | (24) | Req | 17 | No | |
| Washington Boulevard Hospital | Chicago | NPAssn | 110 | 3 | 4 | 93 | 1,755 | Mixed | 6 | 15 | (1-d) | No | Req | 17 | No | |
| West Memorial Hospital ¹ | Chicago | Church | 25 | 34 | 16 | 50 | 3,170 | Rotating | 6 | 12 | Jan & July | No | None | 63 | No | |
| Women and Children's Hospital ¹ | Chicago | NPAssn | 125 | 25 | 8 | 64 | 1,599 | Rotating | 6 | 12 | Jan & July | No | Req | 17 | No | |
| Wood-Lawn Hospital | Chicago | NPAssn | 172 | 1 | 64 | 35 | 2,699 | Mixed | 3 | 12 | July | No | None | 31 | \$25 | |
| St. Mary's Hospital | East St. Louis | Church | 25 | 2 | 51 | 47 | 3,757 | Rotating | 5 | 12 | July | No | None | 16 | \$25 | |
| Francis Hospital | Frankton | NPAssn | 270 | 15 | 2 | 47 | 6,575 | Rotating | 12 | 16 | (1-e) | No | Req | 65 | \$10 | |
| St. Francis Hospital | Frankton | Church | 370 | 6 | 57 | 37 | 5,250 | Mixed | 8 | 12 | July | No | None | 21 | \$25 | |
| Little Company of Mary Hospital | Evergreen Park | Church | 163 | 8 | 57 | 39 | 3,470 | Rotating | 3 | 12 | July | No | None | 21 | \$25 | |
| St. Joseph Hospital | Jefferson | Church | 250 | 27 | 39 | 0 | 4,252 | Rotating | 3 | 12 | July | No | None | 21 | \$25 | |
| Oak Park Hospital | Oak Park | Church | 165 | 7 | 12 | 51 | 2,715 | Rotating | 6 | 12 | July & Sept | No | Req | 17 | No | |

| Name of Hospital | Location | Control | Capacity | Classification of Patients | | | | Type of Internship | Number of Interns | Length of Service in Months | Service Commences | Affiliated Service | Outpatient Services | Autopsy Percentage | Salary per Month |
|---|----------------|---------|----------|----------------------------|----------|----------|------------------------|--------------------|-------------------|-----------------------------|-------------------|--------------------|---------------------|--------------------|------------------|
| | | | | Free | Part Pay | Full Pay | Total Patients Treated | | | | | | | | |
| ILLINOIS—Continued | | | | | | | | | | | | | | | |
| West Suburban Hospital | Oak Park. | NPAssn | 427 | | | | 6 606 | Rotating | 10 | 12 | July & Oct | No | Req | 26 | No |
| St Francis Hospital | Peoria | Church | 330 | 9 | 24 | 67 | 7 122 | Mixed | 6 | 12 | July | No | None | 26 | \$20 |
| St Mary Hospital | Quincy | Church | 215 | 43 | 42 | 15 | 8 609 | Rotating | 3 | 12 | July | No | None | 19 | \$25 |
| St Anthony's Hospital | Rock Island | Church | 163 | 25 | 40 | 35 | 1 706 | Mixed | 1 | 12 | July | No | Op | 25 | \$25 |
| INDIANA | | | | | | | | | | | | | | | |
| St Catherine's Hospital | East Chicago | Church | 250 | 2 | 19 | 79 | 3 763 | Rotating | 6 | 12 | June & July | No | None | 10 | \$25 |
| Lutheran Hospital | Fort Wayne | Church | 159 | 10 | 10 | 80 | 8 350 | Mixed | 3 | 12 | July | No | None | 26 | \$25 |
| St Joseph Hospital | Fort Wayne | Church | 300 | 9 | 31 | 60 | 4 870 | Rotating | 5 | 12 | July | No | None | 20 | \$25 |
| St Mary's Mercy Hospital | Gary | Church | 270 | 2 | 41 | 57 | 5 423 | Rotating | 5 | 12 | June & July | No | None | 18 | \$25 |
| St Margaret's Hospital | Hammond | Church | 240 | 3 | 70 | 22 | 6 464 | Rotating | 8 | 12 | (1 g) | No | Req | 15 | \$30 |
| Indianapolis City Hospital | Indianapolis | City | 577 | 92 | 4 | 4 | 11,813 | Mixed | 32 | 12 | July | No | Req | 41 | \$10 |
| Indiana University Hospitals ¹ | Indianapolis | State | 604 | 00 | 3 | 7 | 9 200 | Rotating | 22 | 12 | July | (26) | Req | 45 | \$12 50 |
| Methodist Episcopal Hospital | Indianapolis | Church | 626 | | | | 75 17,311 | Rotating | 18 | 12 | July | No | Op | 33 | \$10 |
| St Vincent's Hospital | Indianapolis | Church | 290 | 17 | 18 | 60 | 5,693 | Rotating | 9 | 12 | July | No | None | 23 | \$15 |
| St Elizabeth Hospital | La Fayette | Church | 240 | 18 | 66 | 16 | 5 202 | Rotating | 4 | 12 | July | No | None | 25 | \$30 |
| Ball Memorial Hospital ¹ | Muncie | NPAssn | 162 | | | | 100 3 104 | Mixed | 6 | 12 | July | No | None | 30 | \$15 |
| Epworth Hospital | South Bend | NPAssn | 192 | 15 | 8 | 8 | 3,630 | Mixed | 3 | 12 | July | No | Req | 21 | \$35 |
| St Joseph Hospital | South Bend | Church | 147 | 83 | 31 | 31 | 2,543 | Rotating | 2 | 12 | July | No | Req | 31 | \$25(o) |
| IOWA | | | | | | | | | | | | | | | |
| Mercy Hospital | Cedar Rapids | Church | 173 | 5 | 7 | 88 | 2,316 | Mixed | 2 | 12 | July | No | Req | 24 | \$25 |
| St Luke's Methodist Hospital | Cedar Rapids | Church | 160 | 5 | 61 | 34 | 2,702 | Mixed | 2 | 12 | July | No | Op | 16 | \$25 |
| Jennie Edmundson Memorial Hospital | Council Bluffs | NPAssn | 130 | | | | 1,319 | Mixed | 3 | 12 | July | No | Req | 27 | \$30 |
| Mercy Hospital | Council Bluffs | Church | 160 | 5 | 73 | 22 | 2 451 | Rotating | 3 | 12 | June | No | None | 20 | \$25(1) |
| Mercy Hospital | Davenport | Church | 145 | 16 | 30 | 54 | 3 059 | Mixed | 3 | 12 | July | No | None | 15 | \$25 |
| Iowa Lutheran Hospital ¹ | Des Moines | Church | 135 | 4 | 10 | 80 | 8 692 | Rotating | 3 | 12 | July | No | None | 23 | \$25(p) |
| Iowa Methodist Hospital | Des Moines | Church | 270 | 9 | 20 | 60 | 6 900 | Rotating | 6 | 12 | July | No | Req | 23 | \$30 |
| Mercy Hospital | Des Moines | Church | 176 | 6 | 4 | 90 | 3,674 | Rotating | 5 | 12 | July | No | None | 26 | \$25 |
| University Hospitals ¹ | Iowa City | State | 84 | 87 | 8 | 5 | 18 232 | Rotating | 19 | 12 | July | No | Req | 67 | (1) |
| St Joseph Mercy Hospital | Sioux City | Church | 220 | | | | 8 92 4 210 | Rotating | 4 | 12 | July | No | None | 34 | \$25 |
| KANSAS | | | | | | | | | | | | | | | |
| Bethany Methodist Hospital ¹ | Kansas City | Church | 140 | 5 | 15 | 80 | 2,863 | Rotating | 3 | 12 | July | No | None | 51 | \$25 |
| St Margaret Hospital | Kansas City | Church | 270 | 38 | 53 | 9 | 3,594 | Rotating | 6 | 12 | July | No | Req | 69 | \$25 |
| University of Kansas Hospitals ¹ | Kansas City | State | 240 | 15 | 37 | 48 | 6 750 | Rotating | 8 | 12 | July | (23) | Req | 84 | \$15 |
| St Francis Hospital | Wichita | Church | 800 | 20 | 30 | 50 | 4,558 | Rotating | 6 | 12 | July | (29) | Req | 33 | \$40 |
| Wesley Hospital | Wichita | Church | 230 | 10 | 30 | 60 | 4 496 | Rotating | 6 | 12 | July | (30) | None | 27 | \$25 |
| Wichita Hospital | Wichita | Church | 116 | 24 | 22 | 54 | 2,205 | Mixed | 2 | 12 | July | (29) | Req | 31 | \$40 |
| KENTUCKY | | | | | | | | | | | | | | | |
| St Elizabeth Hospital | Covington | Church | 393 | 39 | 44 | 17 | 5,230 | Mixed | 6 | 12 | July | No | Req | 18 | \$25 |
| Good Samaritan Hospital ¹ | Lexington | Church | 193 | 25 | 3 | 72 | 5 135 | Rotating | 4 | 12 | July | No | Req | 21 | \$25 |
| St Joseph's Hospital | Lexington | Church | 200 | 7 | 35 | 53 | 4,220 | Mixed | 6 | 12 & 24 | July | (81) | None | 53 | \$25 |
| Kentucky | Louisville | Church | 160 | 13 | 53 | 49 | 3,518 | Mixed | 4 | 12 | July | No | None | 15 | \$25 |
| Louisville | Louisville | City | 423 | 90 | 10 | 49 | 11,209 | Rotating | 18 | 12 | July | (32) | Req | 29 | \$25 |
| Norton Memorial Infirmary | Louisville | NPAssn | 145 | 9 | 69 | 32 | 2,889 | Mixed | 8 | 12 | July | (33) | Req | 23 | \$30 |
| St Anthony's Hospital | Louisville | Church | 167 | 13 | 50 | 81 | 2 431 | Mixed | 3 | 12 | July | No | Op | 16 | \$25 |
| St Joseph Infirmary | Louisville | Church | 350 | 23 | 22 | 65 | 5 734 | Mixed | 4 | 12 | July | No | None | 22 | \$25 |
| St Mary and Elizabeth Hospital | Louisville | Church | 176 | | | | 3,127 | Mixed | 3 | 12 | July | No | None | 15 | \$40 |
| LOUISIANA | | | | | | | | | | | | | | | |
| Charity Hospital ¹ | New Orleans | State | 1 013 | 100 | | | 60 202 | Rotat & Str | 55 | 12 | July | No | Req | 40 | No |
| Flint Goodridge Hospital of Dillard University ¹ (col) | New Orleans | NPAssn | 100 | 41 | 16 | 40 | 1 313 | Rotating | 4 | 12 | July | No | Req | 16 | \$10 |
| Hotel Dieu Hospital | New Orleans | Church | 243 | 6 | 18 | 70 | 6 033 | Mixed | 6 | 12 | July | No | None | 23 | \$25 |
| Mercy Hospital Soniat Memorial | New Orleans | Church | 130 | 9 | 0 | 80 | 2 563 | Mixed | 4 | 12 | July | No | Req | 23 | \$25 |
| Southern Baptist Hospital | New Orleans | Church | 220 | 14 | 28 | 53 | 7 263 | Mixed | 8 | 12 | July | No | None | 23 | \$15(k) |
| Touro Infirmary ¹ | New Orleans | NPAssn | 326 | 31 | 33 | 31 | 5,893 | Rotating | 16 | 12 | July | No | Req | 40 | \$10 |
| U S Marine Hospital | New Orleans | USPHS | 572 | 100 | | | 3 540 | Rotating | 13 | 12 | July | (34) | Op | 63 | (d) |
| T E Schumpert Memorial Sanitarium | Shreveport | Church | 162 | 23 | 50 | 20 | 3 632 | Mixed | 1 | 12 | July | No | None | 32 | \$30 |
| Shreveport Charity Hospital | Shreveport | State | 600 | 100 | | | 18 291 | Rotating | 20 | 12 | July | No | None | 44 | \$10 |
| MAINE | | | | | | | | | | | | | | | |
| Eastern Maine General Hospital | Bangor | NPAssn | 173 | 25 | 16 | 59 | 3 742 | Mixed | 3 | 12 | Sept | No | Req | 21 | \$25 |
| Central Maine General Hospital ¹ | Lewiston | NPAssn | 202 | 29 | 30 | 41 | 3 444 | Mixed | 4 | 12 | July | No | Op | 38 | No |
| St Mary's General Hospital | Lewiston | Church | 160 | 31 | 21 | 43 | 2,622 | Mixed | 2 | 12 | July | No | Req | 26 | \$30 |
| Maine General Hospital | Portland | NPAssn | 275 | 32 | 48 | 22 | 5 575 | Mixed | 6 | 12 | Apr & July | No | Req | 35 | No |
| MARYLAND | | | | | | | | | | | | | | | |
| Baltimore City Hospitals ¹ (General) | Baltimore | City | 963 | 100 | | | 8 146 | Rotat & Str | 30 | 12 | July | No | Req | 41 | No |
| Bon Secours Hospital | Baltimore | Church | 143 | 33 | 23 | 44 | 2,359 | Rotating | 3 | 12 | July | (35) | Req | 73 | \$25 |
| Church Home and Infirmary ¹ | Baltimore | Church | 184 | 21 | 53 | 26 | 2,894 | Rotating | 7 | 12 | July | No | Req | 46 | \$15 |
| Franklin Square Hospital | Baltimore | NPAssn | 129 | 73 | | | 2 156 | Mixed | 5 | 12 | July | No | None | 17 | \$12 50(p) |
| Hospital for Women ¹ | Baltimore | NPAssn | 134 | 20 | 47 | 33 | 2 150 | Mixed | 5 | 12 | July | (30) | Req | 31 | No |
| Johns Hopkins Hospital ¹ | Baltimore | NPAssn | 902 | 53 | 21 | 29 | 14,301 | Straight | 59 | 12 | July & Sept | No | Req | 80 | No |
| Maryland General Hospital | Baltimore | Church | 238 | 42 | 9 | 49 | 4 615 | Rotating | 6 | 12 | July | No | Req | 18 | \$10 |
| Mercy Hospital | Baltimore | Church | 300 | 58 | 11 | 30 | 6 043 | Rotating | 19 | 12 | July | No | Req | 38 | No |
| Provident Hosp and Free Disp (col) | Baltimore | NPAssn | 172 | 83 | 4 | 13 | 2,069 | Rotating | 8 | 12 | June & Oct | No | Req | 17 | No |
| St Agnes Hospital | Baltimore | Church | 205 | 33 | 34 | 23 | 3,800 | Rotating | 9 | 12 | July | (30) | Req | 26 | No |
| St Joseph's Hospital | Baltimore | Church | 280 | 41 | 12 | 47 | 5,380 | Rotating | 6 | 12 | July | No | Req | 30 | \$15 |
| Sinal Hospital ¹ | Baltimore | NPAssn | 209 | 41 | 8 | 51 | 5 210 | Str & Mix | 10 | 12 | July | No | Req | 27 | No |
| South Baltimore General Hospital | Baltimore | NPAssn | 120 | 31 | 42 | 27 | 2,009 | Rotating | 8 | 12 | July | No | Req | 34 | \$20 |
| Union Memorial Hospital | Baltimore | NPAssn | 270 | 22 | 43 | 30 | 5,348 | Mixed | 10 | 12 | July | No | Req | 37 | No |
| U S Marine Hospital | Baltimore | USPHS | 313 | 100 | | | 2,497 | Rotating | 8 | 12 | July | (31) | Req | 58 | (d) |
| University Hospital ¹ | Baltimore | State | 450 | 50 | 6 | 44 | 7 074 | Rotating | 24 | 24 | July | No | Req | 44 | No |
| West Baltimore General Hospital | Baltimore | Corp | 200 | 30 | | | 6 2447 | Rotating | 5 | 12 | July | (38) | Req | 21 | \$15 |
| MASSACHUSETTS | | | | | | | | | | | | | | | |
| Beverly Hospital | Beverly | NPAssn | 141 | | | | 50 30 | Mixed | 3 | 12 | (11) | No | Req | 40 | No |
| Beth Israel Hospital | Boston | NPAssn | 215 | 18 | 32 | 50 | 5,292 | Straight | 11 | 15 & 24 1/2 | (11) | No | Req | 51 | No |
| Boston City Hospital ¹ | Boston | City | 1 732 | 90 | 9 | 1 | 42,660 | Straight | 93 | 12 24 | Varies | (20) | Req | 29 | No |
| Carney Hospital | Boston | Church | 171 | 4 | 83 | 8 | 3 337 | Straight | 12 | 12 20 | (1 m) | No | Req | 21 | No |
| Faulkner Hospital | Boston | NPAssn | 100 | 1 | 70 | 20 | 3,440 | Mixed | 2 | 12 | June | No | Req | 50 | No |
| Long Island Hospital | Boston | City | 568 | 100 | | | 2,543 | Rotating | 6 | 12 | July | No | Req | 50 | No |
| Massachusetts | Boston | NPAssn | 424 | 47 | 34 | 16 | 8,200 | Straight | 32 | 19 & 20 | (1-d) | No | Req | 57 | No |
| Massachusetts | Boston | NPAssn | 346 | 23 | 45 | 32 | 6 121 | Rotating | 12 | 12 | Aug | No | Req | 39 | No |
| New England Hospital for Women and Children ¹ Roxbury | Boston | NPAssn | 260 | 7 | 1 | 92 | 4 450 | Rotating | 8 | 12 | July & Oct | No | Req | 33 | No |

| Name of Hospital | Location | Control | Capacity | Classification of Patients | | | | Type of Internship | Number of Interns | Length of Service in Months | Service Commences | Affiliated Service | Outpatient Service | Autopsy Percentage | Salary per Month |
|--|---------------|---------|----------|----------------------------|----------|----------|------------------------|--------------------|-------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|------------------|
| | | | | Free | Part Pay | Full Pay | Total Patients Treated | | | | | | | | |
| MASSACHUSETTS—Continued | | | | | | | | | | | | | | | |
| Peter Bent Brigham Hospital | Boston | NPAssn | 247 | 44 | 29 | 27 | 4,423 | Straight | 24 | 16½ | (1 k) | (40) | Req | 61 | No |
| St Elizabeth's Hospital Brighton | Boston | Church | 300 | 20 | 30 | 50 | 4,083 | Mixed | 7 | 21 | (1-d) | No | Req | 10 | No |
| Brookline Hospital | Brookline | NPAssn | 154 | 13 | 63 | 21 | 2,582 | Rotating | 3 | 12 | June & Aug | No | Op | 23 | \$10(1) |
| Cambridge City Hospital | Cambridge | City | 203 | 65 | 5 | 80 | 5,205 | Rotating | 14 | 22 24 | (1-e) | No | Req | 17 | No |
| Cambridge Hospital | Cambridge | NPAssn | 300 | 22 | 60 | 18 | 5,380 | Rotating | 5 | 13 | (1-d) | (41) | Req | 15 | No |
| Union Hospital | Fall River | NPAssn | 180 | 11 | 32 | 57 | 3,001 | Mixed | 2 | 12 | July | No | Req | 24 | \$30-50 |
| Bartholomew Hospital | Fitchburg | Corp | 215 | 63 | 14 | 33 | 4,220 | Mixed | 4 | 12 | (1-d) | No | Req | 21 | \$25 |
| Providence Hospital | Holyoke | Church | 175 | 10 | 10 | 60 | 4,683 | Mixed | 2 | 12 | June | No | None | 15 | \$25 |
| Lawrence General Hospital | Lawrence | NPAssn | 151 | 24 | 2 | 74 | 3,006 | Mixed | 2 | 12 | June | No | Req | 31 | \$10 |
| Lowell General Hospital | Lowell | NPAssn | 180 | 7 | 65 | 28 | 3,823 | Mixed | 2 | 12 | July | No | Req | 58 | \$25 |
| St John's Hospital | Lowell | Church | 167 | 7 | 59 | 34 | 3,281 | Mixed | 4 | 12 | June | No | Req | 21 | (m) |
| St Joseph's Hospital | Lowell | Church | 122 | 3 | 57 | 40 | 2,774 | Mixed | 2 | 12 | July | No | Req | 27 | \$10 |
| Lynn Hospital | Lynn | NPAssn | 205 | 15 | 25 | 60 | 4,535 | Mixed | 4 | 12 | June | No | Req | 24 | \$10(q) |
| St Luke's Hospital | New Bedford | NPAssn | 339 | 10 | 47 | 43 | 6,433 | Rotating | 6 | 12 | July | No | Req | 19 | No |
| Newton Hospital | Newton | NPAssn | 240 | 28 | 45 | 27 | 5,892 | Rotating | 6 | 12 | June | No | Req | 41 | No |
| House of Mercy Hospital | Pittsfield | NPAssn | 227 | 3 | 59 | 8 | 2,970 | Mixed | 3 | 12 | July | No | Req | 15 | \$40 |
| St Luke's Hospital | Pittsfield | Church | 189 | 7 | 35 | 58 | 2,326 | Mixed | 2 | 12 | June | No | Req | 16 | \$25 |
| Quincy City Hospital | Quincy | City | 239 | 14 | 6 | 80 | 5,841 | Rotating | 6 | 12 | Jan & July | No | Req | 34 | No |
| Salem Hospital | Salem | NPAssn | 188 | 28 | 42 | 30 | 3,857 | Rotating | 3 | 12 | July & Aug | No | Req | 25 | \$25 |
| Mercy Hospital | Springfield.. | Church | 390 | 5 | 15 | 80 | 6,864 | Rotating | 6 | 12 | July | (42) | Req | 29 | \$25 |
| Springfield Hospital | Springfield | NPAssn | 265 | 7 | 78 | 15 | 5,462 | Rotating | 9 | 13 | Jan & July | (43) | Req | 20 | No |
| Wesson Memorial Hospital | Springfield | NPAssn | 120 | 3 | 40 | 57 | 2,748 | Mixed | 3 | 18 | Jan & July | (43) | Req | 17 | \$25 |
| State Infirmary | Tewksbury | State | 1,759 | 100 | | | 5,814 | Mixed | 4 | 16 | (1 d) | No | None | 18 | No |
| Waltham Hospital | Waltham | NPAssn | 216 | 7 | 82 | 11 | 3,144 | Rotating | 3 | 12 | June-Aug | No | Req | 43 | \$15(1) |
| Memorial Hospital | Worcester | NPAssn | 215 | 17 | 7 | 76 | 5,226 | Mixed | 9 | 13 | (1-e) | No | Req | 33 | No |
| St Vincent Hospital | Worcester | Church | 260 | 9 | 12 | 79 | 5,370 | Rotating | 4 | 12 | (1-d) | No | Req | 20 | No |
| Worcester City Hospital | Worcester | City | 400 | 88 | 14 | 19 | 9,990 | Rotating | 13 | 24 | (1 n) | No | Req | 36 | No |
| Worcester Hahnemann Hospital | Worcester | NPAssn | 140 | 5 | 72 | 23 | 1,972 | Rotating | 3 | 12 | July | No | None | 40 | \$35 |
| MICHIGAN | | | | | | | | | | | | | | | |
| St Joseph's Mercy Hospital | Ann Arbor | Church | 140 | 12 | 24 | 64 | 2,267 | Mixed | 2 | 13 | July | No | Op | 36 | \$25 |
| University Hospital | Ann Arbor | State | 1,250 | 79 | | 21 | 24,235 | Rotat & Mix | 33 | 12 | July | No | Req | 57 | No |
| Mercy Hospital | Bay City | Church | 140 | 5 | 23 | 72 | 4,019 | Mixed | 3 | 12 | July & Sept. | No | None | 18 | No |
| City of Detroit | Detroit | City | 6,000 | | | | 22,007 | Rotating | 26 | 12 | July | (44) | Req | 28 | \$25 |
| Evangelical | Detroit | Church | 135 | 1 | 31 | 63 | 3,527 | Rotating | 2 | 12 | July | No | Req | 18 | \$15 |
| Grace Hospital | Detroit | NPAssn | 533 | 31 | 42 | 27 | 11,249 | Rotating | 24 | 12 | July & Sept. | (44) | Req | 18 | \$25 |
| Harper Hospital | Detroit | NPAssn | 725 | 10 | | 90 | 15,416 | Rotating | 35 | 12 | July | (45) | Req | 22 | No |
| Henry Ford Hospital | Detroit | NPAssn | 638 | 34 | 66 | 11 | 11,453 | Rotating | 24 | 12 | Sept | No | None | 41 | \$100(a) |
| Providence Hospital | Detroit | Church | 403 | 21 | 67 | 12 | 10,702 | Rotating | 16 | 12 | July | (46) | None | 32 | \$25 |
| St Joseph's Mercy Hospital | Detroit | Church | 235 | 2 | 24 | 74 | 5,234 | Rotating | 7 | 12 | July | No | Req | 27 | \$25 |
| St Mary's Hospital | Detroit | Church | 331 | 4 | 29 | 67 | 6,411 | Rotating | 10 | 12 | July | No | Req | 33 | \$25 |
| Eloise Hospital (Dr William J Seymour Hospital) | Eloise | County | 1,363 | 100 | | | 5,091 | Rotating | 13 | 12 | July | (44) | Req | 41 | \$25 |
| Hurley Hospital | Flint | City | 437 | | | | 9,165 | Rotating | 14 | 12 | July | No | None | 45 | \$25(k) |
| Grand Rapids | Grand Rapids | NPAssn | 150 | 20 | 55 | 25 | 2,930 | Mixed | 4 | 12 | July | No | Req | 26 | No |
| Grand Rapids | Grand Rapids | NPAssn | 212 | 8 | | 92 | 4,165 | Mixed | 6 | 12 | July | No | Req | 43 | \$7.50 |
| Grand Rapids | Grand Rapids | Church | 253 | 1 | 33 | 66 | 4,167 | Rotating | 6 | 12 | July | No | Req | 20 | (1) |
| Highland Park | Highland Park | City | 100 | 20 | | 80 | 3,635 | Rotating | 6 | 12 | July & Sept. | No | Req | 15 | \$15 |
| W A Foote Memorial Hospital | Jackon | City | 150 | 6 | | 95 | 4,599 | Mixed | 3 | 12 | July | No | Req | 18 | \$25 |
| Edward W Sparrow Hospital | Laurens | NPAssn | 145 | 2 | 72 | 26 | 3,624 | Mixed | 2 | 12 | July | No | Req | 16 | \$25 |
| St Lawrence Hospital | Lansing | Church | 152 | | | | 3,477 | Mixed | 3 | 12 | July | (47) | None | 32 | \$40 |
| Hackley Hospital | Muskegon | NPAssn | 125 | 20 | 60 | 20 | 3,436 | Mixed | 2 | 12 | July | No | None | 19 | \$25 |
| Mercy Hospital | Muskegon | Church | 123 | 20 | 44 | 36 | 3,435 | Mixed | 2 | 12 | July | No | None | 20 | \$25 |
| St Joseph Mercy Hospital | Pontiac | Church | 175 | 6 | 36 | 64 | 2,908 | Rotating | 3 | 12 | July | No | Req | 41 | \$15-25 |
| Saginaw General Hospital | Saginaw | NPAssn | 168 | 3 | 8 | 84 | 2,753 | Rotating | 3 | 12 | July | No | Req | 34 | \$25 |
| St Mary's Hospital | Saginaw | Church | 176 | 14 | 10 | 76 | 3,183 | Mixed | 3 | 12 | July | No | Req | 23 | \$40 |
| MINNESOTA | | | | | | | | | | | | | | | |
| St Luke's Hospital | Duluth | NPAssn | 270 | 30 | | 70 | 5,374 | Rotating | 7 | 12 | July | (48) | Req | 60 | \$12.50 |
| St Mary's Hospital | Duluth | Church | 390 | 22 | 40 | 29 | 5,216 | Rotating | 7 | 12 | (1 f) | (48) | Req | 73 | \$12.50 |
| Asbury Hospital | Minneapolis | Church | 140 | 10 | | 90 | 3,165 | Rotating | 4 | 12 | Jan & July | No | Op | 35 | \$25 |
| Fairview Hospital | Minneapolis | Church | 225 | 15 | 50 | 35 | 3,973 | Mixed | 4 | 12 | Jan & July | (49) | Req | 19 | \$25 |
| Lutheran Deaconess Home and Hosp | Minneapolis | Church | 150 | 3 | 8 | 89 | 3,018 | Rotating | 4 | 12 | Jan. & July | No | Op | 21 | \$25 |
| Minneapolis General Hospital | Minneapolis | City | 657 | 90 | | | 13,784 | Rotating | 27 | 12 | Apr & Oct. | No | Req | 29 | No |
| Northwestern Hospital | Minneapolis | NPAssn | 185 | 10 | 15 | 75 | 5,791 | Rotating | 3 | 12 | July | No | Op | 24 | \$25 |
| St Barnabas Hospital | Minneapolis | NPAssn | 160 | 3 | 97 | | 3,231 | Mixed | 3 | 12 | July | No | None | 32 | \$25 |
| St Mary's Hospital | Minneapolis | Church | 200 | 6 | 39 | 55 | 4,053 | Rotating | 5 | 12 | July | No | Op | 32 | \$15(1) |
| Swedish Hospital | Minneapolis | NPAssn | 225 | 6 | 10 | 84 | 5,609 | Mixed | 4 | 12 | July | No | Req | 71 | No |
| University Hospitals | Minneapolis | State | 450 | 10 | 63 | 37 | 8,861 | Rotat & Str | 22 | 12 & 24 | July | (50) | Req | 65 | No |
| Ancker Hospital | St Paul | CyCo | 900 | 100 | | | 12,847 | Rotating | 32 | 12 | July | No | Req | 65 | No |
| Bethesda Hospital | St Paul | Church | 137 | 1 | 3 | 96 | 3,927 | Rotating | 3 | 12 | July | (51) | None | 25 | \$25 |
| Charles T Miller Hospital | St Paul | NPAssn | 230 | 33 | 34 | 33 | 6,532 | Rotating | 7 | 12 | July | (51) | Req | 58 | No |
| Northern Pacific Beneficial Association Hospital | St Paul | NPAssn | 150 | | | | 2,470 | Mixed | 2 | 12 | July | No | Req | 22 | \$25 |
| St Joseph's Hospital | St Paul | Church | 270 | 7 | 7 | 86 | 6,258 | Rotating | 6 | 12 | July | (52) | None | 33 | \$25 |
| MISSOURI | | | | | | | | | | | | | | | |
| Kansas City General Hospital | Kansas City | City | 400 | 100 | | | 9,314 | Rotating | 24 | 12 | July | No | Req | 63 | \$25 |
| Kansas City General Hospital No 2 (col) | Kansas City | City | 274 | 100 | | | 3,765 | Rotating | 12 | 12 | July | No | Req | 60 | \$17.50 |
| Memorial Hospital | Kansas City | NPAssn | 143 | 10 | 20 | 70 | 2,929 | Rotating | 5 | 12 | July | (53) | Req | 46 | \$25 |
| Research Hospital | Kansas City | NPAssn | 225 | 4 | | 96 | 4,541 | Rotating | 5 | 12 | July | No | None | 73 | \$25 |
| St Joseph's Hospital | Kansas City | Church | 235 | 20 | 50 | 30 | 4,142 | Mixed | 6 | 12 | July | No | None | 84 | \$25 |
| St Luke's Hospital | Kansas City | Church | 225 | 3 | 54 | 43 | 4,330 | Mixed | 5 | 13 | July | No | None | 82 | \$25 |
| St Mary's Hospital | Kansas City | Church | 175 | 21 | 18 | 61 | 3,670 | Rotating | 5 | 12 | July | No | None | 67 | \$25 |
| Trinity | Kansas City | Church | 149 | 1 | 10 | 89 | 2,262 | Rotating | 4 | 12 | July | No | None | 49 | \$25(p) |
| St Joseph | St Joseph | Church | 230 | 2 | 36 | 62 | 4,143 | Rotating | 4 | 12 | July | No | Op | 12 | \$20 |
| St Joseph | St Joseph | Church | 211 | 6 | 46 | 49 | 3,112 | Rotating | 4 | 12 | July | No | None | 21 | \$15(1) |
| Alexander | St Louis | Church | 200 | 15 | 25 | 57 | 1,310 | Mixed | 4 | 12 | July | (54) | Req | 57 | No |
| Barnes Hospital | St Louis | Church | 370 | 16 | 4 | 80 | 8,134 | Straight | 22 | 12 & 15 | Jan & July | (55) | None | 17 | \$12.50 |
| Christian Hospital | St Louis | NPAssn | 118 | 3 | 3 | 94 | 1,573 | Rotating | 4 | 12 | July | No | Req | 22 | \$25 |
| Dr Paul Hospital | St Louis | Church | 225 | 11 | 45 | 44 | 5,725 | Rotating | 6 | 12 | July | No | None | 31 | \$25(1) |
| Evangelical Deaconess Home and Hosp | St Louis | Church | 150 | 6 | 10 | 84 | 4,674 | Rotating | 6 | 12 | July | No | None | 31 | \$15 |
| Jewell Hospital | St Louis | NPAssn | 229 | 22 | 19 | | 4,653 | Rotating | 11 | 12 | July | (56) | Req | 37 | \$25 |
| Lutheran Hospital | St Louis | Church | 150 | 4 | 38 | 58 | 2,731 | Mixed | 3 | 12 | July | No | None | 37 | \$25 |
| St. Louis Baptist Hospital | St Louis | Church | 500 | 11 | 10 | 79 | 4,603 | Mixed | 8 | 12 | July | No | None | 6 | \$25 |
| St Anthony's Hospital | St Louis | Church | 250 | 11 | 8 | 81 | 3,601 | Rotating | 5 | 12 | July | (57) | None | 18 | \$10 |
| St John's Hospital | St Louis | Church | 315 | 20 | 3 | 77 | 5,322 | Rotating | 12 | 12 | July | No | Req | 47 | \$25 |
| St. Louis City Hospital | St Louis | City | 575 | 160 | | | 21,422 | Rotating | 12 | 12 | July | (58) | Req | 21 | \$15(1) |
| St. Louis City Hospital No 2 (col) | St Louis | | | | | | | | | | | | | | |

| Name of Hospital | Location | Control | Capacity | Classification of Patients Percentage | | | | Type of Internship | Number of Interns | Length of Service in Months | Service Commences | Affiliated Service | Outpatient Service | Autopsy Percentage | Salary per Month |
|--|---------------|---------|----------|--|----------|----------|---------------------------|--------------------|-------------------|--------------------------------|-------------------|--------------------|--------------------|-----------------------|------------------|
| | | | | Free | Part Pay | Full Pay | Total Patients Treated | | | | | | | | |
| MONTANA | | | | | | | | | | | | | | | |
| Murray Hospital | Butte | Corp | 132 | | | | 1,715 | Mixed | 2 | 12 | Jan & July | No | Req | 32 | \$40 |
| St James Hospital | Butte | Church | 157 | 6 | 19 | 75 | 2,093 | Rotating | 2 | 12 | July | No | Req | 40 | \$50 |
| NEBRASKA | | | | | | | | | | | | | | | |
| St. Francis Hospital | Grand Island | Church | 145 | 2 | 63 | 30 | 1,986 | Mixed | 2 | 12 | July | No | None | 33 | \$25 |
| Bryan Memorial Hospital | Lincoln | Church | 114 | 1 | 5 | 94 | 1,993 | Mixed | 2 | 12 | July | No | None | 33 | \$25 |
| Lincoln General Hospital | Lincoln | City | 190 | 10 | 50 | 40 | 2,634 | Mixed | 2 | 12 | July | No | Op | 37 | \$25 |
| St. Elizabeth's Hospital | Lincoln | Church | 200 | 16 | 63 | 26 | 4,034 | Mixed | 2 | 12 | July | No | None | 16 | \$35 |
| Bishop Clarkson Memorial Hospital | Omaha | Church | 106 | 3 | 63 | 29 | 2,039 | Rotating | 3 | 12 | July | No | None | 54 | \$25 |
| Creighton Memorial St Joseph's Hosp | Omaha | Church | 433 | 21 | 61 | 18 | 9,947 | Rotating | 10 | 12 | July | No | Req | 46 | \$20(1) |
| Immanuel Deaconess Institute | Omaha | Church | 146 | 2 | 13 | 85 | 3,967 | Rotating | 4 | 12 | June | No | None | 31 | \$20(1) |
| Nebraska Methodist Episcopal Hospital | Omaha | Church | 200 | 2 | 10 | 88 | 3,833 | Rotating | 4 | 12 | July | No | None | 21 | \$25 |
| St. Ontherlins Hospital | Omaha | Church | 175 | 15 | 5 | 80 | 3,852 | Rotating | 4 | 12 | July | No | None | 24 | \$25 |
| University of Nebraska Hospital | Omaha | State | 240 | 100 | | | 5,627 | Rotating | 12 | 12 | July | No | Req | 78 | \$25 |
| NEW HAMPSHIRE | | | | | | | | | | | | | | | |
| Mary Hitchcock Memorial Hospital | Hanover | NPAasn | 142 | 40 | 56 | 24 | 3,304 | Rotating | 4 | 13 | Jan & July | No | Req | 87 | \$100 yr |
| NEW JERSEY | | | | | | | | | | | | | | | |
| Atlantic City Hospital | Atlantic City | NPAasn | 276 | 43 | 28 | 29 | 6,246 | Rotating | 8 | 12 | July | (60) | Req | 26 | \$25 |
| Bayonne Hospital and Dispensary | Bayonne | NPAasn | 222 | 69 | 2 | 18 | 4,032 | Rotating | 5 | 15 | (1-4) | No | Req | 51 | \$25 |
| Cooper Hospital | Camden | NPAasn | 360 | 45 | 21 | 34 | 5,699 | Rotating | 10 | 12 | July | No | Req | 42 | \$10 |
| West Jersey Homeopathic Hospital | Camden | NPAasn | 237 | 33 | 31 | 36 | 5,010 | Rotating | 7 | 12 | June | No | Req | 20 | \$10 |
| Homeopathic Hospital of Essex County | East Orange | NPAasn | 120 | 13 | 63 | 34 | 2,768 | Rotating | 3 | 12 | July | No | Req | 34 | \$25 |
| Alexian Bros Hosp (male patients only) | Elizabeth | Church | 162 | 46 | 5 | 49 | 1,971 | Rotating | 3 | 12 | July | (61) | Req | 24 | \$50 |
| Elizabeth General Hosp and Disp | Elizabeth | NPAasn | 236 | 30 | 70 | | 5,579 | Rotating | 9 | 12 | July | No | Req | 42 | \$15 |
| St. Elizabeth Hospital | Elizabeth | Church | 240 | 41 | 8 | 51 | 4,553 | Rotating | 5 | 12 | July | No | Req | 24 | \$15 |
| Englewood Hospital | Englewood | NPAasn | 233 | 43 | 41 | 16 | 5,273 | Rotating | 9 | 12 | Jan & July | (62) | Req | 24 | \$20 |
| Hackensack Hospital | Hackensack | NPAasn | 235 | 63 | 21 | 14 | 6,277 | Rotating | 8 | 18 | Jan & July | (62) | Req | 27 | \$25 |
| St. Mary Hospital | Hoboken | Church | 460 | 64 | 26 | 10 | 5,003 | Rotating | 9 | 12 | July | No | Req | 23 | \$25 |
| Christ Hospital | Jersey City | Church | 203 | 18 | 2 | 80 | 3,978 | Rotating | 7 | 12 | July & Oct | No | Req | 21 | \$25 |
| Medical Center of Jersey City | Jersey City | City | 1,200 | 94 | | | 6,194 | Rotating | 69 | 12 | (1-0) | (63) | Req | 16 | No |
| St. Francis Hospital | Jersey City | Church | 240 | 82 | 23 | 45 | 4,432 | Rotating | 6 | 24 | July | (64) | Req | 22 | No |
| Monmouth Memorial Hospital | Long Branch | NPAasn | 207 | 60 | 15 | 25 | 4,473 | Rotating | 9 | 18 | Jan & July | (65) | Req | 25 | \$15 |
| Mountainside Hospital | Montclair | NPAasn | 350 | 47 | 23 | 25 | 5,152 | Rotating | 9 | 18 | Jan & July | No | Req | 28 | \$25 |
| All Souls Hospital | Morristown | Church | 134 | 34 | | | 2,253 | Rotating | 3 | 12 | July | No | Req | 82 | \$35 |
| Morristown Memorial Hospital | Morristown | NPAasn | 160 | 40 | 20 | 40 | 2,504 | Rotating | 4 | 12 | July | No | Req | 46 | \$40 |
| Darlington County Hospital | Mount Holly | NPAasn | 141 | 39 | 27 | 34 | 2,666 | Rotating | 4 | 12 | July | (66) | Req | 33 | \$25 |
| Fitkin Memorial Hospital | Neptune | NPAasn | 173 | 75 | 5 | 20 | 4,103 | Rotating | 7 | 12 | Jan & July | No | Req | 15 | \$25 |
| Hospital of St. Barnabas and for Women and Children | Newark | Church | 140 | 27 | 0 | 64 | 2,907 | Rotating | 3 | 12 | July | No | Req | 32 | \$45 |
| Newark Beth Israel Hospital | Newark | NPAasn | 414 | 18 | 24 | 58 | 10,365 | Rotating | 12 | 16 | Jan & July | No | Op | 33 | \$100 yr |
| Newark City Hospital | Newark | City | 700 | 100 | | | 15,922 | Rotating | 24 | 24 | (1-4) | No | Req | 29 | No |
| Newark Memorial Hospital | Newark | NPAasn | 161 | 23 | 44 | 23 | 2,484 | Rotating | 4 | 12 | July | No | Req | 23 | \$25 |
| St. James Hospital | Newark | Church | 125 | 3 | 8 | 89 | 2,250 | Mixed | 2 | 12 | July | No | Req | 39 | \$30 |
| St. Michael's Hospital | Newark | Church | 317 | 59 | 21 | 40 | 5,071 | Rotating | 7 | 12 | July & Aug | (64) | Req | 47 | \$30 |
| St. Peter's General Hospital | New Brunswick | Church | 212 | 29 | 33 | 33 | 3,862 | Rotating | 4 | 12 | July & Sept | No | Req | 28 | (1) |
| Orange Memorial Hospital | Orange | NPAasn | 400 | 30 | 18 | 52 | 6,063 | Rotating | 8 | 12 | July | No | Req | 33 | \$25 |
| St. Mary's Hospital | Orange | Church | 150 | 31 | 61 | 18 | 2,503 | Rotating | 4 | 12 | July | No | Req | 26 | \$25 |
| Passaic General Hospital | Passaic | NPAasn | 225 | 60 | 10 | 30 | 3,888 | Rotating | 4 | 12 | June | No | Req | 22 | \$25 |
| St. Mary's Hospital | Passaic | Church | 200 | 43 | 19 | 38 | 5,184 | Rotating | 4 | 12 | July | No | Req | 15 | \$25 |
| Nathan and Miriam Burnert Memorial Hospital | Paterson | NPAasn | 118 | 42 | 20 | 33 | 2,586 | Rotating | 4 | 12 | July & Oct | No | Req | 33 | \$16-20 |
| Paterson General Hospital | Paterson | NPAasn | 326 | 40 | 3 | 57 | 5,798 | Rotating | 7 | 18 | Jan & July | No | Op | 25 | \$25 |
| St. Joseph Hospital | Paterson | Church | 458 | 25 | 19 | 56 | 6,567 | Rotating | 8 | 24 | July | No | Req | 23 | \$12.50-25 |
| Muhlenberg Hospital | Plainfield | NPAasn | 274 | 54 | 15 | 31 | 5,631 | Rotating | 5 | 12 | July | No | Req | 29 | \$25 |
| Holy Name Hospital | Teaneck | Church | 220 | 70 | 15 | 15 | 3,850 | Rotating | 6 | 12 | July | (62) | Req | 24 | \$40 |
| Mercer Hospital | Trenton | NPAasn | 260 | 44 | 3 | 53 | 4,494 | Rotating | 6 | 12 | July | No | Req | 25 | \$25 |
| St. Francis Hospital | Trenton | Church | 317 | 43 | 19 | 38 | 5,935 | Rotating | 8 | 12 | July | No | Req | 20 | \$25 |
| William McKinley Memorial Hospital | Trenton | NPAasn | 146 | 45 | 3 | 52 | 2,541 | Rotating | 4 | 12 | July | No | Req | 17 | \$25 |
| North Hudson Hospital | Weehawken | NPAasn | 191 | 64 | 14 | 22 | 3,127 | Rotating | 7 | 12 | July & Sept | No | Req | 26 | \$25 |
| NEW YORK | | | | | | | | | | | | | | | |
| Albany Hospital | Albany | NPAasn | 610 | 8 | 75 | 17 | 10,885 | Rotating | 21 | 12 | July | No | Req | 72 | No |
| Memorial Hospital | Albany | NPAasn | 140 | 1 | 32 | 67 | 2,837 | Mixed | 5 | 12 | July & Sept | No | Req | 43 | \$25 |
| St. Peter's Hospital | Albany | Church | 135 | 6 | 37 | 57 | 2,902 | Mixed | 5 | 12 | July | (68) | Req | 32 | \$40 |
| Beth El Hospital | Brooklyn | NPAasn | 233 | 27 | 63 | 10 | 6,375 | Rotating | 15 | 16 | Jan & July | No | Op | 22 | No |
| Beth Moses Hospital | Brooklyn | NPAasn | 224 | 38 | 4 | 58 | 4,794 | Rotating | 16 | 24 | Jan & July | No | Req | 20 | No |
| Brooklyn Hospital | Brooklyn | NPAasn | 490 | 8 | 20 | 72 | 6,613 | Rotating | 16 | 24 | July | No | Op | 38 | No |
| Bushwick Hospital | Brooklyn | NPAasn | 127 | 19 | 20 | 61 | 3,112 | Rotating | 6 | 24 | July | No | Req | 18 | No |
| Caledonian Hospital | Brooklyn | NPAasn | 130 | 2 | 59 | 39 | 1,542 | Rotating | 2 | 12 | July | No | Req | 36 | \$25 |
| Coney Island Hospital | Brooklyn | City | 300 | 100 | | | 9,616 | Rotating | 20 | 24 | July | No | Req | 35 | \$15 |
| Cumberland Hospital | Brooklyn | City | 318 | 100 | | | 8,195 | Rotat & Str | 20 | 24 | July | No | Op | 40 | \$15 |
| Greenpoint Hospital | Brooklyn | City | 320 | 100 | | | 7,205 | Rotating | 16 | 24 | July | No | Req | 36 | \$15 |
| Israel Zion Hospital | Brooklyn | NPAasn | 450 | 28 | 4 | 68 | 11,202 | Rotating | 24 | 24 | July | (69) | Req | 23 | No |
| Jewish Hospital | Brooklyn | NPAasn | 604 | 30 | 40 | 20 | 15,012 | Rotating | 58 | 18 | Jan & July | (69) | Req | 40 | No |
| Kings County Hospital | Brooklyn | City | 3,100 | 100 | | | 63,823 | Rotating | 54 | 15 | (1-c) | No | Req | 19 | \$15 |
| Long Island College Hospital | Brooklyn | NPAasn | 473 | 18 | 34 | 45 | 9,037 | Straight | 19 | 12 | July | No | Req | 34 | No |
| Methodist Episcopal Hospital | Brooklyn | Church | 412 | 16 | 24 | 60 | 9,740 | Rotating | 12 | 24 | July | No | Req | 23 | No |
| Norwegian Lutheran Deaconess Home and Hospital | Brooklyn | Church | 198 | 5 | 43 | 52 | 4,372 | Rotating | 8 | 12 | July | No | Req | 50 | No |
| St. Catherine's Hospital | Brooklyn | Church | 313 | 25 | 2 | 73 | 6,537 | Rotating | 16 | 24 | July | No | Req | 23 | No |
| St. John's Hospital | Brooklyn | Church | 224 | 55 | 6 | 39 | 5,012 | Rotating | 12 | 36 | July | No | Req | 50 | No |
| St. Mary's Hospital | Brooklyn | Church | 303 | 57 | 23 | 20 | 6,244 | Rotating | 12 | 24 | July | No | Req | 16 | No |
| St. Peter's Hospital | Brooklyn | Church | 220 | 54 | 17 | 29 | 2,697 | Rotating | 6 | 12 | July | No | None | 22 | No |
| Trinity Hospital | Brooklyn | NPAasn | 123 | 67 | 30 | 8 | 3,133 | Rotating | 14 | 12 | July | No | Req | 44 | No |
| Wyckoff Heights Hospital | Brooklyn | NPAasn | 200 | 6 | 57 | 23 | 5,314 | Rotating | 12 | 24 | (1 q) | No | Req | 15 | No |
| Buffalo City Hospital | Buffalo | CyCo | 1,063 | 66 | 30 | 4 | 12,866 | Rotating | 20 | 12 | July | No | Req | 21 | No |
| Buffalo General Hospital | Buffalo | NPAasn | 465 | 13 | 36 | 51 | 10,938 | Rotating | 14 | 12 | July | (70) | Req | 36 | No |
| Deaconess Hospital | Buffalo | NPAasn | 225 | 1 | 31 | 68 | 4,830 | Rotating | 6 | 12 | July | No | Op | 25 | \$25 |
| Mercy Hospital | Buffalo | Church | 200 | 40 | | | 4,511 | Rotating | 6 | 12 | July | No | Req | 23 | \$25 |
| Millard Fillmore Hospital | Buffalo | NPAasn | 309 | 21 | 34 | 45 | 7,211 | Rotating | 7 | 12 | July | No | Req | 46 | \$15 |
| Arnold Ogden Memorial Hospital | Elmira | NPAasn | 213 | 9 | 55 | 36 | 4,369 | Mixed | 2 | 12 | July | No | Req | 33 | \$20(k) |
| St. Joseph's Hospital | Elmira | Church | 216 | 7 | 23 | 70 | 4,795 | Rotating | 4 | 12 | July | No | None | 22 | \$25 |
| Ideal Hospital | Endicott | City | 146 | 3 | | | 97 | Mixed | 4 | 12 | July | No | None | 25 | \$25(p) |
| Flushing Hospital and Dispensary | Flushing | NPAasn | 258 | 41 | | | 6,601 | Rotating | 8 | 24 | July | No | Req | 20 | \$25 |

| Name of Hospital | Location | Control | Capacity | Classification of Patients | | | Total Patients Treated | Type of Internship | Number of Interns | Length of Service in Months | Service Commences | Affiliated Service | Outpatient Service | Autopsy Percentage | Salary per Month |
|--|------------------|---------|----------|----------------------------|----------|----------|------------------------|--------------------|-------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|------------------|
| | | | | Free | Part Pay | Full Pay | | | | | | | | | |
| NEW YORK—Continued | | | | | | | | | | | | | | | |
| Jamaica Hospital | Jamaica | NPAssn | 177 | 38 | 3 | 59 | 5,806 | Rotating | 8 | 18 | July | No | Req | 38 | No |
| Mary Immaculate Hospital | Jamaica | Church | 310 | 5 | 38 | 57 | 7,298 | Rotating | 16 | 24 | July | No | Req | 36 | No |
| Charles S. Wilson Memorial Hospital | Johnson City | NPAssn | 350 | 4 | 96 | 5 | 5,516 | Rotating | 6 | 12 | July | No | Req | 51 | \$15 |
| Kingston Hospital | Kingston | NPAssn | 183 | 3 | 71 | 26 | 8,159 | Rotating | 3 | 12 | Jan & July | (71) | None | 25 | \$15(m) |
| Our Lady of Victory Hospital | Lackawanna | Church | 161 | 12 | 49 | 89 | 1,939 | Rotating | 3 | 12 | July | No | Req | 16 | \$6 |
| St. John's Long Island City Hospital | Long Island City | Church | 301 | 4 | 73 | 23 | 5,933 | Rotating | 16 | 24 | July | No | Req | 51 | no |
| Nassau Hospital | Mineola | NPAssn | 205 | 2 | 84 | 14 | 5,089 | Rotating | 6 | 18 | Jan & July | No | None | 21 | \$6 |
| Mount Vernon Hospital | Mount Vernon | NPAssn | 180 | 22 | 17 | 61 | 4,438 | Rotating | 6 | 24 | July | No | Req | 17 | \$15-30 |
| New Rochelle Hospital | New Rochelle | NPAssn | 147 | 6 | 32 | 62 | 4,657 | Rotating | 6 | 12 | July | No | Req | 32 | \$15 |
| Bellerose Hospital | New York | City | 2,333 | 100 | | | 63,910 | Straight | 140 | 12-24 | Jan & July | No | Req | 33 | \$15 |
| Beth David Hospital | New York | NPAssn | 166 | 52 | 23 | 25 | 2,529 | Rotating | 7 | 24 | July | No | Req | 25 | no |
| Beth Israel Hospital | New York | NPAssn | 444 | 43 | 56 | 1 | 9,961 | Rotat & Str | 23 | 12 & 24 | July | No | Op | 4 | no |
| Bronx Hospital | New York | NPAssn | 802 | 14 | 20 | 61 | 10,097 | Rotating | 18 | 27 | (1 r) | No | Req | 35 | no |
| Columbus Hospital | New York | Church | 800 | 62 | 26 | 22 | 4,703 | Rotating | 9 | 24 | Jan | No | Req | 19 | no |
| Flower Fifth Avenue Hospital | New York | NPAssn | 347 | | | | | Rotating | 20 | 24 | July | (72) | Req | 40 | no |
| Fordham Hospital | New York | City | 609 | 100 | | | 17,430 | Mix & Str | 28 | 12 & 24 | (1 h) | No | Op | 51 | \$15 |
| French Hospital | New York | NPAssn | 300 | 2 | 5 | 70 | 3,942 | Straight | 12 | 24 | (1-d) | No | Op | 15 | no |
| Gouverneur Hospital | New York | City | 229 | 100 | | | 5,193 | Rotating | 18 | 24-30 | Jan & July | No | Req | 32 | \$15 |
| Harlem Hospital | New York | City | 325 | 100 | | | 13,435 | Rotating | 48 | 24 | Jan & July | No | Op | 25 | \$15 |
| Hospital for Joint Diseases | New York | NPAssn | 350 | 20 | 83 | 47 | 5,841 | Rotating | 12 | 24 | Jan & July | (73) | Req | 41 | no |
| Knickerbocker Hospital | New York | NPAssn | 204 | 7 | 73 | 20 | 3,960 | Rotating | 8 | 24 | (1-d) | No | Op | 33 | no |
| Lebanon Hospital | New York | NPAssn | 154 | 58 | 36 | 6 | 3,169 | Straight | 12 | 24 | (1 h) | No | Req | 44 | no |
| Lenox Hill Hospital | New York | NPAssn | 505 | 55 | | | 10,120 | Rotat & Mix | 24 | 24 | Jan & July | No | Op | 33 | (r) |
| Lincoln Hospital | New York | City | 265 | 100 | | | 8,740 | Rotating | 20 | 24 | Jan & July | No | Req | 36 | \$15 |
| Metropolitan Hospital | New York | City | 1,420 | 100 | | | 14,400 | Rotat & Str | 44 | 24 | July | (74) | Req | 19 | \$15 |
| Misericordia Hospital | New York | Church | 310 | 11 | 40 | 49 | 5,035 | Rotating | 7 | 18 | Jan & July | No | Op | 35 | \$10 |
| Montefiore Hosp for Chronic Diseases | New York | NPAssn | 711 | 79 | 8 | 18 | 2,619 | Rotat & Str | 11 | 12 | Jan & July | No | Req | 73 | \$15 |
| Morrisania City Hospital | New York | City | 639 | 100 | | | 15,011 | Rotating | 35 | 24 | Jan & July | No | Op | 27 | \$15 |
| Mount Sinai Hospital | New York | NPAssn | 789 | 57 | 16 | 27 | 13,838 | Mixed & Str | 28 | 12 & 29 | (1 h) | No | Op | 52 | (m) |
| New York City Hospital | New York | City | 1,080 | 100 | | | 10,111 | Rotating | 36 | 24 | Jan & July | No | Req | 40 | \$15 |
| New York Hospital | New York | NPAssn | 1,010 | 8 | 73 | 19 | 14,429 | Straight | 36 | 12 | July | (75) | Req | 57 | no |
| New York Infirmary for Women and Children | New York | NPAssn | 162 | 86 | 7 | 57 | 3,549 | Rotating | 5 | 12 | (1 s) | No | Req | 70 | (1) |
| New York Polyclinic Medical School and Hospital | New York | NPAssn | 346 | 17 | 70 | 13 | 7,922 | Rotating | 8 | 24 | (1-d) | No | Req | 23 | no |
| New York Post Graduate Medical School and Hospital | New York | NPAssn | 411 | 13 | 3 | 84 | 9,372 | Straight | 28 | 12-27 | (1-d) | No | Req | 46 | no |
| Presbyterian and Sloan Hospitals | New York | NPAssn | 955 | 33 | 42 | 2 | 17,704 | Straight | 48 | 12-25 | Varies | No | Req | 45 | no |
| Roosevelt Hospital | New York | NPAssn | 384 | 43 | 9 | 48 | 6,162 | Straight | 21 | 24 & 36 | Jan & July | No | Req | 32 | no |
| St. Francis Hospital | New York | Church | 425 | 57 | 21 | 22 | 5,428 | Mixed | 8 | 24 | Jan & July | No | None | 26 | no |
| St. Luke's Hospital | New York | Church | 507 | 62 | 33 | 7 | 7,772 | Mixed | 16 | 24 | Jan & July | No | Req | 47 | no |
| St. Vincent's Hospital | New York | Church | 465 | 57 | 23 | 15 | 10,012 | Rotating | 32 | 24 | Jan & July | No | Req | 31 | no |
| Sydenham Hospital | New York | NPAssn | 200 | 10 | 40 | 50 | 5,083 | Rotating | 16 | 12 & 24 | Jan & July | No | Op | 23 | no |
| United Hospital | Port Chester | NPAssn | 200 | 2 | 37 | 61 | 4,106 | Rotating | 4 | 12 | July | No | Req | 32 | \$10(1) |
| Vassar Brothers Hospital | Poughkeepsie | NPAssn | 225 | 22 | 78 | 4 | 4,833 | Rotating | 4 | 12 | July | No | Req | 20 | \$30(1) |
| Genesee Hospital | Rochester | NPAssn | 220 | 29 | 28 | 48 | 4,454 | Rotating | 8 | 24 | July | No | Req | 29 | \$10-15 |
| Highland Hospital | Rochester | NPAssn | 200 | 5 | 50 | 9 | 3,978 | Rotating | 6 | 24 | July | No | Req | 35 | \$2-20 |
| Rochester General Hospital | Rochester | NPAssn | 335 | 24 | 9 | 07 | 8,013 | Rotating | 3 | 12 | July | No | Req | 65 | (h) |
| St. Mary's Hospital | Rochester | Church | 220 | 16 | 31 | 53 | 4,694 | Rotating | 5 | 12 | July | No | Req | 29 | \$20 |
| Strong Memorial and Rochester Municipal Hospitals | Rochester | NPAssn | 645 | 49 | 39 | 12 | 13,063 | Straight | 30 | 12 | July | No | Req | 66 | no |
| Ellis Hospital | Schenectady | NPAssn | 285 | 4 | 98 | 7 | 7,424 | Rotating | 6 | 12 | July | No | Req | 32 | no |
| U. S. Marine Hospital (Staten Island) | Stapleton | USPHS | 288 | 100 | | | 2,936 | Rotating | 10 | 12 | July | (76) | Req | 40 | (d) |
| St. Vincent's Hospital | Staten Island | Church | 255 | 59 | 1 | 40 | 5,234 | Rotating | 6 | 18 | (1-d) | No | Req | 27 | no |
| Staten Island Hospital | Staten Island | NPAssn | 256 | 3 | 79 | 18 | 5,461 | Rotating | 7 | 21 | (1-d) | No | Req | 26 | no |
| General Hospital of Syracuse | Syracuse | NPAssn | 110 | 16 | 69 | 2 | 2,652 | Rotating | 3 | 12 | July | No | Req | 34 | \$10 |
| Syracuse Hospital | Syracuse | NPAssn | 242 | 2 | 45 | 53 | 5,066 | Rotating | 9 | 12 | July & Aug | (77) | None | 40 | no |
| Syracuse Hospital | Syracuse | Church | 231 | 33 | 45 | 17 | 6,249 | Rotating | 6 | 12 | July | No | Req | 20 | no |
| Syracuse Hospital | Syracuse | NPAssn | 240 | 41 | 59 | 5 | 5,500 | Rotating | 7 | 12 | July | No | Req | 40 | no |
| Troy Hospital | Troy | NPAssn | 181 | 5 | 70 | 25 | 2,709 | Rotating | 4 | 12 | (1 l) | (78) | Req | 32 | \$15-18 |
| Troy Hospital | Troy | Church | 294 | 9 | 42 | 49 | 3,490 | Rotating | 4 | 12 | July | (68) | Req | 26 | \$30 |
| Valhalla Hospital | County | Church | 932 | 87 | 13 | 7 | 7,043 | Rotating | 20 | 24 | Jan & July | No | Req | 64 | no |
| White Plains Hospital | White Plains | Church | 143 | 3 | 17 | 80 | 2,679 | Rotating | 3 | 12 | July | No | Req | 23 | \$15 |
| Yonkers Hospital | Yonkers | NPAssn | 200 | 73 | | | 2,674 | Rotating | 5 | 12 | Jan & July | No | Op | 43 | \$10 |
| Yonkers General Hospital | Yonkers | Church | 107 | 33 | 13 | 49 | 2,796 | Rotating | 6 | 12 | July | No | Req | 18 | no |
| Yonkers General Hospital | Yonkers | NPAssn | 176 | 31 | 51 | 18 | 2,623 | Rotating | 4 | 12 | Jan & July | No | Req | 17 | (1) |
| NORTH CAROLINA | | | | | | | | | | | | | | | |
| Duke Hospital | Durham | NPAssn | 456 | 66 | 24 | 10 | 8,506 | Straight | 33 | 12 | July & Sept | No | Req | 57 | no |
| Lincoln Hospital (col) | Durham | NPAssn | 103 | 64 | 18 | 18 | 1,818 | Mixed | 4 | 12 | June | No | Req | 25 | \$15 |
| Watts Hospital | Durham | NPAssn | 225 | 32 | 33 | 35 | 5,438 | Rotating | 7 | 12 | July | No | Req | 24 | \$15 |
| Highsmith Hospital | Fayetteville | NPAssn | 125 | 17 | 46 | 37 | 2,942 | Mixed | 3 | 12 | July | No | Req | 20 | \$10 |
| L. Richardson Memorial Hospital (col) | Greensboro | NPAssn | 64 | 27 | 43 | 50 | 694 | Mixed | 2 | 12 | July & Oct | No | Req | 18 | \$15 |
| Rex Hospital | Raleigh | NPAssn | 129 | 17 | 38 | 45 | 3,906 | Rotating | 4 | 12 | July | No | Req | 18 | \$15 |
| St. Agnes Hospital (col) | Raleigh | Church | 100 | 62 | 10 | 23 | 1,093 | Mixed | 2 | 12 | July & Oct | No | Req | 23 | \$100-17 |
| St. Luke's Hospital | Rocky Mount | NPAssn | 150 | 24 | 11 | 65 | 2,638 | Mixed | 3 | 12 | July | No | Req | 18 | \$15 |
| James Walker Memorial Hospital | Wilmington | NPAssn | 132 | 64 | 5 | 41 | 4,763 | Rotating | 4 | 12 | July | No | Req | 23 | \$15(1) |
| City Memorial Hospital | Winston Salem | City | 191 | 43 | 0 | 45 | 4,053 | Mixed | 6 | 12 | July | (79) | Req | 23 | \$15(1) |
| NORTH DAKOTA | | | | | | | | | | | | | | | |
| St. John's Hospital | Fargo | Church | 165 | 6 | 26 | 63 | 2,663 | Mixed | 2 | 12 | July | No | None | 32 | \$10 |
| Trinity Hospital | Minot | Church | 156 | | 45 | 55 | 3,431 | Rotating | 4 | 12 | July | No | None | 70 | \$15 |
| OHIO | | | | | | | | | | | | | | | |
| City Hospital | Akron | NPAssn | 250 | 43 | 7 | 50 | 7,063 | Rotating | 12 | 12 | July | (80) | Req | 52 | \$20 |
| Proper Hospital | Akron | NPAssn | 150 | 57 | 9 | 34 | 3,297 | Rotating | 4 | 12 | July | (80) | Req | 29 | \$15 |
| St. Thomas Hospital | Akron | Church | 150 | 31 | 23 | 27 | 4,401 | Rotating | 4 | 12 | July | No | None | 27 | \$10(1) |
| Aultman Hospital | Canton | NPAssn | 161 | 16 | 64 | 20 | 3,101 | Rotating | 4 | 12 | July | No | None | 21 | \$15 |
| Mercy Hospital | Canton | Church | 214 | 26 | 50 | 15 | 6,105 | Rotating | 4 | 12 | July | No | Req | 16 | \$15 |
| Little da Hospital | Cincinnati | Church | 244 | | 70 | 70 | 3,517 | Rotating | 7 | 12 | July | (81) | Req | 21 | \$15-20 |
| Christ Hospital | Cincinnati | Church | 244 | | 70 | 70 | 3,517 | Rotating | 7 | 12 | July | (81) | Req | 21 | \$15-20 |
| Cincinnati General Hospital | Cincinnati | City | 92 | 80 | 13 | | 16,027 | Rotating | 26 | 12 | July | (83) | Req | 42 | no |
| Twicken Hospital | Cincinnati | Church | 175 | 5 | 49 | 46 | 4,602 | Rotating | 5 | 12 | July | (84) | Req | 17 | \$15 |
| Good Samaritan Hospital | Cincinnati | Church | 220 | 20 | 12 | 23 | 11,165 | Rotating | 13 | 12 | June | No | Req | 21 | \$15 |
| Good Samaritan Hospital | Cincinnati | NPAssn | 220 | 20 | 12 | 23 | 11,165 | Rotating | 9 | 12 | July | (85) | Req | 21 | \$15 |
| Good Samaritan Hospital | Cincinnati | Church | 220 | 20 | 12 | 23 | 11,165 | Rotating | 9 | 12 | July | (85) | Req | 21 | \$15 |
| Good Samaritan Hospital | Cincinnati | City | 170 | | 2 | 14 | 445 | Rotating | 27 | 12 | July | No | Req | 24 | no |

| Name of Hospital | Location | Control | Capacity | Classification of Patients | | | | Type of Internship | Number of Interns | Length of Service in Months | Service Commences | Affiliated Service | Outpatient Service | Autopsy Percentage | Salary per Month |
|---|----------------|---------|----------|----------------------------|----------|----------|------------------------|--------------------|-------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|------------------|
| | | | | Free | Part Pay | Full Pay | Total Patients Treated | | | | | | | | |
| OHIO—Continued | | | | | | | | | | | | | | | |
| Lutheran Hospital | Cleveland | Church | 142 | 5 | 40 | 55 | 3,407 | Rotating | 8 | 12 | July | No | None | 80 | \$30 |
| Mount Sinai Hospital ¹ | Cleveland | NP Assn | 270 | 84 | 12 | 54 | 7,623 | Rotating | 12 | 12 | July | (87) | Op | 28 | \$10 |
| St Alexis Hospital | Cleveland | Church | 220 | 35 | 4 | 61 | 4,154 | Rotating | 8 | 12 | July | (88) | Req | 88 | \$10 |
| St John's Hospital | Cleveland | Church | 210 | 12 | 10 | 78 | 4,838 | Rotating | 6 | 12 | July | No | None | 32 | \$12.50 |
| St Luke's Hospital | Cleveland | Church | 392 | 23 | 2 | 70 | 9,310 | Rotating | 16 | 12 | July | No | Req | 24 | No |
| St Vincent Charity Hospital | Cleveland | Church | 301 | 42 | 3 | 55 | 5,409 | Rotating | 12 | 12 | July | (88) | Req | 34 | No |
| University Hospitals ¹ | Cleveland | NP Assn | 972 | 37 | 14 | 49 | 16,068 | Rotating | 12 | 12 | July | (88) | Req | 54 | (n) |
| Woman's Hospital ¹ | Cleveland | NP Assn | 120 | 0 | 8 | 83 | 1,992 | Rotating | 3 | 12 | July | (89) | None | 31 | \$25 |
| Grant Hospital | Columbus | NP Assn | 303 | 7 | 58 | 85 | 5,847 | Rotating | 8 | 12 | July | No | None | 21 | \$25 |
| Mount Carmel Hospital | Columbus | Church | 239 | 9 | 6 | 85 | 4,065 | Rotating | 5 | 12 | July | (90) | None | 17 | \$25 |
| St Francis Hospital | Columbus | Church | 168 | 74 | 17 | 9 | 3,250 | Rotating | 8 | 12 | July | (91) | None | 37 | \$10 |
| Starling Loving University Hospital ¹ | Columbus | State | 276 | 46 | 19 | 35 | 5,061 | Rotating | 9 | 12 | July | No | Req | 41 | (m) |
| White Cross Hospital | Columbus | Church | 289 | 19 | 81 | 5 | 6,033 | Mixed | 6 | 12 | July | No | None | 33 | \$25 |
| Good Samaritan Hospital | Dayton | Church | 250 | 28 | 2 | 70 | 2,503 | Mixed | 4 | 12 | July | No | Op | 26 | \$25 |
| Miami Valley Hospital | Dayton | NP Assn | 371 | 33 | 26 | 41 | 7,677 | Rotating | 8 | 12 | July | (92) | None | 47 | \$25 |
| St Elizabeth Hospital | Dayton | Church | 400 | 61 | 20 | 19 | 5,799 | Rotating | 7 | 12 | July | No | None | 24 | \$25 |
| Huron Road Hospital ¹ | East Cleveland | NP Assn | 202 | 16 | 3 | 81 | 2,827 | Rotating | 6 | 12 | July | No | Req | 23 | \$25(r) |
| Mercy Hospital | Hamilton | Church | 200 | 20 | 60 | 20 | 2,848 | Rotating | 2 | 12 | July | No | Req | 25 | \$25 |
| Springfield City Hospital | Springfield | City | 238 | 38 | 23 | 39 | 3,635 | Mixed | 6 | 12 | July | No | Req | 33 | \$15 |
| Flower Hospital | Toledo | Church | 125 | 5 | 35 | 60 | 2,602 | Rotating | 3 | 12 | July | No | Req | 36 | \$25 |
| Locas County General Hospital | Toledo | County | 315 | 100 | | | 5,007 | Rotating | 10 | 12 | July | No | Req | 36 | \$25 |
| Mercy Hospital | Toledo | Church | 132 | 6 | 76 | 18 | 2,446 | Rotating | 3 | 12 | July | No | Req | 20 | \$25 |
| St Vincent's Hospital ¹ | Toledo | Church | 345 | 36 | 32 | 32 | 9,823 | Rotating | 11 | 12 | July | No | Req | 50 | \$25 |
| Toledo Hospital | Toledo | NP Assn | 275 | 4 | 58 | 38 | 2,766 | Rotating | 4 | 12 | July | No | None | 48 | \$25 |
| St Elizabeth's Hospital | Youngstown | Church | 261 | 2 | 20 | 78 | 4,909 | Rotating | 6 | 12 | July | No | None | 24 | \$20(k) |
| Youngstown Hospital | Youngstown | NP Assn | 448 | 2 | 71 | 27 | 7,822 | Rotating | 14 | 12 | July | No | Op | 83 | \$20 |
| OKLAHOMA | | | | | | | | | | | | | | | |
| Oklahoma City General Hospital | Oklahoma City | Corp | 100 | | 37 | 63 | 3,387 | Rotating | 4 | 12 | July | No | Req | 16 | \$25 |
| St Anthony Hospital | Oklahoma City | Church | 340 | 11 | 64 | 85 | 7,768 | Rotating | 8 | 12 | July | No | Op | 88 | \$15 |
| State University Hospitals ¹ | Oklahoma City | State | 510 | 62 | 32 | 6 | 6,160 | Rotating | 20 | 24 | July | No | Req | 53 | \$10 |
| Wesley Hospital | Oklahoma City | Part | 170 | | 50 | 50 | 4,402 | Rotating | 4 | 12 | July | No | None | 19 | \$25 |
| Morningside Hospital | Tulsa | Corp | 250 | 10 | 30 | 60 | 5,262 | Rotating | 4 | 12 | July | No | Req | 71 | \$25 |
| St John's Hospital | Tulsa | Church | 278 | 33 | 33 | 34 | 4,482 | Rotating | 4 | 12 | July | No | Req | 36 | \$25(cc) |
| OREGON | | | | | | | | | | | | | | | |
| Emmanuel Hospital ¹ | Portland | Church | 280 | | | | 6,357 | Rotating | 9 | 12 | June | (83) | None | 37 | \$20 |
| Good Samaritan Hospital | Portland | Church | 375 | 3 | 3 | 94 | 7,373 | Rotating | 9 | 12 | July | No | Req | 41 | \$20 |
| Portland Sanitarium and Hospital | Portland | Church | 184 | 20 | 40 | 40 | 3,942 | Rotating | 3 | 12 | July | No | None | 65 | \$75(a) |
| St Vincent's Hospital | Portland | Church | 416 | 13 | 42 | 45 | 9,333 | Rotating | 8 | 12 | July | No | None | 42 | \$25 |
| Univ of Oregon Medical School Hosp | Portland | Co-Sta | 405 | 100 | | | 8,701 | Rotating | 16 | 12 | July | (84) | Req | 65 | \$20 |
| PENNSYLVANIA | | | | | | | | | | | | | | | |
| Ahlington Memorial Hospital | Ahlington | NP Assn | 275 | 30 | 22 | 48 | 5,209 | Rotating | 9 | 24 | July | No | Req | 43 | No |
| Allentown Hospital ¹ | Allentown | NP Assn | 325 | 37 | 16 | 47 | 6,918 | Rotating | 10 | 12 | July | No | Req | 35 | No |
| Sacred Heart Hospital | Allentown | Church | 300 | 55 | 6 | 39 | 3,828 | Rotating | 6 | 12 | July | (94) | Req | 23 | No |
| Altoona Hospital | Altoona | NP Assn | 180 | 41 | 4 | 55 | 2,561 | Rotating | 5 | 12 | July | No | Req | 42 | \$25 |
| Mercy Hospital | Altoona | NP Assn | 128 | 45 | 38 | 19 | 2,706 | Rotating | 4 | 12 | July | No | Req | 18 | \$25 |
| St. Luke's Hospital | Bethlehem | NP Assn | 210 | 47 | 11 | 42 | 4,765 | Rotating | 7 | 12 | July | No | Req | 41 | (f) |
| Bryn Mawr Hospital | Bryn Mawr | NP Assn | 262 | 12 | 28 | 62 | 4,670 | Rotating | 8 | 12 | July | No | Req | 49 | No |
| Chester Hospital ¹ | Chester | NP Assn | 255 | 59 | 3 | 38 | 4,127 | Rotating | 6 | 12 | July | No | Req | 18 | \$15 |
| G F Gelsinger Memorial Hospital | Danville | NP Assn | 193 | 25 | 31 | 44 | 4,443 | Rotating | 10 | 12 | July | No | Req | 30 | No |
| Fitzgerald Mercy Hospital ¹ | Darby | Church | 248 | 62 | 15 | 20 | 3,200 | Rotating | 6 | 12 | July | No | Req | 83 | No |
| Easton Hospital ¹ | Easton | NP Assn | 220 | 35 | 5 | 60 | 4,927 | Rotating | 6 | 12 | July | No | Req | 50 | (f) |
| Hamot Hospital | Erie | NP Assn | 255 | 45 | 14 | 41 | 5,594 | Rotating | 7 | 12 | July | No | Req | 20 | \$25 |
| St Vincent's Hospital | Erie | NP Assn | 215 | 61 | | 39 | 5,787 | Rotating | 5 | 12 | July | No | Req | 22 | \$15(k) |
| Harrisburg Hospital | Harrisburg | NP Assn | 275 | 45 | 6 | 49 | 5,739 | Rotating | 8 | 12 | July | No | Req | 24 | \$25 |
| Harrisburg Polytechnic Hospital | Harrisburg | NP Assn | 180 | 36 | 3 | 61 | 3,492 | Rotating | 4 | 12 | July | No | Req | 33 | \$50 |
| Conemah Valley Memorial Hospital | Johnstown | NP Assn | 220 | 42 | 16 | 42 | 5,490 | Rotating | 6 | 12 | July | No | Req | 21 | No |
| Lancaster General Hospital ¹ | Lancaster | NP Assn | 263 | 40 | 4 | 56 | 5,585 | Rotating | 6 | 12 | July | No | Req | 64 | \$17.50 |
| St Joseph's Hospital | Lancaster | Church | 191 | 44 | 24 | 32 | 3,245 | Rotating | 5 | 12 | July | No | Req | 40 | \$17.50 |
| McKeesport Hospital | McKeesport | NP Assn | 263 | 38 | 2 | 60 | 4,024 | Rotating | 6 | 12 | July | No | Req | 25 | \$25 |
| Jameson Memorial Hospital | New Castle | NP Assn | 164 | 46 | 17 | 37 | 3,021 | Rotating | 4 | 12 | July | No | None | 35 | \$15 |
| Montgomery Hospital | Norristown | NP Assn | 110 | 49 | 7 | 44 | 3,097 | Rotating | 4 | 12 | July | No | Req | 24 | \$30 |
| Chestnut Hill Hospital | Philadelphia | NP Assn | 114 | 16 | 33 | 51 | 1,844 | Rotating | 4 | 12 | July | No | Req | 20 | \$30 |
| Frankford Hospital | Philadelphia | NP Assn | 142 | 16 | 19 | 65 | 3,333 | Rotating | 7 | 12 | July | No | Req | 16 | No |
| Germantown Dispensary and Hospital | Philadelphia | NP Assn | 300 | 18 | 32 | 50 | 7,147 | Rotating | 12 | 24 | July | No | Req | 26 | No |
| Graduate Hospital of the University of Pennsylvania | Philadelphia | NP Assn | 475 | 36 | 9 | 55 | 7,166 | Rotating | 8 | 24 | July | (96) | Req | 49 | No |
| Hahnemann Hospital | Philadelphia | NP Assn | 692 | 60 | 11 | 89 | 13,671 | Rotating | 24 | 12 | July | No | Req | 28 | No |
| Hospital of the Protestant Episcopal Church | Philadelphia | Church | 530 | 60 | 3 | 7 | 6,918 | Rotating | 16 | 24 | Jan & July | No | Req | 44 | No |
| Hospital of the Univ of Pennsylvania ¹ | Philadelphia | State | 508 | 36 | 24 | 40 | 10,292 | Rotating | 23 | 24 | July | No | Req | 67 | No |
| Hosp of the Woman's Medical College ¹ | Philadelphia | NP Assn | 173 | 24 | 28 | 48 | 3,545 | Rotating | 6 | 12 | July & Sept | No | Req | 41 | No |
| Jefferson Medical College Hospital | Philadelphia | NP Assn | 688 | 50 | 19 | 26 | 12,869 | Rotating | 23 | 27 | June | No | Req | 65 | No |
| Jewish Hospital ¹ | Philadelphia | NP Assn | 423 | 34 | 12 | 54 | 7,950 | Rotating | 18 | 24 | June | (97) | Req | 62 | No |
| Lankenau Hospital | Philadelphia | NP Assn | 300 | 30 | 13 | 57 | 4,423 | Rotating | 10 | 24 | July | (98) | Req | 33 | No |
| Mercy Hospital ¹ (col) | Philadelphia | NP Assn | 110 | 74 | 20 | 6 | 1,891 | Rotating | 5 | 12 | July | (99) | Req | 28 | \$5 |
| Methodist Episcopal Hospital ¹ | Philadelphia | Church | 242 | 25 | 28 | 47 | 3,723 | Rotating | 8 | 12 | July | No | Req | 21 | No |
| Misericordia Hospital ¹ | Philadelphia | Church | 239 | 11 | 54 | 33 | 5,144 | Rotating | 9 | 12 | July | No | Req | 33 | No |
| Mount Sinai Hospital | Philadelphia | NP Assn | 316 | 21 | 19 | 60 | 7,649 | Rotating | 14 | 12 | June | No | Req | 53 | No |
| Northeastern Hospital | Philadelphia | NP Assn | 102 | 10 | 7 | 83 | 2,518 | Rotating | 4 | 12 | July | No | Req | 17 | \$20 |
| Pennsylvania Hospital | Philadelphia | NP Assn | 500 | 43 | 32 | 25 | 10,965 | Rotating | 18 | 24 | July | (100) | Req | 60 | No |
| Philadelphia General Hospital ¹ | Philadelphia | City | 2,400 | 100 | | | 26,881 | Rotating | 60 | 24 | July | No | Req | 53 | No |
| Presbyterian Hospital | Philadelphia | Church | 423 | 30 | 12 | 58 | 5,060 | Rotating | 12 | 24 | July | No | Req | 33 | No |
| St Agnes Hospital | Philadelphia | Church | 346 | 28 | 47 | 25 | 5,905 | Rotating | 10 | 12 | July | No | Req | 15 | No |
| St Joseph's Hospital | Philadelphia | Church | 180 | 38 | 23 | 41 | 2,732 | Rotating | 6 | 12 | July | No | Req | 31 | No |
| St Luke's and Children's Hospital | Philadelphia | NP Assn | 249 | 33 | 19 | 48 | 4,493 | Rotating | 9 | 12 | July | No | Req | 83 | No |
| St Mary's Hospital | Philadelphia | Church | 278 | 58 | 6 | 38 | 4,431 | Rotating | 7 | 12 | July | No | Req | 39 | No |
| Temple University Hospital | Philadelphia | NP Assn | 458 | 35 | 30 | 33 | 6,360 | Rotating | 18 | 24 | July | (101) | Req | 29 | No |
| Woman's Hospital ¹ | Philadelphia | NP Assn | 150 | 20 | 15 | 65 | 3,546 | Rotating | 6 | 12 | July & Sept | (102) | Req | 33 | No |
| Women's Homeopathic Hospital | Philadelphia | NP Assn | 200 | 66 | 14 | 20 | 3,187 | Rotating | 4 | 12 | July | No | Req | 32 | No |
| Allegheny General Hospital ¹ | Pittsburgh | NP Assn | 405 | 59 | 3 | 38 | 6,578 | Rotating | 16 | 12 | July | No | Req | 25 | No |
| Homoeopathic Medical and Surgical Hospital and Dispensary | Pittsburgh | NP Assn | 325 | 32 | 2 | 66 | 4,497 | Rotating | 7 | 12 | July | No | Req | 22 | No |
| Mercy Hospital | Pittsburgh | Church | 60 | 33 | 35 | 20 | 10,045 | Rotating | 24 | 12 | July | (103) | Req | 32 | No |
| Montefiore Hospital | Pittsburgh | NP Assn | 225 | 44 | 33 | 21 | 5,827 | Rotating | 8 | 12 | July | No | Req | 38 | \$10 |
| Parasaut Hospital ¹ | Pittsburgh | Church | 140 | 39 | 6 | 55 | 2,007 | Rotating | 5 | 12 | July | No | Req | 23 | \$10 |
| Pittsburgh Hospital | Pittsburgh | NP Assn | 500 | 35 | 20 | 45 | 4,033 | Rotating | 6 | 12 | July | No | Req | 25 | No |

| Name of Hospital | Location | Control | Capacity | Classification of Patients | | | | Type of Internship | Number of Interns | Length of Service in Months | Service Commenced | Affiliated Service | Outpatient Service | Autopsy Percentage | Salary per Month |
|--|----------------|-----------|----------|----------------------------|----------|----------|------------------------|--------------------|-------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|------------------|
| | | | | Free | Part Pay | Full Pay | Total Patients Treated | | | | | | | | |
| PENNSYLVANIA—Continued | | | | | | | | | | | | | | | |
| St. Joseph's Hospital | Pittsburgh | Church | 140 | 35 | 50 | 15 | 2,058 | Rotating | 4 | 12 | July | No | Req | 29 | (w) |
| St. Margaret Memorial Hospital | Pittsburgh | Church | 150 | 56 | 27 | 18 | 2,063 | Rotating | 4 | 12 | July | No | Req | 30 | do |
| South Side Hospital | Pittsburgh | NPAssn | 225 | 38 | 39 | 25 | 4,743 | Rotating | 7 | 12 | July | No | Req | 17 | do |
| Western Pennsylvania Hospital | Pittsburgh | NPAssn | 651 | 42 | 28 | 58 | 10,126 | Rotating | 17 | 12 | July | No | Req | 18 | do |
| Pottsville Hospital | Pottsville | NPAssn | 140 | 50 | 3 | 47 | 2,880 | Rotating | 4 | 12 | July | No | Req | 27 | \$25 |
| Homoeopathic Med. and Surgical Hosp | Reading | NPAssn | 114 | 66 | 2 | 42 | 2,833 | Rotating | 4 | 12 | June | No | Req | 19 | \$25 |
| Reading Hospital | Reading | NPAssn | 268 | 44 | 2 | 54 | 5,370 | Rotating | 8 | 12 | July | No | Req | 61 | do |
| St. Joseph's Hospital | Reading | Church | 205 | 42 | 2 | 56 | 4,102 | Rotating | 6 | 12 | July | (106) | Req | 36 | do |
| Robert Packer Hospital | Sayre | NPAssn | 325 | 44 | 2 | 54 | 6,614 | Rotating | 8 | 12 | Jan & July | No | Req | 57 | do |
| Hahnemann Hospital | Scranton | NPAssn | 125 | 65 | 7 | 38 | 2,929 | Rotating | 4 | 12 | July | No | Req | 21 | \$13.50 |
| Moses Taylor Hospital | Scranton | NPAssn | 100 | | | | 1,609 | Rotating | 8 | 12 | July | (107) | Req | 41 | \$7 |
| Scranton State Hospital | Scranton | State | 183 | 74 | 2 | 24 | 3,772 | Rotating | 8 | 12 | July | No | Req | 24 | \$3.25 |
| Uniontown Hospital | Uniontown | NPAssn | 210 | 27 | 6 | 67 | 4,183 | Rotating | 6 | 12 | July | No | Req | 35 | \$25 |
| Washington Hospital | Washington | NPAssn | 166 | 39 | 5 | 56 | 2,789 | Rotating | 4 | 12 | July | No | Req | 46 | \$25 |
| Chester County Hospital | West Chester | NPAssn | 159 | 50 | 18 | 32 | 2,477 | Rotating | 4 | 12 | July | No | Req | 33 | \$25 |
| Mercy Hospital | Wilkes Barre | Church | 220 | 64 | 38 | 5 | 5,804 | Rotating | 6 | 12 | July | No | Req | 32 | do |
| Wilkes Barre General Hospital | Wilkes Barre | NPAssn | 407 | 65 | 5 | 40 | 8,318 | Rotating | 10 | 12 | July | No | Req | 27 | do |
| Columbia Hospital | Wilkesburg | Church | 213 | 41 | 1 | 58 | 3,423 | Rotating | 5 | 12 | July | No | Req | 37 | \$70 |
| Williamsport Hospital | Williamsport | NPAssn | 275 | 46 | 5 | 49 | 4,513 | Rotating | 6 | 12 | July | No | Req | 23 | do |
| Windber Hospital | Windber | NPAssn | 117 | 10 | 70 | 20 | 2,720 | Rotating | 2 | 12 | July | No | Req | 25 | \$25 |
| York Hospital | York | NPAssn | 209 | 43 | 8 | 49 | 4,400 | Rotating | 6 | 12 | July | No | Req | 23 | \$25 |
| RHODE ISLAND | | | | | | | | | | | | | | | |
| Memorial Hospital | Pawtucket | NPAssn | 106 | 44 | 5 | 51 | 2,937 | Rotating | 6 | 12 | June & Aug | No | Req | 30 | do |
| Homeopathic Hospital | Providence | NPAssn | 200 | 30 | 27 | 43 | 4,613 | Rotating | 4 | 12 | July | No | Req | 21 | \$3.00 |
| Rhode Island Hospital | Providence | NPAssn | 600 | 60 | 15 | 25 | 10,301 | Mix & Str | 28 | 12 & 24 | Monthly | (108) | Req | 35 | do |
| St. Joseph's Hospital | Providence | Church | 350 | 89 | 20 | 41 | 4,039 | Rotating | 6 | 24 | (1 h) | No | Req | 27 | do |
| SOUTH CAROLINA | | | | | | | | | | | | | | | |
| Roper Hospital | Charleston | NPAssn | 300 | 63 | 4 | 33 | 6,003 | Rotating | 14 | 12 | July | No | Req | 28 | \$10 |
| Columbia Hospital | Columbia | County | 305 | 28 | 20 | 52 | 5,300 | Mixed | 4 | 12 | July | No | Req | 20 | \$25(1) |
| Greenville General Hospital | Greenville | City | 200 | 61 | 13 | 36 | 4,231 | Mixed | 5 | 12 | July | No | Req | 27 | \$15 |
| TENNESSEE | | | | | | | | | | | | | | | |
| Baroness Erlanger Hospital | Chattanooga | CyCo | 246 | 67 | 1 | 32 | 0,753 | Rotating | 12 | 12 | July | (100) | Req | 26 | \$25 |
| Knoxville General Hospital | Knoxville | City | 300 | 68 | | 32 | 7,789 | Rotating | 9 | 18 | (1-d) | No | Req | 23 | \$25 |
| Baptist Memorial Hospital | Memphis | Church | 400 | 31 | 17 | 62 | 13,735 | Rotating | 12 | 18 | (1-d) | No | None | 18 | \$23 |
| John Gaston Hospital | Memphis | City | 400 | 98 | | 2 | 14,043 | Rotating | 18 | 18 | Monthly | No | Req | 19 | \$20 |
| Methodist Hospital | Memphis | Church | 185 | 23 | 20 | 52 | 6,777 | Mixed | 8 | 12 | (1 u) | No | Req | 19 | \$20 |
| St. Joseph's Hospital | Memphis | Church | 238 | 25 | 41 | 34 | 4,199 | Rotating | 4 | 12 | (1-d) | No | Req | 19 | \$25 |
| George W. Hubbard Hospital (col.) | Nashville | NPAssn | 172 | 81 | 13 | 0 | 2,125 | Rotating | 0 | 12 | July & Sept | No | Req | 21 | \$15 |
| Nashville General Hospital | Nashville | City | 305 | 84 | | 10 | 0,811 | Rotating | 10 | 12 | July | No | Req | 35 | \$25 |
| St. Thomas Hospital | Nashville | Church | 225 | 7 | 42 | 61 | 4,509 | Rotating | 5 | 12 | July | No | None | 28 | \$10 |
| Vanderbilt University Hospital | Nashville | NPAssn | 210 | 34 | 34 | 32 | 4,737 | Straight | 11 | 12 | July | (110) | Op | 61 | \$23.75 |
| TEXAS | | | | | | | | | | | | | | | |
| Hotel Dieu Hospital | Beaumont | Church | 189 | 12 | 33 | 55 | 2,435 | Mixed | 2 | 12 | July | No | Req | 20 | \$3.00 |
| Baylor University Hospital | Dallas | Church | 880 | 20 | 20 | 60 | 11,533 | Rotating | 13 | 12 | July | (111) | Req | 30 | \$23 |
| Methodist Hospital | Dallas | Church | 100 | 1 | 9 | 60 | 2,945 | Rotating | 4 | 12 | July | No | Req | 21 | \$25(1) |
| Parland Hospital | Dallas | CyCo | 250 | 94 | 6 | | 8,410 | Rotating | 20 | 18 | Jan & July | No | Req | 20 | \$25 |
| St. Paul's Hospital | Dallas | Church | 300 | 18 | 19 | 63 | 7,663 | Rotating | 9 | 12 | July | No | Req | 40 | \$25(1) |
| El Paso City County Hospital | El Paso | CyCo | 164 | 88 | 2 | | 2,837 | Rotating | 4 | 12 | July | No | Req | 40 | (d) |
| William Beaumont General Hospital | El Paso | Army | 601 | 100 | | | 3,985 | Rotating | 2 | 12 | July | No | Op | 85 | (d) |
| City and County Hospital | Fort Worth | CyCo | 111 | 100 | | | 3,427 | Rotating | 4 | 12 | July | No | Req | 32 | (d) |
| Har | Fort Worth | Indiv | 100 | 20 | 50 | 30 | 1,240 | Mixed | 2 | 12 | July | No | Req | 24 | do |
| St. John | Fort Worth | Church | 200 | 11 | 16 | 74 | 3,832 | Rotating | 4 | 12 | July | No | None | 25 | \$25 |
| St. Mary's Infirmary | Galveston | City | 374 | 70 | 5 | 25 | 5,759 | Rotating | 8 | 12 | June & July | No | Req | 57 | do |
| Hermann Hospital | Galveston | Church | 225 | 17 | 50 | 33 | 3,672 | Mixed | 3 | 12 | June | No | None | 22 | \$30 |
| Jefferson Davis Hospital | Houston | NPAssn | 196 | 70 | 20 | | 3,541 | Rotating | 6 | 12 | July | No | Req | 35 | \$25-50 |
| Medical and Surgical Memorial Hospital | Houston | CyCo | 193 | 100 | | | 7,474 | Rotating | 10 | 24 | July | No | Req | 37 | \$25 |
| Robert B. Green Memorial Hospital | San Antonio | NPAssn | 116 | 2 | 3 | 95 | 2,914 | Mixed | 3 | 12 | July | No | Req | 10 | \$10 |
| Santa Rosa Hospital | San Antonio | County | 140 | 100 | | | 4,095 | Rotating | 10 | 12 | July | No | Req | 20 | \$25 |
| Station Hospital | San Antonio | Church | 242 | 9 | 15 | 76 | 4,602 | Rotating | 6 | 12 | July | (112) | Req | 20 | (d) |
| Gulf Colorado and Santa Fe Hospital | Temple | Army | 600 | 100 | | | 7,340 | Rotating | 8 | 12 | July | No | Op | 80 | (d) |
| Kings Daughters Clinic and Hospital | Temple | NPAssn | 160 | | | 100 | 1,107 | Rotating | 1 | 12 | July | (113) | Op | 43 | \$3.00 |
| Scott and White Hospital | Temple | NPAssn | 118 | | | | 2,350 | Mixed | 2 | 12 | July | No | Req | 22 | \$5(1) |
| | | Corp | 145 | | | | 3,110 | Rotating | 5 | 12 | July | (113) | Req | 26 | \$3.00 |
| UTAH | | | | | | | | | | | | | | | |
| Thomas D. Dee Memorial Hospital | Ogden | Church | 185 | 3 | 7 | 90 | 5,173 | Rotating | 5 | 12 | July | No | Req | 17 | \$25 |
| Dr. W. H. Groves Latter Day Saints Hospital | Salt Lake City | Church | 450 | 10 | | 90 | 6,044 | Rotating | 9 | 24 | July | (114) | Req | 20 | (x) |
| Holy Cross Hospital | Salt Lake City | Church | 200 | 4 | 20 | 76 | 3,633 | Mixed | 2 | 12 | July | No | Op | 23 | \$1 (m) |
| St. Mark's Hospital | Salt Lake City | Church | 169 | 4 | 10 | 80 | 2,632 | Mixed | 2 | 12 | July | No | Op | 20 | \$2.4(1) |
| Salt Lake General Hospital | Salt Lake City | County | 246 | 91 | | 9 | 3,617 | Rotating | 8 | 12 | July | No | Req | 20 | \$20(1) |
| VERMONT | | | | | | | | | | | | | | | |
| Bishop DeCoesbriand Hospital | Burlington | Church | 122 | 65 | 10 | 22 | 2,787 | Rotating | 3 | 12 | July | No | None | 21 | \$25 |
| Mary Fletcher Hospital | Burlington | NPAssn | 150 | 28 | 40 | 22 | 3,504 | Rotating | 6 | 12 | July & Sept | No | Req | 41 | \$25 |
| VIRGINIA | | | | | | | | | | | | | | | |
| Hospital of St. Vincent de Paul | Norfolk | Church | 200 | 24 | 21 | 43 | 4,202 | Rotating | 5 | 12 | July | No | Req | 21 | \$25 |
| Norfolk General Hospital | Norfolk | NPAssn | 200 | 24 | 26 | 50 | 4,521 | Mixed | 4 | 12 | July | No | Req | 18 | \$25 |
| U. S. Marine Hospital | Norfolk | U. S. PHS | 200 | 100 | | | 2,726 | Rotating | 8 | 12 | July | (115) | Op | 70 | (d) |
| Richmond | Richmond | Corp | 127 | 4 | 5 | 91 | 3,170 | Rotating | 3 | 12 | July | No | Req | 15 | \$15 |
| Richmond | Richmond | NPAssn | 442 | 7 | 51 | 12 | 9,412 | Mix & Rotat | 22 | 12 | July | (116) | Req | 23 | do |
| Richmond | Richmond | Corp | 102 | 3 | 49 | 45 | 2,764 | Rotating | 4 | 12 | July | No | Req | 40 | \$25 |
| Richmond | Richmond | Corp | 110 | 40 | 60 | | 2,145 | Mixed | 2 | 12 | July | No | Req | 17 | \$25 |
| University of Virginia Hospital | University | State | 311 | 24 | 4 | 20 | 6,620 | Rotating | 20 | 12 | July | (117) | Req | 21 | do |
| WASHINGTON | | | | | | | | | | | | | | | |
| Columbus Hospital | Seattle | Church | 220 | 29 | 60 | 20 | 2,407 | Rotating | 3 | 12 | July | No | None | 23 | \$20 |
| King County Hospital Unit No. 1 (Harborview) | Seattle | County | 445 | 169 | | | 10,652 | Rotating | 21 | 24 | July | (115) | Req | 42 | \$70 |
| Providence Hospital | Seattle | Church | 470 | 4 | 10 | 87 | 6,155 | Rotating | 6 | 12 | July | (119) | Req | 22 | \$25 |
| Seattle General Hospital | Seattle | NPAssn | 170 | 5 | 20 | 75 | 3,607 | Mixed | 3 | 12 | July | (120) | None | 27 | \$25 |
| Swedish Hospital | Seattle | NPAssn | 260 | 10 | 10 | 4 | 4,220 | Rotating | 8 | 12 | July & Oct | (121) | Req | 21 | \$25 |

| Name of Hospital | Location | Control | Capacity | Classification of Patients | | | Total Patients treated | Type of Internship | Number of Interns | Length of Service in Months | Service Commences | Affiliated Service | Outpatient Service | Autopsy Percentage | Salary per Month |
|--------------------------------------|-------------|---------|----------|----------------------------|----------|----------|------------------------|--------------------|-------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|------------------|
| | | | | Free | Part Pay | Full Pay | | | | | | | | | |
| WASHINGTON—Continued | | | | | | | | | | | | | | | |
| U S Marine Hospital | Seattle | USPHS | 400 | 100 | | | 3 169 | Rotating | 8 | 12 | July | (122) | Req | 74 | (d) |
| Virginia Mason Hospital | Seattle | NPAasn | 180 | | 100 | | 3 093 | Rotating | 4 | 12 | July | No | None | 38 | \$30 |
| Deaconess Hospital | Spokane | Church | 227 | | | | 5 002 | Rotating | 4 | 12 | July | (123) | Req | 27 | \$25 |
| Sacred Heart Hospital | Spokane | Church | 340 | 8 | 32 | 60 | 7 174 | Mixed | 5 | 12 | July | (124) | None | 18 | \$25 |
| St Luke's Hospital | Spokane | NPAasn | 160 | 10 | 35 | 55 | 2 530 | Rotating | 4 | 12 | July | (125) | None | 29 | \$35 |
| Pierce County Hospital | Tacoma | County | 230 | 100 | | | 3 333 | Mixed | 2 | 12 | July | (126) | Op | 10 | \$25-46 |
| St Joseph's Hospital | Tacoma | Church | 350 | 23 | 18 | 59 | 3 003 | Rotating | 3 | 12 | July | No | Req | 23 | \$30 |
| Tacoma General Hospital | Tacoma | NPAasn | 220 | | | 100 | 4 106 | Rotating | 4 | 12 | July | (127) | Op | 35 | \$35 |
| WEST VIRGINIA | | | | | | | | | | | | | | | |
| Charleston General Hospital | Charleston | Corp | 200 | 3 | 6 | 91 | 5 228 | Rotating | 6 | 12 | July | (128) | Req | 24 | \$23 |
| Chesapeake and Ohio Railway Hospital | Huntington | NPAasn | 135 | 100 | | | 2 543 | Rotating | 3 | 12 | July | No | Req | 17 | \$30 |
| St Mary's Hospital | Huntington | Church | 120 | 15 | 27 | 58 | 2 807 | Rotating | 3 | 12 | July | No | Req | 22 | \$30 |
| Ohio Valley General Hospital | Wheeling | NPAasn | 250 | 8 | 42 | 50 | 4 664 | Rotating | 6 | 12 | July | No | Req | 19 | \$25 |
| Wheeling Hospital | Wheeling | Church | 300 | 21 | 13 | 66 | 2 949 | Rotating | 4 | 12 | July | No | Req | 21 | \$30 |
| WISCONSIN | | | | | | | | | | | | | | | |
| Appleton | Appleton | Church | 250 | 7 | 15 | 78 | 3 850 | Mixed | 2 | 12 | June & July | No | None | 35 | \$25 |
| Fond du Lac | Fond du Lac | Church | 250 | 22 | 20 | 58 | 5 061 | Rotating | 4 | 12 | June | No | None | 25 | \$25 |
| Janeville | Janeville | Church | 150 | 20 | 30 | 50 | 1 505 | Mixed | 2 | 12 | July | No | None | 31 | \$12.50 |
| La Crosse | La Crosse | Church | 129 | 5 | 10 | 85 | 2 350 | Mixed | 1 | 12 | July | No | Req | 17 | \$23 |
| La Crosse | La Crosse | Church | 305 | 12 | 33 | 55 | 4 014 | Rotating | 4 | 12 | July | No | Req | 45 | No |
| Madison | Madison | NPAasn | 160 | 6 | 25 | 69 | 4 871 | Rotating | 4 | 12 | July | No | None | 28 | \$23 |
| Madison | Madison | Church | 120 | 8 | 21 | 70 | 2 272 | Rotating | 3 | 12 | July | No | Req | 23 | \$30 |
| Madison | Madison | Church | 200 | 20 | 15 | 65 | 5 009 | Rotating | 5 | 12 | July | No | Req | 43 | \$25 |
| Marshfield | Marshfield | State | 602 | 63 | 7 | 5 | 10 979 | Rotating | 20 | 12 | July | No | Req | 70 | No |
| Marquette | Marquette | Church | 165 | 10 | 50 | 40 | 3 283 | Mixed | 2 | 12 | July | No | Req | 29 | \$30 |
| Millwaukee | Millwaukee | NPAasn | 155 | 9 | 91 | 2,731 | Rotating | 8 | 24 | July | (129) | Req | 54 | \$25 | |
| Evangelical Deaconess Hospital | Millwaukee | Church | 150 | 5 | 39 | 56 | 3 227 | Rotating | 8 | 12 | June | (130) | Op | 22 | \$25 |
| Millwaukee Hospital "The Passavant" | Millwaukee | Church | 251 | 5 | 67 | 28 | 6 393 | Rotating | 7 | 12 | July | No | Req | 41 | \$25 |
| Merced Hospital | Merced | Church | 140 | 8 | 5 | 92 | 2 537 | Mixed | 2 | 12 | July | No | Op | 20 | \$15 |
| Mount Sinai Hospital | Millwaukee | NPAasn | 170 | 16 | 62 | 22 | 4 797 | Rotating | 5 | 12 | July | No | Req | 38 | \$25 |
| St Joseph's Hospital | Millwaukee | Church | 895 | 19 | 34 | 47 | 5 632 | Rotating | 6 | 12 | June | No | Req | 24 | \$25 |
| St Luke's Hospital | Millwaukee | Church | 117 | 63 | 47 | 2,233 | Mixed | 2 | 12 | July | (131) | Op | 28 | \$23 | |
| St Mary's Hospital | Millwaukee | Church | 217 | 4 | 12 | 84 | 4 459 | Mixed | 6 | 12 | July | No | Op | 23 | \$23 |
| Mercy Hospital | Oshkosh | Church | 140 | 12 | 23 | 65 | 3 634 | Rotating | 3 | 12 | July | No | Op | 35 | \$25 |
| St. Mary's Hospital | Bacine | Church | 200 | 2 | 25 | 73 | 3 690 | Mixed | 2 | 12 | July | No | None | 82 | \$25 |
| St. Mary's Hospital | Superior | Church | 122 | 2 | 17 | 81 | 1 851 | Rotating | 2 | 12 | July | No | Req | 41 | \$23 |
| Millwaukee County General Hospital | Wauwatosa | County | 1,125 | 100 | | | 15 832 | Rotating | 38 | 12 | June | No | Req | 31 | \$10 |
| CANAL ZONE | | | | | | | | | | | | | | | |
| Gorgas Hospital | Ancon | Fed | 850 | 9 | 61 | | 10 692 | Rotating | 11 | 12 | June & July | No | Op | 61 | (y) |
| HAWAII | | | | | | | | | | | | | | | |
| Queen's Hospital | Honolulu | Corp | 284 | | 100 | | 7 728 | Rotating | 6(x) | 18 | (1-d) | (132) | None | 49 | \$71 |
| PHILIPPINE ISLANDS | | | | | | | | | | | | | | | |
| Philippine General Hospital | Manila | Fed | 727 | 92 | | | 8 20 051 | Rotating | 81(xz) | 12 | March | (133) | Req | 68 | No |

Numerical and other references will be found on pages 701 and 702

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an Internship in Canada, the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Department of Hospital Service of the Canadian Medical Association should be regarded as giving an Internship equivalent in educational value to that offered by hospitals in the United States approved for Intern training by the Council. It is understood however that this statement applies only to hospitals that are unqualifiedly approved under the Canadian plan and does not apply to that group referred to as "Recommended."

The following list of hospitals revised to June 1 1936, has been furnished by the Department of Hospital Service

| Name of Hospital | Location | Name of Hospital | Location | Name of Hospital | Location |
|---------------------------|-----------|-------------------------|----------|--------------------|-----------|
| Victoria General Hospital | Victoria | Ottawa General Hospital | Ottawa | St John's Hospital | St John's |
| St John's Hospital | St John's | King's Hospital | King's | | |
| | | Hosp | Hosp | | |
| | | St J | St J | | |
| | | St M | St M | | |
| | | Toro | Toro | | |
| | | Toro | Toro | | |
| | | Toro | Toro | | |
| | | Ham | Ham | | |
| | | St J | St J | | |
| | | St J | St J | | |
| | | Victr | Victr | | |
| | | Metr | Metr | | |
| | | Hote | Hote | | |

NOTES

- 1 Women Interns admitted
- 2 Women Interns only
- (a) In lieu of maintenance.
- (b) Bonus of \$110
- (c) Bonus of \$10 for satisfactory records
- (d) Salary established by government pay tables.
- (e) \$20 per month for 11 months \$30 the twelfth month.
- (f) Bonus of \$2.0
- (g) Bonus of \$2.5
- (h) Bonus of \$180
- (i) Bonus of \$100
- (j) Bonus of \$120
- (k) Bonus of \$20
- (l) Bonus of \$20
- (m) Bonus of \$20
- (n) Bonus of \$20
- (o) Bonus of \$200
- (p) Bonus of \$150
- (q) Bonus of \$150
- (r) Bonus of \$40

- (s) Bonus of \$12.
- (t) \$25 per month for 4 months \$30 for 8 months bonus of \$100
- (n) \$20 per month to seniors after completion of 12 months service
- (v) Bonus of \$200
- (w) Bonus of \$30
- (x) \$15 per month first year \$20 per month second year bonus of \$75
- (xx) Bonus of \$3
- (y) Net salary \$70 per month. Appointments made by Chief of Office, The Panama Canal Washington D C
- (z) Prefer aspirants going into foreign missions or boys born and raised in Hawaii
- (zz) All Internships reserved for the fifth year students of the College of Medicine University of the Philippines
- (1a) January April May July August November

- (1h) June July September
- (1c) January March July November
- (1d) Quarterly
- (1e) Every two months
- (1f) January April July
- (1g) January June July September
- (1h) March July November
- (1i) July August September
- (1j) Surgery March July November medicine January April June September
- (1k) February June October
- (1m) January April May July, September October
- (1n) Every six weeks
- (1-o) January July October
- (1-q) January July November
- (1-r) March June September December
- (1-s) January June September
- (1-t) July August, September November December
- (1-u) January April October

Affiliation as Referred to in Column Headed "Affiliated Service"

- 3 Patton State Hospital Patton psychiatry
- 4 Children's Hospital and Los Angeles Maternity Service pediatrics and obstetrics
- 5 Fairmont Hospital, San Leandro tuberculosis
- 6 Woman's Hospital Pasadena obstetrics
- 7 Laguna Honda Home Infirmary San Francisco chronic diseases
- 8 Hassler Health Home Redwood City tuberculosis
- 8 St. Francis Hospital and University of California Hospital San Francisco obstetrics pediatrics
- 9 San Francisco Hospital gynecology obstetrics pediatrics
- 10 White Memorial Hospital Los Angeles obstetrics pediatrics surgery
- 11 Santa Barbara General Hospital communicable diseases and outpatient service
- 12 St. Francis Hospital and Santa Barbara Cottage Hospital
- 13 National Methodist Episcopal Sanatorium for Tuberculosis Colorado Springs
- 14 Columbia Hospital for Women and Lying In Asylum Washington
- 15 Gallinger Municipal Hospital Children's Hospital Providence Hospital Central Dispensary and Emergency Hospital Columbia Hospital for Women and Lying In Asylum Washington pediatrics obstetrics surgery
- 16 Children's Hospital and Columbia Hospital for Women and Lying In Asylum Washington pediatrics obstetrics
- 17 Grady Hospital Atlanta
- 18 Misericordia Hospital and Home for Infants Chicago obstetrics gynecology pediatrics
- 19 Children's Memorial Hospital Chicago pediatrics
- 20 Municipal Contagious Disease Hospital, Chicago
- 21 Winfield Sanatorium Winfield tuberculosis (23 rotating internships 4 straight internships in pathology)
- 22 Winfield Sanatorium Winfield tuberculosis
- 23 Grant Hospital Chicago obstetrics gynecology pediatrics
- 24 Internships in the University of Chicago Clinics include service in Albert Merritt Billings Hospital Bobs Roberts Memorial Hospital Nancy Adele McElwee Memorial and Gertrude Dunn Hicks Memorial Hospital Max Epstein Clinic also Chicago Lying In Hospital
- 25 Peoria State Hospital Peoria Municipal Tuberculosis Sanatorium
- 26 The Indiana University Hospitals include the Robert W. Long Hospital the James Whitcomb Riley Hospital for Children the William H. Coleman Hospital for Women the Indiana Rotary Convalescent Home and the Kiwanis Home
- 27 Paradise Valley Sanatorium and Hospital National City general.
- 28 Watkins Memorial Hospital Lawrence
- 29 Sedgwick County Hospital Wichita general and outpatient
- 30 Salvation Army Home and Hospital and Sedgwick County Hospital Wichita obstetrics and general
- 31 Julius Marks Sanatorium Lexington tuberculosis
- 32 Children's Free Hospital Louisville pediatrics
- 33 pediatrics, obstetrics
- 34 cleans pediatrics gynecology obstetrics
- 35 Baltimore pathology
- 36 Baltimore urology
- 37 Sydenham Hospital Baltimore obstetrics
- 38 pediatrics communicable diseases
- 39 Sydenham Hospital Baltimore communicable diseases
- 39 Boston City Hospital includes the Main Hospital South Department for Contagious Diseases Haymarket Square Relief Station and East Boston Relief Station
- 40 Boston State Hospital
- 41 Evangeline Booth Maternity Hospital and Home Boston
- 42 Health Department Hospitals Springfield communicable diseases
- 43 Shriners Hospital for Crippled Children Health Department Hospitals Weston Maternity Hospital Springfield orthopedics communicable diseases obstetrics
- 44 Herman Klefer Hospital Detroit
- 45 Herman Klefer Hospital, obstetrics communicable diseases tuberculosis Children's Hospital pediatrics
- 46 Herman Klefer Hospital, communicable diseases tuberculosis St. Joseph's Retreat Dearborn neurology
- 47 Ingham Sanatorium and Boys' Vocational School Hospital Lansing tuberculosis and otolaryngology
- 48 Miller Memorial Hospital Duluth outpatient service
- 49 Gillette State Hospital for Crippled Children St. Paul orthopedics
- 50 Lutheran Girls Maternity Home Minneapolis, obstetrics Glen Lake Sanatorium Oak Terrace tuberculosis
- 51 Glen Lake Sanatorium Oak Terrace tuberculosis
- 52 Children's Hospital St. Paul, pediatrics
- 53 Gillette State Hospital for Crippled Children St. Paul orthopedics
- 54 Italian Settlement House obstetrics
- 54 St. Anthony's Hospital St. Louis obstetrics gynecology pediatrics
- 55 St. Louis Children's Hospital Shriners Hospital for Crippled Children City Isolation Hospital surgery orthopedics communicable diseases
- 56 Jewish Sanatorium Robertson tuberculosis City Isolation Hospital St. Louis communicable diseases
- 57 Alexian Brothers Hospital St. Louis outpatient service
- 58 City Isolation Hospital communicable diseases Robert Koch Hospital tuberculosis City Sanatorium psychiatry
- 59 St. Mary's Group of Hospitals includes St. Mary's Hospital Firmin Desloge Hospital and Mt. St. Rose Sanatorium
- 60 Municipal Hospital Atlantic City communicable diseases
- 61 St. Elizabeth Hospital Elizabeth obstetrics
- 62 Bergen Pines Bergen County Hospital Ridgewood tuberculosis and communicable diseases
- 63 Margaret Hague Maternity Hospital Jersey City Hudson County Tuberculosis Hospital and Sanatorium Secaucus
- 64 Margaret Hague Maternity Hospital Jersey City
- 65 New Jersey State Hospital Marlboro psychiatry Allenwood Sanatorium Allenwood tuberculosis
- 66 Fairview Sanatorium New Lisbon tuberculosis
- 68 Anthony N. Brady Maternity Hospital Albany
- 69 Kingston Avenue Hospital Brooklyn communicable diseases.
- 70 Children's Hospital Buffalo, pediatrics
- 71 Ulster County Tuberculosis Hospital Kingston
- 72 On Jan. 1, 1935 the merger of Flower and Fifth Avenue Hospitals became effective. Complete statistical data not available
- 73 Jewish Maternity Hospital, New York City
- 74 Flower Fifth Avenue Hospital New York City
- 75 New York State Hospital Ray Brook tuberculosis
- 76 Perth Amboy General Hospital Perth Amboy N. J., obstetrics pediatrics
- 77 Syracuse Memorial Hospital City Hospital Syracuse Psychopathic Hospital obstetrics communicable diseases psychiatry
- 78 Pawling Sanatorium Wyanetskill tuberculosis
- 79 Forsyth County Sanatorium Winston Salem tuberculosis
- 80 Children's Hospital Akron
- 81 Catherine Booth Home and Hospital Cincinnati obstetrics
- 82 Children's Hospital Cincinnati, pediatrics
- 83 Christian R. Holmes Hospital Hamilton County Tuberculosis Sanatorium Hamilton County Home and Chronic Disease Hospital Cincinnati
- 84 Longview State Hospital Cincinnati psychiatry
- 85 Cincinnati General Hospital, pediatrics otolaryngology
- 86 St. Ann's Maternity Hospital Cleveland
- 87 City Hospital Cleveland psychiatry
- 88 University Hospitals of Cleveland includes the Lakeside Hospital, Maternity Hospital Babies and Children's Hospital Cleveland, and the Rainbow Hospital for Crippled and Convalescent Children South Euclid
- 89 Mt. Sinai Hospital, Cleveland gynecology
- 90 Children's Hospital Columbus pediatrics
- 91 Sterling Loving University Hospital Children's Hospital Columbus, Dayton tuberculosis
- 92 Crippled Children Salvation Army White
- 93 Shield Home, Portland orthopedics obstetrics
- 94 University of Oregon Medical School Hospitals include Multnomah Hospital and Doernbecher Memorial Hospital for Children
- 95 Allentown State Hospital psychiatry
- 96 Hospital of the University of Pennsylvania Philadelphia, obstetrics.
- 97 Philadelphia Hospital for Contagious Diseases
- 98 Children's Hospital of the Mary J. Drexel Home Philadelphia, pediatrics
- 99 Henry Phipps Institute of the University of Pennsylvania Philadelphia outpatient service
- 100 Children's Hospital Philadelphia pediatrics
- 101 Shriners Hospital for Crippled Children and Philadelphia Hospital for Contagious Diseases
- 102 Pennsylvania Hospital Department for Mental and Nervous Diseases Philadelphia
- 103 Rosalia Foundling and Maternity Hospital and Municipal Hospital for Contagious Diseases Pittsburgh
- 104 Elizabeth Steel Magee Hospital Children's Hospital, and Eye and Ear Hospital, Pittsburgh obstetrics gynecology pediatrics eye and ear
- 105 Municipal Hospital for Contagious Diseases Pittsburgh
- 106 Berks County Tuberculosis Sanatorium Reading
- 107 Pittston Hospital Pittston obstetrics
- 108 Providence Lying In Hospital
- 109 Children's Hospital and Pine Breeze Sanatorium Chestnutport pediatrics tuberculosis
- 110 Willard Parker Hospital New York City pediatrics
- 111 Bradford Memorial Hospital for Babies Dallas pediatrics
- 112 Spohn Hospital Corpus Christi
- 113 Gulf Colorado and Santa Fe Hospital and the Scott and White Hospital affiliated furnish one internship
- 114 Utah State Hospital Provo psychiatry
- 115 Norfolk Protestant Hospital Florence Crittenton Home and Children's Clinic of the Kings Daughters Norfolk obstetrics pediatrics.
- 116 Pine Camp Hospital Brook Hill tuberculosis
- 117 Blue Ridge Sanatorium Charlottesville tuberculosis
- 118 Includes service in King County Hospital Unit No. 2, Seattle
- 119 King County Hospital, Unit No. 1 Seattle outpatient service
- 120 Children's Orthopedic Hospital and Florence Crittenton Home, Seattle orthopedics pediatrics obstetrics
- 121 Children's Orthopedic Hospital Seattle Firland Sanatorium and Isolation Hospital Richmond Highlands pediatrics orthopedics tuberculosis communicable diseases
- 122 King County Hospital, Unit No. 1 Seattle obstetrics gynecology pediatrics
- 123 Rivercrest Hospital Spokane communicable diseases
- 124 Edgecliff Sanatorium Spokane tuberculosis
- 125 Edgecliff Sanatorium Salvation Army Women's Hospital and Home Florence Crittenton Home Rivercrest Hospital, Spokane Eastern State Hospital Medical Lake tuberculosis obstetrics communicable diseases psychiatry
- 126 Tacoma General Hospital
- 127 Pierce County Hospital Tacoma surgery medicine obstetrics
- 128 Hill Crest Sanatorium Charleston tuberculosis
- 129 Milwaukee Children's Hospital South View Hospital Milwaukee, pediatrics communicable diseases Milwaukee Sanatorium Wauwatosa psychiatry
- 130 Milwaukee Children's Hospital, pediatrics
- 131 South View Hospital Milwaukee communicable diseases
- 132 Haukeolani Children's Hospital Honolulu pediatrics
- 133 Santol Tuberculosis Sanatorium Santol San Lazaro Hospital, Manila and In-war Psychopathic Hospital San Felipe Veri.

HOSPITALS APPROVED FOR RESIDENCIES IN SPECIALTIES

Note—The following hospitals are considered in position to furnish acceptable residencies in the several specialties designated for graduates who have already had a general internship or its equivalent in practice. Statistical material is based on reports received for the calendar year 1935. Reported salaries and length of appointment should be verified through correspondence with individual hospitals.

The abbreviations under the column headed Control are as follows:

CyCo City and county
Corp Corporation unrestricted
as to profit

Fed Federal
Frat Fraternal
Indiv Individual

NPAasn Nonprofit association
Part Partnership
USPHS United States Public
Health Service

HOSPITALS 410 RESIDENCIES 2 340

| | | Control | Capacity | Classification of Patients | | | Patients Treated Under Speciality | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month |
|---|-----------------|---------|----------|----------------------------|----------|----------|-----------------------------------|--------------------|----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|
| | | | | Free | Part Pay | Full Pay | | | | | | | | |
| ANESTHESIA | | | | | | | | | | | | | | |
| University of Chicago Clinics | Chicago | NPAasn | 203 | 26 | 69 | 5 | | | 2 | Jan | 12 | 184 | 72 | None |
| Methodist Episcopal Hospital | Indianapolis | Church | 523 | 25 | | 75 | | | 2 | Jan | 12 | 153 | 33 | \$50 |
| Massachusetts General Hospital | Boston | NPAasn | 424 | 47 | 34 | 19 | | | 1 | Varies | 12 | 285 | 57 | \$41.67 |
| Jersey City Hospital | Jersey City N J | City | 1 200 | 94 | | 6 | | | 3 | March & Oct | 12 | 168 | 16 | Nons |
| Bellevue Hospital | New York City | City | 2,333 | 100 | | | | | 12 | Jan & July | 24 | 1,344 | 38 | \$50 |
| Grasslands Hospital | Valhalla N Y | County | 932 | 87 | 13 | | | | 2 | April & Oct | 12 | 295 | 64 | \$90 |
| State University Hospital and Crip- pled Children's Hospital | Oklahoma City | State | 510 | 62 | 82 | 6 | | | 1 | Jan | 12 | 208 | 53 | \$25 |
| Hahnemann Hospital | Philadelphia | NPAasn | 592 | 50 | 11 | 39 | | | 2 | Varies | 12 | 223 | 28 | \$125 |
| Philadelphia General Hospital | Philadelphia | City | 2,400 | 100 | | | | | 1 | July | 12 | 1,062 | 53 | \$100 |
| Rhodes Island Hospital | Providence R I | NPAasn | 600 | 60 | 15 | 25 | | | 1 | Varies | 12 | 301 | 35 | \$45 |
| State of Wisconsin General Hospital | Madison | State | 652 | 88 | 7 | 5 | | | 4 | March | 36 | 257 | 70 | \$25 |
| CARDIOLOGY | | | | | | | | | | | | | | |
| Indiana University Hospitals | Indianapolis | State | 504 | 90 | 8 | 7 | | Yes | 1 | Feb | 12 | 153 | 45 | \$33.33 |
| Pennsylvania Hospital | Philadelphia | NPAasn | 550 | 43 | 32 | 25 | | Yes | 1 | Varies | 12 | 191 | 50 | \$33.33 |
| St. Francis Hospital | Pittsburgh | Church | 587 | 29 | 19 | 58 | 292 | Yes | 1 | Nov | 12 | 122 | 32 | \$50 |
| Rhode Island Hospital | Providence R I | NPAasn | 600 | 60 | 15 | 25 | | No | 1 | Varies | 12 | 301 | 35 | |
| COMMUNICABLE DISEASES | | | | | | | | | | | | | | |
| Los Angeles County Hospital | Los Angeles | County | 3 410 | 100 | | | 4,301 | | 4 | Varies | Indef. | 2,551 | 59 | \$175 |
| Hospital for Children | San Francisco | NPAasn | 279 | 14 | 23 | 63 | 203 | | 1 | Feb | 12 | 19 | 23 | \$75 |
| Municipal Hospitals | Hartford Conn | City | 328 | 100 | | | 548 | | 1 | Feb | 12 | 66 | 39 | |
| Municipal Contagious Disease Hosp | Chicago | City | 423 | 100 | | | 5 036 | | 8 | Varies | 12 | 182 | 73 | \$150 |
| Boston City Hospital | Boston | City | 1 732 | 90 | 9 | 1 | 1 631 | | 2 | Varies | Indef. | 809 | 29 | \$33.33 |
| Belmont Hospital | Worcester Mass | City | 275 | 71 | 29 | | 649 | | 2 | Varies | 12 | 25 | 66 | \$133.33 |
| Herman Kiefer Hospital | Detroit | City | 1 400 | 98 | 2 | | 4,521 | | 6 | Jan | 12 | 151 | 23 | |
| City Isolation Hospital | St. Louis | City | 250 | 95 | 3 | 2 | 1,901 | | 1 | April | 12 | 55 | 28 | \$75 |
| Essex County Hosp for Contag Dis | Belleville N J | County | 550 | 96 | 4 | | 3 664 | | 2 | Varies | Indef. | 32 | 23 | \$900 |
| Kington Avenue Hospital | Brooklyn | City | 510 | 100 | | | 6,199 | | 8 | May & Nov | 12 | 48 | 20 | \$100 |
| Willard Parker Hospital | New York City | City | 424 | 98 | 2 | | 6 903 | | 8 | April & Oct | 12 | 63 | 44 | \$100 |
| City Hospital | Cleveland | City | 1 670 | 100 | | | 1 742 | | 1 | Jan | 12 | 628 | 38 | \$37 |
| DERMATOLOGY SYPHILOLOGY | | | | | | | | | | | | | | |
| Los Angeles County Hospital | Los Angeles | County | 3,410 | 100 | | | 506 | Yes | 3 | Varies | 24 | 2,551 | 59 | \$10 |
| Cook County Hospital | Chicago | County | 3,300 | 100 | | | 2,788 | No | 2 | June & Dec. | 12 | 1 176 | 21 | Nons |
| University of Chicago Clinics | Chicago | NPAasn | 293 | 26 | 69 | 5 | | Yes | 1 | Jan | 12 | 184 | 72 | None |
| Massachusetts General Hospital | Boston | NPAasn | 424 | 47 | 34 | 19 | 267 | Yes | 1 | Varies | 12 | 285 | 57 | \$41.67 |
| University Hospital | Ann Arbor Mich | State | 1 255 | 79 | 21 | 1 769 | | Yes | 2 | Jan | 12 | 470 | 57 | \$25 |
| Minneapolis General Hospital | Minneapolis | City | 687 | 95 | 5 | | 268 | Yes | 1 | Varies | 36 | 331 | 39 | None |
| Barnard Free Skin and Cancer Hosp | St. Louis | NPAasn | 44 | 100 | | | 802 | Yes | 1 | Jan | 12 | 11 | 34 | \$25 |
| Kings County Hospital | Brooklyn | City | 3,160 | 100 | | | 684 | Yes | 1 | June & Nov | 12 | 939 | 19 | \$100 |
| Buffalo City Hospital | Buffalo | CyCo | 1 063 | | | | 173 | Yes | 2 | Nov | 12 | 204 | 21 | |
| Metropolitan Hospital | New York City | City | 1 425 | 100 | | | 127 | Yes | 1 | Feb | 12 | 214 | 19 | \$75 |
| Montefiore Hosp for Chronic Diseases | New York City | NPAasn | 711 | 79 | 8 | 13 | | Yes | 1 | March & Oct. | 12 | 365 | 73 | \$25 |
| N Y Post-Grad Med School & Hosp | New York City | NPAasn | 411 | 13 | 3 | 84 | 168 | Yes | 1 | Varies | 12 | 81 | 23 | |
| Cincinnati General Hospital | Cincinnati | City | 925 | 80 | 13 | 7 | 432 | Yes | 1 | Feb | 12 | 708 | 42 | |
| City Hospital | Cleveland | City | 1 670 | 100 | | | 598 | Yes | 2 | Jan | 12 | 628 | 38 | \$37 |
| University Hospitals | Cleveland | NPAasn | 972 | 87 | 14 | 49 | 364 | Yes | 2 | Jan | 12 | 348 | 54 | \$35 |
| Skin and Cancer Hospital | Philadelphia.. | NPAasn | 22 | 15 | 62 | 23 | 155 | Yes | 1 | June | 12 | 2 | 18 | \$30 |
| University of Virginia Hospital | University | State | 311 | 24 | 46 | 30 | 114 | Yes | 1 | Dec. | 12 | 113 | 84 | \$45 |
| EPILEPSY | | | | | | | | | | | | | | |
| Monson State Hospital | Palmer Mass | State | 1 510 | 97 | 3 | | 1 551 | No | 1 | Varies | 12 | 29 | 27 | \$150 |
| Craig Colony | Sonyea N Y | State | 2,450 | 96 | 4 | | 2,806 | No | 2 | Varies | Indef. | 47 | 36 | |
| FRACTURES | | | | | | | | | | | | | | |
| Cook County Hospital | Chicago | County | 3,300 | 100 | | | 3,300 | No | 4 | June & Dec. | 12 | 1 176 | 21 | None |
| Rhode Island Hospital | Providence | NPAasn | 600 | 60 | 15 | 25 | 666 | No | 1 | Varies | 12 | 301 | 35 | \$45 |
| GYNECOLOGY (Also see Obstetrics Gynaecology) | | | | | | | | | | | | | | |
| Los Angeles County Hospital | Los Angeles | County | 3 410 | 100 | | | 1 611 | Yes | 3 | Varies | 18 | 2,551 | 59 | \$10 |
| Passavant Memorial Hospital | Chicago | NPAasn | 165 | 5 | 1 | 94 | 503 | No | 1 | Jan & July | 12 | 45 | 60 | Nons |
| Indiana University Hospitals | Indianapolis | State | 504 | 90 | 8 | 7 | 811 | Yes | 1 | Feb | 12 | 153 | 45 | \$33.33 |
| Johns Hopkins Hospital | Baltimore | NPAasn | 902 | 53 | 21 | 26 | 1,303 | Yes | 5 | May | 12 | 506 | 50 | \$50 |
| University Hospital | Baltimore | State | 460 | 50 | 6 | 44 | 560 | Yes | 2 | Jan | 12 | 183 | 44 | None |
| Free Hospital for Women | Brookline Mass | NPAasn | 101 | 80 | 14 | 6 | 687 | Yes | 1 | Jan | 12 | 8 | 36 | \$33.33 |
| Jersey City Hospital | Jersey City N J | City | 1,200 | 94 | 6 | 1 200 | | Yes | 1 | March & Oct | 12 | 1,6 | 16 | \$50 |
| Albany Hospital | Albany N Y | NPAasn | 610 | 8 | 75 | 17 | 1 706 | Yes | 4 | Dec. | 12 | 353 | 72 | \$15 |
| Buffalo City Hospital | Buffalo | CyCo | 1 063 | | | | 674 | Yes | 2 | Nov | 12 | 204 | 21 | |
| Buffalo General Hospital | Buffalo | NPAasn | 465 | 13 | 36 | 51 | 1 184 | Yes | 1 | Dec. | 12 | 194 | 36 | \$23 |
| Mount Sinai Hospital | New York City | NPAasn | 789 | 57 | 15 | 27 | | Yes | 2 | Varies | 12 | 400 | 52 | \$45 |
| N Y Post-Grad Med. School & Hosp | New York City | NPAasn | 411 | 13 | 3 | 84 | 450 | Yes | 1 | Varies | 12 | 61 | 26 | |
| Sloane Hospital for Women | New York City | NPAasn | 322 | 33 | 42 | 25 | 1 116 | Yes | 1 | Varies | 12 | 7 | 33 | \$50 |
| University Hospitals | Cleveland | NPAasn | 972 | 37 | 14 | 49 | 1,309 | Yes | 3 | Jan | 12 | 345 | 54 | \$35 |
| Starling Loving University Hospital | Columbus O | State | 276 | 45 | 19 | 35 | 368 | Yes | 1 | Dec. | 12 | 137 | 41 | \$75 |

Numerical references will be found on page 715

| GYNECOLOGY—Continued | | | | | | | | | | | | | | |
|---|----------------------|---------|----------|----------------------------|----------|----------|----------------------------------|--------------------|----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|
| Hospital | City | Control | Capacity | Classification of Patients | | | Patients Treated Under Specialty | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary Per Month |
| | | | | Free | Part Pay | Full Pay | | | | | | | | |
| Graduate Hospital of the Univ. of Pa. | Philadelphia | NPAssn | 475 | 38 | 9 | 55 | 718 | Yes | 1 | Jan | 12 | 100 | 49 | None |
| Hospital of the Univ. of Pennsylvania | Philadelphia | State | 585 | 38 | 24 | 40 | 1,130 | Yes | 1 | Jan | 12 | 216 | 67 | None |
| Elizabeth Steel Maee Hospital | Pittsburgh | NPAssn | 495 | 60 | 8 | 32 | 961 | Yes | 1 | Jan | 12 | 81 | 39 | \$41.63 |
| John Gaston Hospital | Memphis, Tenn | City | 400 | 83 | | 2 | 886 | Yes | 1 | July | 12 | 221 | 19 | \$2 |
| INDUSTRIAL SURGERY | | | | | | | | | | | | | | |
| Indianapolis City Hospital | Indianapolis | City | 577 | 92 | 4 | 4 | | Yes | 1 | April | 12 | 414 | 41 | \$20.53 |
| MALIGNANT DISEASES | | | | | | | | | | | | | | |
| Los Angeles County Hospital | Los Angeles | County | 3,410 | 100 | | | 1,065 | Yes | 2 | Varies | 12 | 2,531 | 59 | \$10 |
| Albert Steiner Clinic for Cancer and Allied Diseases | Atlanta Ga | City | 83 | 100 | | | 490 | No | 2 | Jan | 12 | 14 | 100 | \$100 |
| Michael-Reese Hospital | Chicago | NPAssn | 626 | 43 | 29 | 23 | 662 | Yes | 2 | Jan & July | 27 | 219 | 51 | None |
| Collis P. Huntington Memorial Hosp | Boston | NPAssn | 25 | 22 | 11 | 67 | 1,443 | Yes | 5 | March | Indef | 8 | 73 | \$15 |
| Pondville Hospital at Norfolk | Wrentham Mass | State | 122 | 75 | 25 | | 1,069 | Yes | 7 | Varies | Indef | 131 | 62 | |
| Barnard Free Skin and Cancer Hosp | St. Louis | NPAssn | 44 | 100 | | | 802 | Yes | 1 | Jan | 12 | 11 | 34 | \$25 |
| Jersey City Hospital | Jersey City N. J | City | 1,200 | 94 | 6 | | 344 | Yes | 1 | March & Oct | 12 | 153 | 16 | \$50 |
| Memorial Hospital for the Treatment of Cancer and Allied Diseases | New York City | NPAssn | 110 | 5 | 50 | 45 | 2,560 | Yes | 10 | Varies | 36 | 64 | 63 | \$125 |
| New York City Cancer Institute Hosp | New York City | City | 192 | 100 | | | 859 | Yes | 8 | Varies | 10 | 150 | 41 | \$50 |
| Jeane's Hospital | Philadelphia | NPAssn | 0 | 22 | 50 | 28 | 493 | Yes | 2 | April | 12 | 67 | 70 | \$50 |
| MAXILLOFACIAL SURGERY | | | | | | | | | | | | | | |
| Graduate Hosp. of the Univ. of Pa. | Philadelphia | NPAssn | 475 | 38 | 9 | 55 | | Yes | 1 | Jan | 12 | 100 | 49 | None |
| MEDICINE | | | | | | | | | | | | | | |
| Hillman Hospital | Birmingham Ala | County | 474 | 100 | | | 1,930 | Yes | 2 | Jan | 12 | 241 | 26 | \$50 |
| Employees Hospital of the Tennessee Coal Iron and Railroad Co. | Fairfield Ala | NPAssn | 310 | | | 100 | 833 | Yes | 1 | Jan | 12 | 108 | 45 | \$100 |
| Fresno County General Hospital | Fresno Calif | County | 520 | 88 | 2 | | 1,423 | Yes | 1 | Jan | 12 | 245 | 33 | \$65 |
| Cedars of Lebanon Hospital | Los Angeles | NPAssn | 233 | 22 | 3 | 75 | 1,262 | No | 1 | Dec. | 12 | 101 | 40 | \$75 |
| Los Angeles County Hospital | Los Angeles | County | 3,410 | 100 | | | 8,560 | Yes | 6 | Varies | 36 | 2,531 | 59 | \$10 |
| White Memorial Hospital | Los Angeles | Church | 120 | | 20 | 75 | | Yes | 1 | April | 36 | 40 | 33 | \$50 |
| Alameda County Hospital | Oakland Calif | County | 372 | 100 | | | 4,079 | No | 3 | Dec. | 12 | 832 | 40 | \$10 |
| San Bernardino County Charity Hosp | San Bernardino Calif | County | 324 | 100 | | | 623 | Yes | 1 | April | 12 | 132 | 42 | \$75 |
| San Diego County General Hospital | San Diego Calif | County | 663 | 100 | | | 3,233 | Yes | 2 | April | 12 | 240 | 42 | \$75 |
| Hospital for Children | San Francisco | NPAssn | 249 | 14 | 23 | 63 | 380 | Yes | 1 | Feb. | 12 | 19 | 23 | \$25 |
| Mount Zion Hospital | San Francisco | NPAssn | 189 | 18 | 13 | 69 | 1,193 | Yes | 1 | Feb. | 12 | 82 | 43 | \$50 |
| San Franc | San Francisco | City | 1,437 | 100 | | | 2,501 | No | 7 | Nov. | 12 | 555 | 53 | \$50 |
| Stanford | San Francisco | NPAssn | 324 | 6 | 39 | 55 | 2,121 | Yes | 6 | Jan | 12 | 118 | 53 | \$23.75 |
| University | San Francisco | State | 293 | 68 | 32 | | 1,621 | Yes | 0 | Feb. | 12 | 140 | 73 | \$25 |
| Santa Clara County Hospital | San Jose Calif | County | 493 | 98 | 2 | | | Yes | 2 | Jan | 12 | 210 | 38 | |
| Colorado General Hospital | Denver | State | 178 | 90 | 10 | | 1,483 | No | 1 | Jan | 12 | 115 | 61 | |
| Denver General Hospital | Denver | City | 580 | 100 | | | 1,450 | No | 1 | Varies | 12 | 332 | 83 | \$50 |
| New Haven Hospital | New Haven Conn | NPAssn | 511 | 37 | 37 | 26 | 1,005 | Yes | 5 | Jan & July | 12 | 232 | 57 | \$50 |
| Central Disp. and Emergency Hospital | Washington D. C. | NPAssn | 210 | 13 | 14 | 63 | 2,409 | Yes | 2 | March | 12 | 170 | 49 | \$50 |
| Freedmen's Hospital (col.) | Washington D. C. | Fed | 376 | 86 | 14 | | 679 | Yes | 1 | June | 12 | 190 | 49 | \$31.68 |
| Gallinger Municipal Hospital | Washington D. C. | City | 1,220 | 100 | | | 3,123 | No | 0 | Jan | 12 | 497 | 34 | \$50 |
| Grady Hospital | Atlanta Ga | City | 325 | 100 | | | 1,891 | Yes | 1 | Jan | 12 | 264 | 20 | \$50 |
| Grady Hospital Emory University Division (colored unit) | Atlanta Ga | City | 215 | 100 | | | 1,463 | Yes | 3 | Jan | 12 | 264 | 20 | \$50 |
| University Hospital | Augusta Ga | City | 300 | 42 | 5 | 43 | 1,515 | Yes | 3 | Nov. | 12 | 163 | 27 | \$50 |
| Cook County | Chicago | County | 3,800 | 100 | | | 17,240 | No | 4 | June & Dec | 12 | 1,170 | 21 | None |
| Passavant | Chicago | NPAssn | 165 | 6 | 1 | 84 | 974 | Yes | 2 | Jan & July | 12 | 45 | 60 | None |
| Dea Hospital | Chicago | Church | 403 | 24 | 47 | 23 | 2,504 | Yes | 2 | Varies | 24 | 160 | 57 | \$50 |
| | Chicago | NPAssn | 155 | 18 | 6 | 70 | 373 | Yes | 1 | Jan | 12 | 69 | 30 | \$50 |
| | Chicago | State | 352 | 100 | | | 761 | Yes | 2 | Varies | 24 | 107 | 63 | \$50 |
| | Chicago | NPAssn | 639 | 4 | 20 | 76 | 1,236 | Yes | 4 | Jan | 12 | 123 | 40 | None |
| | Chicago | NPAssn | 293 | 26 | 69 | 6 | | Yes | 6 | Jan | 12 | 184 | 72 | None |
| | Chicago | Church | 263 | 34 | 16 | 50 | 703 | Yes | 1 | Jan | 12 | 67 | 68 | |
| University of Chicago Clinics | Chicago | NPAssn | 240 | 15 | 29 | 47 | 1,264 | Yes | 1 | April | 12 | 95 | 66 | \$133 |
| Wesley Memorial Hospital | Evansston Ill | State | 404 | 90 | 3 | 7 | 863 | Yes | 2 | Feb. | 12 | 133 | 40 | \$17.23 |
| Evansston Hospital | Evansston Ill | NPAssn | 240 | 15 | 39 | 17 | 1,264 | Yes | 1 | Jan | 12 | 95 | 66 | \$133 |
| Indiana University Hospitals | Indianapolis | State | 404 | 90 | 3 | 7 | 863 | Yes | 2 | Feb. | 12 | 133 | 40 | \$17.23 |
| University Hospitals | Iowa City | State | 64 | 87 | 8 | 6 | | Yes | 6 | July | 12 | 325 | 57 | \$10.53 |
| University of Kansas Hospitals | Kansas City Kan | State | 240 | 15 | 37 | 43 | 883 | Yes | 1 | Oct. | 36 | 216 | 84 | \$50 |
| Louisville City Hospital | Louisville Ky | City | 423 | 90 | 10 | | 2,325 | Yes | 9 | March | 36 | 253 | 29 | \$13.51 |
| Charity Hospital | New Orleans | State | 1,913 | 100 | | | 15,233 | Yes | 5 | May & June | 12 | 1,547 | 40 | \$25 |
| Touro Infirmary | New Orleans | NPAssn | 366 | 31 | 33 | 31 | 914 | Yes | 1 | Jan to March | 12 | 142 | 40 | \$50 |
| Baltimore City Hospitals (General) | Baltimore | City | 963 | 100 | | | 1,930 | No | 6 | Jan | 12 | 410 | 41 | \$12.50 |
| Church Home and Infirmary | Baltimore | Church | 184 | 21 | 53 | 26 | 333 | Yes | 1 | Dec. | 12 | 44 | 40 | \$25 |
| Johns Hopkins Hospital | Baltimore | NPAssn | 902 | 53 | 21 | 26 | 2,492 | Yes | 0 | May | 12 | 505 | 50 | \$20 |
| Maryland General Hospital | Baltimore | Church | 233 | 42 | 9 | 49 | 623 | Yes | 1 | Jan | 12 | 44 | 18 | \$25 |
| Mersey Hospital | Baltimore | Church | 309 | 53 | 11 | 26 | 633 | No | 2 | Jan | 12 | 86 | 38 | \$50 |
| Provident Hosp. and Free Disp. (col.) | Baltimore | NPAssn | 132 | 83 | 4 | 13 | 393 | No | 1 | Oct. | 12 | 36 | 17 | \$25 |
| St. Agnes Hospital | Baltimore | Church | 205 | 33 | 34 | 23 | 724 | Yes | 1 | Nov. | 12 | 53 | 20 | |
| St. Joseph's Hospital | Baltimore | Church | 255 | 41 | 12 | 47 | 555 | Yes | 2 | Jan | 12 | 70 | 70 | |
| St. Michael's Hospital | Baltimore | NPAssn | 269 | 41 | 8 | 61 | 984 | Yes | 1 | Jan | 12 | 63 | 27 | \$17.50 |
| South Baltimore General Hospital | Baltimore | NPAssn | 125 | 31 | 42 | 27 | 24 | Yes | 1 | Dec. | 12 | 46 | 34 | \$50 |
| Union Memorial Hospital | Baltimore | NPAssn | 275 | 22 | 45 | 30 | 119 | Yes | 3 | Jan | 12 | 77 | 37 | \$15.00 |
| University Hospital | Baltimore | State | 450 | 60 | 6 | 44 | 1,012 | Yes | 2 | Jan | 12 | 153 | 44 | None |
| West Baltimore General Hospital | Baltimore | Corp. | 200 | 35 | 65 | 30 | | Yes | 1 | Jan | 12 | 22 | 21 | \$50 |
| Beth Israel Hospital | Boston | NPAssn | 215 | 15 | 32 | 50 | 1,233 | No | 2 | Varies | 12 | 102 | 51 | \$11.67 |
| Boston City Hospital | Boston | City | 1,122 | 99 | 9 | 1 | 6,164 | Yes | 8 | Sept. | 12 | 609 | 29 | \$11.67 |
| Massachusetts General Hospital | Boston | NPAssn | 424 | 47 | 34 | 19 | 1,991 | Yes | 6 | Varies | 12 | 235 | 51 | \$50 |
| Massachusetts Memorial Hospital | Boston | NPAssn | 348 | 23 | 45 | 32 | 877 | Yes | 1 | March | 12 | 61 | 20 | \$50 |
| Peter Bent Brigham Hospital | Boston | NPAssn | 241 | 41 | 29 | 27 | 1,035 | Yes | 5 | Varies | 24 | 171 | 61 | \$11.67 |
| University Hospital | Ann Arbor Mich | State | 1,250 | 9 | 21 | | 2,794 | Yes | 8 | Jan | 12 | 470 | 57 | \$50 |
| City of Detroit Receiving Hospital | Detroit | City | 600 | 100 | | | 4,571 | Yes | 4 | Dec. | 12 | 120 | 18 | \$50 |
| Grace Hospital | Detroit | NPAssn | 253 | 31 | 42 | 27 | 2,259 | Yes | 1 | Feb. | 12 | 120 | 18 | \$50 |
| Harper Hospital | Detroit | NPAssn | 253 | 31 | 42 | 27 | 2,243 | Yes | 7 | Jan | 12 | 103 | 22 | \$25 |
| Henry Ford Hospital | Detroit | NPAssn | 253 | 31 | 42 | 27 | 2,243 | Yes | 0 | Jan | 12 | 27 | 41 | \$110 |
| Jefferson Clinic Hospital | Detroit | NPAssn | 253 | 31 | 42 | 27 | 2,243 | Yes | 1 | Feb. | 24 | 8 | 19 | \$50 |
| Providence Hospital | Detroit | Church | 405 | 21 | 12 | 26-3 | | No | 1 | Jan | 12 | 144 | 22 | \$100 |
| Eliot Hospital (Dr. William J. Seymour Hospital) | Flint Mich | County | 150 | 100 | | | | Yes | 2 | March | 12 | 51 | 44 | \$50 |
| Hurley Hospital | Flint Mich | City | 47 | | | | | Yes | 1 | July | 12 | 25 | 45 | \$100 |
| Manassas General Hospital | Manassas Va | City | 67 | 100 | | | 2,204 | Yes | 6 | Varies | 12 | 231 | 29 | \$50 |
| Rocky Mountain Hospital | St. Paul | City | 500 | 100 | | | | Yes | 6 | March | 12 | 217 | 65 | \$50 |
| St. Louis Hospital | St. Louis | Church | 500 | 100 | | | 2,204 | No | 2 | Dec. | 12 | 170 | 27 | \$25 |
| St. Louis Hospital | St. Louis | NPAssn | 220 | 25 | 19 | 147 | | No | 2 | Dec. | 12 | 27 | 51 | \$10 |
| St. Louis City Hospital | St. Louis | City | 500 | 100 | | | 4,012 | Yes | 6 | March | 12 | 264 | 45 | \$75 |

| | | Control | Capacity | Classification of Patients | | | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Beginning Salary per Month |
|---|---------------------|---------|----------|----------------------------|----------|----------|--------------------|----------------------|---------------------|---------------------------------|---------------------|----------------------------|
| | | | | Free | Part Pay | Full Pay | | | | | | |
| MEDICINE—(Continued) | | | | | | | | | | | | |
| St Louis City Hospital No 2 (col) | St Louis | City | 325 | 100 | | | Yes | 1 | June | 12 | 122 | \$100 |
| St Luke's Hospital | St Louis | Church | 210 | 14 | 31 | 55 | Yes | 1 | Dec | 12 | 42 | \$50 |
| St. Mary's Group of Hospitals | St Louis | Church | 651 | 88 | 31 | 83 | Yes | 6 | March | 36 | 164 | \$25 |
| Jersey City Hospital | Jersey City N J | City | 1,200 | 94 | 6 | 3 | Yes | 2 | March & Oct | 12 | 169 | \$50 |
| Albany Hospital* | Albany N Y | NPAsen | 610 | 8 | 75 | 17 | Yes | 4 | Dec | 12 | 353 | \$15 |
| Cumberland Hospital | Brooklyn | City | 318 | 100 | | | No | 1 | March | 12 | 155 | \$100 |
| Kings County Hospital | Brooklyn | City | 3,160 | 100 | | | Yes | 5 | June & Nov | 12 | 939 | None |
| Long Island College Hospital | Brooklyn | NPAsen | 473 | 18 | 34 | 48 | Yes | 2 | Jan | 12 | 126 | \$22.50 |
| Norwegian Lutheran Deaconesses Home and Hospital | Brooklyn | Church | 108 | 5 | 43 | 52 | Yes | 1 | March | 12 | 105 | \$50 |
| Buffalo City Hospital* | Buffalo | City | 1,063 | | | | Yes | 2 | Nov | 12 | 204 | \$21 |
| Buffalo General Hospital | Buffalo | NPAsen | 465 | 13 | 36 | 51 | Yes | 7 | Dec | 12 | 194 | \$30 |
| Millard Fillmore Hospital | Buffalo | NPAsen | 309 | 21 | 34 | 45 | Yes | 2 | Dec | 12 | 119 | \$36 |
| Clifton Springs Sanitarium and Clinic | Clifton Springs N Y | NPAsen | 432 | 10 | 40 | 50 | No | 1 | Varies | 12 | 35 | \$25 |
| Charles S Wilson Memorial Hospital | Johnson City N Y | NPAsen | 360 | 1 | 3 | 96 | Yes | 1 | Dec | 12 | 85 | \$15 |
| Metropolitan Life Insurance Co Sannat Bellevue Hospital | Mt McGregor N Y | NPAsen | 860 | 100 | | | Yes | 1 | Varies | Indef | 6 | \$100 |
| Flower Fifth Avenue Hospital* | New York City | City | 2,333 | 100 | | | Yes | 4 | Jan & July | 12 | 1,344 | \$53.33 |
| Metropolitan Hospital | New York City | NPAsen | 347 | | | | Yes | 2 | Feb | 12 | 214 | \$19 |
| Montefiore Hosp for Chronic Diseases | New York City | NPAsen | 711 | 79 | 8 | 13 | Yes | 4 | March & Oct | 12 | 363 | \$73 |
| Mount Sinai Hospital | New York City | NPAsen | 780 | 57 | 16 | 27 | Yes | 2 | Varies | 12 | 400 | \$120 |
| New York Hospital | New York City | NPAsen | 1,010 | 8 | 73 | 19 | Yes | 8 | Jan | 12 | 316 | \$25 |
| N Y Post Grad Med School & Hosp | New York City | NPAsen | 411 | 13 | 8 | 84 | Yes | 1 | Varies | 12 | 81 | \$25 |
| Presbyterian Hospital | New York City | NPAsen | 965 | 33 | 42 | 25 | Yes | 3 | Varies | 12 | 231 | \$41.67 |
| Genesee Hospital | Rochester N Y | NPAsen | 220 | 29 | 23 | 43 | No | 1 | Jan | 12 | 74 | \$50 |
| Rochester General Hospital | Rochester N Y | NPAsen | 365 | 24 | 9 | 67 | No | 1 | April | 12 | 209 | \$50 |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Oy | 645 | 49 | 39 | 12 | Yes | 5 | Jan | 12 | 382 | \$68 |
| Hospital of the Good Shepherd | Syracuse N Y | NPAsen | 242 | 2 | 45 | 53 | No | 2 | Dec | 12 | 96 | \$89.50 |
| Grasslands Hospital | Valhalla N Y | County | 932 | 87 | 13 | 1 | Yes | 1 | April & Oct | 12 | 295 | \$64 |
| Duke Hospital | Durham N C | NPAsen | 436 | 66 | 24 | 10 | Yes | 0 | Jan | 36 | 195 | \$41.67 |
| Watts Hospital | Durham N C | NPAsen | 225 | 32 | 33 | 35 | Yes | 1 | Jan | 12 | 62 | \$23 |
| City Memorial Hospital | Winston Salem N C | City | 191 | 43 | 9 | 48 | Yes | 1 | Jan | 12 | 44 | \$23 |
| City Hospital* | Akron O | NPAsen | 350 | 43 | 7 | 50 | Yes | 1 | Feb | 12 | 191 | \$50 |
| Cincinnati General Hospital | Cincinnati | City | 925 | 89 | 13 | 7 | Yes | 10 | Feb | 12 | 708 | \$42 |
| Deaconess Hospital | Cincinnati | Church | 175 | 5 | 40 | 55 | Yes | 1 | Dec | 12 | 59 | \$25 |
| Good Samaritan Hospital | Cincinnati | Church | 305 | 50 | 22 | 28 | Yes | 1 | Jan | 12 | 81 | \$16 |
| Jewish Hospital* | Cincinnati | NPAsen | 262 | 19 | 43 | 38 | Yes | 2 | July | 12 | 61 | \$31 |
| City Hospital | Cleveland | City | 1,670 | 100 | | | Yes | 5 | Jan | 12 | 623 | \$37 |
| Mount Sinai Hospital | Cleveland | NPAsen | 270 | 34 | 12 | 54 | No | 1 | Dec | 12 | 57 | \$50 |
| St Alexis Hospital | Cleveland | Church | 220 | 35 | 4 | 61 | No | 1 | Dec | 12 | 84 | \$33 |
| St John's Hospital | Cleveland | Church | 210 | 12 | 10 | 78 | No | 1 | Dec | 12 | 78 | \$22 |
| St Luke's Hospital | Cleveland | Church | 392 | 23 | 2 | 75 | Yes | 2 | Dec | 24 | 92 | \$25 |
| University Hospitals | Cleveland | NPAsen | 973 | 37 | 14 | 40 | Yes | 12 | Jan | 12 | 349 | \$35 |
| Starling-Loving University Hospital | Columbus O | State | 278 | 40 | 19 | 35 | Yes | 4 | Dec | 12 | 137 | \$41 |
| Miami Valley Hospital | Dayton O | NPAsen | 371 | 33 | 26 | 41 | No | 1 | Jan | 12 | 217 | \$75 |
| St Elizabeth's Hospital | Youngstown O | Church | 261 | 2 | 20 | 78 | No | 1 | Dec | 12 | 85 | \$24 |
| State University Hospital and Crippled Children's Hospital* | Oklahoma City | State | 510 | 62 | 32 | 6 | Yes | 2 | Jan | 12 | 203 | \$25 |
| Univ of Oregon Med School Hosps | Portland | Co-St | 405 | 93 | 7 | 158 | Yes | 2 | Jan | 24 | 409 | \$30 |
| Arlington Memorial Hospital | Arlington Pa | NPAsen | 276 | 30 | 22 | 43 | Yes | 1 | March | 12 | 106 | \$30 |
| Geo F Geisinger Memorial Hospital | Danville Pa | NPAsen | 198 | 25 | 31 | 44 | No | 1 | Jan | 12 | 58 | \$50 |
| Germantown Dispensary and Hospital | Philadelphia | NPAsen | 360 | 18 | 32 | 50 | Yes | 1 | Jan | 12 | 84 | \$130 |
| Graduate Hospital of the Univ of Pa | Philadelphia | NPAsen | 476 | 36 | 9 | 55 | Yes | 1 | Jan | 12 | 100 | None |
| Hospital of the Univ of Pennsylvania | Philadelphia | State | 593 | 26 | 24 | 40 | Yes | 1 | Jan | 12 | 216 | None |
| Jewish Hospital | Philadelphia | NPAsen | 426 | 34 | 12 | 54 | No | 1 | March | 12 | 174 | None |
| Pennsylvania Hospital | Philadelphia | NPAsen | 560 | 43 | 32 | 23 | Yes | 2 | Varies | 12 | 191 | \$50 |
| Philadelphia General Hospital | Philadelphia | City | 2,400 | 100 | | | Yes | 1 | July | 12 | 1,962 | \$107 |
| Allegheny General Hospital | Pittsburgh | NPAsen | 405 | 59 | 3 | 33 | No | 1 | Feb | 12 | 100 | \$31 |
| Mercy Hospital* | Pittsburgh | Church | 670 | 35 | 35 | 30 | Yes | 1 | Dec | 12 | 144 | \$32 |
| St Francis Hospital | Pittsburgh | Church | 587 | 29 | 13 | 58 | Yes | 1 | Nov | 12 | 122 | \$75 |
| Reading Hospital | Reading Pa | NPAsen | 268 | 44 | 2 | 54 | Yes | 1 | Jan | 12 | 154 | \$33.33 |
| Roper Hospital | Charleston S C | NPAsen | 300 | 63 | 4 | 33 | Yes | 1 | Jan | 12 | 152 | \$48 |
| Johns Hopkins Hospital | Memphis Tenn | City | 400 | 98 | 2 | 2,054 | Yes | 2 | July | 12 | 221 | \$65 |
| Nashville General Hospital* | Nashville Tenn | City | 305 | 84 | 16 | | Yes | 2 | Dec | 12 | 157 | \$35 |
| Vanderbilt University Hospital | Nashville Tenn | NPAsen | 210 | 34 | 34 | 32 | No | 4 | March | 12 | 189 | \$30.40 |
| Baylor University Hospital | Dallas Tex | Church | 350 | 20 | 20 | 60 | Yes | 1 | April | 12 | 95 | \$75 |
| John Sealy Hospital | Galveston Tex | City | 374 | 70 | 5 | 25 | Yes | 1 | Jan | 12 | 209 | None |
| Norfolk General Hospital | Norfolk Va | Church | 200 | 24 | 26 | 60 | Yes | 1 | Jan | 12 | 26 | \$37.50 |
| Medical College of Va Hosp Division | Richmond | NPAsen | 442 | 7 | 81 | 12 | Yes | 4 | Feb | 12 | 241 | \$25 |
| University of Virginia Hospital | University | State | 311 | 24 | 46 | 30 | Yes | 2 | Dec | 12 | 118 | None |
| State of Wisconsin General Hospital | Madison | State | 652 | 88 | 7 | 5 | Yes | 2 | March | 36 | 257 | \$25 |
| St Joseph's Hospital | Millwaukee | Church | 385 | 19 | 34 | 47 | Yes | 1 | Dec | 12 | 54 | \$100 |
| MENTAL DEFICIENCIES | | | | | | | | | | | | |
| Belchertown State School | Belchertown Mass | State | 1,250 | 100 | | | No | 1 | Varies | Indef | 3 | \$23 |
| Michigan Home and Training School | Lapeer Mich | State | 177 | 100 | | | Yes | 2 | Varies | 12 | 21 | \$150 |
| Polk State School | Polk Pa | State | 3,000 | 92 | 6 | 2 | Yes | 2 | July | Indef | 14 | \$75 |
| METABOLIC DISEASES | | | | | | | | | | | | |
| Philadelphia General Hospital | Philadelphia | City | 2,400 | 100 | | | Yes | 1 | July | 12 | 1,962 | \$100 |
| MIXED | | | | | | | | | | | | |
| Golden State Hospital | Los Angeles | Indiv | 69 | | | | Yes | 3 | Varies | Indef | 13 | \$7 |
| St Luke's Hospital | San Francisco | Church | 223 | 8 | 9 | 83 | Yes | 7 | Jan | 12 | 49 | \$25 |
| Fairmont Hosp of Alameda County | San Leandro Calif. | County | 900 | 100 | | | No | 2 | Dec | 12 | 202 | \$45 |
| James M Jackson Memorial Hosp | Miami Fla | City | 350 | 55 | | | Yes | 2 | Jan | 12 | 118 | \$75 |
| Emory University Hospital | Emory University Ga | NPAsen | 150 | 3 | 13 | 84 | No | 1 | Jan | 12 | 36 | \$36 |
| West Suburban Hospital | Oak Park Ill | NPAsen | 182 | 8 | 23 | 69 | Yes | 1 | March | 12 | 29 | \$100 |
| Indianapolis City Hospital | Indianapolis | City | 577 | 92 | 4 | 3 | Yes | 4 | April | 12 | 414 | \$20.83 |
| Massachusetts Memorial Hospitals | Boston | NPAsen | 846 | 23 | 45 | 33 | Yes | 1 | March | 12 | 64 | \$91 |
| Atlantic City Hospital | Atlantic City N J | NPAsen | 276 | 43 | 23 | 29 | Yes | 2 | Jan | 12 | 122 | \$26 |
| Arnot Ogden Memorial Hospital | Elmira N Y | NPAsen | 218 | 9 | 65 | 25 | Yes | 1 | Jan | 12 | 65 | \$33 |
| Tamaleca Hospital | Jamaica N Y | NPAsen | 177 | 38 | 3 | 59 | Yes | 1 | Varies | 12 | 57 | \$36 |
| St Thomas Hospital | Akron O | Church | 183 | 31 | 23 | 39 | No | 1 | Dec | 12 | 79 | \$35 |
| Charity Hospital | Cleveland | Church | 301 | 42 | 3 | 55 | Yes | 3 | Jan | 12 | 131 | \$4 |
| Women and Children's Hospital | Toledo O | NPAsen | 146 | 4 | 69 | 27 | No | 2 | Jan | 12 | 49 | \$25 |

Numerical references will be found on page 715

| | | Control | Capacity | Classification of Patients | | | Patients Treated Under Speciality | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month |
|--|--------------------|---------|----------|----------------------------|----------|----------|-----------------------------------|--------------------|----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|
| | | | | Free | Part Pay | Full Pay | | | | | | | | |
| MIXED—Continued | | | | | | | | | | | | | | |
| Youngstown Hospital | Youngstown O | NPAasn | 448 | 2 | 71 | 27 | 7,822 | No | 2 | Jan | 12 | 158 | 33 | \$100 |
| St Anthony Hospital | Oklahoma City | Church | 340 | 11 | 54 | 35 | 2,521 | Yes | 1 | Jan | 12 | 108 | 83 | |
| Presbyterian Hospital | Philadelphia | Church | 425 | 30 | 12 | 58 | 5,069 | Yes | 1 | Varies | 12 | 95 | 38 | \$10 |
| Baroness Erlanger Hospital | Chattanooga Tenn | CyCo | 248 | 67 | 1 | 32 | 6,753 | Yes | 2 | Dec. | 12 | 116 | 25 | \$40 |
| Knoxville General Hospital | Knoxville Tenn | City | 300 | 63 | | 32 | 7,789 | Yes | 1 | Jan | 12 | 108 | 23 | |
| Medical Arts Hospital | Dallas, Tex | Indiv | 56 | | | 100 | 2,406 | Yes | 1 | March | 12 | 3 | 17 | \$75 |
| Salt Lake General Hospital | Salt Lake City | County | 246 | 91 | | 9 | 3,617 | Yes | 1 | March | 12 | 73 | 20 | \$40 |
| Chesapeake and Ohio Railway Hosp | Clifton Forge Va | NPAasn | 150 | | 50 | 50 | 2,731 | Yes | 8 | Feb | 12 | 13 | 16 | \$40 |
| Jefferson Hospital | Roanoke Va | Corp | 110 | | | | 2,146 | Yes | 2 | Dec. | 12 | 16 | 16 | |
| NEUROLOGY | | | | | | | | | | | | | | |
| Los Angeles County Hospital ¹⁰ | Los Angeles | County | 3,410 | 100 | | | 1,404 | Yes | 2 | Varies | 24 | 2,551 | 59 | \$10 |
| University of Chicago Clinics ¹⁰ | Chicago | NPAasn | 293 | 26 | 69 | 5 | | Yes | 2 | Jan | 12 | 184 | 72 | None |
| University Hospitals | Iowa City | State | 654 | 87 | 8 | 5 | | Yes | 2 | July | 12 | 825 | 57 | \$20.83 |
| Boston City Hospital | Boston | City | 1,732 | 90 | 9 | 1 | 523 | Yes | 3 | Sept | 12 | 809 | 29 | None |
| Massachusetts General Hospital | Boston | NPAasn | 424 | 47 | 34 | 19 | 875 | Yes | 1 | Varies | 12 | 285 | 57 | \$11.67 |
| University Hospital | Ann Arbor, Mich | State | 1,285 | 79 | | 21 | 969 | Yes | 1 | Jan | 12 | 410 | 57 | \$25 |
| Kings County Hospital | Brooklyn | City | 3,160 | 100 | | | 4,510 | Yes | 1 | June & Nov | 12 | 939 | 19 | \$100 |
| Bellevue Hospital | New York City | City | 2,333 | 100 | | | 289 | Yes | 5 | Jan & July | 12 | 1,344 | 33 | \$33.33 |
| Central Neurological Hospital | New York City | City | 470 | 100 | | | 1,224 | No | 6 | Jan & July | 12 | 97 | 34 | \$100 |
| Lenox Hill Hospital | New York City | NPAasn | 565 | 55 | | 45 | 182 | Yes | 1 | Varies | 12 | 127 | 38 | \$25 |
| Metropolitan Hospital | New York City | City | 1,425 | 100 | | | 181 | Yes | 1 | Feb | 12 | 214 | 19 | \$75 |
| Montefiore Hosp for Chronic Diseases | New York City | NPAasn | 711 | 79 | 8 | 18 | 314 | Yes | 6 | March & Oct. | 12 | 365 | 73 | \$25 |
| Mount Sinai Hospital | New York City | NPAasn | 750 | 57 | 16 | 27 | | Yes | 3 | Varies | 12 | 400 | 62 | None |
| Neurological Institute of New York | New York City | NPAasn | 222 | 13 | 22 | 65 | 3,617 | No | 15 | Varies | 24 | 76 | 47 | \$40 |
| Philadelphia Orthopaedic Hosp and Infirmary for Nervous Diseases | Philadelphia | NPAasn | 140 | 37 | 37 | 26 | 295 | Yes | 1 | Varies | 12 | 1 | 25 | \$10 |
| State of Wisconsin General Hospital | Madison | State | 652 | 83 | 7 | 5 | | Yes | 1 | March | 36 | 257 | 70 | \$25 |
| NEUROPSYCHIATRY | | | | | | | | | | | | | | |
| Compton Sanitarium | Compton Calif | Corp | 155 | | | 100 | 400 | No | 1 | Varies | 12 | 2 | 18 | \$100 |
| Stanford University Hospitals | San Francisco | NPAasn | 834 | 6 | 39 | 55 | 504 | Yes | 3 | Jan | 12 | 118 | 53 | \$23.75 |
| Mendocino State Hospital | Talmage Calif | State | 2,212 | 91 | 1 | 8 | 2,744 | No | 2 | Varies | 12 | 33 | 24 | \$30 |
| Colorado Psychopathic Hospital | Denver | State | 78 | 69 | 23 | 8 | 606 | Yes | 6 | Jan | 36 | 23 | 77 | \$100 |
| Neuro-Psychiatric Institute of the Hartford Retreat | Hartford Conn | NPAasn | 2,700 | | | | 552 | No | 3 | Varies | Indef | 25 | 19 | |
| Connecticut State Hospital | Middletown | State | 317 | 100 | | | 4,094 | No | 3 | Varies | Indef | 52 | 90 | |
| New Haven Hospital | New Haven Conn | NPAasn | 511 | 37 | 37 | 26 | 411 | Yes | 3 | Jan & July | 12 | 232 | 57 | \$40 |
| Delaware State Hospital | Farmhurst, Del | State | 1,050 | 84 | 6 | 10 | 1,549 | Yes | 4 | Jan & June | 12 | 32 | 33 | \$40 |
| Gallinger Municipal Hospital | Washington, D C | City | 1,220 | 100 | | | 2,840 | No | 2 | Jan | 12 | 497 | 34 | \$30 |
| St Elizabeths Hospital | Washington D C | Fed | 5,445 | 100 | | | | | 10 | July & Oct | 12 | 198 | 66 | \$166.67 |
| Cook County Hospital | Chicago | County | 3,800 | 100 | | | 5,591 | No | 8 | June & Dec. | 12 | 1,176 | 21 | None |
| Research and Educational Hospital | Chicago | State | 382 | 100 | | | 143 | Yes | 3 | Varies | Indef | 197 | 63 | \$40 |
| University of Chicago Clinics | Chicago | NPAasn | 293 | 26 | 69 | 5 | | Yes | 1 | Jan | 12 | 184 | 72 | None |
| East Moline State Hospital | East Moline Ill | State | 1,689 | 100 | | | 2,580 | No | 2 | Varies | Indef | 67 | 40 | \$40 |
| Elgin State Hospital | Elgin Ill. | State | 4,450 | 100 | | | 6,304 | No | 2 | Varies | Indef. | 140 | 51 | \$40 |
| Central State Hospital | Indianapolis | State | 1,600 | 90 | 10 | | 1,848 | No | 3 | Varies | Indef | 55 | 42 | |
| Indianapolis City Hospital | Indianapolis | City | 577 | 92 | 4 | 4 | 452 | Yes | 1 | April | 12 | 414 | 41 | \$20.83 |
| Logansport State Hospital | Logansport Ind | State | 1,688 | 97 | 1 | 2 | 1,881 | No | 2 | Varies | 36 | 23 | 18 | \$160 |
| Iowa State Psychopathic Hospital | Iowa City | State | 60 | 76 | 2 | 22 | 391 | Yes | 4 | May & Dec | 12 | 3 | 60 | \$141.67 |
| Osawatimie State Hospital | Osawatimie Kan | State | 1,680 | 94 | | 6 | 1,904 | No | 1 | June | Indef | 16 | 17 | \$110 |
| Menninger Sanitarium | Topeka Kan | Corp | 50 | 100 | | | 157 | Yes | 3 | Varies | 12 | | | \$75 |
| Baltimore City Hosps (Psychopathic) | Baltimore | City | 300 | 100 | | | 513 | No | 1 | Varies | Indef | 10 | 53 | \$400 |
| Johns Hopkins Hospital | Baltimore | NPAasn | 902 | 53 | 21 | 26 | 279 | Yes | 4 | May | 12 | 50 | 60 | \$40 |
| Spring Grove State Hospital | Catonsville Md | State | 1,786 | 100 | | | 2,299 | Yes | 1 | Varies | Indef | 22 | 18 | \$135 |
| Springfield State Hospital | Skysville Md | State | 2,600 | 100 | | | 3,260 | | 3 | May | 12 | 41 | 25 | \$25 |
| Sheppard and Enoch Pratt Hospital | Towson Md | NPAasn | 300 | 10 | 60 | 30 | 680 | No | 6 | Varies | Indef | 1 | 16 | \$100 |
| McLean Hospital | Belmont, Mass | NPAasn | 232 | 7 | 41 | 52 | 440 | Yes | 5 | June | 12 | 2 | 18 | \$40 |
| Boston Psychopathic Hospital | Boston | State | 110 | 85 | 5 | 10 | 2,010 | No | 8 | April | 12 | 21 | 53 | \$75 |
| Boston State Hospital | Boston | State | 2,466 | 83 | | 12 | 3,160 | No | 3 | Varies | Indef | 250 | 61 | \$110 |
| Massachusetts General Hospital | Boston | NPAasn | 494 | 47 | 34 | 19 | 118 | Yes | 1 | Varies | 12 | 235 | 57 | \$11.67 |
| Gardner Mass | Gardner Mass | State | 1,339 | 97 | 2 | 1 | 1,609 | Yes | 2 | Varies | 12 | 17 | 40 | \$40 |
| Danvers State Hospital | Hathorne Mass | State | 2,200 | 70 | 26 | 4 | 3,147 | Yes | 2 | July | Indef | 47 | 16 | None |
| Medford State Hospital | Medford Mass | State | 1,853 | 97 | | 3 | 1,900 | Yes | 2 | Varies | 12 | 44 | 36 | \$150 |
| Grafton State Hospital | North Grafton Mass | State | 1,500 | 83 | 2 | | 1,541 | No | 1 | Varies | Indef | 17 | 27 | \$150 |
| Taunton State Hospital | Taunton Mass | State | 1,500 | 87 | 8 | 5 | 2,231 | Yes | 4 | July | 12 | 101 | 50 | None |
| Worcester State Hospital | Worcester Mass. | State | 2,256 | 83 | 10 | 5 | 2,223 | No | 6 | March | 12 | 165 | 61 | None |
| State Psychopathic Hospital | Ann Arbor Mich | State | 64 | 83 | 9 | 3 | 103 | Yes | 1 | April | 12 | 3 | 100 | \$100 |
| Eloise Hospital (Psychiatric Unit) | Eloise Mich | County | 3,200 | 100 | | | 3,803 | Yes | 6 | March | 12 | 551 | 44 | \$100 |
| Kalamazoo State Hospital | Kalamazoo Mich | State | 2,765 | | | | 3,014 | Yes | 3 | June | 12 | 46 | 25 | \$40 |
| Pontiac State Hospital | Pontiac Mich | State | 1,600 | 100 | | | 1,773 | No | 6 | Varies | Indef | 30 | 31 | \$141.67 |
| Traverse City State Hospital | Traverse City Mich | State | 2,300 | 100 | | | 2,295 | No | 3 | Varies | Indef | 24 | 10 | \$150 |
| Ypsilanti State Hospital | Ypsilanti Mich | State | 1,600 | 83 | 2 | 12 | 2,205 | Yes | 2 | Varies | Indef | 36 | 43 | \$2 |
| Minneapolis General Hospital ¹ | Minneapolis | City | 637 | 83 | 5 | | 994 | Yes | 1 | Varies | 12 | 331 | 29 | \$100 |
| State Hospital No 4 | Farmington Mo | State | 1,272 | | | | 1,624 | Yes | 3 | Varies | 12 | 22 | 18 | |
| State Hospital No 1 | Pinlon Mo | State | 2,012 | 97 | | 3 | 2,263 | No | 3 | Varies | Indef | 24 | 19 | |
| State Hospital No 2 | St Joseph Mo | State | 2,535 | 98 | | 2 | 2,513 | Yes | 1 | Varies | Indef | 8 | 27 | \$100 |
| City Sanitarium | St Louis | City | 3,634 | 84 | 10 | 6 | 4,040 | Yes | 5 | April | 12 | 68 | 29 | \$100 |
| St Louis City Hospital | St Louis | City | 666 | 100 | | | 3,084 | Yes | 2 | March | 12 | 764 | 43 | \$100 |
| Hastings State Hospital | Ingleside Neb | State | 1,406 | 92 | 2 | 6 | 1,859 | No | 2 | May | 12 | 29 | 47 | \$100 |
| Norfolk State Hospital | Norfolk Neb | State | 1,091 | 89 | 11 | | 1,040 | No | 2 | Varies | Indef | 41 | 73 | \$40 |
| Lutheran Hospital ¹ | Omaha | Church | 105 | | | | 460 | Yes | 1 | Jan | 12 | 16 | 23 | \$40 |
| New Jersey State Hospital | Greystone Park | State | 511.3 | 24 | 0 | 6 | 6,535 | Yes | 3 | Varies | Indef | 143 | 23 | \$100 |
| Albany Hospital ¹ | Albany N Y | NPAasn | 610 | 8 | 70 | 17 | 633 | Yes | 3 | Dec | 12 | 33 | 72 | \$100 |
| Binghamton State Hospital | Binghamton N Y | State | 2,231 | 94 | | 6 | 3,371 | Yes | 3 | Varies | Indef | 124 | 30 | \$100 |
| Brooklyn State Hospital | Brooklyn | State | 1,703 | 100 | | | 4,214 | Yes | 11 | Varies | Indef | 140 | 27 | \$100 |
| Buffalo City Hospital ⁴ | Buffalo | CyCo | 1,023 | | | | 2,000 | Yes | 2 | Nov | 12 | 204 | 21 | \$100 |
| Buffalo State Hospital | Buffalo | State | 2,007 | 83 | 12 | | 3,402 | Yes | 2 | Varies | Indef | 41 | 21 | \$100 |
| Hastings Hills de Ho pital | | NPAasn | 41 | 11 | 80 | 4 | 145 | Yes | 1 | July | 12 | | | \$100 |
| Cowanda State Homeopathic Hosp | | State | 1,240 | 83 | 10 | 2 | 2,607 | No | 2 | Varies | Indef | 63 | 30 | \$100 |
| Middletown State Homeopathic Hosp | Middletown N Y. | State | 2,780 | 83 | 10 | | 3,357 | No | 1 | Varies | Indef | 62 | 33 | \$100 |
| New York Hospital | New York City | NPAasn | 1,010 | 8 | 72 | 19 | 293 | Yes | 10 | Jan | 12 | 316 | 77 | \$40 |
| N Y State Psychiatric Inst and Hosp | New York City | State | 200 | 83 | 10 | | 51 | Yes | 6 | Jan & July | 12 | 2 | 169 | \$40 |
| U S Marine Hospital | New York City | USPHS | 40 | 100 | | | 608 | No | 1 | April | 12 | 67 | 70 | \$100 |
| St. Lawrence State Hospital | Ordenburg N Y | State | 2,224 | 91 | 4 | 5 | 2,649 | Yes | 3 | Varies | 12 | 72 | 41 | \$100 |
| Hudson River State Hospital | Poughkeepsie N Y. | State | 44.3 | 90 | | | 5,201 | No | 3 | Varies | 12 | 192 | 27 | \$100 |
| Rocky State Hospital | Poughkeepsie N Y. | State | 3,224 | 82 | 11 | | 3,616 | Yes | 6 | Varies | 12 | 57 | 29 | \$100 |

NEUROPSYCHIATRY—Continued

| Hospital | City | State | Control | Capacity | Classification of Patients | | | Patients Treated Under Listed Specialty | Outpatient Service | Number of Residencies | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month |
|--|-----------------------------|---------|---------|----------|----------------------------|----------|----------|---|--------------------|-----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|
| | | | | | Fees | Part Pay | Full Pay | | | | | | | | |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Cy | 645 | 49 | 39 | 12 | 436 | Yes | 1 | Jan | 12 | 332 | 66 | | \$66.67 |
| Utica State Hospital | Utica N Y | State | 1,640 | 100 | | | 2,319 | Yes | 1 | Varies | Indef | 50 | 100 | | |
| Grasslands Hospital | Valhalla N Y | County | 932 | 87 | 13 | | 1,183 | Yes | 1 | April & Oct | 24 | 235 | 64 | | \$120 |
| Bromfield Hospital | White Plains, N Y | NP Assn | 330 | 3 | 40 | 57 | 532 | Yes | 6 | Varies | 24 | 1 | 23 | | \$125 |
| Duke Hospital | Durham N C | NP Assn | 456 | 66 | 24 | 10 | | Yes | 1 | Jan | 12 | 195 | 57 | | \$41.67 |
| North Dakota State Hosp for Insane | Jamestown N D | State | 2,000 | 100 | | | 2,143 | No | 2 | July | 12 | 23 | 21 | | |
| Cincinnati General Hospital | Cincinnati | City | 925 | 80 | 18 | 7 | 1,322 | Yes | 3 | Feb | 12 | 708 | 43 | | None |
| Longview State Hospital | Cincinnati | State | 1,742 | 100 | | | 2,622 | Yes | 2 | April | 12 | 120 | 53 | | |
| Cleveland State Hospital | Cleveland | City | 1,670 | 100 | | | 764 | Yes | 3 | Jan | 12 | 628 | 38 | | \$37 |
| Columbus State Hospital | Cleveland | State | 2,700 | 100 | | | 3,164 | Yes | 2 | Varies | Indef | 32 | 32 | | \$75 |
| Toledo State Hospital | Columbus O | State | 2,400 | 100 | | | 8,610 | No | 1 | Varies | Indef | 60 | 20 | | |
| Allentown State Hospital | Toledo O | State | 2,600 | 68 | 34 | | 8,630 | No | 1 | May | Indef | 35 | 16 | | \$50 |
| Danville State Hospital | Allentown Pa | State | 1,544 | 83 | 5 | 12 | | Yes | 2 | Varies | Indef | 30 | 25 | | \$25 |
| Friends Hospital | Danville Pa | State | 1,947 | 88 | 4 | 8 | 2,951 | Yes | 2 | Varies | Indef | 25 | 17 | | \$100 |
| Pennsylvania Hosp Department for Mental and Nervous Diseases | Philadelphia | NP Assn | 190 | | | | 231 | No | 1 | Varies | 12 | | | | \$100 |
| Philadelphia General Hospital | Philadelphia | NP Assn | 255 | 4 | 61 | 85 | 407 | Yes | 5 | Dec | Indef | | | | None |
| St. Francis Hospital | Philadelphia | City | 2,400 | 100 | | | 6,484 | Yes | 1 | July | 12 | 1,962 | 53 | | \$100 |
| Warren State Hospital | Pittsburgh | Church | 587 | 29 | 13 | 53 | 4,341 | Yes | 1 | Nov | 12 | 122 | 32 | | \$150 |
| State Hospital for Mental Diseases | Warren, Pa | State | 2,063 | | | | 2,973 | Yes | 4 | Varies | Indef | 65 | 30 | | \$100 |
| Butler Hospital | Howard R I | State | 2,377 | 94 | 3 | 3 | 3,262 | Yes | 1 | Varies | Indef | 95 | 44 | | \$160 |
| Charles V. Chapin Hospital | Providence R I | NP Assn | 174 | 6 | 33 | 61 | 801 | Yes | 3 | April & Oct | 12 | 3 | 38 | | \$25 |
| Western State Hospital | Providence R I | City | 255 | 71 | 7 | 22 | | Yes | 1 | Jan | 12 | 62 | 33 | | |
| Galveston State Psychopathic Hosp | Western State Hospital Tenn | State | 1,900 | 95 | | | 2,473 | No | 4 | June | 12 | 30 | 24 | | \$36 |
| John Sealy Hospital | Galveston Tex | State | 55 | 100 | | | 350 | Yes | 3 | June | 12 | 3 | 60 | | None |
| University of Virginia Hospital | Galveston Tex | City | 874 | 70 | 5 | 25 | | Yes | 1 | Jan. | 12 | 209 | 57 | | None |
| State of Wisconsin General Hospital | University | State | 311 | 24 | 46 | 30 | 288 | Yes | 1 | Dec. | 12 | 113 | 34 | | \$40 |
| Milwaukee Hosp for Mental Diseases | Madison | State | 632 | 88 | 7 | 5 | | Yes | 1 | March | 36 | 257 | 70 | | \$23 |
| Milwaukee Sanitarium | Wauwatosa Wis | County | 920 | 94 | 1 | 5 | 1,422 | Yes | 2 | Jan & July | 12 | 14 | 61 | | \$50 |
| | Wauwatosa Wis | Corp | 180 | 3 | 20 | 77 | 370 | No | 1 | Varies | 12 | 1 | 15 | | \$150 |

NEUROSURGERY

| | | | | | | | | | | | | | | | |
|---|---------------|---------|-------|-----|----|----|-----|-----|---|------------|----|-----|----|--|---------|
| University of California Hospital | San Francisco | State | 290 | 68 | | 32 | | Yes | 1 | Feb | 12 | 146 | 73 | | |
| Probyterian Hospital | Chicago | Church | 453 | 24 | 47 | 29 | 264 | Yes | 1 | Varies | 24 | 160 | 57 | | None |
| Boston City Hospital | Boston | City | 1,732 | 90 | 9 | 1 | 420 | No | 2 | Sept | 12 | 609 | 29 | | None |
| Kings County Hospital | Brooklyn | City | 3,160 | 100 | | | | Yes | 1 | June & Nov | 12 | 939 | 19 | | \$100 |
| Neurological Institute of New York | New York City | NP Assn | 223 | 13 | 22 | 65 | 275 | No | 1 | Varies | 12 | 76 | 47 | | \$100 |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Cy | 645 | 49 | 39 | 12 | 229 | Yes | 2 | Jan | 12 | 332 | 66 | | \$41.67 |
| Medical College of Va Hosp Division | Richmond | NP Assn | 443 | 7 | 81 | 12 | | Yes | 2 | Feb | 12 | 241 | 83 | | \$23 |

OBSTETRICS

(Also see Obstetrics Gynecology)

| | | | | | | | | | | | | | | | |
|--|-----------------|---------|-------|-----|----|----|--------|-----|---|------------|----|-------|----|--|---------|
| Los Angeles County Hospital | Los Angeles | County | 3,410 | 100 | | | 6,445 | Yes | 4 | Varies | 18 | 2,531 | 59 | | \$10 |
| Hospital for Children | San Francisco | NP Assn | 250 | 14 | 23 | 63 | 637 | Yes | 1 | Feb | 12 | 19 | 23 | | \$25 |
| University Hospital | Augusta Ga | City | 300 | 52 | 6 | 43 | 1,639 | Yes | 2 | Nov | 12 | 163 | 27 | | \$50 |
| Chicago Maternity Center | Chicago | NP Assn | 100 | | | | 3,540 | Yes | 1 | Oct | 12 | 36 | 73 | | None |
| Cook County Hospital | Chicago | County | 3,200 | 100 | | | 10,516 | No | 4 | June & Dec | 12 | 1,176 | 21 | | None |
| Provident Hospital (col.) | Chicago | NP Assn | 155 | 18 | 6 | 76 | 355 | Yes | 1 | Jan | 12 | 50 | 39 | | \$50 |
| Research and Educational Hospital | Chicago | State | 332 | 100 | | | 811 | Yes | 2 | Varies | 12 | 197 | 83 | | \$50 |
| Indiana University Hospitals | Indianapolis | State | 504 | 90 | 3 | 7 | 1,153 | Yes | 1 | Feb | 12 | 153 | 40 | | \$33.33 |
| Louisville City Hospital | Louisville Ky | City | 423 | 90 | 10 | | 1,303 | Yes | 3 | March | 36 | 238 | 29 | | \$13.51 |
| Johns Hopkins Hospital | Baltimore | NP Assn | 902 | 53 | 21 | 26 | 1,639 | Yes | 4 | May | 12 | 605 | 50 | | \$50 |
| Provident Hosp and Free Disp (col.) | Baltimore | NP Assn | 133 | 83 | 4 | 13 | 194 | No | 1 | Oct | 12 | 36 | 17 | | \$25 |
| Sinal Hospital | Baltimore | NP Assn | 269 | 41 | 8 | 51 | 791 | Yes | 1 | Jan | 12 | 58 | 27 | | \$47.50 |
| University Hospital | Baltimore | State | 450 | 50 | 6 | 44 | 817 | Yes | 3 | Jan | 12 | 183 | 44 | | None |
| Boston Lying in Hospital | Boston | NP Assn | 300 | 8 | 92 | | 3,402 | No | 2 | Varies | 12 | 39 | 50 | | \$53.33 |
| Massachusetts Memorial Hospitals | Boston | NP Assn | 346 | 23 | 45 | 32 | 619 | Yes | 2 | March | 12 | 64 | 39 | | \$91 |
| Providence Hospital | Detroit | Church | 406 | 21 | 67 | 12 | 2,069 | No | 1 | Jan | 12 | 144 | 32 | | \$100 |
| Margaret Hague Maternity Hospital | Jersey City N J | County | 558 | 74 | 26 | | 5,404 | Yes | 7 | Varies | 21 | 106 | 62 | | \$35 |
| Cumberland Hospital | Brooklyn | City | 318 | 100 | | | 1,223 | Yes | 1 | March | 12 | 155 | 40 | | \$100 |
| Jewish Hospital | Brooklyn | NP Assn | 664 | 30 | 40 | 30 | 2,163 | Yes | 3 | Dec. | 12 | 238 | 40 | | \$50 |
| Methodist Episcopal Hospital | Brooklyn | Church | 412 | 16 | 24 | 60 | | Yes | 2 | July | 12 | 113 | 23 | | |
| Norwegian Lutheran Desconesses Home and Hospital | Brooklyn | Church | 198 | 5 | 43 | 52 | 922 | Yes | 1 | March | 12 | 103 | 50 | | |
| Buffalo City Hospital | Buffalo | City | 1,033 | | | | 753 | Yes | 2 | Nov | 12 | 294 | 21 | | |
| Buffalo General Hospital | Buffalo | NP Assn | 465 | 13 | 36 | 51 | 759 | Yes | 1 | Dec. | 12 | 194 | 36 | | \$25 |
| Millard Fillmore Hospital | Buffalo | NP Assn | 300 | 21 | 34 | 45 | 1,400 | Yes | 1 | Dec. | 12 | 119 | 46 | | \$25 |
| Lenox Hill Hospital | New York City | NP Assn | 595 | 65 | | | 730 | Yes | 1 | Varies | 12 | 127 | 88 | | \$35 |
| Morrisania City Hospital | New York City | City | 539 | 100 | | | 2,115 | No | 2 | Varies | 12 | 247 | 27 | | None |
| Sloane Hospital for Women | New York City | NP Assn | 322 | 83 | 42 | 25 | 5,334 | Yes | 3 | Varies | 12 | 7 | 33 | | \$50 |
| Cincinnati General Hospital | Cincinnati | City | 925 | 80 | 13 | 7 | 2,341 | Yes | 8 | Feb | 12 | 708 | 42 | | |
| City Hospital | Cleveland | City | 1,670 | 100 | | | 1,662 | Yes | 3 | Jan | 12 | 628 | 39 | | \$37 |
| Mount Sinal Hospital | Cleveland | NP Assn | 270 | 34 | 12 | 54 | 1,397 | No | 1 | Dec | 12 | 57 | 23 | | \$50 |
| St. John's Hospital | Cleveland | Church | 210 | 12 | 10 | 78 | 720 | No | 1 | Dec | 12 | 78 | 22 | | \$25 |
| St. Luke's Hospital | Cleveland | Church | 392 | 23 | 2 | 75 | 1,290 | Yes | 2 | Dec | 24 | 92 | 24 | | \$25 |
| University Hospitals | Cleveland | NP Assn | 972 | 87 | 14 | 49 | 2,067 | Yes | 5 | Jan | 12 | 848 | 54 | | \$35 |
| Miami Valley Hospital | Dayton O | NP Assn | 371 | 83 | 26 | 41 | 1,062 | No | 1 | Jan | 12 | 217 | 47 | | \$75 |
| State University Hospital and Crippled Children's Hospital | Oklahoma City | State | 510 | 62 | 32 | 6 | 523 | Yes | 1 | Jan | 12 | 208 | 53 | | \$75 |
| Hospital of the Univ of Pennsylvania | Philadelphia | State | 598 | 36 | 24 | 40 | 1,095 | Yes | 1 | Jan | 12 | 216 | 67 | | None |
| Elizabeth Steele Magee Hospital | Pittsburgh | NP Assn | 405 | 60 | 8 | 32 | 2,933 | Yes | 3 | Jan | 12 | 81 | 39 | | \$41.63 |
| John Gaston Hospital | Memphis Tenn | City | 400 | 98 | | | 2,040 | Yes | 1 | July | 12 | 221 | 19 | | \$55 |
| Baylor University Hospital | Dallas Tex | Church | 350 | 20 | 20 | 60 | 1,659 | Yes | 1 | April | 12 | 95 | 30 | | \$125 |
| Medical College of Va., Hosp Division | Richmond | NP Assn | 442 | 7 | 81 | 12 | 1,632 | Yes | 1 | Feb | 12 | 241 | 33 | | \$50 |

OBSTETRICS GYNECOLOGY

(Also see Obstetrics and Gynecology)

| | | | | | | | | | | | | | | | |
|---|-----------------|---------|-------|-----|----|-------|-------|-----|---|------------|----|-----|----|--|---------|
| Hillman Hospital | Birmingham Ala | County | 474 | 100 | | | 3,231 | Yes | 2 | Jan | 12 | 241 | 28 | | \$30 |
| White Memorial Hospital | Los Angeles | Church | 120 | | 25 | 75 | | Yes | 2 | April | 36 | 46 | 32 | | \$65 |
| Alameda County Hospital | Oakland Calif | County | 372 | 100 | | | 2,349 | No | 3 | Dec. | 12 | 832 | 40 | | \$40 |
| San Francisco Hospital | San Francisco | City | 1,327 | 60 | | | 2,566 | No | 3 | Nov | 12 | 555 | 53 | | \$50 |
| Stanford University Hospitals | San Francisco | NP Assn | 224 | 6 | 39 | 55 | 1,369 | Yes | 3 | Jan | 12 | 118 | 63 | | \$23.75 |
| University of California Hospital | San Francisco | State | 224 | 6 | 32 | 1,133 | | Yes | 1 | Feb | 12 | 146 | 73 | | \$50 |
| Santa Clara County Hospital | San Jose Calif | City | 493 | 98 | 2 | | | Yes | 3 | Jan | 12 | 210 | 39 | | |
| New Haven Hospital | New Haven, Conn | NP Assn | 511 | 37 | 37 | 26 | 1,445 | Yes | 1 | Jan & July | 12 | 252 | 57 | | |
| Columbia Hospital for Women and Lying in Asylum | Washington D C | NP Assn | 210 | | 60 | 40 | 3,472 | Yes | 6 | May & Nov | 12 | 23 | 21 | | None |
| Freedmen's Hospital (col.) | Washington D C | Fed | 576 | | 14 | 1,453 | | Yes | 1 | June | 12 | 150 | 40 | | \$31.63 |

OBSTETRICS GYNECOLOGY—Continued

| | Control | Capacity | Classification of Patients | | | Patients Treated Under Speciality | Outpatient Service | Number of Residencies | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month |
|--|-----------------|----------|----------------------------|----------|----------|-----------------------------------|--------------------|-----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|
| | | | Free | Part Pay | Full Pay | | | | | | | | |
| Gallinger Municipal Hospital | Washington D C | City | 1 220 | 100 | | 5 029 | No | 2 | Jan | 12 | 497 | 34 | \$30 |
| Grady Hospital | Atlanta Ga | City | 325 | 100 | | 3 885 | Yes | 1 | Jan | 12 | 264 | 20 | \$30 |
| Grady Hospital Emory University Division (colored unit) | Atlanta Ga | City | 275 | 100 | | 2 426 | Yes | 2 | Jan | 12 | 204 | 20 | \$30 |
| Chicago Lying In Hospital and Disp | Chicago | NPAsso | 322 | 32 | 42 26 | 6 467 | Yes | 6 | Varies | 36 | 50 | 69 | \$33.33 |
| Presbyterian Hospital | Chicago | Church | 453 | 24 | 47 29 | 1 692 | Yes | 1 | Varies | 12 | 190 | 57 | None |
| St. Luke's Hospital | Chicago | NPAsso | 659 | 4 | 20 76 | 1 622 | Yes | 2 | Jan | 12 | 123 | 40 | None |
| University of Chicago Clinics (see Chicago Lying In Hospital and Disp) | Chicago | | | | | | | | | | | | |
| University Hospitals | Iowa City | State | 954 | 87 | 8 5 | | Yes | 5 | July | 12 | 825 | 57 | \$30.53 |
| University of Kansas Hospitals | Kansas City Kan | State | 250 | 15 | 37 48 | 960 | Yes | 2 | Oct | 36 | 216 | 84 | \$61 |
| Charity Hospital | New Orleans | NPAsso | 1 913 | 100 | | 17 974 | Yes | 2 | May & June | 12 | 1 347 | 40 | \$25 |
| Touro Infirmary | New Orleans | NPAsso | 363 | 81 | 38 31 | 2 129 | Yes | 2 | Jan to March | 12 | 142 | 46 | \$25 |
| Mercy Hospital | Baltimore | Church | 300 | 63 | 11 36 | 871 | No | 1 | Jan | 12 | 80 | 33 | \$23 |
| St. Joseph's Hospital | Baltimore | Church | 235 | 41 | 12 47 | 1 019 | Yes | 2 | Jan | 12 | 70 | 50 | |
| University Hospital | Ann Arbor Mich | State | 1 235 | 79 | 21 | 2 663 | Yes | 2 | Jan | 12 | 470 | 57 | \$25 |
| City of Detroit Receiving Hospital | Detroit | City | 650 | 100 | | 1 450 | Yes | 4 | Dec. | 48 | 577 | 28 | \$33.33 |
| Grace Hospital | Detroit | NPAsso | 638 | 31 | 42 27 | 2 232 | Yes | 1 | Feb | 12 | 130 | 15 | \$30 |
| Harper Hospital | Detroit | NPAsso | 725 | 10 | 90 | 1 186 | Yes | 2 | Jan | 12 | 108 | 22 | \$15 |
| Herman Kiefer Hospital | Detroit | City | 1 400 | 98 | 2 | 3 613 | No | 2 | Jan | 48 | 151 | 23 | \$25 |
| Women's Hospital | Detroit | NPAsso | 320 | 6 | 12 82 | 4 653 | Yes | 9 | Feb | 12 | 89 | 27 | \$25 |
| Minneapolis General Hospital | Minneapolis | City | 637 | 95 | 5 | 4 380 | Yes | 2 | Varies | 36 | 831 | 39 | \$25 |
| Ancker Hospital | St. Paul | CyCo | 900 | 100 | | 1 070 | Yes | 1 | March | 36 | 516 | 65 | |
| Jewish Hospital | St. Louis | NPAsso | 290 | 29 | 52 19 | 1 387 | No | 1 | Dec | 12 | 66 | 31 | \$30 |
| St. Louis City Hospital | St. Louis | City | 800 | 100 | | 3 406 | Yes | 3 | March | 12 | 764 | 43 | \$75 |
| St. Louis Maternity Hospital | St. Louis | NPAsso | 198 | 19 | 64 17 | 3 403 | Yes | 11 | July | 12 | 23 | 82 | None |
| St. Luke's Hospital | St. Louis | Church | 210 | 14 | 31 65 | 1 036 | Yes | 1 | Dec | 12 | 42 | 25 | \$30 |
| St. Mary's Group of Hospitals | St. Louis | Chorch | 561 | 36 | 31 83 | 1 634 | Yes | 6 | March | 36 | 164 | 44 | \$25 |
| Kings County Hospital | Brooklyn | City | 3 160 | 100 | | 7 464 | Yes | 4 | June & Nov | 12 | 939 | 19 | None |
| Long Island College Hospital | Brooklyn | NPAsso | 473 | 18 | 84 48 | 2 137 | Yes | 3 | Jan | 12 | 126 | 34 | \$22.50 |
| Bellevue Hospital | New York City | City | 2 333 | 100 | | 6 616 | Yes | 7 | Jan & July | 36 | 1 344 | 38 | \$33.33 |
| Lying In Hospital (Unit of New York Hospital) | New York City | NPAsso | 324 | 8 | 73 19 | 4 313 | Yes | 10 | Jan | 12 | 8 | 30 | None |
| Metropolitan Hospital | New York City | City | 1 425 | 100 | | 2 064 | Yes | 2 | Feb | 12 | 214 | 19 | |
| Sloane Hospital for Women | New York City | NPAsso | 322 | 33 | 42 25 | 6 450 | Yes | 6 | Varies | 12 | 7 | 33 | \$30 |
| Woman's Hospital | New York City | NPAsso | 300 | 7 | 70 23 | 3 507 | Yes | 9 | Varies | 24 | 31 | 47 | None |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Cy | 646 | 49 | 39 12 | 3 285 | Yes | 4 | Jan | 12 | 832 | 66 | \$11.57 |
| Duke Hospital | Durham N C | NPAsso | 458 | 66 | 24 10 | 1 748 | Yes | 7 | Jan | 36 | 195 | 57 | \$11.07 |
| Univ. of Oregon Med School Hosps | Portland | Co-St | 405 | 93 | 7 | 1 699 | Yes | 3 | Jan | 12 | 409 | 65 | \$30 |
| Kensington Hospital for Women | Philadelphia | NPAsso | 101 | 23 | 14 53 | 2 655 | Yes | 2 | July | 24 | 10 | 29 | \$25 |
| Pennsylvania Hospital | Philadelphia | NPAsso | 569 | 43 | 32 25 | 3 435 | Yes | 2 | Varies | 12 | 191 | 50 | None |
| Philadelphia General Hospital | Philadelphia | City | 2 400 | 100 | | 8 544 | Yes | 1 | July | 12 | 1 603 | 83 | \$100 |
| St. Francis Hospital | Pittsburgh | Chorch | 587 | 29 | 13 58 | 532 | Yes | 1 | Nov | 12 | 122 | 82 | \$30 |
| Nashville General Hospital | Nashville Tenn | City | 505 | 84 | 16 | 1 636 | Yes | 2 | Dec | 12 | 157 | 35 | \$75 |
| Vanderbilt | Nashville Tenn | NPAsso | 210 | 34 | 34 32 | 751 | No | 3 | March | 12 | 189 | 61 | \$30.40 |
| John Sealy | Galveston Tex | City | 374 | 70 | 5 25 | 1 003 | Yes | 1 | Jan. | 12 | 209 | 57 | None |
| University | University | State | 311 | 24 | 46 30 | 897 | Yes | 2 | Dec. | 12 | 113 | 34 | None |
| State of W | Madison | State | 652 | 83 | 7 5 | | Yes | 2 | March | 36 | 257 | 70 | \$25 |
| Millwaukee County General Hospital | Wauwatosa Wis | County | 1 125 | 100 | | 2 700 | Yes | 2 | May | 12 | 404 | 31 | \$30 |

OPHTHALMOLOGY
(Also see Ophthalmology Otolaryngology)

| | | | | | | | | | | | | | |
|---|-----------------|--------|-------|-----|-------|-------|-----|---|--------------|----|-------|----|---------|
| Los Angeles County Hospital | Los Angeles | Conoty | 3 410 | 100 | | 497 | Yes | 2 | Varies | 24 | 2 551 | 59 | \$10 |
| White Mer | Los Angeles | Chorch | 120 | | 25 75 | | Yes | 1 | April | 12 | 46 | 32 | \$25 |
| Stanford | San Francisco | NPAsso | 324 | 6 | 39 55 | 498 | Yes | 2 | Jan | 12 | 118 | 3 | \$23.75 |
| University | San Francisco | State | 293 | 68 | 32 | 185 | Yes | 1 | Feb | 12 | 146 | 73 | \$30 |
| Colorado | Denver | State | 178 | 90 | 10 | 117 | Yes | 1 | Jan | 12 | 175 | 61 | None |
| Episcopal | Washington D C | Church | 100 | 21 | 23 51 | 9 201 | Yes | 5 | Varies | 10 | 5 | 39 | None |
| Illinois Eye and Ear Infirmary | Chicago | State | 200 | 100 | | | Yes | 8 | Sept | 12 | 3 | 38 | None |
| Michael Rec | Chicago | NPAsso | 629 | 45 | 29 23 | 508 | Yes | 1 | Jan & July | 12 | 279 | 51 | None |
| Peasavant | Chicago | NPAsso | 165 | 6 | 1 04 | 177 | Yes | 1 | Jan & July | 12 | 45 | 00 | None |
| Presbyterian | Chicago | Church | 453 | 24 | 47 29 | 1 692 | Yes | 2 | Varies | 12 | 160 | 57 | None |
| Research and | Chicago | State | 382 | 100 | | 260 | Yes | 1 | Varies | 12 | 197 | 83 | \$30 |
| University of | Chicago | NPAsso | 293 | 26 | 6 | | Yes | 1 | Jan | 12 | 184 | 72 | None |
| Indianaopolis | Indianapolis | City | 577 | 92 | 4 4 | 202 | Yes | 1 | April | 12 | 414 | 41 | \$20.63 |
| University Hospitals | Iowa City | State | 954 | 87 | 8 5 | | Yes | 3 | July | 12 | 325 | 57 | \$20.63 |
| Eye Ear Nose and Throat Hospital | New Orleans | NPAsso | 70 | 50 | 25 25 | 3 374 | Yes | 2 | Varies | 12 | | | None |
| Johns Hopkins Hospital | Baltimore | NPAsso | 902 | 63 | 21 26 | 1 074 | Yes | 4 | May | 12 | 505 | 80 | \$30 |
| Massachusetts Eye and Ear Infirmary | Boston | NPAsso | 231 | 78 | 22 | 2 181 | Yes | 7 | Varies | 21 | 21 | 45 | None |
| University Hospital | Ann Arbor Mich | State | 1 235 | 79 | 21 | 1 062 | Yes | 3 | Jan | 12 | 470 | 57 | \$25 |
| Bar | St. Louis | Chorch | 300 | 16 | 4 80 | | Yes | 5 | Dec | 12 | 170 | 57 | None |
| St | St. Louis | City | 806 | 100 | | 186 | Yes | 1 | March | 12 | 764 | 43 | \$25 |
| St | St. Louis | Church | 541 | 36 | 31 33 | 99 | Yes | 1 | March | 36 | 164 | 44 | None |
| Jer | Jersey City N J | City | 1 200 | 94 | 6 | 572 | Yes | 1 | March & Oct | 12 | 158 | 10 | None |
| Kin | Brooklyn | City | 3 160 | 100 | | 293 | Yes | 1 | June & Nov | 12 | 939 | 19 | |
| Buf | Buffalo | CyCo | 1 003 | | | 183 | Yes | 2 | Nov | 12 | 204 | 21 | |
| Bell | New York City | City | 2 333 | 100 | | 663 | Yes | 5 | Jan & July | 36 | 1 334 | 33 | None |
| Herman Knapp Memorial Eye Hosp | New York City | Corp | 60 | 12 | 76 12 | 815 | Yes | 2 | Varies | 18 | | | None |
| Mount Sinai Hospital | New York City | NPAsso | 760 | 57 | 16 27 | | Yes | 1 | Varies | 12 | 409 | 52 | None |
| New York Eye and Ear Infirmary | New York City | NPAsso | 1 010 | 16 | 74 | 3 246 | Yes | 7 | March & Sept | 21 | 2 | 18 | None |
| Presbyterian Hospital | New York City | NPAsso | 955 | 33 | 42 25 | 1 647 | Yes | 6 | Varies | 12 | 231 | 45 | \$125 |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Cy | 646 | 49 | 39 12 | 223 | Yes | 2 | Jan | 12 | 238 | 65 | \$11.57 |
| Cincinnati General Hospital | Cincinnati | City | 825 | 80 | 13 7 | 233 | Yes | 2 | Feb | 24 | 708 | 42 | \$17 |
| City Hospital | Cleveland | City | 1 570 | 100 | | 202 | Yes | 1 | Jan | 12 | 623 | 34 | \$30 |
| University Hospitals | Cleveland | NPAsso | 972 | 37 | 14 49 | 422 | Yes | 2 | Jan | 12 | 243 | 44 | \$30 |
| Univ. of Oregon Med School Hosp | Portland | Co St | 405 | 93 | 7 | 217 | Yes | 1 | Jan | 12 | 409 | 65 | None |
| Graduate Hosp of the Univ of Pa | Philadelphia | NPAsso | 473 | 18 | 84 48 | 2 137 | Yes | 3 | Jan | 12 | 126 | 34 | None |
| Wills Hospital | Philadelphia | NPAsso | 200 | 73 | 8 19 | 3 590 | Yes | 8 | Varies | 21 | | | None |

OPHTHALMOLOGY OTOLARYNGOLOGY
(Also see Ophthalmology and Otolaryngology)

| | | | | | | | | | | | | | |
|-----------------------------------|------------------|--------|-------|-----|-------|-------|-----|---|-------|----|-----|----|------|
| Hillman Hospital | Birmingham Ala. | County | 474 | 100 | | 741 | Yes | 1 | Jan | 12 | 211 | 46 | \$30 |
| San Diego County General Hospital | San Diego Calif. | County | 653 | 109 | | 1 471 | Yes | 1 | April | 12 | 276 | 41 | \$75 |
| Hospital for Children | San Francisco | NPAsso | 270 | 10 | 25 63 | 250 | Yes | 1 | Feb | 12 | 19 | 23 | \$70 |
| Gallinger Municipal Hospital | Washington D C | City | 1 220 | 100 | | 44 | No | 1 | Jan | 12 | 477 | 24 | \$30 |
| Grady Hospital | Atlanta Ga | City | 325 | 100 | | 1 613 | Yes | 2 | Jan | 12 | 264 | 20 | \$30 |

| OPHTHALMOLOGY OTOLARYNGOLOGY—Continued | | | | | | | | | | | | | | | |
|--|--------------------|----------|----------------------------|----------|----------|----------------------------------|--------------------|----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|----------|--|
| | Control | Capacity | Classification of Patients | | | Patients Treated Under Specialty | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month | | |
| | | | Free | Part Pay | Full Pay | | | | | | | | | | |
| Grady Hospital Emory University Division (colored unit) | Atlanta Ga | City | 275 | 100 | | 671 | Yes | 2 | Jan | 12 | 264 | 20 | \$15 | | |
| Cook County Hospital | Chicago | County | 3 800 | 100 | | 7 457 | Yes | 6 | June & Dec. | 12 | 1 176 | 21 | None | | |
| Indiana University Hospitals | Indianapolis | State | 604 | 90 | 3 | 1 661 | Yes | 2 | Feb | 12 | 163 | 45 | \$33.33 | | |
| Charity Hospital | New Orleans. | State | 1 013 | 100 | | 6 252 | Yes | 3 | May & June | 12 | 1 347 | 40 | \$25 | | |
| Touro Infirmary | New Orleans | NPAasn | 365 | 31 | 33 | 1 652 | Yes | 1 | Jan to March | 12 | 142 | 46 | \$25 | | |
| Baltimore Eye Ear and Throat Charity Hospital | Baltimore | NPAasn | 60 | 51 | | 2 559 | No | 3 | Jan | 12 | 1 | 33 | None | | |
| University Hospital | Baltimore | State | 450 | 50 | 6 | 846 | Yes | 1 | Jan | 12 | 183 | 44 | None | | |
| Boston City Hospital | Boston | City | 1 732 | 90 | 9 | 1 | Yes | 1 | Jan | 21 | 809 | 29 | | | |
| City of Detroit Receiving Hospital | Detroit | City | 650 | 100 | | 1 071 | Yes | 1 | Dec. | 12 | 577 | 28 | \$83.33 | | |
| Grace Hospital | Detroit | NPAasn | 538 | 31 | 42 | 27 | 1 257 | Yes | 1 | Feb | 12 | 130 | 18 | \$50 | |
| Harper Hospital | Detroit | NPAasn | 725 | 10 | | 2 832 | Yes | 2 | Jan | 12 | 103 | 22 | \$25 | | |
| Eloise Hospital (Dr William J Seymour Hospital) | Eloise Mich | County | 1,583 | 100 | | 6 657 | Yes | 2 | March | 12 | 551 | 44 | \$37 | | |
| Minneapolis General Hospital | Minneapolis | City | 687 | 90 | 5 | 1,376 | Yes | 2 | Varies | 86 | 331 | 39 | \$25 | | |
| Ancker Hospital | St Paul | City | 900 | 100 | | 1 409 | Yes | 2 | March | 12 | 616 | 65 | \$50 | | |
| Jewish Hospital | St Louis | NPAasn | 290 | 29 | 52 | 19 | 997 | Yes | 1 | Dec. | 12 | 56 | 31 | \$60 | |
| Newark City Hospital | Newark, N J | City | 700 | 100 | | | | Yes | 1 | July | 12 | 301 | 29 | | |
| Newark Eye and Ear Infirmary | Newark N J | NPAasn | 69 | 33 | 2 | 65 | 2,563 | Yes | 3 | Varies | 12 | 16 | 41 | None | |
| Long Island College Hospital | Brooklyn | NPAasn | 478 | 16 | 34 | 48 | 889 | Yes | 1 | Jan | 12 | 126 | 84 | \$45 | |
| Harlem Eye and Ear Hospital | New York City | NPAasn | 60 | 31 | 37 | 32 | 1 295 | Yes | 3 | Varies | 12 | * | | None | |
| Lenox Hill Hospital | New York City | NPAasn | 595 | 55 | | 45 | 1 648 | Yes | 1 | Varies | 12 | 127 | 38 | None | |
| Manhattan Eye Ear and Throat Hospital | New York City | NPAasn | 212 | | | 15 | 16,603 | Yes | 16 | Varies | 24 | 8 | 29 | None | |
| Metropolitan Hospital | New York City | City | 1 425 | 100 | | | 1 235 | Yes | 1 | Feb | 12 | 214 | 19 | \$100 | |
| N Y Polyclinic Med School and Hospital | New York City | NPAasn | 846 | 17 | 70 | 13 | 1,903 | Yes | 4 | Varies | 24 | 43 | 23 | None | |
| N Y Post-Grad Med School and Hospital | New York City | NPAasn | 411 | 13 | 3 | 84 | 2,923 | Yes | 6 | Varies | 36 | 51 | 26 | | |
| Grasslands Hospital | Valhalla N Y | County | 932 | 87 | 13 | | 942 | Yes | 1 | April & Oct | 12 | 295 | 64 | \$120 | |
| Duke Hospital | Durham N O | NPAasn | 453 | 66 | 24 | 10 | 751 | Yes | 2 | Jan | 24 | 195 | 57 | \$41.67 | |
| State University Hospital and Crippled Children's Hospital | Oklahoma City | State | 510 | 62 | 32 | 6 | 654 | Yes | 1 | Jan | 12 | 208 | 53 | \$50 | |
| Memphis Eye Ear Nose and Throat Hospital | Memphis Tenn | NPAasn | 75 | 43 | 18 | 59 | 1 704 | Yes | 3 | March & Oct. | 18 | 1 | 25 | None | |
| Medical College of Va Hospital Division | Richmond | NPAasn | 442 | 7 | 81 | 12 | 1 181 | Yes | 2 | Feb | 12 | 241 | 33 | \$25 | |
| University of Virginia Hospital | University | State | 311 | 24 | 46 | 30 | 960 | Yes | 2 | Dec | 12 | 113 | 84 | None | |
| State of Wisconsin General Hospital | Madison | State | 632 | 83 | 7 | 5 | | Yes | 2 | March | 36 | 237 | 70 | \$25 | |
| Milwaukee County General Hospital | Wauwatosa Wis | County | 1 125 | 100 | | | 1 557 | Yes | 1 | May | 12 | 404 | 31 | \$50 | |
| ORTHOPEDICS | | | | | | | | | | | | | | | |
| Hillman Hospital | Birmingham Ala | County | 474 | 100 | | | 282 | Yes | 1 | Jan | 12 | 241 | 26 | \$141.75 | |
| Children's Hospital | Los Angeles | NPAasn | 103 | 59 | 51 | 10 | 364 | Yes | 1 | March | 12 | 141 | 27 | \$90 | |
| Los Angeles County Hospital | Los Angeles | County | 3 410 | 100 | | | 4 682 | Yes | 3 | Varies | 24 | 2,551 | 69 | \$10 | |
| Orthopaedic Hospital | Los Angeles | NPAasn | 80 | 69 | 20 | 11 | 1,904 | Yes | 2 | Varies | 24 | 1 | 33 | \$50 | |
| San Francisco Hospital | San Francisco | City | 1 487 | 100 | | | | No | 3 | Nov | 12 | 553 | 63 | \$50 | |
| Shriners Hosp for Crippled Children | San Francisco | Frat | 60 | 100 | | | 334 | Yes | 2 | Jan | 12 | * | | \$25 | |
| University of California Hospital | San Francisco | State | 223 | 63 | | 32 | 243 | Yes | 1 | Feb | 12 | 146 | 73 | \$25 | |
| New Haven Hospital | New Haven Conn | NPAasn | 511 | 37 | 37 | 26 | | Yes | 1 | Jan & July | 12 | 232 | 57 | | |
| Cook County Hospital | Chicago | County | 3,300 | 100 | | | 894 | No | 2 | June & Dec | 12 | 1 170 | 21 | None | |
| Research and Educational Hospital | Chicago | State | 382 | 100 | | | 404 | Yes | 3 | Varies | 36 | 197 | 65 | \$50 | |
| University of Chicago Clinics | Chicago | NPAasn | 293 | 26 | 69 | 5 | | Yes | 3 | Jan | 12 | 184 | 72 | None | |
| Indiana University Hospitals | Indianapolis | State | 504 | 10 | 8 | 7 | 599 | Yes | 2 | Feb | 12 | 153 | 45 | \$33.33 | |
| University Hospitals | Iowa City | State | 904 | 87 | 8 | 6 | | Yes | 9 | July | 12 | 325 | 57 | \$20.83 | |
| Charity Hospital | New Orleans | State | 1 013 | 100 | | | 1,288 | Yes | 2 | May & June | 12 | 1,347 | 40 | \$25 | |
| Shriners Hosp for Crippled Children | Shreveport La | Frat | 60 | 100 | | | 260 | Yes | 1 | Varies | 24 | * | | \$125 | |
| James Lawrence Kernan Hospital | Baltimore | NPAasn | 80 | 93 | 4 | 3 | 103 | Yes | 1 | Jan | 12 | 2 | 50 | \$90 | |
| Johns Hopkins Hospital | Baltimore | NPAasn | 902 | 63 | 21 | 26 | 423 | Yes | 3 | May | 12 | 505 | 80 | \$50 | |
| Boston City Hospital | Boston | City | 1 732 | 90 | 9 | 1 | 1,530 | Yes | 1 | Jan | 12 | 809 | 29 | \$33.33 | |
| Children's Hospital | Boston | NPAasn | 283 | 2 | 58 | 40 | 467 | Yes | 1 | Varies | 12 | 73 | 49 | \$50 | |
| Massachusetts General Hospital | Boston | NPAasn | 424 | 47 | 84 | 19 | 623 | Yes | 1 | Varies | 12 | 235 | 57 | \$41.67 | |
| Shriners Hosp for Crippled Children | Springfield Mass | Frat | 60 | 100 | | | 379 | Yes | 1 | July | 12 | 1 | 50 | \$25 | |
| City of Detroit Receiving Hospital | Detroit | City | 600 | 100 | | | 1,539 | Yes | 2 | Dec. | 24 | 577 | 28 | \$33.33 | |
| Blodgett Memorial Hospital | Grand Rapids Mich. | NPAasn | 150 | 20 | 65 | 25 | 210 | Yes | 1 | Dec | 12 | 40 | 36 | \$50 | |
| Gillette State Hospital for Crippled Children | St Paul | State | 230 | 100 | | | 759 | Yes | 1 | March | 12 | 14 | 100 | \$100 | |
| State Hospital for Crippled Children (Unit of University Hospitals) | Columbia Mo | State | 25 | 100 | | | 438 | Yes | 1 | Varies | 12 | 6 | 18 | None | |
| Shriners Hosp for Crippled Children | St Louis | Frat | 100 | 100 | | | 503 | Yes | 1 | Jan | 12 | * | | None | |
| Jersey City Hospital | Jersey City N J | City | 1,200 | 94 | | 6 | 1,651 | Yes | 2 | March & Oct. | 12 | 168 | 16 | None | |
| New Jersey Orthopaedic Hospital and Dispensary | Orange | NPAasn | 86 | 34 | 29 | 37 | 405 | Yes | 2 | Varies | 18 | * | | \$30 | |
| Kings County Hospital | Brooklyn. | City | 3 160 | 100 | | | 1,326 | Yes | 2 | June & Nov | 24 | 939 | 19 | None | |
| Long Island College Hospital | Brooklyn | NPAasn | 473 | 18 | 54 | 48 | 366 | Yes | 2 | Jan | 12 | 126 | 34 | \$22.50 | |
| Bellevue Hospital | New York City | City | 2,333 | 100 | | | 137 | Yes | 3 | Jan & July | 12 | 1,844 | 88 | None | |
| Hospital for Joint Diseases | New York City | NPAasn | 355 | 20 | 53 | 47 | 2,719 | Yes | 9 | Jan | 24 | 65 | 41 | \$25 | |
| Metropolitan Hospital | New York City | City | 1 425 | 100 | | | 531 | Yes | 1 | Feb | 12 | 214 | 19 | \$75 | |
| N Y Orthopaedic Disp and Hospital | New York City | NPAasn | 302 | | | | 2 136 | Yes | 6 | Varies | 24 | 1 | 25 | \$50 | |
| N Y Post-Grad Med School and Hospital | New York City | NPAasn | 411 | 13 | 8 | 84 | 886 | Yes | 1 | Varies | 12 | 61 | 20 | \$50 | |
| New York Society for the Relief of the Ruptured and Crippled | New York City | NPAasn | 254 | 11 | 69 | | 1,848 | Yes | 8 | Jan & July | 24 | 17 | 50 | \$20 | |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y. | NP Cy | 645 | 49 | 39 | 12 | 381 | Yes | 1 | Jan | 12 | 382 | 66 | \$66.66 | |
| Sea View Hospital | Staten Island N Y. | City | 1 788 | 99 | 1 | | 239 | Yes | 2 | May & Nov | 12 | 244 | 49 | \$100 | |
| New York State Reconstruction Home | West Haverstraw | State | 810 | 98 | | 2 | 572 | No | 3 | Jan & July | 18 | * | | \$100 | |
| Duke Hospital | Durham N C | NPAasn | 456 | 66 | 24 | 10 | 554 | Yes | 2 | Jan | 36 | 190 | 57 | \$41.67 | |
| Cincinnati General Hospital | Cincinnati | City | 920 | 80 | 13 | 7 | 340 | Yes | 1 | Feb | 12 | 708 | 42 | | |
| Mount Sinai Hospital | Cleveland | NPAasn | 270 | 31 | 12 | 54 | | No | 1 | Dec. | 12 | 57 | 26 | \$60 | |
| University Hospitals | Cleveland | NPAasn | 972 | 87 | 14 | 49 | 603 | Yes | 1 | Jan | 12 | 348 | 54 | \$35 | |
| State University Hospital and Crippled Children's Hospital | Oklahoma City-- | State | 510 | 62 | 32 | 6 | 996 | Yes | 4 | Jan | 12 | 208 | 53 | Varies | |
| Shriners Hosp for Crippled Children | Portland Ore | Frat | 100 | 100 | | | 290 | Yes | 1 | March | 12 | * | | \$25 | |
| State Hospital for Crippled Children | Elizabethtown Pa | State | 125 | 100 | | | 161 | Yes | 2 | July | 12 | 1 | 33 | \$100 | |
| Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases | Philadelphia | NPAasn | 140 | 37 | 37 | 26 | 274 | Yes | 1 | Varies | 12 | 1 | 25 | \$40 | |
| Willis O Campbell Clinic | Memphis Tenn. | Frat | 60 | | | | 817 | Yes | 3 | Varies | 24 | * | | \$50 | |
| Texas Scottish Rite Hospital for Crippled Children | Dallas | State | 40 | 100 | | | 604 | Yes | 1 | Jan | 12 | * | | \$100 | |
| University of Virginia Hospital | University | State | 311 | 24 | 46 | 30 | 400 | Yes | 1 | Dec | 12 | 113 | 84 | \$30 | |
| State of Wisconsin General Hospital | Madison | State | 632 | 83 | 7 | 5 | | Yes | 3 | March | 36 | 237 | 70 | \$25 | |

| | | Control | Capacity | Classification of Patients | | | Patients Treated Under Speciality | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Percentage | Beginning Salary per Month | | |
|---|-------------------|---------|----------|----------------------------|----------|----------|-----------------------------------|--------------------|----------------------|---------------------|---------------------------------|---------------------|------------|----------------------------|--|--|
| | | | | Free | Part Pay | Full Pay | | | | | | | | | | |
| OTOLARYNGOLOGY (Also see Ophthalmology Otolaryngology) | | | | | | | | | | | | | | | | |
| Children's Hospital | Los Angeles | NPAsenn | 193 | 69 | 31 | 10 | 1 123 | Yes | 1 | March | 12 | 141 | 27 | \$90 | | |
| Los Angeles County Hospital | Los Angeles | County | 3 410 | 100 | | | 1 237 | Yes | 3 | Varies | 24 | 2 551 | 59 | \$10 | | |
| White Memorial Hospital | Los Angeles | Church | 120 | | 25 | 75 | | Yes | 1 | April | 24 | 46 | 32 | \$55 | | |
| San Francisco Hospital | San Francisco | CyCo | 1 487 | 100 | | | 911 | No | 2 | Nov | 12 | 555 | 53 | \$30 | | |
| Stanford University Hospitals | San Francisco | NPAsenn | 324 | 6 | 39 | 55 | 1 476 | Yes | 2 | Jan | 12 | 118 | 53 | \$23.75 | | |
| University of California Hospital | San Francisco | State | 293 | 68 | | 32 | 724 | Yes | 1 | Feb | 12 | 146 | 73 | \$40 | | |
| New Haven Hospital | New Haven Conn | NPAsenn | 511 | 37 | 37 | 26 | 1 104 | Yes | 2 | Jan & July | 12 | 242 | 57 | \$50 | | |
| Episcopal Eye Ear and Throat Hosp | Washington D C | Church | 100 | 21 | 23 | 51 | 7 112 | Yes | 3 | Varies | 12 | 5 | 38 | None | | |
| Illinois Eye and Ear Infirmary | Chicago | State | 200 | 100 | | | | Yes | 7 | Sept | 12 | 3 | 38 | None | | |
| Passavant Memorial Hospital | Chicago | NPAsenn | 165 | 5 | 1 | 94 | 270 | Yes | 1 | Jan & July | 12 | 45 | 00 | None | | |
| Presbyterian Hospital | Chicago | Church | 453 | 24 | 47 | 29 | 1 869 | Yes | 2 | Varies | 12 | 160 | 57 | None | | |
| Research and Educational Hospital | Chicago | State | 332 | 100 | | | 720 | Yes | 1 | Varies | 12 | 107 | 88 | \$40 | | |
| University of Chicago Clinics | Chicago | NPAsenn | 293 | 28 | 69 | 5 | | Yes | 1 | Jan | 12 | 184 | 72 | None | | |
| Indianapolis City Hospital | Indianapolis | City | 577 | 92 | 4 | 4 | 1 864 | Yes | 1 | April | 12 | 414 | 41 | \$20.83 | | |
| University Hospitals | Iowa City | State | 954 | 87 | 8 | 5 | | Yes | 13 | July | 12 | 325 | 57 | \$20.83 | | |
| Eye Ear Nose and Throat Hospital | New Orleans | NPAsenn | 70 | 60 | 25 | 25 | 5 336 | Yes | 7 | Varies | 12 | * | | None | | |
| Johns Hopkins Hospital | Baltimore | NPAsenn | 902 | 53 | 21 | 26 | 1 115 | Yes | 2 | May | 12 | 503 | 80 | \$40 | | |
| Beth Israel Hospital | Boston | NPAsenn | 215 | 18 | 32 | 50 | 631 | No | 1 | Varies | 12 | 102 | 51 | \$40 | | |
| Massachusetts Eye and Ear Infirmary | Boston | NPAsenn | 231 | 78 | | 22 | 3 454 | Yes | 7 | Varies | 21 | 21 | 43 | None | | |
| Memorial Hospital | Worcester Mass | NPAsenn | 215 | 17 | 7 | 76 | 1 884 | No | 1 | Jan | 12 | 62 | 38 | \$11.67 | | |
| University Hospital | Ann Arbor Mich | State | 1 255 | 79 | | 21 | 2 607 | Yes | 3 | Jan | 12 | 470 | 57 | \$40 | | |
| Barnes Hospital | St Louis | Church | 800 | 16 | 4 | 80 | | | 0 | Dec | 12 | 170 | 57 | None | | |
| St Louis City Hospital | St Louis | City | 806 | 100 | | | 1 710 | Yes | 1 | March | 12 | 764 | 43 | \$25 | | |
| St Mary's Group of Hospitals | St Louis | Church | 551 | 36 | 31 | 33 | 940 | Yes | 2 | March | 36 | 164 | 44 | None | | |
| Jersey City Hospital | Jersey City N J | City | 1 200 | 94 | | 6 | 3 941 | Yes | 1 | March & Oct | 12 | 158 | 16 | None | | |
| Kings County Hospital | Brooklyn | City | 3 160 | 100 | | | 3 544 | Yes | 2 | March & Nov | 12 | 639 | 19 | None | | |
| Buffalo City Hospital | Buffalo | CyCo | 1 063 | | | | 432 | Yes | 2 | Nov | 12 | 204 | 21 | \$40 | | |
| Buffalo General Hospital | Buffalo | NPAsenn | 465 | 13 | 30 | 51 | 1 183 | Yes | 1 | Dec | 12 | 194 | 36 | \$40 | | |
| Bellevue Hospital | New York City | City | 2 333 | 100 | | | 3 277 | Yes | 6 | Jan & July | 24 | 1 844 | 33 | \$40 | | |
| Mount Sinai Hospital | New York City | NPAsenn | 750 | 57 | 16 | 27 | | Yes | 2 | Varies | 12 | 400 | 52 | \$40 | | |
| New York Eye and Ear Infirmary | New York City | NPAsenn | 170 | 10 | 16 | 74 | 2 309 | Yes | 8 | March & Sept | 21 | 2 | 18 | None | | |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Cy | 645 | 49 | 39 | 12 | 1 473 | Yes | 2 | Jan | 12 | 392 | 66 | \$11.67 | | |
| Sea View Hospital | Staten Island N Y | City | 1 783 | 89 | | 1 | 2 186 | Yes | 2 | May & Nov | 12 | 244 | 49 | \$100 | | |
| Cincinnati General Hospital | Cincinnati | City | 92 | 80 | 13 | 7 | 1 420 | Yes | 3 | Feb | 24 | 708 | 42 | \$40 | | |
| City Hospital | Cleveland | City | 1 670 | 100 | | | 1 013 | Yes | 1 | Jan | 18 | 623 | 33 | \$37 | | |
| St Luke's Hospital | Cleveland | Church | 392 | 23 | 2 | 75 | 1 603 | Yes | 2 | Dec | 24 | 92 | 24 | \$25 | | |
| University Hospitals | Cleveland | NPAsenn | 972 | 37 | 14 | 49 | 2 142 | Yes | 3 | Jan | 24 | 348 | 51 | \$35 | | |
| Univ of Oregon Med School Hospital | Portland | Co-St | 403 | 83 | | 7 | 1 665 | Yes | 1 | Jan | 12 | 400 | 61 | \$10 | | |
| Geo F Gelsinger Memorial Hospital | Danville Pa | NPAsenn | 198 | 25 | 31 | 44 | 446 | No | 1 | Jan | 12 | 53 | 30 | None | | |
| Graduate Hospital of the Univ of Pa | Philadelphia | NPAsenn | 475 | 38 | 9 | 55 | 2 304 | Yes | 1 | Jan | 12 | 100 | 47 | None | | |
| PATHOLOGY | | | | | | | | | | | | | | | | |
| Hillman Hospital | Birmingham Ala | County | 474 | 100 | | | | Yes | 1 | Jan | 12 | 241 | 26 | \$40 | | |
| Children's Hospital | Los Angeles | NPAsenn | 193 | 69 | 31 | 10 | | Yes | 1 | March | 12 | 141 | 27 | \$40 | | |
| Los Angeles County Hospital | Los Angeles | County | 3 410 | 100 | | | | Yes | 4 | Varies | 24 | 2 551 | 59 | \$10 | | |
| White Memorial Hospital | Los Angeles | Church | 120 | | 25 | 75 | | Yes | 2 | April | 36 | 46 | 32 | \$55 | | |
| Mount Zion | San Francisco | NPAsenn | 169 | 18 | 13 | 69 | | Yes | 1 | Feb | 12 | 82 | 43 | \$30 | | |
| San Francisco | San Francisco | CyCo | 1 487 | 100 | | | | No | 1 | Nov | 12 | 555 | 53 | \$30 | | |
| University of | San Francisco | State | 293 | 68 | | 32 | | Yes | 1 | Feb | 12 | 146 | 73 | \$40 | | |
| Denver General Hospital | Denver | CyCo | 689 | 100 | | | | No | 1 | Varies | 12 | 232 | 33 | \$40 | | |
| New Hav | New Haven Conn | NPAsenn | 511 | 37 | 37 | 26 | | Yes | 3 | Jan & July | 12 | 242 | 57 | \$50 | | |
| Gallinger | Washington D C | City | 1 220 | 100 | | | | No | 2 | Jan | 12 | 497 | 34 | \$40 | | |
| Garfield | Washington D C | NPAsenn | 311 | 1 | 25 | 74 | | Yes | 1 | Dec | 12 | 81 | 38 | \$40 | | |
| Children's Memorial Hospital | Chicago | NPAsenn | 264 | 68 | 33 | 1 | | Yes | 1 | Varies | 12 | 85 | 43 | \$40 | | |
| Cook County Hospital | Chicago | County | 3 300 | 100 | | | | No | 4 | June & Dec | 12 | 1 178 | 21 | None | | |
| Michael Reese Hospital | Chicago | NPAsenn | 636 | 48 | 29 | 23 | | Yes | 1 | Jan & July | 12 | 279 | 51 | \$110 | | |
| Presbyterian Hospital | Chicago | Church | 443 | 24 | 47 | 29 | | Yes | 2 | Varies | 12 | 160 | 57 | \$25 | | |
| Provident Hospital (col) | Chicago | NPAsenn | 155 | 18 | 6 | 70 | | Yes | 1 | Jan | 12 | 62 | 39 | \$40 | | |
| Research and Educational Hospital | Chicago | State | 332 | 100 | | | | Yes | 1 | Varies | 12 | 107 | 88 | \$40 | | |
| St Luke's Hospital | Chicago | NPAsenn | 233 | 36 | 69 | 5 | | Yes | 2 | Jan | 12 | 133 | 40 | None | | |
| University of Chicago Clinics | Chicago | NPAsenn | 270 | 15 | 38 | 47 | | Yes | 1 | Jan | 12 | 184 | 72 | \$33.33 | | |
| Evanston Hospital | Evanston Ill | State | 677 | 92 | 4 | 4 | | Yes | 1 | April | 12 | 414 | 41 | \$20.83 | | |
| Indianapolis City Hospital | Indianapolis | State | 604 | 90 | 3 | 7 | | Yes | 1 | Feb | 12 | 153 | 41 | \$33.33 | | |
| Indiana University Hospitals | Indianapolis | Church | 526 | | 25 | 75 | | Yes | 2 | Jan | 12 | 153 | 33 | \$40 | | |
| Methodist Episcopal Hospital | Indianapolis | State | 240 | 15 | 37 | 43 | | Yes | 2 | Oct | 36 | 216 | 84 | \$71 | | |
| University of Kansas Hospitals | Kansas City Kan | City | 423 | 60 | 10 | | | Yes | 2 | March | 24 | 233 | 29 | \$13.91 | | |
| Louisville City Hospital | Louisville Ky | State | 1 013 | 100 | | | | Yes | 1 | May & June | 12 | 1 347 | 40 | \$25 | | |
| Charity Hospital | New Orleans | NPAsenn | 363 | 31 | 28 | 31 | | Yes | 1 | Jan to March | 12 | 142 | 40 | \$25 | | |
| Touro Infirmary | Baltimore | City | 963 | 100 | | | | No | 2 | Jan | 12 | 440 | 41 | \$12.50 | | |
| Baltimore City Hospitals (General) | Baltimore | NPAsenn | 902 | 53 | 21 | 26 | | Yes | 3 | May | 12 | 503 | 80 | \$40 | | |
| Johns Hopkins Hospital | Baltimore | NPAsenn | 215 | 18 | 32 | 50 | | No | 2 | Varies | 12 | 102 | 51 | \$40 | | |
| Beth Israel Hospital | Boston | City | 1 732 | 69 | 9 | 1 | | Yes | 5 | Varies | Indef | 899 | 22 | None | | |
| Boston City Hospital | Boston | NPAsenn | 233 | 2 | 53 | 40 | | Yes | 1 | Varies | 12 | 73 | 49 | \$40 | | |
| Children's Hospital | Boston | NPAsenn | 424 | 47 | 34 | 19 | | Yes | 1 | Varies | 12 | 253 | 57 | \$11.67 | | |
| Massachusetts General Hospital | Boston | Church | 253 | 8 | 53 | 34 | | Yes | 1 | Jan | 12 | 144 | 60 | \$40 | | |
| New England Deaconess Hospital | Boston | NPAsenn | 247 | 41 | 23 | 27 | | Yes | 1 | Varies | 12 | 171 | 61 | \$33.33 | | |
| Peter Bent Brigham Hospital | Boston | State | 1 255 | 79 | | 21 | | Yes | 1 | Jan | 12 | 470 | 57 | \$40 | | |
| University Hospital | Ann Arbor Mich | City | 640 | 100 | | | | Yes | 1 | Dec | 12 | 577 | 23 | \$33.33 | | |
| City of Detroit Receiving Hospital | Detroit | CyCo | 900 | 100 | | | | Yes | 1 | March | 12 | 716 | 65 | \$40 | | |
| Anchor Hospital | St Paul | Church | 235 | 29 | 60 | 30 | | No | 1 | Oct | 12 | 179 | 81 | \$25 | | |
| St Joseph Hospital | Kansas City Mo | Church | 390 | 16 | 4 | 80 | | No | 1 | Dec | 12 | 170 | 57 | None | | |
| Barnes Hospital | St Louis | City | 806 | 100 | | | | Yes | 1 | March | 12 | 764 | 43 | \$25 | | |
| St Louis City Hospital | St Louis | NPAsenn | 142 | 40 | 26 | 24 | | Yes | 1 | July | 12 | 99 | 87 | \$33.33 | | |
| Mary Hitchcock Memorial Hospital | Hanover N H | NPAsenn | 414 | 18 | 24 | 58 | | No | 2 | July | 24 | 145 | 23 | \$40 | | |
| Newark Beth Israel Hospital | Newark N J | NPAsenn | 610 | 8 | 75 | 17 | | Yes | 2 | Dec | 24 | 353 | 72 | \$40 | | |
| Albany Hospital | Albany N Y | NPAsenn | | | | | | Yes | 2 | Varies | 12 | 162 | | \$40 | | |
| Imperial Hygienic Laboratory | Albany N Y | NPAsenn | 654 | 39 | 40 | 29 | | Yes | 6 | Dec | 12 | 233 | 40 | \$40 | | |
| Jewish Hospital | Brooklyn | City | 3 160 | 100 | | | | Yes | 1 | Jan & Nov | 12 | 673 | 19 | \$40 | | |
| Kings County Hospital | Brooklyn | NPAsenn | 473 | 18 | 24 | 43 | | Yes | 1 | Jan | 12 | 127 | 21 | \$40 | | |
| Long Island College Hospital | Brooklyn | Church | 224 | 65 | 6 | 29 | | No | 1 | Jan | 12 | 117 | 50 | \$25 | | |
| St John's Hospital | Brooklyn | CyCo | 1 623 | | | | | Yes | 2 | Nov | 12 | 204 | 21 | \$40 | | |
| Buffalo City Hospital | Buffalo | NPAsenn | 465 | 13 | 30 | 51 | | Yes | 1 | Dec | 12 | 194 | 36 | \$40 | | |
| Buffalo General Hospital | Buffalo | NPAsenn | 465 | 13 | 30 | 51 | | Yes | 1 | Dec | 12 | 194 | 36 | \$40 | | |
| Wilkes Filmore Hospital | Buffalo | Church | 310 | 5 | 23 | 57 | | Yes | 1 | Dec | 12 | 131 | 25 | None | | |
| Mary Immaculate Hospital | Jamaica N Y | City | 222 | 100 | | | | Yes | 2 | Varies | 12 | 299 | 25 | None | | |
| Harlem Hospital | New York City | NPAsenn | 295 | 65 | 45 | | | Yes | 1 | Varies | 12 | 127 | 34 | None | | |
| Lenox Hill Hospital | New York City | City | 25 | 100 | | | | Yes | 1 | Jan & July | 12 | 21 | 25 | None | | |
| Lincoln Hospital | New York City | City | 145 | 100 | | | | Yes | 1 | Feb | 12 | 214 | 12 | None | | |
| Strombuntan Hospital | New York City | NPAsenn | 711 | 79 | 8 | 13 | | Yes | 1 | March & Oct | 12 | 300 | 73 | \$40 | | |
| Montefiore Hosp for Chronic Diseases | New York City | NPAsenn | 711 | 79 | 8 | 13 | | Yes | 1 | March & Oct | 12 | 300 | 73 | \$40 | | |

| | | Control | Capacity | Classification of Patients | | | Patients Treated Under Listed Specialty | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month |
|--|-----------------|---------|----------|----------------------------|----------|----------|---|--------------------|----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|
| | | | | Free | Part Pay | Full Pay | | | | | | | | |
| PATHOLOGY—(Continued) | | | | | | | | | | | | | | |
| New York Hospital | New York City | NPAssn | 1 010 | 8 | 73 | 19 | | Yes | 1 | Jan | 12 | 316 | 57 | \$25 |
| N Y Post Grad Med School and Hosp | New York City | NPAssn | 411 | 13 | 3 | 84 | | Yes | 1 | Varies | 12 | 81 | 28 | |
| Presbyterian Hospital | New York City | NPAssn | 963 | 33 | 42 | 25 | | Yes | 1 | Varies | 12 | 231 | 45 | |
| St Luke's Hospital | New York City | Church | 507 | 62 | | 33 | | No | 1 | | 12 | 202 | 47 | |
| Willard Parker Hospital | New York City | City | 424 | 98 | 2 | | | No | 1 | April & Oct | 12 | 83 | 44 | \$100 |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Cy | 645 | 49 | 39 | 12 | | Yes | 4 | Jan | 12 | 332 | 66 | \$41.67 |
| Grasslands Hospital | Valhalla N Y | County | 932 | 87 | 13 | | | Yes | 2 | April & Oct | 24 | 293 | 64 | \$120 |
| Duke Hospital | Durham N C | NPAssn | 456 | 66 | 24 | 10 | | Yes | 3 | Jan | 26 | 193 | 57 | \$41.67 |
| Cincinnati General Hospital | Cincinnati | City | 925 | 89 | 13 | 7 | | Yes | 4 | Feb | 12 | 708 | 42 | |
| Charity Hospital | Cleveland | Church | 901 | 42 | 3 | 55 | | Yes | 1 | Jan | 12 | 131 | 34 | |
| City Hospital | Cleveland | City | 1 670 | 100 | | | | Yes | 3 | Jan | 12 | 628 | 33 | \$40 |
| Mount Sinai Hospital | Cleveland | NPAssn | 270 | 34 | 12 | 54 | | No | 1 | Dec | 12 | 57 | 26 | |
| St Luke's Hospital | Cleveland | Church | 292 | 23 | 2 | 75 | | Yes | 2 | Dec | 24 | 92 | 24 | \$25 |
| University Hospitals | Cleveland | NPAssn | 872 | 37 | 14 | 49 | | Yes | 2 | Jan | 12 | 348 | 54 | \$35 |
| Miami Valley Hospital | Dayton O | NPAssn | 371 | 33 | 26 | 41 | | No | 1 | Jan | 12 | 217 | 47 | \$75 |
| State University Hospital and Crippled Children's Hospital | Oklahoma City | State | 510 | 62 | 32 | 6 | | Yes | 1 | Jan | 12 | 203 | 53 | \$25 |
| St Vincent's Hospital | Portland Ore | Church | 416 | 13 | 42 | 4 | | No | 1 | Jan | 12 | 145 | 42 | \$25 |
| Univ of Oregon Med School Hosps | Portland | Co-St | 405 | 93 | | 7 | | Yes | 1 | Jan | 12 | 409 | 65 | \$40 |
| Abington Memorial Hospital | Abington Pa | NPAssn | 275 | 30 | 23 | 43 | | Yes | 1 | March | 12 | 106 | 43 | \$100 |
| Graduate Hosp of the Univ of Pa | Philadelphia | NPAssn | 475 | 26 | 0 | 50 | | Yes | 1 | Jan | 12 | 100 | 49 | None |
| Hospital of the Univ of Pennsylvania | Philadelphia | State | 598 | 36 | 24 | 40 | | Yes | 2 | Jan | 12 | 216 | 67 | None |
| Pennsylvania Hospital | Philadelphia | NPAssn | 560 | 43 | 32 | 2 | | Yes | 1 | Varies | 12 | 191 | 50 | \$41.67 |
| Philadelphia General Hospital | Philadelphia | City | 2 400 | 100 | | | | Yes | 2 | July | 12 | 1 962 | 53 | \$100 |
| Presbyterian Hospital | Philadelphia | Church | 425 | 30 | 12 | 53 | | Yes | 1 | Varies | 12 | 65 | 38 | \$20 |
| Allegheny General Hospital | Pittsburgh | NPAssn | 400 | 69 | 3 | 33 | | No | 2 | Feb | 12 | 100 | 28 | \$31 |
| Children's Hospital | Pittsburgh | NPAssn | 196 | 70 | 15 | 15 | | Yes | 1 | Jan | 12 | 63 | 37 | \$35 |
| Mercy Hospital | Pittsburgh | Church | 670 | 30 | 30 | 30 | | Yes | 2 | Dec | 12 | 144 | 32 | |
| St Francis Hospital | Pittsburgh | Church | 687 | 29 | 13 | 53 | | Yes | 2 | Nov | 12 | 122 | 32 | \$20 |
| Reading Hospital | Reading Pa | NPAssn | 268 | 44 | 2 | 54 | | Yes | 1 | Jan | 12 | 154 | 61 | \$33.33 |
| Rhode Island Hospital | Providence | NPAssn | 600 | 60 | 15 | 25 | | No | 1 | Varies | 12 | 301 | 35 | \$100 |
| John Gaston Hospital | Memphis Tenn | City | 400 | 98 | | 2 | | Yes | 2 | July | 12 | 221 | 19 | \$65 |
| Vanderbilt University Hospital | Nashville Tenn | NPAssn | 210 | 34 | 34 | 32 | | No | 2 | March | 12 | 189 | 61 | \$35.40 |
| PEDIATRICS | | | | | | | | | | | | | | |
| Children's Hospital | Birmingham Ala | NPAssn | 50 | 83 | 12 | 5 | 983 | Yes | 1 | March | 12 | 9 | 21 | |
| California Babies Hospital | Los Angeles | NPAssn | 50 | 46 | 2 | 53 | 403 | Yes | 1 | March | 12 | 7 | 78 | \$100 |
| Children's Hospital | Los Angeles | NPAssn | 193 | 59 | 31 | 10 | 3 642 | Yes | 8 | March | 12 | 141 | 27 | \$40 |
| Los Angeles County Hospital | Los Angeles | County | 3 410 | 100 | | | 2 159 | Yes | 2 | Varies | 24 | 2 531 | 59 | \$10 |
| White Memorial Hospital | Los Angeles | Church | 120 | | 23 | 75 | 209 | Yes | 1 | April | 36 | 46 | 32 | \$65 |
| Children's Hospital of the East Bay | Oakland Calif | NPAssn | 65 | | 65 | 35 | 2 180 | Yes | 2 | Feb | 12 | 20 | 57 | \$75 |
| Hospital for Children | San Francisco | NPAssn | 200 | 14 | 23 | 63 | 1 881 | Yes | 1 | Feb | 12 | 19 | 23 | \$25 |
| San Francisco Hospital | San Francisco | Co-Co | 1 457 | 100 | | | 1 019 | No | 2 | Nov | 12 | 535 | 63 | \$50 |
| Stanford University Hospitals | San Francisco | NPAssn | 324 | 6 | 39 | 55 | 531 | Yes | 2 | Jan | 12 | 118 | 53 | \$23.75 |
| University of California Hospital | San Francisco | State | 293 | 63 | | 32 | 523 | Yes | 2 | Feb | 12 | 146 | 73 | \$25 |
| Children's Hospital | Denver | NPAssn | 135 | 27 | 25 | 47 | 363 | No | 6 | Dec | 12 | 53 | 56 | \$50 |
| New Haven Hospital | New Haven Conn | NPAssn | 511 | 37 | 37 | 26 | 237 | Yes | 4 | Jan & July | 12 | 232 | 67 | |
| Children's Hospital | Washington D C | NPAssn | 180 | 60 | 15 | 25 | 0 327 | Yes | 11 | Jan & July | 12 | 132 | 49 | \$10 |
| Freedmen's Hospital (col) | Washington D C | Fed | 376 | 86 | | 14 | 673 | Yes | 1 | June | 12 | 189 | 49 | \$1.50 |
| Gallinger Municipal Hospital | Washington D C | City | 1 220 | 100 | | | 1 911 | No | 4 | Jan | 12 | 497 | 34 | \$26 |
| Grady Hospital Emory University | Atlanta Ga | City | 275 | 100 | | | 651 | Yes | 1 | Jan | 12 | 264 | 20 | \$25 |
| Division (colored unit) | Atlanta Ga | NPAssn | 50 | 51 | 8 | 41 | 981 | Yes | 2 | Jan & July | 12 | 42 | 78 | \$27 |
| Hennetta Egerton Hosp for Children | Augusta Ga | City | 300 | 53 | 5 | 43 | 443 | Yes | 1 | Nov | 12 | 103 | 27 | \$50 |
| Children's Memorial Hospital | Chicago | NPAssn | 264 | 60 | 33 | 1 | 3 933 | Yes | 16 | Varies | 12 | 85 | 43 | None |
| Cook County Hospital | Chicago | County | 3 300 | 100 | | | 3 917 | No | 6 | June & Dec | 12 | 1 176 | 21 | None |
| Michael Reese Hospital | Chicago | NPAssn | 626 | 43 | 29 | 23 | 3 234 | Yes | 1 | Jan & July | 12 | 279 | 51 | \$100 |
| Presbyterian Hospital | Chicago | Church | 433 | 24 | 47 | 29 | 221 | Yes | 1 | Varies | 12 | 160 | 57 | None |
| Provident Hospital (col) | Chicago | NPAssn | 165 | 18 | 0 | 70 | 497 | Yes | 1 | Jan | 12 | 69 | 39 | \$50 |
| Research and Educational Hospital | Chicago | State | 332 | 100 | | | 178 | Yes | 1 | Varies | 12 | 197 | 83 | \$50 |
| University of Chicago Clinics | Chicago | NPAssn | 293 | 26 | 69 | 6 | | Yes | 4 | Jan | 12 | 184 | 72 | None |
| Indiana University Hospitals | Indianapolis | State | 504 | 60 | 2 | 7 | 1 370 | Yes | 2 | Feb | 12 | 183 | 45 | \$33.33 |
| University Hospitals | Iowa City | State | 904 | 57 | 8 | 5 | | Yes | 3 | July | 12 | 325 | 57 | \$20.33 |
| University of Kansas Hospitals | Kansas City Kan | State | 250 | 15 | 37 | 48 | 762 | Yes | 1 | Oct | 12 | 216 | 84 | \$61 |
| Louisville City Hospital | Louisville Ky | City | 423 | 60 | 10 | | 1 501 | Yes | 4 | March | 36 | 253 | 29 | \$13.91 |
| Charity Hospital | New Orleans | State | 1 913 | 100 | | | | Yes | 2 | May & June | 12 | 1 347 | 40 | \$25 |
| Touro Infirmary | New Orleans | NPAssn | 350 | 31 | 38 | 31 | 338 | Yes | 1 | Jan to March | 12 | 142 | 42 | \$25 |
| Johns Hopkins Hospital | Baltimore | NPAssn | 902 | 53 | 21 | 26 | 1 134 | Yes | 3 | May | 12 | 505 | 80 | \$50 |
| Union Memorial Hospital | Baltimore | NPAssn | 215 | 22 | 45 | 30 | 950 | Yes | 2 | Jan | 12 | 77 | 37 | \$12.50 |
| Boston City Hospital | Boston | City | 1 732 | 60 | 0 | 1 | 4 814 | Yes | 1 | Varies | Indef | 809 | 29 | \$33.33 |
| Boston Floating Hospital | Boston | NPAssn | 50 | 100 | | | 1 006 | Yes | 4 | March | 12 | 30 | 86 | \$10 |
| Children's Hospital | Boston | NPAssn | 233 | 2 | 53 | 4 | 1 358 | Yes | 2 | Varies | 12 | 73 | 49 | |
| Massachusetts General Hospital | Boston | NPAssn | 424 | 47 | 34 | 19 | 337 | Yes | 1 | Varies | 12 | 285 | 57 | \$41.67 |
| University Hospital | Ann Arbor Mich | State | 1 500 | 79 | | 21 | 2 910 | Yes | 6 | Jan | 12 | 470 | 57 | \$25 |
| Children's Hospital | Detroit | NPAssn | 239 | 97 | 18 | 5 | 7 210 | Yes | 9 | Dec | 12 | 180 | 41 | \$25 |
| Minneapolis General Hospital | Minneapolis | City | 637 | 97 | 6 | | 640 | Yes | 2 | Varies | 36 | 331 | 39 | \$40 |
| Wheatley Provident Hospital (col) | Kansas City Mo | NPAssn | 69 | 20 | 12 | 63 | 150 | Yes | 1 | June | 12 | 10 | 29 | \$10 |
| St Louis Children's Hospital | St Louis | NPAssn | 208 | 46 | 41 | 13 | 3 363 | Yes | 9 | July | 12 | 103 | 64 | None |
| St Louis City Hospital | St Louis | City | 800 | 100 | | | 1 014 | Yes | 1 | March | 12 | 74 | 43 | \$100 |
| St Mary's Group of Hospitals | St Louis | Church | 651 | 36 | 31 | 33 | 940 | Yes | 1 | March | 36 | 164 | 44 | \$25 |
| Jersey City Hospital | Jersey City N J | City | 1 900 | 94 | | 6 | 847 | Yes | 1 | March & Oct | 12 | 153 | 16 | None |
| Cumhriand Hospital | Brooklyn | City | 318 | 100 | | | 1 783 | No | 1 | March | 12 | 155 | 40 | \$100 |
| Jewish Hospital | Brooklyn | NPAssn | 604 | 30 | 40 | 30 | 708 | Yes | 4 | Dec | 12 | 238 | 40 | \$50 |
| Kings County Hospital | Brooklyn | City | 3 160 | 100 | | | 2 894 | Yes | 4 | June & Nov | 12 | 929 | 10 | None |
| Long Island College Hospital | Brooklyn | NPAssn | 473 | 18 | 34 | 48 | 444 | Yes | 3 | Jan | 12 | 126 | 34 | \$22.50 |
| Norwegian Lutheran Deaconesses Home and Hospital | Brooklyn | Church | 193 | 5 | 43 | 52 | 290 | Yes | 1 | March | 12 | 105 | 50 | |
| Buffalo City Hospital | Buffalo | Co-Co | 1 063 | | | | 950 | Yes | 2 | Nov | 12 | 204 | 21 | |
| Children's Hospital | Buffalo | NPAssn | 200 | 2 | 56 | 42 | 4 963 | Yes | 2 | Jan | 12 | 95 | 53 | \$65 |
| Babies Hospital | New York City | NPAssn | 154 | 41 | 50 | 9 | 3 231 | Yes | 12 | Varies | 12 | 95 | 61 | None |
| Bellevue Hospital | New York City | City | 2 333 | 100 | | | 2 482 | Yes | 10 | Jan & July | 24 | 1 344 | 53 | \$33.33 |
| Flower Fifth Avenue Hospital | New York City | NPAssn | 347 | | | | | | | | | | | |
| Marion Hospital | New York City | City | 825 | 100 | | | | Yes | 1 | Varies | 12 | 336 | 25 | None |
| Metropolitan Hospital | New York City | City | 1 420 | | | | 1 133 | Yes | 1 | Feb | 12 | 214 | 19 | \$100 |
| Mount Sinai Hospital | New York City | NPAssn | 740 | 57 | 16 | 27 | | Yes | 2 | Varies | 12 | 400 | 52 | \$45 |
| New York Foundling Hospital | New York City | Church | 418 | 1 | 84 | 15 | 2 663 | Yes | 9 | Varies | 12 | 36 | 72 | \$25 |
| New York Hospital | New York City | NPAssn | 1 010 | 6 | 73 | 19 | 970 | Yes | 0 | Jan | 12 | 316 | 57 | \$25 |
| N Y Post-Grad Med School and Hosp | New York City | NPAssn | 411 | 13 | 3 | 84 | 1 233 | Yes | 1 | Varies | 24 | 81 | 46 | |
| St Luke's Hospital | New York City | Church | 507 | 62 | | 33 | | No | 2 | | 12 | 202 | 47 | |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Cy | 645 | 49 | 39 | 12 | 1 000 | Yes | 4 | Jan | 12 | 332 | 66 | \$41.67 |

| PEDIATRICS—(Continued) | | | | | | | | | | | | | | |
|---|----------------------|----------|----------------------------|----------|----------|------------------------------------|--------------------|-----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|---------|
| | Control | Capacity | Classification of Patients | | | Patients Treated Under Specialties | Outpatient Service | Number of Residencies | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month | |
| | | | Free | Part Pay | Full Pay | | | | | | | | | |
| Sea View Hospital | Staten Island N Y | City | 1788 | 69 | 1 | | 371 | Yes | 4 | May & Nov | 12 | 244 | 49 | \$100 |
| Grasslands Hospital | Valhalla N Y | County | 932 | 87 | 13 | | | Yes | 2 | April & Oct. | 12 | 225 | 64 | \$120 |
| Duke Hospital | Durham, N C | NPAasn | 456 | 66 | 24 | 10 | 412 | Yes | 3 | Jan | 12 | 183 | 57 | \$11.67 |
| Children's Hospital | Akron O | NPAasn | 110 | 61 | 39 | | 2,830 | Yes | 1 | Jan | 12 | 54 | 41 | \$30 |
| Children's Hospital | Cincinnati | Church | 221 | 62 | 24 | 14 | 4,208 | Yes | 8 | Dec | 24 | 62 | 35 | \$25 |
| Cincinnati General Hospital | Cincinnati | City | 925 | 80 | 13 | 7 | 1,010 | Yes | 4 | Feb | 12 | 768 | 42 | |
| Charity Hospital | Cleveland | Church | 301 | 42 | 3 | 55 | 154 | Yes | 1 | Jan | 12 | 131 | 84 | |
| University Hospitals | Cleveland | NPAasn | 972 | 37 | 14 | 49 | 696 | Yes | 7 | Jan | 12 | 343 | 54 | \$35 |
| Children's Hospital | Columbus O | NPAasn | 100 | 67 | 11 | 2 | 3,142 | Yes | 3 | Dec | 12 | 61 | 65 | \$45 |
| Univ of Oregon Med School Hosps | Portland | Co-St | 405 | 93 | 7 | | 713 | Yes | 1 | Jan | 12 | 409 | 65 | \$40 |
| Children's Hospital | Philadelphia | NPAasn | 116 | 73 | 10 | 8 | 2,100 | Yes | 11 | Varies | 12 | 77 | 69 | None |
| Children's Hospital of the Mary J Drexel Home | Philadelphia | Church | 52 | 15 | 22 | 63 | 857 | Yes | 1 | April | 12 | 7 | 83 | \$100 |
| Hospital of the Univ of Pennsylvania | Philadelphia | State | 598 | 38 | 24 | 40 | 1,087 | Yes | 1 | Jan | 12 | 216 | 67 | None |
| Philadelphia General Hospital | Philadelphia | City | 2,400 | 100 | | | 2,146 | Yes | 1 | July | 12 | 1,962 | 63 | \$100 |
| St Christopher's Hosp for Children | Philadelphia | NPAasn | 75 | 61 | 19 | 30 | 2,243 | Yes | 4 | Feb | 12 | 18 | 24 | \$75 |
| Children's Hospital | Pittsburgh | NPAasn | 196 | 70 | 15 | 15 | 2,779 | Yes | 5 | Jan | 12 | 69 | 87 | \$35 |
| Children's Hospital | Chattanooga Tenn | CoCo | 74 | 77 | 4 | 19 | 509 | Yes | 2 | Jan | 12 | 80 | 22 | \$50 |
| John Gaston Hospital | Memphis Tenn | City | 400 | 98 | 2 | | 1,487 | Yes | 1 | July | 12 | 231 | 19 | \$65 |
| Vanderbilt University Hospital | Nashville Tenn | NPAasn | 210 | 34 | 84 | 82 | 678 | No | 3 | March | 12 | 169 | 61 | \$35.40 |
| Medical College of Va., Hosp Division | Richmond | NPAasn | 442 | 7 | 61 | 12 | 1,083 | Yes | 1 | Feb | 12 | 241 | 83 | \$50 |
| University of Virginia Hospital | University | State | 311 | 24 | 46 | 80 | 734 | Yes | 1 | Dec | 12 | 113 | 84 | \$45 |
| Children's Orthopedic Hospital | Seattle | NPAasn | 184 | 69 | 26 | 15 | 1,271 | Yes | 1 | July | 12 | 24 | 62 | \$22.50 |
| State of Wisconsin General Hospital | Madison | State | 652 | 83 | 7 | 5 | | Yes | 1 | March | 36 | 57 | 70 | \$25 |
| Milwaukee Children's Hospital | Milwaukee | NPAasn | 165 | 67 | 17 | 16 | 2,904 | Yes | 7 | Jan. | 12 | 69 | 45 | \$30 |
| PHYSICAL THERAPY | | | | | | | | | | | | | | |
| Stanford University Hospitals | San Francisco | NPAasn | 324 | 6 | 89 | 55 | | Yes | 1 | Jan | 12 | 118 | 63 | \$23.75 |
| PLASTIC SURGERY | | | | | | | | | | | | | | |
| Kings County Hospital | Brooklyn | City | 3,160 | 100 | | | | Yes | 1 | June & Nov | 12 | 639 | 19 | |
| RADIOLOGY | | | | | | | | | | | | | | |
| Los Angeles County Hospital | Los Angeles | County | 3,410 | 100 | | | | Yes | 8 | Varies | 24 | 2,551 | 59 | \$10 |
| San Francisco Hospital | San Francisco | CoCo | 1,487 | 100 | | | | No | 2 | Nov | 12 | 655 | 63 | \$100 |
| Stanford University Hospitals | San Francisco | NPAasn | 324 | 6 | 89 | 55 | | Yes | 2 | Jan | 12 | 118 | 63 | \$23.75 |
| University of California Hospital | San Francisco | State | 293 | 68 | | 32 | | Yes | 2 | Feb | 12 | 146 | 73 | \$50 |
| New Haven Hospital | New Haven Conn | NPAasn | 511 | 37 | 37 | 26 | | Yes | 2 | Jan & July | 12 | 252 | 57 | |
| Garfield Memorial Hospital | Washington D C | NPAasn | 311 | 1 | 25 | 74 | | Yes | 1 | Dec. | 12 | 85 | 88 | |
| Michael Reese Hospital | Chicago | NPAasn | 626 | 48 | 29 | 23 | | Yes | 1 | Jan & July | 12 | 270 | 51 | \$25 |
| Research and Educational Hospital | Chicago | State | 382 | 100 | | | | Yes | 1 | Varies | 12 | 197 | 88 | \$50 |
| St Luke's Hospital | Chicago | NPAasn | 650 | 4 | 20 | 76 | | Yes | 2 | Jan | 24 | 123 | 40 | |
| University of Chicago Clinics | Chicago | NPAasn | 293 | 20 | 69 | 5 | | Yes | 3 | Jan | 12 | 154 | 72 | None |
| Methodist Episcopal Hospital | Indianapolis | Church | 520 | 25 | 75 | | | Yes | 1 | Jan | 12 | 153 | 83 | |
| University Hospitals | Iowa City | State | 954 | 87 | 8 | 5 | | Yes | 8 | July | 12 | 825 | 57 | \$20.53 |
| Charity Hospital | New Orleans | State | 1,013 | 100 | | | | Yes | 1 | May & June | 12 | 1,347 | 40 | \$25 |
| Tonno Infirmary | New Orleans | NPAasn | 366 | 31 | 83 | 31 | | Yes | 1 | Jan to March | 12 | 142 | 46 | \$25 |
| Johns Hopkins Hospital | Baltimore | NPAasn | 902 | 63 | 21 | 20 | | Yes | 1 | May | 12 | 105 | 80 | \$50 |
| University Hospital | Baltimore | State | 450 | 50 | 6 | 44 | | Yes | 1 | Jan | 12 | 183 | 44 | None |
| Boston City Hospital | Boston | City | 1,732 | 99 | 9 | 1 | | Yes | 1 | Varies | Indef | 609 | 29 | \$33.33 |
| Massachusetts General Hospital | Boston | NPAasn | 424 | 47 | 34 | 19 | | Yes | 2 | Varies | 36 | 235 | 57 | \$11.67 |
| Massachusetts Memorial Hospitals | Boston | NPAasn | 346 | 23 | 45 | 32 | | Yes | 1 | March | 24 | 64 | 89 | \$50 |
| Peter Bent Brigham Hospital | Boston | NPAasn | 247 | 44 | 29 | 27 | | Yes | 1 | Varies | 12 | 171 | 61 | \$11.67 |
| University Hospital | Ann Arbor, Mich | State | 1,230 | 70 | | 21 | | Yes | 2 | Jan | 12 | 470 | 57 | \$25 |
| City of Detroit Receiving Hospital | Detroit | City | 650 | 100 | | | | Yes | 1 | Dec. | 12 | 677 | 23 | \$33.33 |
| Hurley Hospital | Flint, Mich | City | 487 | | | | | Yes | 1 | July | 36 | 275 | 45 | \$100 |
| St. Louis City Hospital | St. Louis | City | 806 | 100 | | | | Yes | 2 | March | 12 | 764 | 43 | |
| University of Nebraska Hospital | Omaha | State | 240 | 100 | | | | No | 1 | July | 12 | 107 | 78 | |
| Kings County Hospital | Brooklyn | City | 3,160 | 100 | | | | Yes | 2 | June & Nov | 12 | 639 | 19 | \$100 |
| Long Island College Hospital | Brooklyn | NPAasn | 473 | 18 | 34 | 48 | | Yes | 1 | Jan | 12 | 126 | 84 | \$45 |
| Buffalo City Hospital | Buffalo | CoCo | 1,063 | | | | | Yes | 2 | Nov | 12 | 204 | 21 | |
| Bellevue Hospital | New York City | City | 2,333 | 100 | | | | Yes | 4 | Jan & July | 12 | 1,544 | 33 | |
| Beth Israel Hospital | New York City | NPAasn | 444 | 43 | 56 | 1 | | Yes | 2 | Varies | 12 | 164 | 42 | None |
| Lenox Hill Hospital | New York City | NPAasn | 595 | 55 | | 45 | | Yes | 1 | Varies | 12 | 127 | 83 | None |
| Montefiore Hosp for Chronic Dis | New York City | NPAasn | 711 | 79 | 8 | 13 | | Yes | 2 | March & Oct. | 12 | 305 | 73 | \$50 |
| Mount Sinai Hospital | New York City | NPAasn | 780 | 57 | 16 | 27 | | Yes | 8 | Varies | 12 | 400 | 62 | None |
| New York Hospital | New York City | NPAasn | 1,010 | 8 | 73 | 19 | | Yes | 1 | Jan | 12 | 816 | 67 | \$25 |
| N Y Post Grad Med School and Hosp | New York City | NPAasn | 411 | 13 | 3 | 84 | | Yes | 1 | Varies | 12 | 81 | 46 | |
| Presbyterian Hospital | New York City | NPAasn | 965 | 33 | 42 | 25 | | Yes | 3 | Varies | 12 | 231 | 45 | \$11.67 |
| St Luke's Hospital | New York City | Church | 507 | 62 | | 33 | | No | 2 | Jan & July | 12 | 292 | 47 | |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y | NP Oy | 645 | 49 | 39 | 12 | | Yes | 2 | Jan | 12 | 832 | 60 | \$11.67 |
| Sea View Hospital | Staten Island N Y | City | 1,788 | 69 | 1 | | | No | 1 | May & Nov | 12 | 244 | 49 | \$100 |
| Duke Hospital | Durham N C | NPAasn | 456 | 66 | 24 | 10 | | Yes | 3 | Jan | 12 | 183 | 57 | \$11.67 |
| Cincinnati General Hospital | Cincinnati | City | 925 | 80 | 13 | 7 | | Yes | 2 | Feb | 12 | 768 | 42 | |
| Jewish Hospital | Cincinnati | NPAasn | 262 | 19 | 43 | 38 | | Yes | 1 | Dec. | 12 | 61 | 81 | \$50 |
| City Hospital | Cleveland | City | 1,670 | 100 | | | | Yes | 2 | Jan | 12 | 628 | 38 | \$37 |
| University Hospitals | Cleveland | NPAasn | 972 | 37 | 14 | 14 | | Yes | 1 | Jan | 12 | 343 | 54 | \$25 |
| State University Hospital and Crippled Children's Hospital | Oklahoma City | State | 510 | 62 | 32 | 6 | | Yes | 1 | Jan | 12 | 208 | 53 | \$25 |
| Univ of Oregon Med School Hosps | Portland | Co-St | 405 | 93 | 7 | | | Yes | 1 | Jan | 12 | 409 | 65 | \$40 |
| Hospital of the Univ of Pennsylvania | Philadelphia | State | 598 | 38 | 24 | 40 | | Yes | 1 | Jan | 12 | 216 | 67 | None |
| Pennsylvania Hospital | Philadelphia | NPAasn | 600 | 43 | 22 | 25 | | Yes | 1 | Varies | 12 | 190 | 60 | \$50 |
| Philadelphia General Hospital | Philadelphia | City | 2,400 | 100 | | | | Yes | 1 | July | 12 | 1,962 | 63 | \$100 |
| Roper Hospital | Charleston S O | NPAasn | 320 | 63 | 4 | 33 | | Yes | 1 | Jan | 12 | 152 | 23 | \$40 |
| John Sealy Hospital | Galveston Tex | City | 374 | 70 | 5 | 25 | | Yes | 1 | Jan | 12 | 209 | 57 | \$50 |
| Medical College of Va., Hosp Division | Richmond | NPAasn | 442 | 7 | 61 | 12 | | Yes | 1 | Feb | 12 | 241 | 83 | \$50 |
| University of Virginia Hospital | University | State | 311 | 24 | 46 | 80 | | Yes | 2 | Dec | 12 | 113 | 34 | None |
| State of Wisconsin General Hospital | Madison | State | 652 | 83 | 7 | 5 | | Yes | 2 | March | 36 | 57 | 70 | \$25 |
| SURGERY | | | | | | | | | | | | | | |
| Hillman Hospital | Birmingham Ala. | County | 474 | 100 | | | 1,550 | Yes | 2 | Jan | 12 | 241 | 26 | \$40 |
| Employers' Hospital of the Tennessee Coal, Iron and Railroad Co | Fairfield Ala | NPAasn | 310 | | 100 | 1,450 | | Yes | 1 | Jan | 12 | 108 | 45 | \$100 |
| Fresno County General Hospital | Fresno Calif | County | 520 | 59 | 2 | | 1,635 | Yes | 2 | Jan | 24 | 241 | 29 | \$50 |
| Cedars of Lebanon Hospital | Los Angeles | NPAasn | 289 | 22 | 3 | 75 | 1,774 | No | 1 | Dec | 12 | 101 | 40 | \$50 |
| Los Angeles County Hospital | Los Angeles | County | 3,410 | 100 | | | 4,115 | Yes | 6 | Varies | 36 | 2,611 | 129 | \$10 |
| White Memorial Hospital | Los Angeles | Church | 129 | 25 | 75 | | 1,550 | Yes | 1 | April | 24 | 47 | 22 | \$27.75 |
| Alameda County Hospital | Oakland Calif | County | 372 | 100 | | | 2,004 | No | 4 | Dec | 12 | 625 | 49 | \$40 |
| San Bernardino County Charity Hosp | San Bernardino Calif | County | 374 | 100 | | | 618 | Yes | 1 | April | 12 | 12 | 41 | \$75 |
| San Diego County General Hospital | San Diego Calif | County | 623 | 100 | | | 1,004 | Yes | 1 | April | 12 | 276 | 42 | \$75 |
| Hospital for Children | San Francisco | NPAasn | 250 | 14 | 23 | 63 | 627 | Yes | 1 | Feb | 12 | 19 | 23 | \$50 |

| | | Control | Capacity | Classification of Patients | | | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month |
|--|---------------------|---------|----------|----------------------------|----------|----------|--------------------|----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|
| | | | | Percentage | | | | | | | | | |
| | | | | Free | Part Pay | Full Pay | | | | | | | |
| SURGERY—(Continued) | | | | | | | | | | | | | |
| Mary's Help Hospital | San Francisco | Church | 145 | 11 | 23 | 66 | 1,353 | Yes | 1 | Feb | 12 | 65 43 | |
| Mount Zion Hospital | San Francisco | NPAsen | 189 | 18 | 13 | 69 | 1,637 | Yes | 1 | Feb | 12 | 82 48 | \$50 |
| San Francisco Hospital | San Francisco | CyCo | 1 487 | 100 | | | 2,633 | No | 6 | Nov | 12 | 555 53 | \$50 |
| Stanford University Hospitals | San Francisco | NPAsen | 324 | 6 | 39 | 55 | 1 459 | Yes | 4 | Jan | 12 | 118 53 | \$23 75 |
| University of California Hospital | San Francisco | State | 208 | 68 | | 33 | 1 434 | Yes | 7 | Feb | 12 | 146 73 | \$50 |
| Santa Clara County Hospital | San Jose Calif | County | 403 | 96 | 2 | | | Yes | 1 | Jan | 12 | 210 39 | |
| Colorado General Hospital | Denver | State | 178 | 90 | 10 | | 1,961 | No | 1 | Jan | 12 | 175 81 | |
| New Haven Hospital | New Haven Conn | NPAsen | 511 | 37 | 37 | 26 | 2 632 | Yes | 6 | Jan & July | 12 | 2 32 57 | |
| Central Disp and Emergency Hospital | Washington D C | NPAsen | 2 10 | 18 | 14 | 68 | 5,337 | Yes | 4 | March | 12 | 170 49 | \$50 |
| Freedmen's Hospital (col) | Washington D C | Fed | 376 | 86 | | 14 | 1 624 | Yes | 1 | June | 12 | 180 49 | \$31 66 |
| Gallinger Municipal Hospital | Washington D C | City | 1 230 | 100 | | | 2,216 | No | 4 | Jan | 12 | 497 84 | \$50 |
| Garfield Memorial Hospital | Washington D C | NPAsen | 311 | 1 | 25 | 74 | | Yes | 1 | Dec. | 12 | 85 38 | \$125 |
| Grady Hospital | Atlanta Ga | City | 322 | 100 | | | 8 007 | Yes | 1 | Jan | 12 | 284 20 | \$50 |
| Grady Hospital Emory University Division (colored unit) | Atlanta Ga | City | 276 | 100 | | | 2,880 | Yes | 4 | Jan | 12 | 264 20 | \$50 |
| University Hospital | Anguata Ga | City | 300 | 32 | 5 | 43 | 2,863 | Yes | 3 | Nov | 12 | 163 27 | \$50 |
| Anguata Hospital | Chicago | Church | 3 30 | 12 | 36 | 52 | 2,713 | Yes | 1 | Oct | 12 | 46 26 | |
| Passavant Memorial Hospital | Chicago | NPAsen | 165 | 5 | 1 | 94 | 1 081 | Yes | 3 | Jan & July | 13 | 45 60 | None |
| Presbyterian Hospital | Chicago | Church | 453 | 24 | 47 | 29 | 2 160 | Yes | 2 | Varies | 24 | 160 57 | \$50 |
| Provident Hospital (col) | Chicago | NPAsen | 155 | 18 | 6 | 76 | 1 176 | Yes | 1 | Jan | 12 | 59 39 | \$50 |
| Research and Educational Hospital | Chicago | State | 332 | 100 | | | 807 | Yes | 3 | Varies | 36 | 197 83 | \$50 |
| St. Luke's Hospital | Chicago | NPAsen | 659 | 4 | 20 | 76 | 4 079 | Yes | 4 | Jan. | 12 | 128 40 | None |
| University of Chicago Clinics | Chicago | NPAsen | 203 | 26 | 69 | 5 | | Yes | 4 | Jan | 12 | 184 72 | None |
| Wesley Memorial Hospital | Chicago | Church | 268 | 34 | 18 | 50 | 1 444 | Yes | 1 | Jan | 12 | 67 68 | |
| Evanston Hospital | Evanston Ill | NPAsen | 270 | 15 | 28 | 47 | 1 786 | Yes | 1 | April | 12 | 95 66 | \$83.33 |
| Indianapolis City Hospital | Indianapolis | City | 577 | 92 | 4 | 4 | 1 546 | Yes | 4 | April | 12 | 414 41 | \$20.33 |
| Iadana University Hospitals | Indianapolis | State | 504 | 90 | 3 | 7 | 1 462 | Yes | 2 | Feb | 12 | 153 46 | \$33.33 |
| University Hospitals | Iowa City | State | 954 | 67 | 8 | 6 | | Yes | 9 | July | 12 | 325 57 | \$20.33 |
| University of Kansas Hospitals | Kansas City, Kan | State | 250 | 15 | 37 | 48 | 1 174 | Yes | 2 | Oct | 36 | 216 84 | \$61 |
| Louisville City Hospital | Louisville Ky | City | 423 | 90 | 10 | | 5 103 | Yes | 10 | March | 36 | 258 29 | \$18.91 |
| Charity Hospital | New Orleans | State | 1 913 | 100 | | | 14,946 | Yes | 5 | May & June | 12 | 1 347 40 | \$25 |
| Touro Infirmary | New Orleans | NPAsen | 366 | 31 | 38 | 31 | 2,536 | Yes | 1 | Jan to March | 12 | 142 46 | \$76 |
| Baltimore City Hospitals (General) | Baltimore | City | 963 | 100 | | | 2,792 | No | 5 | Jan | 12 | 440 41 | \$12.50 |
| Bon Secours Hospital | Baltimore | Church | 143 | 33 | 23 | 44 | | Yes | 2 | Dec | 12 | 54 73 | \$50 |
| Chureh Home and Infirmary | Baltimore | Church | 184 | 21 | 63 | 26 | 1,897 | Yes | 3 | Dec. | 12 | 44 46 | \$20 |
| Johns Hopkins Hospital | Baltimore | NPAsen | 602 | 63 | 21 | 28 | 1,683 | Yes | 7 | May | 12 | 505 80 | \$50 |
| Maryland General Hospital | Baltimore | Church | 233 | 42 | 9 | 49 | 2 077 | Yes | 3 | Jan | 12 | 44 18 | \$35 |
| Mercy Hospital | Baltimore | Church | 300 | 53 | 11 | 36 | 1,812 | No | 6 | Jan | 12 | 86 38 | \$50 |
| Provident Hosp and Free Disp (col) | Baltimore | NPAsen | 132 | 83 | 4 | 13 | 1 189 | No | 1 | Oct | 12 | 36 17 | \$41 66 |
| St. Agnes Hospital | Baltimore | Church | 200 | 33 | 34 | 28 | 653 | Yes | 3 | Nov | 12 | 53 26 | |
| St. Joseph's Hospital | Baltimore | Church | 235 | 41 | 12 | 47 | 1,216 | Yes | 4 | Jan | 12 | 70 30 | None |
| Sinal Hospital | Baltimore | NPAsen | 209 | 41 | 8 | 51 | 1 174 | Yes | 1 | Jan | 12 | 53 27 | \$47 50 |
| South Baltimore General Hospital | Baltimore | NPAsen | 132 | 31 | 42 | 27 | 1 107 | Yes | 1 | Dec | 12 | 46 34 | \$50 |
| Union Memorial Hospital | Baltimore | NPAsen | 276 | 22 | 48 | 30 | 3 451 | Yes | 6 | Jan | 12 | 77 67 | \$12 50 |
| University Hospital | Baltimore | State | 450 | 50 | 6 | 44 | 2,147 | Yes | 5 | Jan | 12 | 133 44 | None |
| West Baltimore General Hospital | Baltimore | Corp | 200 | 35 | 6 | | 866 | Yes | 3 | Jan | 12 | 82 21 | \$20 |
| Beth Israel Hospital | Boston | NPAsen | 215 | 18 | 32 | 50 | 1,816 | No | 2 | Varies | 12 | 162 51 | |
| Boston City Hospital | Boston | City | 1 782 | 90 | | | 12,796 | Yes | 10 | Jan | 12 | 693 29 | Varies |
| Children's Hospital | Boston | NPAsen | 263 | 2 | 63 | 40 | 1 516 | Yes | 1 | Varies | 12 | 73 49 | \$56 50 |
| Massachusetts General Hospital | Boston | NPAsen | 424 | 47 | 34 | 19 | 4,206 | Yes | 4 | Varies | 12 | 235 57 | \$41 67 |
| Massachusetts Memorial Hospitals | Boston | NPAsen | 348 | 23 | 45 | 32 | 2,931 | Yes | 1 | March | 12 | 82 30 | \$91 |
| Peter Bent Brigham Hospital | Boston | NPAsen | 247 | 44 | 29 | 27 | 2,466 | Yes | 6 | Varies | 16 | 171 61 | \$41 67 |
| Truistale Hospital | Fall River Mass | NPAsen | 160 | 14 | 43 | 43 | 1 043 | Yes | 2 | Jan & June | 12 | 51 47 | None |
| Memorial Hospital | Worcester Mass | NPAsen | 215 | 17 | 7 | 76 | 1 709 | No | 1 | Jan | 12 | 62 38 | \$100 |
| University Hospital | Ann Arbor Mich | State | 1 235 | 79 | | | 3,852 | Yes | 12 | Jan | 12 | 470 57 | \$27 |
| City of Detroit Receiving Hospital | Detroit | City | 650 | 100 | | | 4 681 | Yes | 2 | Dec | 24 | 577 25 | \$50 |
| Grace Hospital | Detroit | NPAsen | 583 | 31 | 42 | 27 | 4,214 | Yes | 1 | Feb | 12 | 180 18 | \$50 |
| Harper Hospital | Detroit | NPAsen | 723 | 10 | 90 | | 7,875 | Yes | 5 | Jan | 12 | 108 22 | \$25 |
| Henry Ford Hospital | Detroit | NPAsen | 668 | 34 | 66 | | | Yes | 11 | Jan | 12 | 226 41 | \$110 |
| Jefferson Clinic Hospital | Detroit | NPAsen | 60 | 5 | 16 | 80 | | Yes | 1 | Feb | 24 | 8 19 | \$50 |
| Providencia Hospital | Detroit | Church | 406 | 21 | 67 | 12 | 5 150 | No | 1 | Jan | 12 | 144 82 | \$100 |
| Eloise Hospital (Dr William J Seymonr Hospital) | Eloise, Mich | County | 1,363 | 100 | | | | Yes | 6 | March | 12 | 551 44 | \$37 |
| Harley Hospital | Flint Mich | City | 487 | | | | | Yes | 1 | July | 12 | 275 45 | \$100 |
| Minneapolis General Hospital | Minneapolis | City | 687 | 93 | 6 | | 2,194 | Yes | 7 | Varies | 36 | 331 59 | \$2 |
| Ancker Hospital | St Paul | CyCo | 900 | 100 | | | 1 724 | Yes | 2 | March | 24 | 516 65 | \$50 |
| St. Mary's Hospital | Kansas City Mo | Church | 176 | 21 | 18 | 61 | 1 436 | Yes | 1 | Jan | 12 | 126 67 | \$50 |
| Barnard Free Skin and Cancer Hosp | St. Louis | NPAsen | 44 | 100 | | | 45 | Yes | 1 | Jan | 12 | 11 34 | \$25 |
| Barnes Hospital | St. Louis | Church | 300 | 16 | 4 | 80 | 4 500 | No | 7 | Dec | 24 | 170 57 | \$25 |
| Jewish Hospital | St. Louis | NPAsen | 290 | 29 | 52 | 19 | 1,269 | No | 2 | Dec | 12 | 56 31 | \$40 |
| St. Louis City Hospital | St. Louis | City | 800 | 100 | | | 2,017 | Yes | 7 | March | 12 | 764 43 | \$75 |
| St. Louis City Hospital No. 2 (col) | St. Louis | City | 325 | 100 | | | 4 464 | Yes | 1 | June | 12 | 122 16 | \$100 |
| St. Luke's Hospital | St. Louis | Church | 210 | 14 | 31 | 55 | 756 | Yes | 2 | Dec. | 12 | 42 25 | \$30 |
| St. Mary's Group of Hospitals | St. Louis | Church | 651 | 36 | 31 | 33 | 2,181 | Yes | 5 | March | 36 | 164 44 | \$25 |
| Jersey City Hospital | Jersey City N J | City | 1 200 | 94 | | 6 | 4 113 | Yes | 3 | March & Oct | 12 | 168 16 | \$100 |
| Burlington County Hospital | Monnt Holly N J | NPAsen | 141 | 39 | 27 | 34 | 1 445 | Yes | 1 | April | 12 | 49 33 | \$30 |
| Albany Hospital | Albany N Y | NPAsen | 610 | 8 | 76 | 17 | 606 | Yes | 4 | Dec | 12 | 333 72 | \$15 |
| Cumberland Hospital | Brooklyn | City | 318 | 100 | | | 3,270 | No | 2 | March | 12 | 156 40 | \$15 |
| Kings County Hospital | Brooklyn | City | 8 100 | 100 | | | 13,866 | Yes | 6 | June & Nov | 12 | 939 19 | \$100 |
| Long Island College Hospital | Brooklyn | NPAsen | 473 | 18 | 34 | 48 | 2,223 | Yes | 4 | Jan | 12 | 126 34 | \$22.50 |
| Norwegian Lutheran Deaconesses Home and Hospital | Brooklyn | Church | 198 | 5 | 43 | 52 | 1 720 | Yes | 1 | March | 12 | 105 60 | |
| Buffalo City Hospital | Buffalo | CyCo | 1 063 | | | | 2,688 | Yes | 2 | Nov | 12 | 204 21 | |
| Buffalo General Hospital | Buffalo | NPAsen | 403 | 13 | 36 | 51 | 2,694 | Yes | 5 | Dec. | 12 | 194 36 | \$25 |
| Millard Fillmore Hospital | Buffalo | NPAsen | 309 | 21 | 34 | 45 | 2,004 | Yes | 2 | Dec. | 12 | 119 48 | \$50 |
| Clifton Springs Sanitarium and Clinic | Clifton Springs N Y | NPAsen | 432 | 10 | 40 | 50 | 657 | No | 1 | Varies | 12 | 35 56 | \$25 |
| Charles S. Wilson Memorial Hospital | Johnson City N Y. | NPAsen | 350 | 1 | 3 | 96 | 2 073 | Yes | 1 | Dec. | 12 | 85 51 | \$70 |
| Bellevue Hospital | New York City | City | 2 333 | 100 | | | 10,841 | Yes | 2 | Jan & July | 12 | 1 344 28 | \$83.33 |
| Flower Fifth Avenue Hospital | New York City | NPAsen | 347 | | | | | | | | | | |
| Metropolitan Hospital | New York City | City | 1 421 | 100 | | | 2,035 | Yes | 2 | Feb | 12 | 214 19 | \$100 |
| Montefiore Hosp for Chronic Diseases | New York City | NPAsen | 711 | 79 | 8 | 13 | 25 | Yes | 3 | March & Oct | 12 | 885 73 | \$50 |
| Mount Sinai Hospital | New York City | NPAsen | 789 | 67 | 16 | 27 | | Yes | 6 | Varies | 12 | 400 52 | \$120 |
| New York Hospital | New York City | NPAsen | 1 010 | 8 | 73 | 19 | 2,714 | Yes | 12 | Jan | 12 | 816 57 | \$25 |
| N Y Polytechnic Med School and Hosp | New York City | NPAsen | 346 | 17 | 70 | 13 | 1,931 | Yes | 3 | Varies | 24 | 43 23 | None |
| N Y Post-Grad Med. School and Hosp | New York City | NPAsen | 411 | 13 | 3 | 84 | 2,959 | Yes | 1 | Varies | 12 | 81 26 | |
| New York Society for the Relief of the Ruptured and Crippled | New York City | NPAsen | 256 | 11 | 69 | 1 443 | | Yes | 1 | Varies | 12 | 17 50 | \$50 |
| Presbyterian Hospital | New York City | NPAsen | 603 | 33 | 42 | 25 | 5 107 | Yes | 12 | Varies | 12 | 231 45 | \$83.34 |
| Cenese Hospital | Rochester N Y. | NPAsen | 220 | 29 | 23 | 43 | 1,958 | No | 1 | Jan | 12 | 74 29 | \$50 |
| Rochester General Hospital | Rochester N Y | NPAsen | 365 | 24 | 9 | 67 | 3,304 | No | 1 | April | 12 | 209 65 | \$50 |
| Strong Memorial and Rochester Municipal Hospitals | Rochester N Y. | NP Cy | 643 | 49 | 29 | 12 | 5 079 | Yes | 5 | Jan | 12 | 252 60 | \$41 67 |

Numerical references will be found on page 715

SURGERY—Continued

| SURGERY—Continued | | | | | | | | | | | | | | |
|--|--------------------|----------|------------|----------|----------|---|--------------------|-----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|----------|
| | Control | Capacity | Percentage | | | Patients Treated Under Listed Specialty | Outpatient Service | Number of Residencies | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month | |
| | | | Free | Part Pay | Full Pay | | | | | | | | | |
| Hospital of the Good Shepherd | Syracuse N Y | NPAasn | 242 | 2 | 45 | 53 | No | 2 | Dec | 12 | 96 | 40 | \$39.58 | |
| Graceland Hospital | Valhalla N Y | County | 932 | 87 | 13 | 1,590 | Yes | 3 | April & Oct | 12 | 103 | 57 | \$19.00 | |
| Duke Hospital | Durham N C | NPAasn | 456 | 66 | 24 | 1,554 | Yes | 6 | Jan | 12 | 235 | 64 | \$11.67 | |
| Watts Hospital | Durham N C | NPAasn | 225 | 32 | 33 | 35 | 2,160 | Yes | 1 | Jan | 12 | 62 | 23 | \$5.00 |
| City Memorial Hospital | Winston-Salem N C | City | 101 | 43 | 9 | 48 | 1,060 | Yes | 2 | Jan | 12 | 44 | 23 | \$5.00 |
| City Hospital | Akron O | NPAasn | 350 | 43 | 7 | 60 | 4,192 | Yes | 3 | Feb | 12 | 191 | 62 | \$75 |
| St Thomas Hospital | Akron O | Church | 185 | 31 | 33 | 36 | 930 | No | 1 | Dec | 12 | 79 | 36 | \$40 |
| Mercy Hospital | Canton O | Church | 214 | 26 | 60 | 15 | 2,710 | Yes | 1 | Dec | 12 | 80 | 30 | \$100 |
| Cincinnati General Hospital | | City | 925 | 80 | 13 | 7 | 2,536 | Yes | 15 | Feb | 12 | 708 | 42 | |
| Deaconess Hospital | | Church | 175 | 5 | 40 | 55 | 850 | Yes | 1 | Dec | 12 | 63 | 24 | |
| Good Samaritan Hospital | | Church | 635 | 20 | 52 | 23 | 5,831 | Yes | 3 | Jan | 36 | 81 | 16 | \$5.00 |
| Jewish Hospital | | NPAasn | 262 | 19 | 43 | 33 | 2,230 | Yes | 2 | Dec | 12 | 61 | 31 | \$5.00 |
| Charity Hospital | | Church | 301 | 42 | 3 | 55 | 2,810 | Yes | 1 | Jan | 12 | 131 | 34 | |
| City Hospital | | City | 1,670 | 100 | | | 3,185 | Yes | 6 | Jan | 18 | 623 | 38 | \$2.50 |
| Mount Sinai Hospital | | NPAasn | 240 | 34 | 12 | 54 | 2,109 | No | 2 | Dec | 12 | 67 | 26 | \$50 |
| St Alexis Hospital | | Church | 220 | 35 | 4 | 61 | 2,742 | No | 2 | Dec | 12 | 84 | 33 | \$50 |
| St John's Hospital | | Church | 210 | 12 | 10 | 73 | 1,796 | No | 2 | Dec | 12 | 78 | 32 | \$25 |
| St Luke's Hospital | | Church | 392 | 23 | 2 | 75 | 2,223 | Yes | 4 | Dec | 48 | 92 | 24 | \$2.50 |
| University Hospitals | | NPAasn | 972 | 37 | 14 | 40 | 3,711 | Yes | 7 | Jan | 12 | 348 | 54 | \$75 |
| Starling-Loving University Hospital | | State | 276 | 40 | 10 | 35 | 1,432 | Yes | 5 | Dec | 12 | 137 | 41 | \$2.50 |
| Miami Valley Hospital | Dayton O | NPAasn | 371 | 33 | 20 | 41 | 2,460 | No | 1 | Jan | 12 | 217 | 47 | \$75 |
| St Elizabeth's Hospital | Youngstown O | Church | 261 | 2 | 20 | 78 | 2,317 | No | 1 | Dec | 12 | 85 | 24 | \$5.00 |
| St Anthony Hospital | Oklahoma City | Church | 340 | 11 | 54 | 35 | 3,274 | Yes | 2 | Jan | 12 | 108 | 33 | |
| State University Hospital and Crippled Children's Hospital | Oklahoma City | State | 510 | 62 | 32 | 6 | 2,064 | Yes | 3 | Jan | 24 | 208 | 53 | Varies |
| Univ of Oregon Med School Hosps | Portland | County | 405 | 93 | | | 7,103 | Yes | 2 | Jan | 12 | 409 | 60 | \$30 |
| Arlington Memorial Hospital | Arlington Pa | NPAasn | 275 | 30 | 22 | 48 | 1,634 | Yes | 1 | March | 12 | 106 | 43 | None |
| Geo F Gelsinger Memorial Hospital | Danville Pa | NPAasn | 198 | 25 | 31 | 44 | 1,441 | Yes | 1 | Jan | 12 | 53 | 30 | \$5.00 |
| Germantown Dispensary and Hospital | | NPAasn | 350 | 18 | 32 | 50 | 1,105 | Yes | 1 | Jan | 12 | 84 | 26 | \$110 |
| Graduate Hospital of the Univ of Pa | | NPAasn | 475 | 36 | 9 | 65 | 1,241 | Yes | 2 | Jan | 12 | 100 | 40 | None |
| Jewish Hospital | | NPAasn | 426 | 34 | 12 | 54 | 2,401 | No | 2 | March | 12 | 174 | 62 | None |
| Pennsylvania Hospital | | City | 2,400 | 100 | | | 8,425 | Yes | 1 | Varies | 12 | 191 | 50 | \$2.50 |
| Philadelphia General Hospital | | NPAasn | 580 | 43 | 32 | 25 | 307 | Yes | 1 | July | 12 | 1,062 | 53 | \$100 |
| Allegheny General Hospital | | City | 405 | 69 | 3 | 33 | 4,069 | No | 1 | Feb | 12 | 100 | 23 | \$31 |
| St Francis Hospital | | Church | 537 | 29 | 13 | 63 | 1,861 | Yes | 1 | Nov | 12 | 122 | 32 | \$5.00 |
| Reading Hospital | | NPAasn | 268 | 44 | 2 | 54 | 1,062 | Yes | 1 | Jan | 12 | 154 | 61 | \$3.33 |
| Roper Hospital | Charleston S C | NPAasn | 300 | 63 | 4 | 33 | 1,232 | Yes | 1 | Jan | 12 | 152 | 23 | \$40 |
| Baroness Erlanger Hospital | Chattanooga Tenn | CyCo | 246 | 67 | 1 | 32 | 2,331 | Yes | 1 | Dec | 12 | 116 | 26 | \$150 |
| John G | Memphis Tenn | City | 400 | 93 | | | 2,170 | Yes | 2 | July | 12 | 221 | 10 | \$5.00 |
| Nashville | Nashville Tenn | City | 305 | 84 | | | 1,438 | Yes | 2 | Dec | 12 | 157 | 85 | \$75 |
| Vanderb | Nashville Tenn | NPAasn | 210 | 34 | 34 | 32 | 1,604 | No | 4 | March | 12 | 189 | 61 | \$3.40 |
| Daylor | Dallas Tex | Church | 350 | 20 | 20 | 60 | 2,474 | Yes | 1 | April | 12 | 9 | 30 | \$75 |
| John Se | Galveston Tex | City | 374 | 70 | 5 | 25 | 1,236 | Yes | 1 | Jan | 12 | 209 | 57 | None |
| John General Hospital | Norfolk Va | Church | 200 | 24 | 26 | 50 | 2,023 | Yes | 1 | Jan | 12 | 26 | 18 | \$5.00 |
| Medical College of Va Hosp Division | Richmond | NPAasn | 442 | 7 | 81 | 12 | 3,555 | Yes | 7 | Feb | 12 | 241 | 33 | \$2.50 |
| University of Virginia Hospital | University | State | 331 | 24 | 46 | 30 | 1,310 | Yes | 2 | Dec | 12 | 118 | 34 | \$22.50 |
| Charleston General Hospital | Charleston W Va | Corp | 200 | 3 | 6 | 91 | 3,554 | Yes | 2 | Jan | 12 | 49 | 24 | \$2.50 |
| State of Wisconsin General Hospital | Madison | State | 652 | 83 | 7 | 6 | | Yes | 3 | March | 36 | 257 | 70 | \$25 |
| THORACIC SURGERY | | | | | | | | | | | | | | |
| San Francisco Hospital | San Francisco | CyCo | 1,437 | 100 | | | No | 1 | Nov | 12 | 55 | 53 | \$5.00 | |
| Norwich State Tuberculosis Sanatorium (Unas-on Thames) | Norwich Conn | State | 404 | | 100 | | 265 | Yes | 1 | Varies | 12 | 32 | 41 | \$144 |
| Sea View Hospital | States Island N Y | City | 1,783 | 99 | 1 | | 304 | No | 3 | May & Nov | 12 | 244 | 40 | \$100 |
| City Hospital | Cleveland | City | 1,670 | 100 | | | Yes | 1 | Jan | 12 | 623 | 38 | \$75 | |
| TROPICAL DISEASES | | | | | | | | | | | | | | |
| Boston City Hospital | Boston | City | 1,732 | 90 | 0 | 1 | 61 | Yes | 1 | Varies | Indef | 802 | 29 | None |
| University Hospital of the School of Tropical Medicine | San Juan P R | Gov't | 49 | 72 | 15 | 13 | 5.3 | Yes | 2 | May | Indef | 20 | 57 | \$175 |
| TUBERCULOSIS | | | | | | | | | | | | | | |
| Arroyo Sanatorium | Livermore Calif | County | 187 | 100 | | | 421 | Yes | 1 | Jan | 24 | 7 | 3 | \$125 |
| Barlow Sanatorium | Los Angeles | NPAasn | 100 | 0 | 04 | | 183 | Yes | 1 | Varies | 12 | 1 | 100 | \$100 |
| Los Angeles County Hospital | Los Angeles | County | 3,410 | 100 | | | 1,310 | Yes | 2 | Varies | Indef | 2,551 | 50 | \$175 |
| Pottenger Sanatorium and Clinic | Monrovia Calif | Corp | 120 | | 70 | 30 | 179 | Yes | 1 | Varies | Indef | | | \$5.00 |
| San Francisco Hospital | San Francisco | CyCo | 1,497 | 100 | | | 785 | No | 1 | Nov | 12 | 55 | 53 | \$5.00 |
| Santa Clara County Hospital | San Jose Calif | County | 493 | 98 | 2 | | | Yes | 3 | Jan | 12 | 210 | 39 | |
| Fairmont Hospital of Alameda County | San Leandro Calif | County | 600 | 100 | | | 655 | No | 1 | Dec | 12 | 202 | 45 | \$100 |
| Union Printers Home and Tuberculosis Sanatorium | Colorado Springs | NPAasn | 194 | 100 | | | 2.0 | No | 3 | Varies | Indef | 12 | 21 | \$125 |
| National Jewish Hospital | Denver | NPAasn | 2.0 | 100 | | | 623 | Yes | 4 | Varies | 12 | 11 | 33 | \$100 |
| Sanatorium of the Jewish Consumptives Relief Society | Spivak Colo | NPAasn | 300 | 100 | | | 369 | Yes | 5 | Varies | Indef | 3 | 15 | \$100 |
| Underhill Meriden State Tuberculosis Sanatorium | Meriden Conn | State | 2.2 | 85 | 15 | | 377 | Yes | 3 | Varies | Indef | 2 | 22 | \$100 |
| Norwich | Norwich Conn | State | 491 | 100 | | | 72 | Yes | 1 | Varies | Indef | 32 | 41 | \$144 |
| City of Chicago Municipal Tuberculosis Sanatorium | Chicago | City | 1,206 | 100 | | | 3,192 | No | 1 | Varies | Indef | 113 | 41 | \$175 |
| Macon County Tuberculosis Sanatorium | Decatur Ill | County | 80 | 75 | | | 132 | No | 1 | July | 12 | 5 | 100 | \$100 |
| Peoria Municipal Tuberculosis Sanatorium | Peoria Ill | City | 63 | 100 | | | 192 | Yes | 1 | Varies | Indef | 9 | 64 | \$125 |
| Rockford Municipal Tuberculosis Sanatorium | Rockford Ill | City | 126 | 100 | | | 186 | No | 1 | Varies | 12 | | | \$100 |
| Boehne Tuberculosis Hospital | Evansville Ind | County | 120 | 30 | 37 | 33 | 783 | Yes | 1 | Varies | 12 | 29 | 100 | \$1.00 |
| Indiana State Sanatorium | Rockville Ind | State | 211 | 100 | | | 338 | Yes | 1 | Varies | 26 | | | \$5.00 |
| Western Maine | Greenwood Mountain | State | 1.0 | 81 | 19 | | 309 | Yes | 2 | Varies | 12 | 9 | 47 | |
| Baltimore City Hospital | Baltimore | City | 170 | 100 | | | 591 | No | 2 | Jan | 12 | 63 | 42 | \$10.67 |
| Butland State Sanatorium | Rutland Mass | State | 5.0 | 73 | | | 7.3 | Yes | 1 | Varies | 12 | 27 | 42 | \$75 |
| Weymouth County Hospital | South Hampton Mass | County | 140 | 100 | | | 200 | Yes | 1 | Varies | 12 | 23 | 78 | \$100 |
| Middlesex County Sanatorium | Waltham Ma | County | 238 | 100 | | | 43 | Yes | 2 | Varies | 12 | 14 | 22 | \$100 |
| Belmont Hospital | Worcester Ma | City | 275 | 71 | 29 | | 2.7 | Yes | 3 | Varies | 12 | 25 | 57 | \$123.33 |
| University Hospital | Ann Arbor Mich | State | 1.25 | 79 | | | 2.1 | Yes | 1 | Jan | 12 | 4.0 | 57 | \$2.50 |
| American Legion Hospital | Battle Creek Mich | State | 55 | 93 | | | 22 | No | 2 | Varies | Indef | 7 | 10 | \$1.00 |
| Herman K. Hospital | Detroit | City | 1,460 | 68 | 2 | | 2,200 | No | 10 | Jan | Indef | 1.1 | 23 | |
| Michigan State Sanatorium | Howell | State | 450 | 100 | | | 729 | Yes | 2 | Varies | Indef | 12 | 69 | \$125 |
| Jack on County Sanatorium | Jackson Mich | County | 64 | 93 | 4 | 3 | 53 | Yes | 1 | June | 12 | 4 | 50 | \$5.00 |
| Morgan Heights Sanatorium | Marquette Mich | County | 2 | 69 | | | 1.6 | Yes | 1 | July | 12 | 5 | 42 | \$125 |
| Wm H Maybury Sanatorium | Northville Mich | City | 810 | 100 | | | 1,257 | Yes | 5 | Varies | Indef | 1 | 20 | |
| Norwinton Sanatorium | Norwinton Minn | County | 229 | 95 | 3 | 1 | 446 | Yes | 2 | Jan & July | 12 | 16 | 55 | \$100 |
| Green Lake Sanatorium | Oak Terrace Minn | City | 70 | 63 | 8 | 4 | 1.41 | Yes | 1 | March | 12 | 70 | 65 | \$10 |
| City of Leavenworth Hospital | St Louis | City | 2.0 | 95 | | | 291 | No | 1 | April | 12 | 25 | 23 | \$1.00 |
| Mount St Pe Sanatorium | St Louis | Church | 125 | 61 | 43 | 6 | 350 | Yes | 1 | March | 12 | 21 | 67 | \$125 |

TUBERCULOSIS—(Continued)

| | | Control | Capacity | Percentage | | | Patients Treated Under Listed Specialty | Outpatient Service | Number of Residences | Time of Appointment | Length of Appointment in Months | Number of Autopsies | Autopsy Percentage | Beginning Salary per Month |
|---|----------------------|---------|----------|------------|----------|----------|---|--------------------|----------------------|---------------------|---------------------------------|---------------------|--------------------|----------------------------|
| | | | | Free | Part Pay | Full Pay | | | | | | | | |
| TUBERCULOSIS—(Continued) | | | | | | | | | | | | | | |
| Robert Koch Hospital | St Louis | City | 500 | 100 | | | 801 | No | 7 | March | 12 | 42 | 44 | \$150 |
| New Jersey Sanatorium | Glen Gardner | State | 494 | 100 | | | 813 | Yes | 4 | Varies | Indef | 1 | 83 | \$33.33 |
| Jersey City Hospital | Jersey City N J | City | 1 200 | 94 | 6 | | 470 | Yes | 2 | March & Oct | 12 | 158 | 16 | \$50 |
| Hudson County Tuberculosis Hospital and Sanatorium | Secaucus N J | County | 207 | 100 | | | 495 | Yes | 3 | Jan | 12 | 19 | 26 | |
| U S Marine Hospital | Ft Stanton N M | USPHS | 270 | 100 | | | 320 | No | 2 | Varies | Indef. | | 7 | 70 |
| Albany Hospital | Albany N Y | NPAssn | 610 | 8 | 75 | 17 | 270 | Yes | 2 | Dec | 12 | 353 | 72 | \$50 |
| Montefiore Hosp Country Sanatorium | Bedford Hills N Y | NPAssn | 290 | 96 | 4 | | 473 | No | 3 | Jan & July | 12 | * | * | \$100 |
| Kings County Hospital | Brooklyn | City | 1 160 | 100 | | | 1 703 | Yes | 2 | June & Nov | 12 | 939 | 19 | \$100 |
| Metropolitan Life Insurance Co Sanat | Mt McGregor N Y | NPAssn | 300 | 100 | | | 202 | Yes | 1 | Varies | Indef | 6 | 75 | \$100 |
| Dellvue Hospital | New York City | City | 2 333 | 100 | | | 2 600 | Yes | 9 | Jan & July | 12 | 1 344 | 33 | \$70 |
| Lenox Hill Hospital | New York City | NPAssn | 505 | 85 | 45 | | 205 | Yes | 1 | Varies | 12 | 127 | 33 | \$41.67 |
| Metropolitan Hospital | New York City | City | 1 425 | 100 | | | 603 | Yes | 5 | Feb | 12 | 214 | 19 | \$75 |
| Montefiore Hosp for Chronic Diseases | New York City | NPAssn | 711 | 79 | 8 | 13 | 517 | Yes | 3 | March & Oct | 12 | 365 | 73 | \$50 |
| Municipal Sanatorium | Gttsville N Y | City | 378 | 80 | 1 | | 933 | Yes | 7 | Jan & July | 12 | * | * | \$120 |
| Iola Monroe County Tuberculosis Sanatorium | Rochester N Y | County | 400 | 93 | 3 | 4 | 903 | Yes | 3 | Varies | 12 | 50 | 58 | \$100 |
| Sea View Hospital | Staten Island N Y | City | 1 788 | 99 | 1 | | 3 067 | No | 18 | May & Nov | 12 | 214 | 49 | \$100 |
| Trudeau Sanatorium | Trudeau N Y | NPAssn | 185 | 2 | 0 | 92 | 428 | No | 2 | Varies | Indef | 3 | 80 | Nona |
| Grasslands Hospital | Vaihaia N Y | County | 832 | 87 | 13 | | 668 | Yes | 4 | April & Oct | 12 | 290 | 64 | \$50 |
| North Carolina Sanatorium for the Treatment of Tuberculosis | Sanatorium Cleveland | State | 493 | 40 | 57 | 3 | 1 043 | Yes | 3 | Varies | Indef | 6 | 33 | \$120 |
| Ohio State Sanatorium | Mt Vernon | City | 1 670 | 100 | | | 683 | Yes | 1 | Jan | 12 | 628 | 38 | \$46.50 |
| Sunny Acres Cleveland Tuberculosis Sanatorium | | State | 240 | 100 | | | 683 | Yes | 2 | Varies | 12 | 24 | * | \$140 |
| Warrensville O | | City | 431 | 100 | | | 928 | Yes | 5 | April & Oct | 12 | 8 | 22 | \$125 |
| Eagleville Sanat for Consumptives | Eagleville Pa | NPAssn | 183 | 39 | 24 | 37 | 357 | No | 2 | Varies | Indef | * | * | \$125 |
| Philadelphia General Hospital | Philadelphia | City | 2 400 | 100 | | | 1 900 | Yes | 1 | July | 12 | 1 963 | 53 | \$100 |
| White Haven Sanatorium | White Haven Pa | NPAssn | 250 | 2 | 93 | | 623 | No | 1 | Varies | 16 | 52 | 75 | \$75 |
| State Sanatorium | Wallom Lake R I | State | 490 | 100 | | | | 1 | 1 | July | 12 | 55 | 62 | \$50 |
| Pine Breeze Sanatorium | Chattanooga Tenn | NPAssn | 225 | 93 | 6 | 1 | 390 | Yes | 1 | Varies | Indef | 5 | 16 | \$120 |
| St Joseph's Sanatorium | El Paso Tex | Chnrch | 75 | 3 | 8 | 89 | 175 | No | 1 | June | 12 | 7 | 73 | \$100 |
| Hopemont Sanitarium | Hopemont W Va | State | 400 | 100 | | | 699 | Yes | 4 | July | 12 | 23 | 51 | \$125 |
| Wisconsin State Sanatorium | Statecan | State | 240 | 93 | 1 | 1 | 263 | Yes | 3 | Varies | Indef | 6 | 25 | \$155 |

UROLOGY

| | | | | | | | | | | | | | | |
|--------------------------------------|-------------------|--------|-------|-----|----|-------|-------|-----|-------------|---------------|-------|-----|---------|---------|
| Hillman Hospital** | Birmingham Ala | County | 474 | 100 | | 766 | Yes | 2 | Jan | 12 | 241 | 28 | \$30 | |
| Los Angeles County Hospital | Los Angeles | County | 3 410 | 100 | | 2,598 | Yes | 4 | Varies | 36 | 2,551 | 59 | \$10 | |
| San Francisco Hospital | San Francisco | City | 1 487 | 100 | | 613 | No | 1 | Nov | 12 | 553 | 63 | None | |
| Stanford University Hospitals | San Francisco | NPAssn | 324 | 6 | 39 | 55 | 427 | Yes | 1 | Jan | 12 | 118 | 63 | \$23.75 |
| University of California Hospital | San Francisco | State | 293 | 68 | | 32 | 530 | Yes | 1 | Feb | 12 | 146 | 73 | \$50 |
| New Haven Hospital | New Haven Conn | NPAssn | 511 | 37 | 37 | 26 | | Yes | 1 | Jan. & July | 12 | 232 | 57 | |
| Gallinger Municipal Hospital | Washington D C | City | 1 220 | 100 | | 274 | No | 1 | Jan | 12 | 497 | 34 | \$50 | |
| Grady Hospital Emory University | | City | 275 | 100 | | 172 | Yes | 1 | Jan | 12 | 264 | 20 | | |
| Division (colored unit) | Atlanta Ga | NPAssn | 293 | 26 | 69 | 5 | | Yes | 1 | Jan | 12 | 184 | 72 | None |
| University of Chicago Clinics | Chicago | City | 577 | 92 | 4 | 4 | 312 | Yes | 1 | April | 12 | 414 | 41 | \$20.83 |
| Indianapolis City Hospital | Indianapolis | State | 904 | 87 | 6 | 5 | | Yes | 3 | July | 12 | 325 | 57 | \$20.83 |
| University Hospitals | Iowa City | State | 1,913 | 100 | | 4,337 | Yes | 2 | May & June | 12 | 1 347 | 40 | \$25 | |
| Charity Hospital | New Orleans | NPAssn | 389 | 31 | 38 | 31 | | Yes | 1 | Jan. to March | 12 | 142 | 46 | \$25 |
| Touro Infirmary | New Orleans | NPAssn | 389 | 31 | 38 | 31 | | Yes | 1 | May | 12 | 603 | 50 | \$50 |
| Johns Hopkins Hospital | Baltimore | NPAssn | 602 | 53 | 21 | 26 | 666 | Yes | 3 | Varies | 12 | 102 | 51 | |
| Beth Israel Hospital | Boston | NPAssn | 215 | 18 | 32 | 50 | 240 | No | 1 | Varies | 12 | 102 | 51 | |
| Massachusetts General Hospital | Boston | NPAssn | 424 | 47 | 64 | 19 | 323 | Yes | 2 | Varies | 24 | 235 | 57 | \$41.67 |
| Battle Creek Sanitarium | Battle Creek Mich | NPAssn | 500 | 33 | 67 | | 271 | No | 1 | Feb | 12 | 7 | 22 | \$100 |
| City of Detroit Receiving Hospital** | Detroit | City | 650 | 100 | | 766 | Yes | 2 | Dec | 12 | 577 | 28 | \$33.33 | |
| Elkose Hospital (Dr William J Sey | | | | | | | | | | | | | | |
| mour Hospital) | Elkose Mich | County | 1,363 | 100 | | | Yes | 2 | March | 12 | 551 | 40 | \$37 | |
| Ancker Hospital | St Paul | City | 900 | 100 | | 512 | Yes | 1 | March | 12 | 516 | 65 | \$50 | |
| St Louis City Hospital | St Louis | City | 806 | 100 | | 809 | Yes | 1 | March | 12 | 704 | 43 | | |
| Bayonne Hospital and Dispensary** | Bayonne N J | NPAssn | 225 | 80 | 2 | 18 | 344 | Yes | 1 | Varies | 12 | 82 | 51 | None |
| Jersey City Hospital | Jersey City N J | City | 1,200 | 94 | 6 | 1 165 | Yes | 1 | March & Oct | 12 | 158 | 16 | None | |
| Newark City Hospital | Newark N J | City | 700 | 100 | | | No | 1 | July | 12 | 301 | 29 | \$50 | |
| Kings County Hospital | Brooklyn | City | 3 160 | 100 | | 2,917 | Yes | 2 | June & Nov | 12 | 939 | 19 | None | |
| Long Island College Hospital | Brooklyn | NPAssn | 473 | 18 | 34 | 48 | 370 | Yes | 2 | Jan | 12 | 126 | 34 | \$22.50 |
| Bellevue Hospital | New York City | City | 2,333 | 100 | | 1 545 | Yes | 1 | Jan & July | 12 | 1 344 | 33 | \$33.33 | |
| Morrisania City Hospital | New York City | City | 593 | 100 | | 649 | No | 3 | Varies | 18 | 247 | 27 | None | |
| New York Hospital | New York City | NPAssn | 1 010 | 8 | 73 | 19 | 740 | Yes | 4 | Jan | 12 | 316 | 57 | \$25 |
| N Y Post-Grad Med School and Hosp | New York City | NPAssn | 411 | 13 | 3 | 84 | 317 | Yes | 1 | Varies | 12 | 81 | 26 | |
| Presbyterian Hospital | New York City | NPAssn | 965 | 33 | 42 | 23 | 1 161 | Yes | 5 | Varies | 12 | 231 | 45 | \$41.67 |
| Strong Memorial and Rochester Mu | | | | | | | | | | | | | | |
| nicipal Hospitals | Rochester N Y | NP Cy | 645 | 49 | 39 | 12 | 472 | Yes | 2 | Jan | 12 | 332 | 66 | \$41.67 |
| Sea View Hospital** | Staten Island N Y | City | 1 788 | 99 | 1 | 165 | No | 1 | May & Nov | 12 | 244 | 49 | \$100 | |
| Duke Hospital | Durham N C | NPAssn | 456 | 60 | 24 | 10 | 608 | Yes | 2 | Jan | 36 | 195 | 57 | \$41.67 |
| City Hospital | Cleveland | City | 1,670 | 100 | | | Yes | 1 | Jan | 12 | 628 | 38 | \$71.50 | |
| University Hospitals | Cleveland | NPAssn | 972 | 37 | 14 | 49 | 680 | Yes | 1 | Jan | 12 | 348 | 54 | \$50 |
| Starling Loving University Hospital | Columbus O | State | 276 | 46 | 19 | 30 | 263 | Yes | 1 | Dec. | 12 | 137 | 41 | \$25 |
| Graduate Hospital of the Univ of Pa | Philadelphia | NPAssn | 475 | 36 | 9 | 55 | 154 | Yes | 1 | Jan | 12 | 100 | 49 | None |
| Hospital of the Univ of Pennsylvania | Philadelphia.. | State | 598 | 36 | 24 | 40 | 328 | Yes | 1 | Jan | 12 | 216 | 67 | None |
| Leavenworth Hospital | Philadelphia | NPAssn | 560 | 43 | 32 | 25 | 307 | Yes | 1 | Varies | 12 | 191 | 50 | \$25 |
| Presbyterian Hospital | Philadelphia | Church | 425 | 80 | 12 | 58 | 201 | Yes | 1 | Varies | 12 | 95 | 38 | None |
| Mercy Hospital | Pittsburgh | Church | 670 | 35 | 35 | 30 | 301 | Yes | 1 | Dec. | 12 | 144 | 32 | |
| University of Virginia Hospital | University | State | 311 | 24 | 46 | 30 | 440 | Yes | 2 | Dec | 12 | 113 | 34 | \$22.50 |
| State of Wisconsin General Hospital | Madison | State | 652 | 83 | 7 | 5 | | Yes | 3 | March | 36 | 257 | 70 | \$25 |
| Milwaukee County General Hospital | Wauwatosa Wis | County | 1 120 | 100 | | 502 | Yes | 1 | May | 12 | 404 | 31 | \$50 | |

Because of low death rate autopsy figures not compiled

1 Fellowships

2 No applications considered except from own interns

3 Includes urology

4 Residences at Buffalo City Hospital are three year appointments including internship Salary and bonus paid in lieu of maintenance

5 Reappointments annually for three and four years following internship

6 Dental and medical degrees required

7 Recently merged Residences reported available*

8 Includes obstetrics

9 Includes pediatrics

10 Includes neurosurgery

11 Includes neurology

12 Not a hospital outpatients only

13 Appointments are for four years and include two years at City of

Detroit Receiving Hospital in gynecology and two years at

Herman Klefer Hospital to obstetrics

14 Affiliated with Barnes Hospital St Louis gynecology

15 Salary in part as chief house officer

16 Affiliated with Crippled Children's Hospital School and Hospital for Crippled Adults Memphis

17 Clinical material available through affiliation with Anthony A Brady Maternity Hospital Memorial Hospital St Peters Hospital and St Margaret's House and Hospital Albany and Hudson City Hospital Hudson N Y Salary in lieu of maintenance

18 Affiliated with Infants Hospital, Boston

19 Three serve six months in obstetrics.

20 Separate appointments in roentgenology and in radiation therapy

21 Training in radiation therapy only

22 Three months on medical service at University Hospitals Minneapolis

23 Includes proctology

24 First six months spent at New York Post-Graduate Medical School, New York City

25 Includes dermatology and syphilology

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 29, 1936

TECHNICIANS

When the Council on Medical Education and Hospitals first began its work in 1905, the place of the technician in medicine was not significant. Today there are technicians of many varieties. A partial list includes clinical laboratory technicians, x-ray technicians, occupational therapy technicians, physical therapy technicians, hydrotherapy technicians, dietetic technicians, anesthetic technicians, dental technicians and many others. These professions, auxiliary to the practice of medicine, have grown up as the need for their services became apparent. Obviously their growth was uncontrolled and unstandardized since the exact need had not in itself been defined and since the new technical discoveries on which their services depend had not yet been even partially developed. Now, however, the significance of these auxiliary professions is becoming apparent. For that reason the Council on Medical Education and Hospitals in response to resolutions coming through the House of Delegates of the American Medical Association has undertaken an investigation of the available schools in the fields of physical therapy, occupational therapy and laboratory service and has set up certain minimum standards of education to guide students who wish to affiliate themselves with medicine in these fields. The standards for such schools are listed in this issue of THE JOURNAL.

There seem now to be available thirteen schools for physical therapy technicians which conform to the standards adopted by the American Medical Association. In its survey the Council inspected thirty-five schools and received complete information concerning their organization, faculty, prerequisites, curriculum, physical plant, records and affiliations. In the work the American Congress on Physical Therapy and the American Physiotherapy Association cooperated.

One hundred and ninety-six schools for the training of clinical laboratory technicians were visited by the investigators of the Council on Medical Education and Hospitals, and ninety-six of these schools were found to conform to the standards adopted by the American Medical Association. The American Society of Clin-

ical Pathologists did the pioneering work in this field and lent its assistance to the Council in this study of schools for clinical laboratory technicians. The number of students in such schools varied from none in some of the schools that were found acceptable to 182 in the University of Minnesota. Incidentally, the next larger schools after the University of Minnesota boasted of thirty, twenty-three, and twenty-one students respectively. In all, there are ten universities and colleges which have established courses with a graded curriculum covering four years and leading to a university degree.

In the field of occupational therapy the Council has set up the essentials of an acceptable school and has investigated a considerable number of institutions. However, the specialty is in itself so new and the schools thus far on such an experimental basis that the Council has set Jan. 1, 1939, as the date on which such schools shall have set up an acceptable standard and curriculum before providing a list of acceptable schools.

Today medicine consists not of one profession but of many professions. In addition to the 155,000 physicians licensed to practice there are well nigh 1,500,000 people engaged in full time service for health and for the sick. In a profession closely allied to the welfare of mankind, greatly concerned with the safety and health of human beings, there must be minimum standards of education, morals and practice. In accepting these new responsibilities, the Council on Medical Education and Hospitals continues to render an efficient and useful service for the advancement of medicine and the welfare of the public.

STATUS OF VACCINATION AGAINST POLIOMYELITIS

Since the introduction more than a year ago of two poliomyelitis vaccines,¹ nearly 20,000 persons have received one or more inoculations of these monkey spinal cord preparations bearing the virus. Similar vaccines were tested in the laboratory by several groups during the previous two decades. Killed and partially attenuated virus was employed without demonstration of an adequate immunity in more than a certain percentage of experimental monkeys. Among the methods used to "attenuate" the virus, phenol, formaldehyde, desiccation, heating below the thermal death point of the virus and dilution were tried. Virus adsorbed to alumina gel and incorporated in olive oil and agar were tested in the hope that prolonged contact with the host might increase the quantity of antibody production. Neutralizing antibodies were produced in nearly all these attempts, but few animals resisted intracerebral or intranasal application of virulent virus as an

¹ Brodie Maurice and Park W. H. Active Immunization Against Poliomyelitis. J. A. M. A. 105: 1089 (Oct. 5) 1935. Kolmer J. A. Klugh G. A. and Rule Anna M. A Successful Method for Vaccination Against Acute Anterior Poliomyelitis. J. A. M. A. 104: 456 (Feb. 9) 1935. Kolmer J. A. Susceptibility and Immunity in Relation to Vaccination in Acute Anterior Poliomyelitis. Ibid. 105: 1956 (Dec. 14) 1935.

immunity test² Indeed, in the hands of most workers a certain number developed paralysis in the course of vaccination whenever the immunizing preparations contained living virus. None of these early investigators ventured to apply their results to man. These facts apply as well to virus mixed with sodium ricinoleate, since McKinley and Larson³ have shown that one of four monkeys succumbed to the disease during immunization.

Flexner⁴ and many others warned that there was no precedent in the assumption that a poliomyelitis virus adapted to animals for many generations was less virulent for man, the original host, although this seemed to be the case with other viruses (vaccinia, rabies, psittacosis). Since it was known that experimental monkeys developed the disease in only a few instances when fully virulent virus preparations were administered intracutaneously or subcutaneously, it was believed that little danger was involved in the administration of vaccines even though some active virus might be present.

The success in production of active immunity in other virus diseases (foot and mouth disease, louping ill, influenza, psittacosis and herpes) with preparations treated with formaldehyde that contained little or no living virus prompted Brodie⁵ to reapply this method to poliomyelitis. This investigator showed that poliomyelitis virus treated with dilute solution of formaldehyde was noninfectious for monkeys but still produced virus-neutralizing substances if employed while fresh. The stage was thus set for the application of this method to man.

Even while these inoculations were proceeding, three reports by experienced workers in this field appeared denying the effectiveness of immunity produced by either the formaldehyde vaccine (Brodie) or the ricinoleated vaccine. Both Schultz and Gebhardt⁶ and Olitsky and Cox⁷ showed that such "immunized" monkeys were not resistant to intracerebral or intranasal test applications of virus. Gordon⁸ came to a similar conclusion in a study of the response of monkeys to virus adsorbed to alumina gel. However, these facts have been accepted for years. The lack of resistance to such heroic tests as given by intracerebral and intranasal routes does not alone negate the practical value of a vaccine, as antirabic vaccination⁹ and vac-

cination against herpes¹⁰ and louping ill¹¹ likewise fail to produce an immunity against a test dose introduced directly into the nervous system. Cox and Olitsky have produced such an immunity to equine encephalomyelitis¹². Field studies of a vaccine in man seemed to be the only method of determining the worth of vaccination against poliomyelitis.

Paralytic poliomyelitis with high fatality resulted from the use of a vaccine prepared with sodium ricinoleate. Official action by the United States Public Health Service followed the report of Leake¹³. In all, nine cases with five deaths occurred following the use of this vaccine under conditions that clearly incriminated the vaccine, since the disease set in after a characteristic incubation period and paralysis appeared in the same or contralateral extremity in which the vaccine had been given. The unusually high mortality was explained as due to primary involvement of the cervical cord with spread to the medulla. The case against the formaldehyde vaccine (Brodie) is considered by many to be inconclusive and too hastily drawn. Seven cases have been reported¹⁴ at various intervals following the use of this vaccine. All occurred in areas where poliomyelitis was epidemic. In all cases adequate, and in some instances multiple, opportunities for exposure to the natural disease have been traced. The interval elapsing between the last administration of the vaccine and the onset of paralysis was five days, fourteen days, seventeen days, twenty-three days, six weeks, twenty-three weeks and thirty-two weeks. None of these cases can be ascribed to the vaccine with any degree of certainty. The diagnosis is in doubt in two cases and in the latter three the interval between vaccination and onset of the disease was unduly long to incriminate the vaccine. Spasmophilia with low blood calcium and bilateral otitis media initiated disease nine days before weakness was noted in the fourth patient. Even in the one remaining case that was fatal, exposure to the natural disease was traced. Virus was isolated from the spinal cord in this case by Kessel¹⁵ but comparisons to known virus strains have not been completed. However, little is known of the adaptability of monkey virus to man, so that conclusions drawn from such studies can be accepted only with reservations.

Five of the seven cases mentioned occurred in Kern County, Calif., where a controlled study of the vaccine has been carried out by Gifford and Bogen¹⁴. These authors vaccinated 3723 persons during 1935. Contact was traced in more than a thousand cases during that year. Of these, 545 were vaccinated, usually within a

2 Summarized in Poliomyelitis International Committee for the Study of Infantile Paralysis, Baltimore, Williams and Wilkins Company 1932.

3 McKinley J. C. and Larson W. P. Sodium Ricinoleate and Active Immunity Against Experimental Monkey Poliomyelitis. *Proc. Soc. Exper. Biol. & Med.* 24: 297 (Jan.) 1927.

4 Flexner Simon. Concerning Active Immunization in Monkeys. *Science* 82: 420 (Nov. 1) 1935.

5 Brodie Maurice. Active Immunization in Monkeys Against Poliomyelitis with Germicidally Inactivated Virus. *J. Immunol.* 28: 1 (Jan.) 1935.

6 Schultz E. W. and Gebhardt L. P. On the Problem of Immunization Against Poliomyelitis. *California & West Med.* 43: 111 (Aug.) 1935.

7 Olitsky P. K., and Cox, H. R. Experiments on Active Immunization Against Experimental Poliomyelitis. *J. Exper. Med.* 63: 109 (Jan.) 1936.

8 Gordon, F. B. Active and Passive Immunity in Experimental Poliomyelitis. *Arch. Path.* 21: 558 (April) 1936.

9 Galloway I. A. The Fixed Virus of Rabies. The Antigenic Value of the Virus Inactivated by the Photodynamic Action of Methylene Blue and Proflavine. *Brit. J. Exper. Path.* 15: 97 (April) 1934.

10 Andervont, H. B. Herpetic Virus in Mice. *J. Infect. Dis.* 49: 507 (Dec.) 1931. Bedson S. P. Immunization with Killed Herpes Virus. *Brit. J. Exper. Path.* 12: 254 (Aug.) 1931.

11 Gordon W. S. Comparative Aspects of Louping Ill in Sheep and Poliomyelitis of Man. 1: 885 1934.

12 Cox, H. R. and Olitsky P. K. Active Immunization of Guinea Pigs with the Virus of Equine Encephalomyelitis. II. Immunization with Formalized Virus. *J. Exper. Med.* 63: 745 (May) 1936.

13 Leake, J. P. Poliomyelitis Following Vaccination Against the Disease. *J. A. M. A.* 105: 2152 (Dec. 28) 1935.

14 (a) Brodie Maurice. Personal communication. (b) Gifford M. A., and Bogen Emil. Immunization Against Infantile Paralysis in Kern County, Calif. *J. A. M. A.*, to be published.

15 Kessel J. Personal communication.

fortnight of exposure. But two cases (0.37 per cent) developed in the vaccinated controls, while six (1.26 per cent) occurred in 477 not so treated. While the incidence of poliomyelitis was little different in the vaccinated population (0.13 per cent) as compared with those remaining unvaccinated (0.14 per cent), opportunity for infection was said to have been definitely greater in the vaccinated group. Among 1,275 school children vaccinated in a case-matching controlled experiment, none developed the disease, while five of a similar number of unvaccinated controls came down with it. In New York and its environs^{16a} 2,850 children have received the vaccine. Two cases developed, one six and another thirty-two weeks after vaccination, under circumstances in which the vaccine could be completely exonerated. Near Philadelphia¹⁶ 500 persons were vaccinated and in North Carolina¹⁷ 458 injections were made. No cases developed in the latter two groups.

While it has been pointed out¹⁸ that poliomyelitis is not a sufficient public health problem to warrant vaccination, as the seasonal incidence of the disease seldom exceeds from 20 to 40 per hundred thousand, the economic disability and psychic trauma produced by residual paralysis lessen such objections to a considerable extent. The possibilities of specific prevention have not been explored to the limit. On account of the isolation of the central nervous system from the rest of the body, even from the blood, future experiments should explore the possibilities of intimate contact between the immunizing preparation and the spinal cord. Evidence points to the poliomyelitis virus as a poor antigen. Greater antigenic mass relative to protein content might increase the effectiveness of vaccines. The past history of formaldehyde vaccine (Brodie) should encourage further attempts to evolve an improved product in the laboratory. If application is again made to man, immunization should be carried out in interepidemic months and in the absence of the epidemic disease, as disregard of these precautions has directed undue suspicion against the vaccine.

Recent immunologic studies have further complicated the problem of vaccination. Aycock and Hudson,¹⁹ who studied blood samples from the immunization experiment in North Carolina,¹⁷ found virus-neutralizing substances to have been produced at the same rate in an unvaccinated control group as among those who received the vaccine. The suspicion that the virus-neutralizing antibodies did not accurately represent the immune state has been raised by the large number of convalescents that do not have these substances. Harmon and his co-workers²⁰ have shown that paral-

ysis can occur with neutralizing substances present in the preparalytic and early paralytic days of the disease in man. If significant at all in active immunity against poliomyelitis, there may be some critical level that determines the immune state. The significance of the neutralizing substances was discussed at length by Harmon and Harkins²¹ in *THE JOURNAL* last week.

While further experimental studies on specific vaccination are awaited with interest, an effective experimental method of blockade of infection at the nasopharyngeal portal of entry has been discovered by three groups of independent workers.²² Tannic acid, trimetaphenol (picric acid) and mercurochrome in suitable dilution sprayed into the nostrils render monkeys refractive to intranasal instillation of virus for many days. Only elaborate field studies can determine whether this method is effective in limiting the spread of poliomyelitis in man.

Current Comment

PROTECTING THE PUBLIC

Control of the profession in the public interest, as clearly shown by Justin Miller,¹ is a function of the state. Expressed in various ways and in differing degrees in successive ages and with respect to the several professions, the power of the state remains, even when dormant, ultimate and unassailable. The regulation of medical practice in such a manner as to safeguard the citizens against the dangers of ignorance and incompetence is therefore one of the most fundamental responsibilities of the state. That the people of the United States acknowledge the vital importance of such regulation is evidenced by the fact that every one of the forty-eight states and the District of Columbia have enacted statutes prohibiting the practice of medicine by unqualified persons. The enforcement of these statutes, however, has been severely hampered, almost nullified, by lack of funds. No state has appropriated funds to provide adequately for the examination of candidates for a medical license. Judgment and skill, which are of the utmost importance in the art of medicine, obviously cannot be appraised by a purely written examination, but the state boards, financially dependent on the fees of applicants, are unable to underwrite the cost of a complete practical examination. Facing this dilemma, the boards, in order to discharge

21 Harmon P. H. and Harkins H. N. The Significance of Neutralizing Substances in Resistance and Recovery from Poliomyelitis. *J. A. M. A.* 107:552 (Aug. 22) 1936.

22 Armstrong Charles and Harrison W. T. Prevention of Experimental Intranasal Infection with Certain Neurotropic Viruses by Means of Chemicals Instilled into the Nostrils. *Pub. Health Rep.* 51:2 (Feb. 28) 1936. Sabin A. B. Oltky P. K. and Cox H. R. Protective Action of Certain Chemicals Against Infection of Monkeys with Aerially Instilled Poliomyelitis Virus. *J. Exper. Med.* 63:877 (June) 1936. Schultz E. W. and Gebhardt L. P. Prevention of Intranasally Instilled Poliomyelitis in Monkeys by Previous Intranasal Injection with Certain Chemical Agents. *Proc. Soc. Exper. Biol. & Med.* 34:113 (March) 1936.

1 Miller Justin. The Philosophy of Professional Licensure. *Proceedings of the Annual Congress on Medical Education Licensure Hospitals* Feb. 12 1934.

16 Nielsen Percival and Strumia M. M. Personal communication.
17 Cihnam A. C. and Onstott R. H. Results of Field Studies with the Prole Poliomyelitis Vaccine. *Pub. Health Rep.* 51:160 (Feb. 14) 1936.

18 Leake J. P. Poliomyelitis. Present Knowledge and Its Bearing on Control. *J. A. M. A.* To be published.

19 Aycock W. L. and Hudson C. C. The Development of Neutralizing Substance for Poliomyelitis Virus in Vaccinated and Unvaccinated Individuals. *New England J. Med.* 214:715 (April 9) 1936.

20 Harmon P. H. Harkins H. N. Fahey J. J. and Walbotten P. W. Significance of the Early Appearance of Neutralizing Substances in Poliomyelitis in Man. *Proc. Soc. Exper. Biol. & Med.* 34:593 (June) 1936.

their obligations to their constituents to the best of their ability, have resorted to the expedient of admitting to the examination only the graduates of approved schools. This procedure is, in effect, the only real safeguard against the licensing of unqualified persons. Since 1907 it has been possible for the states to adopt this policy because the American Medical Association, through the Council on Medical Education, was able to give to the public a trustworthy classification of medical schools. Without such a list, elevation of the standards of medical education and medical practice would have been impossible. The recent survey of medical education has convincingly demonstrated that appraisal of the medical schools of the country is a task far exceeding the resources of any state board. Thus it has come about that the Council, an extralegal body, without power save the power of public opinion, has become the most important factor in the procedure by which the states perform their regulatory function in the field of medicine. To the extent that the states rely on the findings of the Council, the people will be assured that only well trained and competent physicians will be licensed to practice. When examining boards neglect to avail themselves of the information furnished by this association, the character of medical service available in their respective communities must necessarily deteriorate.

EFFECTIVE TEACHING

The Flexner Report¹ of 1910 called public attention to two of the glaring defects of the medical schools of that day. One was the failure to enforce a reasonable standard of preliminary education in the admission of students. Another was the general dependence on didactic methods in the teaching of medicine and the want of hospital and dispensary facilities for personal and practical instruction in the clinical branches. The fixing of entrance requirements brought about a rapid decrease in the number of students and the closing of many of the weakest schools. When, after the war, the number of applicants began steadily to increase, it was usually taken for granted that the number of students that could be effectively taught depended on the size of the preclinical laboratories, and that in the clinical years, if desired, larger classes could be accommodated. Data from the medical schools of the United States and Canada now being analyzed by the Council indicate that the reverse is true. Adequate clinical facilities, under effective control by the school, are enjoyed by comparatively few institutions. Laboratories may be utilized by successive sections, but patients cannot be subjected to repeated examinations. In the preclinical subjects the curriculum can, if necessary, be adjusted to classes of 100 or 150, but the intimate contact of student and patient that is needed for the best type of clinical teaching is rarely obtainable for such large groups. For effective teaching in our medical schools, the factor limiting the size of classes would be in most cases the clinical rather than the preclinical facilities.

¹ Medical Education in the United States and Canada. Bull. 4 Carnegie Report. June 4, 1910.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ALABAMA

The Poliomyelitis Epidemic—The state health department of Alabama reports that 294 cases of poliomyelitis had been reported in the state from June 1 to August 21, with twenty-four deaths. Up to August 7 the number of cases was 247. Although the spread of the epidemic appears to be declining, Dr. James N. Baker, state health officer, advised against lifting restrictions on gatherings and migrations until no new cases have appeared in a county for twenty-one days. Dr. Baker pointed out that the epidemic has followed the main highways. National Guard encampments and the annual convention of the Alabama Department, American Legion, were postponed because of the epidemic. Newspapers reported August 6 that in Lauderdale County, a northern county which has been one of the principal centers of the disease, a ban on meetings for adults has been removed. Motion picture theaters, churches and other gathering places were closed for several days. The Birmingham *News* reported August 3 that Tennessee had had eighty-one cases with five deaths, Georgia and Mississippi nineteen cases each.

COLORADO

State Medical Meeting in Glenwood Springs—The sixty-sixth annual session of the Colorado State Medical Society will be held at Hotel Colorado, Glenwood Springs, September 9-12, under the presidency of Dr. Walter W. King. Guest speakers will include

Dr. Harold N. Cole. Cleveland. The Syphilis Problem. How Shall We Meet It?

Dr. William W. Bauer. director. Bureau of Health and Public Instruction. American Medical Association. Chicago. Relationships Between the Practicing Physician and the Public Health Worker.

Dr. Henry N. Harkins. Chicago. Surgical Shock from Burns. Freezing and Similar Traumatic Agents.

Clinicopathologic conferences will be held each morning beginning Thursday. At a joint meeting of the society with the Woman's Auxiliary Friday evening Dr. John H. J. Upham, Columbus, Ohio, President-Elect of the American Medical Association, will make an address entitled "These Changing Times in Medicine." Friday morning there will be a presentation of the past presidents of the society in the order of their seniority. Dr. Hubert Work, Englewood, former President of the American Medical Association and Secretary of the Interior under President Coolidge, is the senior living president of the society, having served in 1894-1895. The annual golf tournament will be held on the Hotel Colorado golf course Friday. The annual banquet and president's reception will be held Saturday evening. Dr. Albert C. McClanahan, Delta, will be toastmaster at the banquet, which will be dedicated to Dr. Josiah N. Hall, Denver, in recognition of his fiftieth year of attendance at the annual meetings of the society. He has been a member fifty-two years. Dr. Hall, now 76 years old, has been president of the state society, of the state board of health and of the state board of medical examiners. He served on the Judicial Council of the American Medical Association from 1921 to 1931 and was a member of the House of Delegates at various times from 1903 to 1921. He has been professor of medicine at the University of Colorado School of Medicine for many years. In 1916 he was president of the American Therapeutic Society. Dr. Arthur Jackson Markley, Denver, is the incoming president of the society. Physicians from other states who are members of their county and state societies are invited to attend this meeting.

FLORIDA

Lectures on Tuberculosis—The tuberculosis committee of the Florida Medical Association and the Florida Tuberculosis and Health Association with other cooperating agencies recently conducted an institute in Miami for Negro physicians. Lecturers included Drs. Emile Bryant Woods, Jacksonville, director of the newly created bureau of maternal and child health, state department of health, on gynecologic conditions in persons with tuberculosis. Thomas E. Buckman, Jacksonville, childhood tuberculosis, Mathew Jay Flipse, Miami, director of the institute, symptomatology of pulmonary tuberculosis, George

N MacDonell, Miami, bovine tuberculosis and its relation to tuberculosis in children, Ellsworth C Brunner, physical diagnosis, and James H Putnam, the role of general rest.

ILLINOIS

Expansion of the Elgin State Hospital—A program of expansion is under way at the Elgin State Hospital, Elgin, which ultimately will involve the expenditure of \$14,000,000 in addition to \$3,000,000 which has already been appropriated from PWA funds. Plans have been approved for a diagnostic center, with a maximum of 200 beds, a tuberculosis pavilion, with 100 beds, infirmaries for male and female patients, a cottage for male patients, a two story apartment building to house members of the medical staff and their families, interns and residents, and a two story building for employees, with separate quarters for registered nurses and space for classroom and recreational activities. In the last five years the patient population at Elgin State Hospital has increased from 3,466 to 4,600. During the latter part of 1935, more than 600 patients were transferred to the Manteno State Hospital, Manteno, where a building expansion program has also been under way (THE JOURNAL, February 15, p. 543).

Chicago

Graduate Course on Cancer—The tumor clinic of Michael Reese Hospital is sponsoring a graduate course on tumors during the week September 21-27. Morning sessions will be held at the Palmer House and afternoon sessions at the hospital, except those of Wednesday September 23, which will be at the Veterans' Administration Facility, Hines, Ill. Subjects and speakers are as follows: Monday, symposium on cancer of the breast, with Sir George Lenthal Cheatle, London, Dr. Henri Coutard, Paris, and Dr. Max Cutler as speakers, Tuesday, intra-oral cancer, Dr. Coutard and Dr. Cutler, Thursday, pelvic tumors, Dr. Coutard and Dr. Cutler, Friday, causes of cancer, Sir G. Lenthal Cheatle, and biopsy, Dr. Cutler, Saturday morning, high voltage x-rays, Arthur H. Compton, Ph.D., professor of physics at the University of Chicago, Gioacchino Failla, Ph.D., physicist of Memorial Hospital, New York, and Dr. Coutard. The Wednesday session at Hines Hospital will consist of clinics in which cases of interest from the cancer service of the hospital will be presented. Friday afternoon there will be demonstrations at Michael Reese of radium treatment of cancer of the cervix, insertion of radium needles, construction of radium molds and transillumination of the breast. In the evening there will be a banquet at which Dr. Morris Fishbein, editor of THE JOURNAL, will be the speaker. Sunday will be devoted to informal round table conferences.

INDIANA

Collection of Leonardo da Vinci Drawings—A series of engraved copies of the anatomic drawings in the notebooks of Leonardo da Vinci have been presented to the Indiana University School of Medicine by Dr. George A. Collett, Crawfordsville. The drawings have been in the Royal Library at Windsor since the reign of Charles II, and the prints made in 1795, are the work of Francesco Bartolozzi, a member of the Royal Academy and the historical engraver to King George III. The explanations accompanying the original drawings were written backward with the left hand, as all of da Vinci's notes were written, and must be read with the aid of a mirror. According to the state medical journal, it is supposed that the da Vinci notebooks were taken to England by the Earl of Arundel when he was ambassador at the court of Ferdinand II. They remained unappreciated in the Royal Library until the latter part of the eighteenth century, when they were brought to the attention of William Hunter.

IOWA

Society News.—Dr. Olan R. Hyndman, Iowa City, addressed the Floyd County Medical Society in Charles City, July 28 on intracranial surgery.—William L. Strunk, Sc.D., Decorah, chairman of the board of examiners in the basic sciences, discussed the basic science law and its operation before the Sixth Council District Medical Society and the Poweshiek County Medical Society at Grinnell, June 25.—Speakers at the summer meeting of the Upper Des Moines Medical Society in Arnolds Park, August 6 were Drs. Walter L. Biering, Des Moines on the social security act, Frank J. Heck, Rochester, Minn., practical treatment of the anemias, Edwin W. Miller, Chicago, appendicitis in children, and Edwin B. Winnett, Des Moines, newer developments in the treatment of diabetes, the evening address was delivered by Dr. Frank H. Krusen, Rochester, Minn., on "Medicine Keeps Pace with the Machine Age."

KANSAS

Physician Honored—A certificate of honor for services to his profession and to the Sedgwick County Medical Society was presented, July 22, to Dr. Lloyd P. Warren, a patient in Wichita Hospital. Dr. George E. Milbank, president of the medical society, and Mr. Mac F. Cahal, executive secretary, made the presentation. Dr. Warren has been practicing in Wichita since 1902. He joined the Sedgwick County Medical Society soon after it was organized in 1903, becoming its president in 1914. Dr. Warren has been ill for several months; it was stated. Dr. David W. Basham, past president of the society, is the only other person to have received this tribute from the society, newspapers reported.

LOUISIANA

Society News—At the joint scientific and second quarterly executive meeting of the Orleans Parish Medical Society, July 13, Drs. Arthur Neal Owens discussed "Treatment of Varicose Ulcers of the Lower Extremity" and George W. Robinson, "Local Use of Quinine in Ophthalmology."—A symposium on appendicitis constituted the program of the June meeting of the staff of Mercy Hospital, New Orleans. Speakers were Drs. Philip C. DeVerges, Max M. Green, Edwin L. J. Zander, Lloyd J. Hanches and George H. Hauser.

MARYLAND

Vital Statistics—There were 13,503 births reported in Maryland from January 1 to June 30, as compared with 13,817 during the corresponding period of 1935. A total of 11,564 deaths was recorded, in comparison with 11,253 in the corresponding months of 1935. The greatest increases occurred in the deaths from heart disease and diseases of the kidneys, with 2,718 deaths attributed to the former in 1936 as compared to 2,474 in 1935, and to the latter 1,294 in 1936 against 1,178 in 1935. Communicable diseases showed an increase, with totals of 28,565 in 1936 and 25,123 in 1935. Measles, scarlet fever and whooping cough were responsible for one third of the total sickness reported, while syphilis and gonorrhea, the pneumonias and tuberculosis were charged with another third. There were 350 cases of meningitis in 1936, as compared with 156 during the same period of 1935, 154 cases of diphtheria, six less than last year, nine cases of tularemia, seven of Rocky Mountain spotted fever, fourteen of undulant fever, and six of malaria. With four cases of poliomyelitis, the state recorded one less than the previous year for this period.

MASSACHUSETTS

Centenary Celebration Features Natural Sciences—A symposium on the sciences will be held at Williams College, Williamstown, in October, as a special feature of the centenary celebration of Mark Hopkins' induction as fourth president of the college. Participating in the symposium will be Irving Langmuir, LL.D., of the General Electric Laboratories, Schenectady, N. Y., Herbert Spencer Jennings, Ph.D., Henry Walters, professor of zoology, Johns Hopkins University, Baltimore, and John Clarke Slater, Ph.D., professor of physics, Massachusetts Institute of Technology, Cambridge. William Mansfield Clark, Ph.D., De Lamar professor of physiologic chemistry at Johns Hopkins, who is chairman of the program dealing with the sciences, will preside.

MICHIGAN

Personal—Dr. Robert C. Farrier, Morgantown, W. Va., has been appointed health officer of Delta County, with headquarters at Escanaba.—Dr. Lars W. Switzer, Ludington, has been placed in charge of the new health unit for Mason and Manistee counties; headquarters will be tentatively established at Manistee.

Fellowships at Wayne University—Fellowships in the preclinical basic medical sciences are to be established at Wayne University College of Medicine during the coming year. Fellows will elect a major subject in which they will devote about half their time to teaching and half to research; they will also select a minor subject for graduate study only. They will be registered as graduate students and will be working toward the master's degree. The fellowships are open to students on a competitive basis who have completed the sophomore year of medicine and have the bachelor's degree and to graduates who have the bachelor's and doctor's degrees in medicine. Each fellowship will pay a salary of \$100 a month for ten months and is renewable on recommendation of the head of the department for three years. For further information address Dr. Raymond B. Allen, dean, Wayne University College of Medicine, Detroit.

NEW MEXICO

Tuberculosis Conference—The Rocky Mountain Tuberculosis Conference will be held at the Franciscan Hotel, Albuquerque, September 28-29. Speakers will include

- Dr Raymond J. Friel Salt Lake City Surgical Collapse of the Lung
- Dr James M. Odell The Dallas Ore. Value of Phrenic Nerve Interruption as the Sole Procedure in Pulmonary Tuberculosis
- Dr Felix P. Miller El Paso Modified Technic in Thoracoplasty in Tuberculosis
- Dr Charles F. Stough Colorado Springs Thoracoplasty
- Drs Munford Smith and Howard W. Bosworth Los Angeles When Should Artificial Pneumothorax Treatment Be Discontinued?
- Dr Arthur E. Guedel Beverly Hills Calif. Anesthesia to the Tuberculous
- Dr Harry J. Corper Denver Virulence of Tubercle Bacilli
- Dr John W. Flinn and John S. Flinn B. Sc. Prescott, Ariz. Physiologic Action of Climate and Its Application in the Treatment of Tuberculosis
- Dr John W. Shuman Los Angeles Tuberculosis in the Aged

In addition a sociological section of the conference will discuss problems of case finding and after-care, educating the public about tuberculosis and trends in care of the indigent sick by public agencies. Dr Robert B. Homan Jr., El Paso, Texas, will give an address on "Socialized Medicine as It Affects the Private Sanatoriums." Luncheon sessions will be addressed by Dr J. Arthur Myers, Minneapolis, on "Significance of Tuberculosis in Childhood," and Dr Carl C. Dauer, New Orleans, "Distribution of Tuberculosis Mortality in Western United States."

NEW YORK

Name Changed—The name of the New York State Sanitary Officers' Association has been changed to the New York Health Officers' Association. Dr. Chalmer J. Longstreet, Binghamton, is president. Vice presidents are Drs. Myron M. Metz, Williamsville, Charles G. Lenhart, Spencerport, and James H. Flynn, Troy, the secretary is Dr. Guy H. Turrell, Smithtown Branch.

New York City

Training for the Specialties at Post-Graduate School—New York Post-Graduate Medical School announces that henceforth training provided as a preparation for practice of a specialty will be restricted entirely to residencies in the hospital, except the training offered in the departments of dermatology and radiology. Courses for the general practitioner have been shortened to a maximum of three months.

Sentenced for Fraudulent Insurance Claim—Dr. Abraham Benjamin was sentenced July 27 in the court of general sessions to serve from fifteen months to two and a half years in Sing Sing for a fraudulent accident claim. He is said to have conspired with a man who posed as a lawyer to defraud insurance companies. The probation officer reported that Dr. Benjamin had furnished affidavits for fraudulent claims for fourteen years.

Increase in Acute Alcoholism—Admissions to Bellevue for alcoholism during the first six months of 1936 were at the rate of 12,378 for the year, the department of hospitals recently reported. This is a large increase compared with 9,139 cases in 1935 and 7,649 in 1934. The most serious situation in connection with alcoholic patients arises from the number who fall and sustain a head injury, the report said. A special operating room will be opened this fall in the psychiatric pavilion for surgical treatment of head injuries.

New Corporation to Finance Health Department Research—A non profit making corporation known as Health Research Inc. was recently formed by the New York City Department of Health to accept and administer funds offered for financing research in the city's laboratories. For many years private contributions have been made to finance research under the direction of Dr. William H. Park as Biggs professor of preventive medicine and director of bacteriologic laboratories at New York University College of Medicine and administered by the college. Dr. Currier McEwen, assistant professor of medicine, assistant dean and secretary at New York University College of Medicine was elected president of the new unit, Dr. Park vice president, and Dr. Wade W. Oliver, professor of bacteriology, Long Island College of Medicine, Brooklyn secretary. The department plans to open a convalescent serum center under the new arrangement.

Brooklyn Cancer Institute in New Quarters—The new Brooklyn Cancer Institute will be opened at Kings County Hospital about September 15 as an independent clinical unit of the division of cancer of the city department of hospitals, with Dr. William E. Howes as administrative clinical director.

There will be three services surgical, with Dr. John E. Jennings as director, medical, with Dr. Henry M. Moses as director, and radiotherapy, with Dr. Howes as director. The three directors are to be responsible as a committee for clinical policy in general and for the treatment and care of patients individually. For general administrative purposes the institute is under the supervision of the medical superintendent of Kings County Hospital. A visiting staff of thirty-one physicians has been appointed. It is planned that beds are to be used as far as possible for cases of doubtful classification and for recognized tumor cases requiring short hospitalization so that the patients who are still reclaimable may find facilities for care. The institute was formerly at Cumberland Hospital.

OHIO

Society News—At a meeting of the Seventh Council District of the Ohio State Medical Association in Cadiz, June 24, speakers were Drs. Clyde L. Cummer, Cleveland, on "The Present-Day Diagnosis and Treatment of Syphilis" and Clifton F. McClintic, Moundsville, W. Va., "The Personality of the Criminal"—Dr. Roy Glenn Spurling, Louisville, Ky., addressed the Hempstead Academy of Medicine in Portsmouth July 13, on injuries to the head.

Personal—Dr. Archie J. Martin, Wheeling, W. Va., has been appointed health officer of Belmont County to succeed Dr. Frank R. Dew—Dr. William R. Coleman, Bremen, has been made health officer of Fairfield County—Dr. Paul M. Moore Jr., formerly assistant professor of otolaryngology, State University of Iowa College of Medicine, Iowa City, has been appointed to the staff of the Cleveland Clinic to fill the vacancy caused by the death of Dr. William V. Mullin—Dr. John A. Carter, New Paris, has been appointed health commissioner of Clermont County.

OKLAHOMA

Personal—Dr. Leroy Long, Oklahoma City, former dean and professor of surgery, University of Oklahoma School of Medicine, has been chosen for the state hall of fame by the Oklahoma Memorial Association. He will be a guest of honor at the annual statehood day dinner November 16.

Society News—The Tulsa County Medical Society recently voted that its members would not practice in hospitals that charge a fee that includes medical service, either by interns or by members of their staffs—The Oklahoma Tuberculosis and Health Association will conduct an institute in Tulsa September 24, speakers will include Drs. Lewis J. Moorman, Oklahoma City, on "Procedure in Finding Source of Contact in Children Showing Reaction to the Tuberculin Test" and Robert M. Shepard, Tulsa, president of the association, "Manifestations of Early Tuberculosis and X-Ray Interpretations"—Dr. Andronicus J. Wells, Calera, was elected president of the Southeastern Oklahoma Medical Association in July at a meeting in Poteau.

RHODE ISLAND

Publicity Committee Appointed—At the recent annual meeting of the Rhode Island Medical Society a publicity committee was appointed with Dr. James W. Leech, Providence, as chairman and the following members: Drs. Russell S. Bray and Peter P. Chase, Providence, Charles Bradley, East Providence, Guyon G. Dupre, Woonsocket, Stanley Sprague, Pawtucket, Alfred M. Tartaglino, Newport, George L. Young, East Greenwich, and John W. Helfrich, Westerly. Functions of the committee as outlined are threefold: to abstract scientific papers for the lay press, to serve as a mouthpiece for the medical profession when the press desires an expression of opinion on some question of medical policy, and to institute propaganda for the enactment of beneficial and the defeat of harmful legislation.

SOUTH CAROLINA

New Health District Officers—Dr. Clair A. Henderson, Williamstown, has been made health officer of the district composed of Dillon and Marion counties, with headquarters at Dillon. Dr. Goodman Bare, Starr, has been placed in charge of the district including Edgefield, McCormick and Saluda counties, and Dr. George H. Zerbst, Charleston, of the district consisting of Sumter, Clarendon and Lee counties.

Society News—The Eastern Carolina Medical Assembly, comprising the counties of Marion, Dillon and Horry, met June 23 at Myrtle Beach. Speakers were Drs. Julian P.

Price, Florence, on "Pernicious Malaria in Children", George H. Bunch, Columbia, "Mortality in Acute Appendicitis", Alfred R. Shands Jr., Durham, N. C., "Fractures of the Lower End of the Humerus", Walter R. Mead, Florence, "Cerebral Thrombosis," and Robert E. Seibels, Columbia, "Maternal Mortality in South Carolina." Dr. James A. Hayne, Columbia, state health officer, participated in the discussions.

TENNESSEE

Society News—Dr. James B. Neil, Knoxville, addressed the Campbell County Medical Society, La Follette, July 30, on transurethral prostatic resection—At a meeting of the medical society of Cumberland, Jackson, Overton, Putnam and White counties Drs. Andrew F. Richards, Sparta, and Harlan H. Taylor, Cookeville, spoke on "Ether Anesthesia" and "Acute Surgical Emergencies of the Abdomen" respectively—Dr. Cecil E. Newell, Chattanooga, will address the first fall meeting of the Hamilton County Medical Society, September 3, on "Surgical Treatment of Goiter"—Speakers before the Five-County Medical Society (Hardin, Lawrence, Lewis, Perry and Wayne counties) in Waynesboro July 28 were Drs. Leo C. Harris Jr. and Harrison H. Shoulders, Nashville, on "Congenital Cystic Disease of the Lungs" and "Diagnosis of Acute Abdominal Conditions" respectively—Dr. Charles C. Stockard, Lawrenceburg, reported a case of agranulocytosis—Dr. William Britt Burns, Memphis, addressed the Rutherford County and Stone River Academy of Medicine, July 8, on "Cerebral Hemangioma"—Dr. Edward William Alton Ochsner, New Orleans, addressed the Chattanooga and Hamilton County Medical Society, July 15, on "Treatment of Peptic Ulcer Based on Physiologic Principles."

TEXAS

Sentenced for Using Mails to Defraud—J. Howard Christian, a pharmacist of Fort Worth, was recently sentenced to two years in the federal penitentiary at Leavenworth, Kan., following conviction on a charge of using the mails to defraud. At the same time he received a suspended sentence of five years on two other counts of the indictment which was brought after he had attempted to obtain the annual registration permit of a deceased physician. In addition to the federal prosecution Christian was prosecuted by the state for forgery and sentenced to two years in the Texas State Penitentiary for having forged the physician's name to his application for the registration. Christian was first arrested in January 1935 by the special agent of the Texas State Board of Medical Examiners. After his conviction in the state courts he appealed the case, but his conviction was affirmed and a rehearing was denied.

VIRGINIA

New Health Officers—Dr. Robert D. Hollowell, Charlottesville, who recently received the certificate in public health from Johns Hopkins University School of Hygiene and Public Health, Baltimore, has been appointed director of the health district including Albemarle County, Charlottesville and the University of Virginia. He succeeds Dr. Charles Howe Eller, who recently became assistant director of the state bureau of rural health. Dr. Hugh B. Magill Jr., Norfolk, has been made director of the Northampton County Health department to succeed Dr. Albert B. McCreary, Eastville, who resigned to join the Florida State Department of Health. Halifax and Pittsylvania counties heretofore in a joint health district now have separate departments with Dr. Daniel C. Steelsmith, South Boston, in charge in Halifax and Dr. William H. Walcott, Chatham, in Pittsylvania. Dr. George C. Waters, Williamsburg, has resigned as director of the Peninsula health district which includes Warwick, Elizabeth City, James City and York counties.

WASHINGTON

Society News—Dr. Warren B. Penney, Tacoma, was elected president of the Washington State Tuberculosis Association at the annual meeting at Longview, June 18-20—Speakers at a meeting of the Yakima County Medical Society, Yakima, June 8, were Drs. Louis P. Gambee, Portland, on "Some Phases of the Intestinal Obstruction Problem," John R. Montague, Portland, "Nonmyxedematous Hypothyroidism," and Walter Raymond Jones, Seattle, "Venereal Disease Patient's Assets"—Dr. Raymond H. Somers, Seattle, was elected president of the Washington State Society for Mental Hygiene at its annual meeting in Tacoma, June 4.

WEST VIRGINIA

Society News—Drs. Chester D. Christie and John W. Holloway, Cleveland, addressed a joint meeting of the Monongalia, Marion and Harrison county medical societies recently in Morgantown, on "Thyrotoxicosis in the Aged" and "Duodenal Ileus" respectively—Dr. Arthur A. Shawkey, Charleston, addressed the Boone County Medical Society, Madison, July 15, when the society was installed as an official component of the West Virginia State Medical Association. Dr. William V. Wilkerson, Highcoal, is president, and Dr. Robert L. Hunter, Whitesville, secretary—Dr. Oscar B. Biern, Huntington, addressed the Cabell County Medical Society, Huntington, July 9, on "Graphic Registration of the Heart Action."—At a meeting of the Kanawha Medical Society, Charleston, recently Dr. William C. Stewart, Charleston, spoke on "Rheumatic Fever and Rheumatic Heart Disease in West Virginia."

WISCONSIN

State Medical Meeting at Madison—The ninety-fifth annual meeting of the State Medical Society of Wisconsin will be held in Madison, September 9-11, at the Memorial Union. The first day will be devoted to a joint meeting with the cancer institute sponsored by the University of Wisconsin, announced in *THE JOURNAL* August 8, page 438. The remaining two days will be occupied with general and section meetings, round table luncheons and symposiums. Guest speakers at general sessions will include:

Dr. John D. Camp, Rochester, Minn., "Ray Diagnosis of Tumors of the Brain and Spinal Cord"
Dr. Richard W. Telford, Baltimore, "Pathologic Significance of Bleeding After the Menopause"
Dr. James E. M. Thomson, Lincoln, Neb., "Removal of Internal Fixation After the Reduction of Certain Fractures by Use of a Beaded Wire"
Dr. James A. Johnson, Minneapolis, "Treatment of Carcinoma of the Rectum in the Inoperable Case by Electrocoagulation"
Dr. Arthur F. Bratrud, Minneapolis, "Injection Treatment of Hernia"
Dr. Meredith F. Campbell, New York, "Pyuria in Children"
Dr. Claude F. Dixon, Rochester, Minn., "Practical Considerations in Treatment of Colonic Carcinoma"

Guests who will address section meetings and participate in symposiums include:

Drs. Kaare K. Nygaard and Mandred W. Comfort, Rochester, Minn., "Determination of Potential Hemorrhage in Cases of Jaundice by the Photo-Electric Method"
Dr. Avery D. Prangen, Rochester, Minn., "Clinical Problems in Refraction"
Dr. Francis L. Lederer, Chicago, "Problems in Diagnosis and Treatment of Malignancies of the Nasal Accessory Sinuses"
Dr. Joseph L. Miller, Chicago, "The Problem of the Ameba Histolytica Carrier"
Dr. John H. Skavlem, Cincinnati, "Basic Points in Roentgen Ray Studies of Lung Anatomy and Pathology"
Dr. Nathan A. Womack, St. Louis, "Carcinoma of the Bronchus and Its Surgical Treatment"
Dr. John Alexander, Ann Arbor, "Bronchiectasis"
Dr. Jerome R. Head, Chicago, "Acute and Chronic Empyema"
Dr. M. Herbert Barker, Chicago, "Cyanate Therapy of Hypertension"

The annual dinner will be held at the Hotel Loraine, Thursday evening, September 10, with Dr. Morris Fishbein, Chicago, editor of *THE JOURNAL*, as the speaker. His subject will be "The Hospital and the Doctor." Dr. Fishbein will also address the Women's Auxiliary Thursday morning.

HAWAII

Hawaii's Record Low Death Rate—The lowest mortality rate on record for the Territory of Hawaii was achieved in the fiscal year ended June 1935 with a rate of 8.42 per thousand population exclusive of nonresidents, according to the annual report of the board of health recently issued. This figure compares with a rate of 9.69 in 1934. There were 3,236 deaths, a decrease of 443 or 12 per cent, under 1934. The lowest infant mortality rate was also recorded in 1935. There were 957 deaths or a rate of 64.53 per thousand live births. There were 9,252 births recorded. Forty-four mothers died from puerperal causes during the year. The maternal death rate was 4.64 per thousand live births and stillbirths. There were 3,578 cases of communicable diseases reported as compared with 8,870 in 1934. The most notable reduction was for diphtheria of which there were fifty-three cases with no deaths. There were 2,995 cases of tuberculosis with 307 deaths, giving a new low rate of 80.4 per hundred thousand of population. Earlier rates were 99.7 in 1933 and 89.19 in 1934. Two cases of plague were found in human beings and ten in rodents. The sum of \$705,587.88 was expended during the year for health activities. Additional expenditures included \$1,218.63 for plague activities, \$1,987.72 for diphtheria immunization and \$571.01 for medical inspection of school children.

PHILIPPINE ISLANDS

Society News—The Leyte Medical Association was organized with sixteen members recently. Dr. Anotolio Dasmarrinas was elected president and Dr. Federico Campos, secretary. Dr. Pedro T. Lantim, Manila, addressed the Tayabas Medical Society, Lucena, May 3, on typhoid fever. Dr. Fernando Calderon addressed the Manila Medical Society recently on treatment of retroversion of the uterus. Drs. Antonio G. Sison and Jose G. Cruz presented a case of hyperparathyroidism.

GENERAL

Applications for Certificates of Special Board.—The American Board of Psychiatry and Neurology announces that applications for certificates to be granted at its next meeting, December 29-30, must be sent before October 30 to the secretary, Dr. Walter Freeman, 1028 Connecticut Avenue, Northwest, Washington, D. C.

Industrial Accident Boards and Commissions.—The International Association of Industrial Accident Boards and Commissions will hold its twenty-third annual convention in Topeka, Kan., September 21-24, under the presidency of G. Clay Baker, commissioner of workmen's compensation in Kansas. Tuesday, September 22, will be devoted to a consideration of medical problems associated with workmen's compensation including injection method of treatment of hernia, effect of trauma in lighting up tuberculosis, measurement of schedule injuries under the various laws, and rating of eye disabilities. In addition, the association for the first time will conduct a separate medical section meeting Wednesday for physicians, dealing with technical medical subjects in relation to workmen's compensation. Dr. John F. Hassig, Kansas City, Kan., is chairman of the medical committee.

Prevalence of Smallpox.—A recent analysis of the geographic distribution of smallpox in the United States and Canada by the Metropolitan Life Insurance Company revealed that eight of the most sparsely populated states accounted for 5,054 of the 8,021 cases in the United States. The combined smallpox prevalence rate of these eight states (Washington, Idaho, Montana, Wyoming, Colorado, South Dakota, Nebraska, and Kansas) was 64 cases per hundred thousand of population. The other forty states with an aggregate population of nearly 120,000,000 reported 2,967 cases giving a case rate of only 25 per hundred thousand. There was no smallpox in seven states (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Pennsylvania, and Rhode Island) while in ten others less than one case was reported for every 100,000 inhabitants. None of the states east of the Mississippi except Wisconsin experienced sickness rates in excess of three cases per hundred thousand of population during 1935.

Sixteenth Century Indian Herbal to Be Published.—The Smithsonian Institution, Washington, D. C., has arranged to publish what is said to be the first medical book produced in the New World. The *Badianus Manuscript*, written in Aztec and translated into Latin. The original title was 'A Book of Indian Medical Herbs composed by a certain Indian physician of the College of Santa Cruz who is not theoretically learned but is taught only by experience. In the year of our Lord Saviour 1552.' Martin de la Cruz was the author and Badianus the translator both students at the College of Santa Cruz, the first college in the New World, established by the Spaniards for the Indians. Martin de la Cruz wrote in detail of diseases and remedies for them and produced brilliantly colored illustrations of the plants used in Aztec medicine, which have deteriorated little, according to an account in the *New York Times*. The manuscript found its way to Europe and eventually to the Vatican Library, where an investigator for the Smithsonian Institution found it about five years ago during a search for early Latin American texts. The translation and annotation of the Latin and Aztec text was made by Emily Walcott Emmart, Ph.D., Johns Hopkins University, Baltimore.

Prevention of Blindness.—The National Society for the Prevention of Blindness has issued its annual report for 1935. During the year the society cooperated in three summer session courses for the training of sight saving class teachers. Buffalo, Cleveland, and Teachers College, Columbia University, New York. The number of sight saving classes increased from 458 in 1934 to 476 in 1935 and in New York alone five new classes were established in the fall. In its continued drive for the use of safety glass in automobiles the society reports that twenty-three states and the District of Columbia have enacted laws making this mandatory. The society and the American Museum of Safety collaborated in a study of accidents resulting from fireworks with the financial assistance of the American Pyrotechnic Industries. It was disclosed that 7,738 per-

sons were injured and at least thirty persons were killed celebrating July 4, 1935. Of the 3,000 cases in which it was possible to obtain first hand information by means of a questionnaire or by personal visits, 214 had eye injuries, 104 of which were serious. Preliminary figures at the time the report was drawn up showed that ophthalmia neonatorum had decreased to 7.4 in 1935 from 8.2 in 1934. The society expended about \$133,879 during the year.

FOREIGN

International Congress of Urology.—The sixth International Congress for Urology will be held at the Kunstlerhaus, Vienna, September 9-12. The subjects for discussion are treatment of carcinoma of the prostate, suppuration of the renal parenchyma, and the physiology and pathology of renal excretion. Among American speakers listed on the program are Drs. Edward L. Keyes, Joseph F. McCarthy, and Henry G. Bugbee, New York; William F. Braasch, Rochester, Minn.; Hugh H. Young, Baltimore; Louis E. Schmidt, Chicago; George G. Smith, Boston; and Hugh Cabot, Rochester, Minn. Dr. Keyes is president of the International Society for Urology and Dr. Young a vice president of the congress.

International Society of Microbiologists.—At the second International Congress of Microbiology in London, July 25-August 1, speakers included the following Americans:

Dr. Francis Peyton Rous, New York, Evidence Concerning the Agency of Virus Diseases in the Etiology of New Growths
Edwin O. Jordan, Ph.D., Chicago, Bacteria Causing Acute Inflammation of the Alimentary Tract and Their Mechanism of Action
Dr. Hans Zinsser, Boston, Typhus Fever and the Rickettsias
Dr. Ernest E. Tyzzer, Boston, Coccidia in Relation to Domesticated Animals
Dr. Eugene L. Opie, New York, Significance of Allergy
Michael Heidelberger, Ph.D., New York, Structure of Natural and Synthetic Antigens
Dr. William H. Park, New York, Control of Diphtheria and Whooping Cough by Means of Specific Immunizing Reagents
Dr. Jesse G. M. Bullowa, New York, Serum Treatment of Pneumonia
Dr. Augustus B. Wadsworth, Albany, N. Y., The Relative Value of Antitoxic and Antibacterial Immunity in the Prophylaxis and Serum Treatment in Human and Animal Diseases in Which the Invasion by the Causative Bacterium May Occur in a Focal or Generalized Form.

A demonstration of procedure and apparatus for preservation in 'lyophile' form of serum was presented by Earl W. Florsdorf, Ph.D., and Dr. Stuart Mudd, Philadelphia.

Deaths in Other Countries

Sir Alfred Keogh, who was director general of the British Army Medical Corps during the World War, died in London July 30, aged 79.—Dr. Luigi Devoto, professor of pathology, University of Pavia and an authority on occupational diseases, died July 20 in Milan, aged 72.—Prof. Friedrich Breinl of the University of Prague, Czechoslovakia, died July 29 of Rocky Mountain spotted fever, aged 48.

Government Services

Examinations for Medical Officers

The U. S. Civil Service Commission announces open competitive examinations for the positions of medical officer at \$3,800 a year, associate medical officer at \$3,200 and assistant medical officer at \$2,600 a year, to fill vacancies in various branches of government service. To become eligible, applicants must qualify in one of the following branches of medicine and must state the branch or branches desired: cardiology, cancer diagnosis and treatment, eye, ear, nose and throat (singly or combined), urology, internal medicine and diagnosis, neuropsychiatry, pathology and bacteriology, roentgenology, surgery, general, chest and orthopedic, tuberculosis, venereal disease (clinical and public health aspects), industrial medicine and general practice. Applicants will not be required to report for examination at any place but will be rated on education and experience. Candidates for the position of medical officer must not have passed their forty-fifth birthday and for the lower grades, their thirty-fifth birthday. Further details and application forms may be obtained from the secretary, Board of U. S. Civil Service Examiners at any first class postoffice, from the commission at Washington, D. C., or from its district offices in the following cities: Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, Balboa Heights, C. Z., and San Juan, Puerto Rico. Applications must be filed before September 8.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 11, 1936

The Nutrition of the People

In the house of commons a debate took place on the nutrition of the people—a question which unfortunately has become the subject of political propaganda. Mr. Johnston, a labor member, moved a resolution expressing concern at "widespread malnutrition." He quoted an estimate of \$1,000,000,000 as the cost of national ill health and said that there was an accumulating mass of chronic underfeeding and underdevelopment among the poor. The adjutant general in his report for 1934 stated that "over 52 per cent of the men who went to the recruiting offices did not come up to the physical standard laid down. In the big industrial areas of the North the percentage of rejections rose to 68." The chief medical officer of health for the department of education in this report for 1934 said that twelve per thousand of school children were malnourished and fourteen per thousand undernourished. "It had been proved by Sir John Boyd Orr that 4,500,000 people in this country were trying to live below the minimum standard of the British Medical Association." We had organized limitation of production and restriction of markets. We drank one third of the quantity of milk per head that the Swede or Norwegian drank and one half of what the Yankee drank.

Sir Kingsley Wood, minister of health, said in reply that in the matter of nutrition this country had taken the initiative not only in investigation but in action. The word "malnutrition," on which Mr. Johnston hung his indictment, was much abused. He had not explained that the term meant much more than want of food—one more example of how a matter which was largely scientific and economic could be twisted for other purposes. He had quoted from Dr. M'Gongle's book 'Poverty and Public Health' that the death rate of the 30 shilling family was double that of the 75 shilling. But the minister could quote from M'Gongle too, who pointed out the loose and confused manner in which the word malnutrition had been used and said that in the sense of implying an insufficient intake of food it was rare but if it was used to signify a deviation from bodily growth or function attributable to qualitative defects of diet a high percentage of our population must at one time or other have been the victims of malnutrition. Mr. Johnston had also quoted Sir John Orr, who was a distinguished member of the minister's advisory committee. When his book was published one paper went so far as to use the headline "Sir John Orr's Indictment: Fifty per Cent of the People Starving." Those who quoted him should remember his final conclusion. There is need for further investigation and further discussion of the whole question in all its complicated relationships. An equal authority and another member of the minister's committee Professor Cathcart said that malnutrition was due not so much to poverty as to ignorance and other causes of the same kind. Another authority, Sir Robert Hutchison, said that diseases due to overnutrition were increasing while those due to undernutrition were diminishing. If the allegations made were accurate and there was widespread malnutrition, the health of the population would be rapidly declining. But viewed over any period that enabled just comparisons to be made our national health was improving not merely steadily but remarkably. Again, if the allegations were true our low death rates became difficult to explain. In the last twenty years we had added seven years to the expectation of life and reduced the infant mortality from 100 to 57 per thousand births. Another test was the incidence of tuberculosis and rickets. The death rate from tuberculosis was now less than a quarter of the rate fifty

years ago. The number of deaths from rickets was only half the number five years ago and there had been a progressive diminution in the number of patients with active disease. Another test was the condition of the children. Recent medical inspections of over a million and a half school children showed that the condition of 146 per cent was excellent, 74 normal, 106 slightly subnormal, and only 07 bad. Medical reports from the post office showed that the boys of 16 applying for employment were on the average 16 pounds heavier and 1½ inches taller than those of twenty-five years ago. Girls of the same age were 10 pounds heavier and 1 inch taller than those of the corresponding class twenty-five years ago. The rejection of recruits for the army was used to build up a case. The standards of recruitment were high and were based on the principle that men must be fit to serve all over the world in tropical as well as temperate climates. The rejections—about 35 per cent—did not reflect on the general health but were due to such causes as disease of the middle ear, defective teeth and defects of the lower limbs. Even in the areas depressed by unemployment, only signs of strain due to this cause were found and steady improvement in this direction was taking place. Malnutrition must be fought and increasing attention must be paid to the nutrition of the people. The government had adopted a policy to increase the consumption of milk. About 2,250,000 school children were receiving a daily ration of a third of a pint of milk for 1 cent and free milk was given to 300,000. Nearly all the maternity and child welfare authorities provided milk free or at cheap rates. The government was willing to support any practicable proposals for extending the scheme. The resolution was rejected by 359 votes against 139.

Anglo-French Surgical Meeting

By invitation of the president and council of the Royal College of Surgeons, members of the Académie de chirurgie attended a discussion at the college. They also visited St. Bartholomew's Hospital and the London Hospital, where they witnessed the operations.

Professor Hey Groves introduced the subject of the operative treatment of fracture of the neck of the femur. He confined his remarks to subcapital and transcervical fractures, which were almost entirely intracapsular and difficult to treat because of the poor blood supply of the head of the bone and the tendency to absorption of the neck. Accurate apposition and firm fixation were essential. For many years Whitman's method of plaster fixation held first place, but it was long and tedious and a strain on old patients and yielded only 50 per cent of successes. During the last six years the situation had been dominated by the Smith-Petersen three-flanged nail. The original operation entailed an incision of considerable size. Professor Hey Groves set himself the problem of inseting the nail without such open operation. He devised an instrument to guide the drill into the axis of the head and neck, which he exhibited. It had three vertical points, two of which were thrust through the skin and the third, which took the drill guide, lay outside the thigh. It was necessary to ascertain two points: the middle of the head of the femur and the point at the base of the neck where the axes of the neck and the shaft crossed each other. These points were obtained with the help of the x-rays and were marked on the skin. Only two tenotomy wounds were necessary for the introduction of the instrument. The drill having been thrust into the thigh and through the neck into the head the instrument was removed leaving the drill in position. A small incision was made with the drill as its center and the modified Smith-Petersen nail hammered in. The procedure was simple and did not impose too great strain on the old and feeble.

Mr. Watson-Jones showed a motion picture of his drill guide method. He had operated on sixty-four patients with a mortality of 6 per cent—a figure lower than could be secured by

other methods Bony consolidation was secured in 91 per cent His technic consisted in inserting a stout drill guide under visual direction, which ensured accurate insertion of the nail.

Mr Gwynne-Williams said that he had treated thirty-one cases of unimpacted fracture by the Smith-Petersen open operation The average age of the patients was 65 He had six deaths—two from pulmonary embolism, one a year after operation from infection with *Bacillus Welchii*, one from septicemia, one from erysipelas and one from pyelonephritis The operation involved no great loss of blood and no shock

Mr Edmund Lloyd advocated the lateral approach He showed an instrument of precision which enabled the nail to be inserted through a small incision over the great trochanter, without the use of wires and without exposure of the fracture His method required a developing room adjacent to the operating room or a portable dark room in the operating room and a radiographic staff able to take good lateral pictures

Recent Work on Surgical Shock

Dr John Beattie conservator of the museum of the Royal College of Surgeons, described recent work at the college laboratories on surgical shock Experimental animals showed three stages. The first fall in blood pressure after trauma was due to loss of fluid The period of recovery might last thirty minutes and then a gradual fall, terminating in death, took place. The work done in the laboratories pointed to the conclusion that the loss of fluid during the first phase was not the cause of death, which was due to something happening in the second stage, probably associated with impulses passing along the sympathetic nerve. Perhaps these impulses brought about some change in the central nervous system that was irreversible, and in consequence the blood pressure kept on falling until it became so low that death was inevitable An animal shocked by trauma of the hind limb might die in two and one-half hours But if the spinal cord was blocked by procaine hydrochloride the blood pressure was maintained and the animal was prevented from passing into a condition of shock Cross circulation experiments confirmed the conclusion that the lethal factor in shock was abnormal nerve impulses

PARIS

(From Our Regular Correspondent)

July 20, 1936

Influence of Recent Social Laws on Leisure

Two recent laws are now in effect in France. One of these fixes the maximum number of working hours per week at forty, and according to the other law every employer is obliged to grant a paid vacation of two weeks annually to all employees who have been in his service for more than a year Several interesting developments have followed the enactment of these laws First, a government department has been created called the department of leisure, which will not only advise workers how to spend the hours in which they are not employed but also aid them as to where to spend their two weeks paid vacation period as cheaply and pleasantly as possible. The latter includes special excursion rates, in both summer and winter, to all parts of France.

A second development may appear strange to those who remember how the prohibition law in the United States was regarded as something that would never be needed in France At the June 9 meeting of the Academie de medecine, the leading medical organization in France, Dr Sieur stated that, as one desired that the forty hours a week law should fulfil the hopes of those who planned it, the following clauses ought to be inserted 1 To limit the number of saloons (bistrot) and to control carefully the quality and quantity of alcoholic drinks dispensed by the reduced number of saloons 2 That all cities possessing a large number of workers should make every effort

to place at their disposition large areas of land, in which gardens could be developed by those obliged to work in congested industrial centers This second suggestion will especially impress those who have visited France and observed the paucity of recreation parks in densely populated portions of Paris and other large cities

Following the introduction of Dr Sieur's resolution, a special committee was appointed to investigate these two questions This committee submitted its report at the July 7 meeting, stating that in 1926 the Academy of Medicine had called attention to the marked increase in the consumption of alcoholic beverages in the postwar period Unfortunately this warning was not listened to, and as a result the question of alcoholism has become a very serious one One of the principal reasons why alcoholism has increased is the huge and rapidly increasing number of saloons Whereas in many foreign countries strict control exists, the government pays no attention at all to the question in France. In most countries the tax on alcohol is very high and its sale is limited to specially controlled agents, but in France such a tax is far below what it ought to be Under the loose supervision of saloons that exists in France, the medical profession is observing an increasing number of cases of insanity, cruelty to children and street accidents The Academy agrees with the government that every possible means should be employed to ameliorate the condition of the working classes and hence suggests that the government should apply the following 1 Limit the number of saloons and control the preparation of drinks sold in them 2 Organize recreation centers for adults, in which only nonalcoholic drinks are sold 3 Increase the number of playgrounds where the greatest possible attention shall be paid to physical development of young people 4 Establish city gardens where the working people can raise some of their own vegetables, also construct hygienic dwellings to replace the many hovels of the large cities

Treatment of Neuralgias by Radiotherapy

Radiotherapy occupies an important place at present in the treatment of neuralgia This is especially true of pain due to spinal nerve root inflammation due to rheumatism Minute doses are employed, much smaller than those employed in the treatment of cancer Usually, at a single sitting, from 75 to 250 roentgens is given over the nerve roots or the involved plexus, the total dosage being from 1,000 to 2,500 roentgens Some radiologists employ an even higher dose At the May 8 meeting of the Societe medicale des hopitaux, Coste and his associates called attention to the fact that this method is often followed by an exacerbation of the pain Some radiologists are inclined to disregard such a result, whereas others, like the authors, considered such exacerbations a marked objection Usually the increase of pain diminishes rapidly and then its relief follows Coste and his associates, however, have observed that in some cases the exacerbation of pain does not cease so suddenly but continues for some length of time, so that the patient suffers intensely Hence prudence demands some modification of the dosage, lest this remarkable method fall into disrepute. The experience of the authors has convinced them that the relief of pain in these neuralgias can be obtained even though minute doses frequently repeated, and with short sittings, are used They observed, even after ordinary radiography of the chest, spine and abdomen the marked amelioration of pain in cases of neuralgia of rheumatismal origin Since then they have irradiated small fields which correspond to the nerve roots involved, using 180 kilowatts tension, 0.5 mm of copper and 2 mm of aluminum filtration, an intensity of 3 milliamperes and a distance of from 30 to 40 cm Ninety-seven patients have been thus treated, without any other (internal) medication, and the results have been highly satisfactory, as shown by a tabula-

tion of their cases. This method of minute doses does not exclude the use of higher doses, which, if added, are not followed by any such exacerbation of pain as is observed when doses of medium or high intensity are employed from the beginning of the irradiation. The loss of time in using the smaller doses at first is insignificant as compared to the frequency of increased pain after initial large doses. Radiotherapy alone will not relieve all cases, hence it should be associated with anesthesia (by nerve blocking) of the nerve trunks by the paravertebral or epidural route, injection of irritants at some distance from the nerve, and the treatment of the underlying cause of the neuralgia. Coste and his associates agree with those who believe that irradiation is followed by a local alkalosis of the tissues around the inflamed nerve trunks.

In the discussion, Haguenau stated that he has always used a relatively high dosage in irradiation but that relief had been observed to follow smaller doses even at the beginning of treatment. He agreed with the authors as to the efficacy of minute doses. In the majority of cases, Haguenau has found that relief is obtained only with doses of medium intensity, it being necessary to give as much as 2,000 or 3,000 roentgens before the pain ceases. He objects to the employment of irradiation for neuralgias simultaneously with physical therapy or local injections, as Coste advocated, because one would never be able to say which of the various methods had been efficacious.

The Recent Decline in Tuberculosis Mortality

In the June 15 *Siccle médical*, Marcel Moine, statistician of the National Committee to Fight Tuberculosis, cites figures showing that there has been a marked decrease in the number of deaths from this disease. The city of Paris and the adjacent region was chosen to demonstrate this decrease, because the statistics are more accurate here than elsewhere in France, only 2 per cent of the total number of deaths being reported as "unknown." From 1895 to 1908 the mortality from tuberculosis was as high in Paris as in the surrounding territory. From 1908 to 1918 the curve for Paris showed a decline, while that for the suburbs showed a rise until 1918. This is explained by the intensive migration of city dwellers to the adjacent country from 1908 to 1918. From 1920 to 1926 the mortality in both city and suburbs was about equal. Then a decline followed for both, which has continued to such an extent that by 1940 the author believes that the mortality for Paris (195 per hundred thousand inhabitants) and for the suburban region (165 per hundred thousand) will be about equal to that of the remainder of France. These figures show that up to 1914 the mortality from tuberculosis in the Parisian suburbs was constant and the same was approximately true for the city itself up to 1908, the average being 450 per hundred thousand. In 1935 this figure dropped to less than 200 per hundred thousand, a decrease of 55 per cent. This means on the basis of the present population of the city a saving of 9,400 lives a year, of whom 6,200 are between the ages of 20 and 50. Further curves show that the improvement is not only quantitative but also qualitative. Adolescents and adults have benefited the most by this decrease in the mortality from tuberculosis. In 1886 the group of inhabitants between the ages of 35 to 39 years showed the highest number of deaths (700 per hundred thousand). In 1911 the maximum age group was 45-49 years of age but the proportion had already dropped to 550 per hundred thousand and twenty years later (1931) it was only 255 but the age group most affected was composed of persons between 55 and 59 years. These improved statistics have been the result of a vigorous antituberculosis campaign waged since the World War in the city of Paris and its suburban territory. Moine praises the campaign that has been carried out in the United States, Holland, Great Britain and Germany since 1900. In

France the decline in deaths from tuberculosis has been twice as high during the past thirteen as in the preceding thirty five years, which is the most eloquent tribute to the value of anti-tuberculosis efforts.

Pasteur Vallery-Radot Elected Fellow of Academy of Medicine

The distinguished internist and grandson of Pasteur was elected a fellow of the Academy of Medicine at its June 9 meeting in place of the late Professor Netter. Pasteur Vallery-Radot is associate professor in the University of Paris Medical School and attending physician to the Paris (free) hospitals. He was a pupil of the late Professor Widal, under whose supervision his first research work was undertaken. He is especially known for his study of anaphylactic shock and its relation to asthma.

Homage to the Dermatologist Professor Darier

The French Society of Dermatology and Syphilography will devote one of its coming meetings to celebrate the eightieth birthday of its internationally known member Professor Darier. A monograph by the latter on the history of dermatology during the past fifty years, which was read in abstract at the Budapest congress, will be printed and presented to Professor Darier as a token of appreciation of his distinguished services to this specialty by the society. Those who desire a copy of this monograph can obtain it by sending 30 francs to Georges Masson, Esq., 120 Boulevard St. Germain, Paris.

BERLIN

(From Our Regular Correspondent)

July 10, 1936

Congress of the Society of Internal Medicine

As previously reported, this year's congress of the German Society of Internal Medicine began by meeting in joint session with the Nature Cure physicians. Professor Siebeck, internist, of Berlin, addressed the combined gathering on "The Treatment of Cardiac Weakness." Particular interest attaches to his lecture because of its subsequent discussion by the Nature Cure physicians. Siebeck in his opening remarks emphasized the value of a correct diagnosis as a foundation for any course of therapy. The anamnesis provides the best criterion of function, since from it the physician may ascertain whether or not the patient is equal to the demands of his daily routine. A multitude of factors are involved in the pathogenesis of heart failure and none is of greater importance than the state of blood perfusion in the coronary vessels.

The ultimate result of a course of therapy will not depend on any one medicament but on the medical supervision of the patient. There should be three stages of treatment: (1) relaxation and quieting of the patient; (2) restoration of functional capacity by exercise and added burden; (3) reintegration of the patient into his daily routine. Often hospitalization alone may satisfy all the conditions necessary for a genuine rest. Next there is the dietary regimen to be initiated, the daily fluid supply should not exceed 200 cc. five times. Important, too, is restriction of the salt intake. After such measures as rest in bed and restricted diet have been instituted heart medications may be administered but only in "critical" cases should the use of medications precede the other measures. Venesection or a mustard pack often affords some relief. Digitalis is effective only for insufficient hearts, the output of which it increases while at the same time retarding the beat. The blood perfusion is thus relatively improved. The favorable effect of digitalis is most pronounced in tachycardia. Mitral insufficiency frequently responds well to digitalis but mitral stenosis often reacts unfavorably because of mechanical conditions and the same may be said of aortic insufficiency. Treatment

digitalis may likewise be indicated in coronary sclerosis, and hypertonia if cardiac weakness is present. The prophylactic use of digitalis prior to operations is not justified. It is better to administer the glucoside in small doses at short intervals than in one large dose. The total quantity that may be necessary cannot be estimated *a priori* and must be determined by careful observation of the patient. This therapy should be supplemented by the administration of diuretics, since these exert an influence on the tissues. An acidotic condition of metabolism favors diuresis.

In the second and third phases of the planned therapy, the supply of fluid and of salt must still be held down. Two or three grams of salt may be added to the saltless regimen, but "more restricted" days should be temporarily interpolated. During the later phases exercise will assume the leading role together with massage, graduated respiratory exercises and gymnastics. Overexertion must be avoided. Exercise therapy should also include carbon dioxide baths.

After improvement has taken place in functional capacity, the third stage of treatment may be begun. To avoid too abrupt transition, the patient should now be placed in a work camp where he gradually may become accustomed to exertion. This is better than keeping the patient in a convalescent home, where he will probably obtain too much rest and insufficient opportunity for exercise.

Siebeck's emphasis of certain points suggests that his views do not coincide with the well known pretensions of the present government of Germany. In the discussion that followed, Katz of Stuttgart, one of the best known spokesmen of the Nature Cure group, made the forthright and emphatic declaration that, for Nature Cure therapy, a knowledge of the etiology of a disease was of slight importance. The Nature Cure treatment of heart disease consists of such measures as tapotement of the heart, massaging of the intestine, compresses on the heart and genitals and on the throat and arms, massage of the chest, as well as different types of baths and applications both morning and afternoon, and regimens of fruit juice. The foregoing sample of what took place at the joint session should furnish the reader an adequate picture of that gathering.

On the second day of the Internists' Congress proper, the topic of discussion was "Pulmonary Disorders Due to the Inhalation of Dust." Aschoff, pathologist, of Freiburg, led off with a survey of the self purifying power of the lungs and how it acts against stone dust. Persons dwelling in large cities all become silicotic in the course of their lives. But silicosis as a disease is encountered only among workers whose occupations entail the inhalation of substantial quantities of quartz dust over a considerable period. Although soot particles are inhaled without producing any pathologic reaction, quartz dust always gives rise to pronounced reaction in the tissues. Furthermore, it is difficult to say whether a physical irritation or a chemical surface action is involved. In cases of chronic inhalation, a phagocytosis of the quartz particles may take place in the reticulo-endothelial elements of the germinating centers and particularly in the cells of the lymph sinuses of the excretory region. Quartz particles enter the blood either through the lymph stream or by the rupture of an indurated silicotic cervical lymphatic gland into a pulmonary vein or by direct absorption into the blood capillaries.

Giese of Freiburg made a talk on pulmonary disorders caused by the inhalation of dust. The action of silicic acid influences the formation of nodule-like granulation tissue and characteristic silicotic granulomas. Different types of dust are responsible for differing formations. There is a typical papular formation which is found only after the inhalation of quartz dust. Asbestos needles become completely dissolved within the organism. Sericite, clay and feldspar dusts have never been known to cause indurations. Whereas pure quartz dust in

most cases enters quietly after a first reaction, a progress of the process due to the extensive formation of granulations appears if a mixture of dusts containing other soluble types is inhaled. Not all accompanying dusts aggravate the unfavorable action of the quartz dust, coal dust even appears to mitigate the effect of the quartz. Among general manifestations that occur in advanced cases of silicosis are emphysema and hypertrophy of the right side of the heart. So-called supplementary tuberculosis plays an important part in silicosis by depleting the resistance of the silicotic lung, and rapid deterioration may accordingly take place within the cavity. Endogenic reinfection also may be an important factor in the disease. In animal experimentation, tuberculosis with coexistent silicosis has been found to pursue an unfavorable course. By silicotic action in the tissues, a tuberculosis of the lymph nodes or a healed first manifestation may again be rendered active. In comparison with these internal factors in the development of tuberculosis, the external factors are of trivial importance.

A consideration of the various types of dust is likewise essential for a clinical study of dust diseases, according to another speaker, Professor Boehme of Bochum. Among the mild, nonprogressive comoses he reckons those produced by soot, pit coal, graphite, corundum, carborundum, metal dust, kaolin and ferric oxide. Siliceous dust, on the other hand, is responsible for progressive pulmonary fibrosis. If the latter condition follows the inhalation of asbestos needles, the pathogenesis may be explained as a disintegration of the pulmonary tissues by the noxious silicic acid, which substance is formed from the gradual dissolution of the asbestos particles. Boehme then specified as clinical symptoms dyspnea, emphysema and the dextro type electrocardiogram, the levo type also is encountered, however. After a ten year interval about 50 per cent of the milder cases evidence marked deterioration even when the patient has foregone his hazardous occupation. Cases of severer type silicosis are almost invariably progressive, particularly during the first years. Some 50 per cent of persons attacked die within five years. Silicosis is presented for the most part by men who have been engaged in the contaminating occupation for considerable periods, in stone cutters the disease appears after some twelve and one-half years, whereas among other workers, quartz crushers for example, it may appear as early as from one and one-half to two years after the beginning of occupational activity. An inherited predisposition may be assumed, since a high incidence has been established in a number of families. Other families, however, remain free from the disease. In view of the inability to combat silicosis, all possible prophylactic measures must be utilized. These should include examination of the applicant at the time of his employment, periodic follow-up examinations, frequent rotation of tasks, and industrial hygienic regulations.

Throughout the protracted discussion, silicosis was clinically considered not as a purely organic disorder but as a disease of the entire organism. Schlomka of Bonn pointed out the obvious influence of silicosis on nutrition, examination of 1,500 stone cutters disclosed a tendency to take on fat to be an indication of the disease and a result of the action of the noxious dust.

On the third day, Fritz Schellong of Heidelberg submitted a paper on "Electrocardiographic Diagnoses in Disturbances of the Heart Muscle." The speaker described a new procedure that helps determine the electrical axis of the heart by direct registration of changes during the heart beat. A "vectorgram" is obtained from which it is possible to establish axile alterations. A spatial vectorgram may also be composed by biplanar exposure and in this way it is possible to correlate different parts of the leg with the activity of particular regions of the heart muscle. Pathologic changes in separate regions can thus

be plainly represented and a functional diagnosis made. Schellong reaches the conclusion that, according to the sum of clinical electrocardiographic aspects, similar changes in the electrocardiogram may be interpreted in wholly divergent ways. The discussion of this report elicited numerous important details.

Of the other papers, which were concerned with the most diverse questions, a few may be briefly mentioned. Pannhorst of Greifswald has found that the following determination with regard to conjugal diabetes sheds light on the question of the hereditability of that disease. If two parents are afflicted with diabetes or if one parent is so afflicted and the other possesses a familial predisposition toward the disease, 15 per cent of the descendants will present diabetes, whereas if the disease is present in but one parent, only 1.5 per cent of the descendants will be afflicted.

Gänsslen of Tübingen spoke on his treatment of pernicious anemia. By the administration of from two to four standard ampule injections of liver extract he was able completely to rehabilitate a severely anemic hemogram within a period of from six to ten weeks. By the use of this small and infrequent dosage he had achieved favorable results in twenty-one cases. This proves that for many patients the more frequent injections are unnecessary. Besides, the use of this method effects an extraordinary reduction in the cost of treatment. Gänsslen found that precisely the most severe anemias react favorably to small doses of extract. A single injection must needs produce a decided change in the blood formation and this fact is a useful criterion whether or not the extract is effective. A second injection is administered when the increased hemoglobin content has again become stationary.

The internists concluded their congress by participation in the convention of the German Roentgen Society.

ITALY

(From Our Regular Correspondent)

July 15, 1936

Sanitation in Ethiopia

The public health office now organized in Italian Addis Ababa is provided with chemical and bacteriologic laboratories and offices for administration of supplies to be used in work of sanitation and prevention of diseases. Hygiene and sanitation, all through the country, is supervised by the personnel of the public health office. Addis Ababa is considered as if divided into several zones, each of which is in charge of a physician assisted by a veterinary. The capital of the empire has a special department of hygiene which is in connection with a hospital for isolation of cases of contagious diseases, branches for the improvement of hygiene of the soil and squads of Italian sanitarians and of Italians and natives working on disinfection and vaccination. The Menelik Hospital with all its departments is now a hospital for isolation of patients suffering from infectious diseases. A central post for first aid and a department for obstetrics and municipal outpatient hospitals in connection with antisyphilitic and antituberculous dispensaries have been established. The ex-Swedish Hospital as well as the hospital which was formerly in the hands of the members of the British military ambulances has been placed in the hands of the board of directors of military sanitation. The Fulut Naka and Gullale hospitals and the Sudan Interior Mission the American leprosarium, all of which have been managed by American missions are authorized to continue functioning with the collaboration of the public health department. Groups for detection and treatment of patients suffering from infectious diseases are no longer organization. Regulations have been provided making free the administration of treatments in cases of snake bites and compulsory free vaccination and also for the con-

servation of hygiene of the soil, housing, food, water, milk, live stock and market meat supply. Antityphoid vaccination is compulsory for the lower ranks of soldiers. The prevention and control of malaria and tuberculosis, the care of the insane, the production and distribution of vaccines, the supervision of hygiene and sanitation at the borders and the practice of pharmacy are problems that will be given attention in the near future.

The Riberi Prize

The Riberi prize is given for the best contribution to the progress of medicine during each period of five years. The prize was recently awarded to Francesco Pentinalli, professor of general pathology at the University of Florence, for his work on experimental tumors and cancer. The articles submitted numbered 275 and were written by thirty-eight aspirants from nine different countries.

Society Reunion

The first national congress of the Società di Antropologia e Psicologia Criminale was recently held at Rome. S. E. Novelli spoke on the satisfactory results obtained by the institutions for prevention and punishment of delinquency in reeducating and socially readapting delinquents. A complete actuation of the new penal laws has been made possible through the collaboration of magistrates and persons devoted to the scientific prevention and control of delinquency.

Fabbri spoke on the advisability of establishing offices for medicopedagogic consultations of children between the ages of 6 and 12 who at home or in school show antisocial and delinquent tendencies. A function of these offices will be the physical and moral guidance of those children.

Professor Falco spoke on the importance of the preservation of the biographic records of delinquents in the police department and on the significance of the records for application of the new penal laws owing to the fact that the personality of delinquents should be known for evaluation of the offense. That biographic records require the clinical study of the delinquents in the given case points to the advisability of having physicians who have specialized in criminal anthropology in the police department.

Professor Ovio-Ciancarini spoke on the technical and scientific procedures used for prevention and control of delinquency in soldiers. The sojourn of delinquents in special centers for readaptation and reeducation has given satisfactory results.

Reunion of Gastro-Enterologists

The Società di Gastro-Enterologia met recently at Rome. Dr. Valdoni reported results of studies on the stomach after an operation. His studies prove that periodic contraction almost disappears following gastric resection, while it is preserved almost without change following gastro-enterostomy. The changes of the secretory functions are manifest, especially if the examination is made some time after the operation. Following resection the gastric secretion is hypo-acid and sometimes there is anachlorhydria. If a patient suffering from postresectional anachlorhydria is given 200 Gm. of wine and a regular portion of oatmeal the stomach reacquires the capacity of secreting hydrochloric acid. Together with the increase of hydrochloric acid in the gastric secretion a bacterial flora appears in the gastric juice. The speaker verified the presence of bacteria in 60 per cent of the cases in which before administration of wine and oatmeal there was a sterile gastric juice.

Dr. Meldolesi spoke on the role of an insufficiency of pancreas in the development of progressive muscular dystrophy. According to the speaker the disease originates in the lack in the body of certain substances that are required for maintenance of the trophic conditions of the muscles and that normally originate in food products after the processes of gastric digestion.

Marriages

ALEXANDER VICTOR LYMAN New York to Mrs Elizabeth Gilbert Forsyth of Swampscott, Mass., at Princeton, N J, in July

EDWIN LOUIS LANDRY, De Quincy, La, to Miss Edna Lee Elberson of Lafayette in June

JOHN G LOHMANN to Miss Anastasia Hodgson, both of Fergus Falls, Minn, in June

WILEY E LINDSAY to Miss Ruby Eva Tallant, both of Winchester, Tenn., in July

MARION AUSTIN LOVEJOY to Miss Doris Olive Petit, both of Miami, Fla, June 16

Deaths

Thomas Beaver Holloway * professor of ophthalmology at the University of Pennsylvania School of Medicine Philadelphia, and professor of ophthalmology and formerly vice dean at the graduate school of medicine, died, August 18, at his home in Merion Station Pa, aged 64 Dr Holloway was born at Danville, Pa, March 24, 1872 He received a bachelor of science degree from Lafayette College in Easton, Pa, in 1894, and a master of science in 1897 in which year he also received a medical degree from the University of Pennsylvania Department of Medicine He was a past president and from 1918 to 1925 was secretary-treasurer of the American Ophthalmological Society and at one time edited the society's transactions past president of the section on ophthalmology of the Pan-American Medical Association, a member of the American Academy of Ophthalmology and Oto-Laryngology, the Societe française d'ophtalmologie and the Ophthalmological Society of the United Kingdom as well as numerous other ophthalmologic, neurologic, pathologic and general medical societies in this country In 1918 he was a member of the House of Delegates of the American Medical Association, and chairman of the Section on Ophthalmology from 1929 to 1930 He had been associated with the Wills Eye Hospital, was ophthalmologic surgeon at the University of Pennsylvania Hospital, consulting ophthalmologist to the neurologic department of Philadelphia General Hospital and ophthalmologist to the Pennsylvania Institution for the Instruction of the Blind, Overbrook In 1926 he was awarded an honorary doctor of science degree by the University of Pennsylvania and in 1932 was elected a member of the board of directors of the National Society for the Prevention of Blindness Dr Holloway was co author with Dr George E de Schweinitz, of "Pulsating Exophthalmos" in 1908 and contributed numerous articles to the periodical literature

Charles Gilbert Chaddock * St Louis, emeritus professor of neurology and psychiatry, St. Louis University School of Medicine, died, July 20 at the Central Hospital, of diabetes mellitus, aged 74 Dr Chaddock was born in Jonesville Mich, Nov 14, 1861 He received his medical degree from the University of Michigan Department of Medicine and Surgery Ann Arbor, in 1885 and later took postgraduate studies at the University of Munich and at hospitals of Paris During the years 1888 and 1889, Dr Chaddock resided in Germany, and in France, from 1896 to 1900 From 1889 to 1892 he was an assistant medical superintendent at the Northern Michigan Asylum now known as the Newberry (Mich) State Hospital In 1892 he became professor of nervous diseases at the Marion-Sims Beaumont Medical College now known as St Louis University School of Medicine He was secretary of the Section on Physiology and Dietetics of the American Medical Association from 1894 to 1895, was a life fellow of the American Psychiatric Association, and visiting neurologist at St. Louis City hospitals Dr Chaddock devised a method of physical examination for lesions of the corticospinal reflex paths whereby irritating the skin in the external malleolar regions produces extension of the toes which has become known as the Chaddock sign He translated "Psychopathia Sexualis (Krafft-Ebing) 1892 and Suggestive Therapeutics" (von Schrenck-Notzing) 1895, was the author of "Outline of Psychiatry and Sexual Crimes" and chapters in Hamilton and Godkins A System of Legal Medicine, and Peterson, Haines and Webster's Legal Medicine and Toxicology

Harry Coulter Todd, Oklahoma City Medical School of Maine, Portland 1900, a practitioner in Oklahoma City since 1903, member of the Oklahoma State Medical Association

past president of the Oklahoma County Medical Society professor of anatomy and secretary of the faculty, from 1904 to 1907 and associate professor of eye, ear, nose and throat from 1907 to 1910 at the Epworth College of Medicine, which later became the clinical department of the University of Oklahoma School of Medicine, where he was an associate professor and later professor of otology, rhinology and laryngology, fellow of the American College of Surgeons member of the staffs of the State University and St Anthony's hospitals and the Oklahoma State Baptist Orphans' Home, in addition to being associated with Dr E B Gleason in the latest edition of "Nose, Throat and Ear Manual," was the author of many monographs as well as books of poems, aged 62, died, June 25, of cerebral hemorrhage.

Henry Leander Bernardy, Philadelphia, University of Pennsylvania Department of Medicine Philadelphia, 1900 member of the Medical Society of the State of Pennsylvania an assistant on the dermatologic staff of Jefferson Hospital from 1905 to 1912, and formerly in the department of proctology at the Graduate School of Medicine of the University of Pennsylvania aged 59 died June 30, of coronary occlusion, arteriosclerosis and nephritis

William Henry O'Connor * Passed Assistant Surgeon Lieut Commander U S Navy, retired, Washington D C, Tufts College Medical School, Boston, 1916 entered the navy in 1920, retired in 1931 for incapacity resulting from an incident of service, retired with rank of next higher grade to that held on active list aged 45 died May 16 in the U S Naval Hospital of coronary thrombosis

Harry Beecher Baker, Taunton Mass, Jefferson Medical College of Philadelphia, 1880, member of the Massachusetts Medical Society and the American Academy of Ophthalmology and Oto-Laryngology, formerly member of the board of health and secretary of the school board of Dighton consultant to the Morton and Taunton state hospitals, aged 77, died, June 7, of arteriosclerosis

Willard Springer, Wilmington Del University of Pennsylvania Department of Medicine, Philadelphia 1874, member of the House of Delegates of the American Medical Association in 1902 and in 1917, member and past president of the Medical Society of Delaware, and the New Castle County Medical Society on the staff of the Delaware Hospital, aged 84 died, June 26

William Lane Buhrman * Chicago, University of Illinois College of Medicine, Chicago, 1923, member of the American Academy of Pediatrics, clinical instructor in pediatrics Rush Medical College, assistant attending pediatrician to the Presbyterian and Chicago Memorial hospitals aged 39, died, June 10 of coronary thrombosis and arteriosclerosis

Fount Willard Huddleston, Liberal, Kan, Hospital College of Medicine, Louisville, Ky 1906 member of the Kansas Medical Society, fellow of the American College of Surgeons, past president of the Meade-Seward County Medical Society, a founder of the Epworth Hospital, aged 53, died, June 5, of erysipelas and acute nephritis

George Elmer Malsbary, Los Angeles, Medical College of Ohio, Cincinnati 1896 at one time a practitioner in Cincinnati Ohio formerly assistant to the chair of practice at his alma mater and instructor of medicine University of California Medical Department, aged 62, died, May 25, of coronary thrombosis

Payson La Vern Nusbaum, Chicago, Northwestern University Medical School, Chicago, 1911, fellow of the American College of Surgeons, served during the World War associate in gynecology at his alma mater aged 57 on the staff of the Wesley Memorial Hospital, where he died, July 28

John Duncan Bonnar, Buffalo University of Toronto Faculty of Medicine Toronto, Ont Canada 1878 M B Trinity Medical College, Toronto, 1878 and M D in 1879, member of the Medical Society of the State of New York, aged 84, died, June 24, of cardiac insufficiency

Joe C Ambrister, Chickasha Okla Washington University School of Medicine, St. Louis, 1905, member of the Oklahoma State Medical Association, past president and secretary of the Grady County Medical Society formerly on the staff of the Chickasha Hospital aged 53 died June 29

Joseph Franklin Jenckes, Wrentham, Mass University of Vermont College of Medicine, Burlington 1882 member of the school committee, and board of health, chairman of the board of trustees of the Fiske Public Library, aged 88, died, May 18 in Providence, R I

Charles Hendry Shivers, Atlantic City, N. J., Jefferson Medical College of Philadelphia, 1872, member of the Medical Society of New Jersey, past president of the Camden County Medical Society, aged 88, died, June 28, of pneumonia, following a fractured femur.

Charles Edward Johnston, Portsmouth, N. H., Dartmouth Medical School, Hanover, 1897, member of the New Hampshire Medical Society served during the World War, formerly member of the City Council, aged 71, died, June 28, of coronary sclerosis.

Dillis Sidney Conner Φ Cannelton, Ind., Louisville (Ky.) Medical College, 1905, secretary of the Perry County Medical Society, county health officer, aged 54, died, June 25, in the Protestant Deaconess Hospital, Evansville, following an operation for appendicitis.

Elliott Coues Prentiss, El Paso, Texas, Columbian University Medical Department, Washington, D. C., 1900, member of the State Medical Association of Texas, aged 59, died, May 4, in a local hospital, of pneumonia, following a prostatectomy.

Trenouth Wright Edmonds Φ Horton, Kan., Northwestern University Medical School, Chicago, 1929, on the staff of the Horton Hospital, aged 32, was accidentally electrocuted, June 8, when he fell against the high tension wires of an x-ray machine.

George W. Barnes, Springfield, Mo., Missouri Medical College, St. Louis, 1884, member of the Missouri State Medical Association, aged 81, died, June 9, as the result of a fractured tibia sustained when he was struck by an automobile, and senility.

William Worrall Reber, Baldwin Park, Calif., University of Pennsylvania Department of Medicine, Philadelphia, 1879, at one time postmaster in Leighton, Pa., aged 80, died, May 4, of chronic myocarditis, nephritis and arteriosclerosis.

Dennis Leo Black, Lawrence, Mass., Dartmouth Medical School, Hanover, N. H., 1910, served during the World War, on the staff of the Veterans Administration, Boston, aged 53, died suddenly, June 4, of coronary occlusion.

Sherman Willard Boone, Presque Isle, Maine, McGill University Faculty of Medicine, Montreal, Que., Canada, 1887, fellow of the American College of Surgeons, aged 76, died, May 27, of uremia following myocarditis.

Heber Howe Cleveland, Portland, Maine, Harvard University Medical School, Boston, 1899, formerly member of the school board, aged 63, died, June 17, in Springfield, Mass., of coronary thrombosis and arteriosclerosis.

Horace Osler Averitt, Fayetteville, N. C., Emory University School of Medicine, Atlanta, 1929, member of the Medical Society of the State of North Carolina, aged 32, died, June 29, of acute dilatation of the heart.

Joseph Maxwell Cadwallader, Sheffield, Iowa, State University of Iowa College of Medicine, Iowa City, 1907, member of the Iowa State Medical Society, aged 52, died, May 23, of an accidental overdose of barbitol.

Thomas Henry Toynbee Wight, Carmel, Calif., Harvard University Medical School, Boston, 1901, veteran of the Spanish-American and World wars, aged 65, died, May 11, of bronchopneumonia and arteriosclerosis.

Giles Ripley Pease, Los Angeles, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885, formerly a practitioner in Redwood Falls, Minn., aged 78, died, May 27, of gastric hemorrhage.

Horace Bernard Blan, Brooklyn, New York, University Medical College, 1898, aged 59, formerly on the staff of the Kings County Hospital where he died, June 16, of carcinoma of the bladder with metastases.

Morton Myers, Akia, Alaska, State College of Physicians and Surgeons, Indianapolis, 1907, physician for the U. S. Bureau of Indian Affairs, aged 63, died, May 27, in Anchorage, of intestinal obstruction.

George Edwin Cook, St. Louis, St. Louis College of Physicians and Surgeons, 1905, member of the Missouri State Medical Association, aged 61, died, June 19, in the Deaconess Hospital of cirrhosis of the liver.

Robert Breckenridge Elderdice, McKnightstown, Pa., Cincinnati College of Medicine and Surgery, 1868, Civil War veteran, aged 89, died, June 28, of carcinoma of the liver and chronic myocarditis.

Austin Lynn Braden Wellman, Iowa, State University of Iowa College of Medicine, Iowa City, 1903, member of the Iowa State Medical Society, aged 65, died suddenly, June 22, of heart disease.

Daniel G. Cook, Holland, Mich., Detroit College of Medicine, 1894, formerly health officer, city physician and county coroner, aged 71, died, June 6, of chronic myocarditis and arteriosclerosis.

Archibald Benjamin Morrison, Brookline, Mass., College of Physicians and Surgeons, Baltimore, 1906, member of the Massachusetts Medical Society, aged 72, died, May 3, of coronary thrombosis.

John Sinclair Miller, Hugo, Okla., University of Texas School of Medicine, Galveston, 1903, member of the Oklahoma State Medical Association, aged 59, died, May 4, of cerebral hemorrhage.

James Renwick Gormley, Monaca, Pa., Miami Medical College, Cincinnati, 1893, member of the Medical Society of the State of Pennsylvania, aged 67, died, May 21, of pulmonary embolism.

Benjamin Lynn Bridges, Ellaville, Ga., Atlanta Medical College, 1895, member of the Medical Association of Georgia, aged 62, died, June 24, of typhus fever, pneumonia and acute nephritis.

Frank M. Bell, Portland, Ore., Miami Medical College, Cincinnati, 1883, aged 80, died, May 7, in the Multnomah Hospital of bronchopneumonia, arteriosclerosis and nephrolithiasis.

Joseph A. Lucas, Sullivan, Ill., St. Louis College of Physicians and Surgeons, 1899, for many years county physician, aged 71, died, May 18, of mitral insufficiency and angina pectoris.

Harry Newton Kierulff, San Francisco, Calif., State University of Iowa College of Medicine, Iowa City, 1892, aged 72, died, May 28, of chronic myocarditis and hypertension.

Howard Julian Lackey Φ Oakland, Calif., Hahnemann Medical College and Hospital of Philadelphia, 1899, aged 62, died, May 15, in the Peralta Hospital, of heart disease.

John Wilson Morrow, Marchand, Pa., Jefferson Medical College of Philadelphia, 1875, formerly member of the state legislature, aged 87, died, May 30, of nephritis.

Alfred Elder, Falls City, Neb., Northwestern Medical College, St. Joseph, Mo., 1888, aged 94, died, May 22, of injuries received when he was struck by an automobile.

William M. Thomas, Fort Worth, Texas, St. Louis College of Physicians and Surgeons, 1891, aged 74, died, May 3, of infected thrombosis and ulcer of the nose.

Philip James Shaver, San Antonio, Texas, University of Texas School of Medicine, Galveston, 1904, aged 58, died in May of pulmonary tuberculosis and nephritis.

Buford Munsey Tittsworth, Jefferson City, Tenn., Baltimore Medical College, 1897, served during the World War, aged 64, died, May 11, of pneumonia.

Egbert H. Relyea, New York, University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1907, aged 63, died, May 14, of chronic myocarditis.

Carrie E. Marvin Leiber, Oakland, Calif., Women's Medical College, Chicago, 1882, aged 84, died, May 26, of chronic myocarditis and nephritis.

Robert Ernest Pierce, Los Gatos, Calif., Boston University School of Medicine, 1879, aged 79, died, May 22, of cardiac decompensation and myocarditis.

Luther Calvin Havice, Klingerstown, Pa., Jefferson Medical College of Philadelphia, 1893, aged 66, died, May 4, of acute dilatation of the heart.

Charles C. Ramsey, Baltimore, North Carolina Medical College, Charlotte, 1907, aged 51, died, May 10, of carbon monoxide poisoning.

Sarah Van Gorden, Cincinnati, Pulte Medical College, Cincinnati, 1903, aged 62, died, May 19, of cerebral embolism and myocarditis.

James Lincoln Randall, Hattiesburg, Miss., Leonard Medical School, Raleigh, 1908, aged 56, died suddenly, May 13, of myocarditis.

Sarah J. Bebout, Norwalk, Ohio, Pulte Medical College, Cincinnati, 1882, aged 85, died, May 25, of chronic myocarditis.

James R. Robertson, Columbia, Miss. (licensed in Mississippi in 1908), aged 73, died in May of cerebral hemorrhage.

Sylvester Nash Young Ridgeto, Ont., Canada, Victoria University Medical Department, Coburg, 1888, died May 19.

Joseph McAndrew, Georgetown, Ont., Canada, University of Toronto Faculty of Medicine, 1905, aged 59, died May 15.

Andrew Jackson Baker, Monterey, Calif., Omnia Medical College, 1892, aged 76, died May 5, of heart disease.

Correspondence

HEALTH INSURANCE

To the Editor—It is to be regretted that the words "health insurance" have been so widely applied to plans that have had nothing to do with health and insure little except against monetary risks of unemployment produced by disease or accident. The real insurance of health to the individual and the community is something entirely different from the balancing of probabilities by the statistics of the actuary, to get a profit for the promoters of a special productive scheme for insurance, who embark in speculation by writing "insurance" on the chances of human death or disability. The report on the 'costs of medical care' was more clearly a movement in the field of finance. It was an exploration to find whether some of the income of the medical profession might be diverted to the profit of a new business enterprise offering "medical care" to a larger number of customers.

However, the insurance of health, to the individual and the community, is one of the greatest enterprises that is opening up to the civilizing races of the world. Italy has driven out the emperor of Ethiopia, but can the Italian people exterminate the tropical diseases as easily as they can kill off the savage tribes, which have become partly immune to those diseases. The future of empire and world dominance hangs on the establishing of real health insurance. This will require the growth of knowledge and development of customs that will overcome the dangers of destructive disease and establish a vast resource of race health. Only on this can empire builders rely for the success of their great undertakings. The words "health insurance" have recently occupied a commanding place in medical journals and popular magazines. They should be given a new, real and more important meaning than they have carried in the past.

To insure individual and race health has been, and still will be, the great work of the medical profession. Chance to speculate or make investments in the prospects of health or disease for the people may still be attractive to promoters and financiers, but the need to secure and preserve health is a permanent need for every member of the human race. It has been the real objective of the medical profession. Its importance increases with the discoveries of science and the experiences of individual living. The medical profession must give fresh thought and renewed attention to this greatest department of its labors, the most productive and honorable of its responsibilities.

The most important opportunities for teaching health come to the general physician, with each patient recovering from sickness. The child getting over an attack of indigestion or a cold can understand the good of avoiding such experiences in the future. The developing youth or business man is anxious to escape recurrences of periods of disability. Those who find their powers waning with age feel more strongly the need to defer the time when they must give up both business and amusement. At such times the doctor who has the full confidence of his patient can teach the pertinent facts about the preservation of health as they can be taught at no other time and by no other person. To use such opportunities will do more to insure health than can be done by any other outside organization or any publication of health propaganda.

Men secure the title Doctor of Medicine who may not have the sense of responsibility that must always be a part of the equipment of the complete physician. But the leaders in medicine have always recognized their broad responsibilities. Ever since the oath of Hippocrates was first written, the medical profession has sought to enforce on its members an understanding of the broad extent of the duties of the physician.

From generation to generation there have always been members of the profession who felt keenly how great was their duty to labor for the general health interests of their patients and their communities. Today there are many who never tell a patient he is well without pointing out what he can do to remain so. New relations and new means of communication give new opportunities to tell the people how they may insure health. But the greatest influence for good is exerted by the individual doctor on the individual patient or family. To preserve this influence, no form of business enterprise must be allowed to disturb or impair the close confidence and good understanding between physician and patient.

EDWARD JACKSON, M.D., Denver

HYPERVENTILATION IN ABDOMINAL SURGERY

To the Editor—In THE JOURNAL, July 25, pages 267-269, in an article entitled "Hyperventilation in Abdominal Surgery," Dr. T. J. Ryan concludes that "carbon dioxide is of no value in the prevention of postoperative pneumonia."

This conclusion is drawn from a group of 135 cases in which, at the close of abdominal operations, carbon dioxide was administered only once, for about three minutes, and a control group of 276 in which carbon dioxide was not administered.

The morbidity is reported as 22 per cent for those who received the inhalation and 14 per cent for those who did not, and the mortality as 0.74 per cent for those treated and 0.36 per cent for those who were not. Obviously, if these figures are significant they indicate, not merely that carbon dioxide is without value in the prevention of postoperative pneumonia, but rather that this treatment tends to increase the incidence of postoperative pneumonia.

In fact, however, the number of cases in which the inhalation was administered is so small and the figures for morbidity, and particularly for mortality in the treated group, are so low that the change of a single case would reverse the result. Indeed, a figure of 0.74 per cent for the mortality in a group of 135 patients indicates that there was exactly one death. Did the series stop when it occurred?

Dr. Ryan fails to mention the form of anesthesia used in either group of cases. Yet it is quite certain that the element of anesthesia is one of the most important in producing or preventing postoperative pulmonary complications. Dr. Ryan quotes two papers by me, one of which was published sixteen years ago and the other six years ago. Since the first, and even since the second, there have been distinct improvements in methods of anesthesia.

However, my views also have changed in sixteen years, and even in six years. I still believe that when ether anesthesia by the old method is used it is better to ventilate the lungs at the end of anesthesia by means of carbon dioxide rather than to leave the patient unaided to eliminate the drug through a long hour or hours.

But the main point, as I see it now, is that anesthesia and operation together lower a patient's vitality, and particularly the tonus of his muscles. Because of this lowering of tonus he cannot stand up, or sit up, or even lift his head for some time after the operation. The same lack of tonus in the respiratory muscles, particularly the diaphragm, permits the lungs to be partially deflated. If the deflation is sufficient to result in an occlusion of any of the airways, the air in that portion of the lungs is soon absorbed. Atelectasis of parts of the lungs, or even a massive collapse of one lung, develops. If infection is present, pneumonia may follow.

It is my belief, on the basis of many years of investigation, that depression of the circulation after anesthesia and operation is also due to decreased tonus of all the skeletal and visceral muscles, which permits the blood to stagnate in the tissues.

In surgical shock the consequent failure of the venous return is a more important factor than is vasomotor failure.

Manifestly these respiratory and circulatory conditions cannot be completely counteracted by merely expanding the lungs once at the end of an operation, any more than general body tonus and vitality can at this time be restored sufficiently for the patient to get up off the operating table, or out of bed, dress, and walk home. The value of inhalation of carbon dioxide consists in this. When it is used as needed repeatedly after anesthesia and operation, the effects of loss of tonus in producing pulmonary complications may be obviated.

As I presented my views on this general subject fully in the Carpenter Lecture of the New York Academy of Medicine, I refrain from further restatement of them here.

YANDELL HENDERSON, PH D, New Haven, Conn.

Atelectasis Massive Collapse and Related Postoperative Conditions
Bull New York Acad Med 11: 639-656 (Nov.) 1935. Diseases of the Respiratory Tract (Lectures of the Graduate Forfeight New York Academy of Medicine Philadelphia W B Saunders Company 1936, p 331. Depression of Muscle Tonus as the Cause of Atelectasis, Failure of the Circulation and Other Postoperative Sequelae *Lancet* 2: 178-185 (July 27) 1935.

"TREATMENT OF EARLY SYPHILIS WITH ELECTROPYREXIA"

To the Editor—In THE JOURNAL, July 18, Drs Neymann, Lawless and Osborne, in their paper entitled "Treatment of Early Syphilis with Electropyrexia," state that "if external heat is used, especially if the temperature of the entire skin is raised to the same high level equal to that of the internal organs, terrifying states of delirium and dyspnea result." We desire to take issue with this statement. Since the introductory work of Simpson with the heated and humidified cabinet, the department of fever therapy of Grace Hospital has treated some 650 patients by artificial elevation of body temperature. Especially in the treatment of gonorrhea and its complications, body temperatures have been maintained at 106-107 F (rectal) for six continuous hours, treatment being repeated every other day. Patients are admitted for treatment only after a careful cardiovascular-renal examination. Preparatory treatment consists of the administration of 5 grains (0.3 Gm) of sodium pentobarbital followed by the judicious use of morphine or its derivatives. Saline solution in quantities of from 2 to 5 liters is consumed during a fever session. Being particularly interested in the mental reaction during elevated fever as contrasted with fever produced by infection, we have carefully recorded the results. The majority of patients experience a complete relaxation throughout the fever session. Fifteen per cent of the patients experience a mild delirium, while less than 0.5 per cent are sufficiently excited to require termination of the fever session. Dyspnea corresponds only to the elevated metabolism and at no time has dyspnea been such as to require cessation of treatment.

J. M. BERRIS, M.D.,

M. K. NEWMAN, M.D.,

Detroit

[The letter was referred to Dr. Neymann who replies.]

To the Editor—We do not sponsor any particular type of fever-producing machine. We have stated repeatedly that the skill of the physician and nursing personnel is far more important than the method employed. Terrifying states of delirium and dyspnea were frequently experienced with our patients when the entire skin surface was raised to the same high level of temperature as the internal organs averaging 42 C (107.6 F). By the entire skin surface we mean the scalp, face and neck. Moreover, it should be noted that the patient at the same time breathed hot air at a temperature ranging between 54.4 C (130 F) and 71.1 C (160 F). These are facts and not theories.

It is interesting to note that the investigators at the Grace Hospital in Detroit have experienced 15 per cent of mild

deliriums. In our experience with penetrating heat we have rarely observed the occurrence of delirious states, though we have given thousands of treatments. The incidence of delirium in our series is certainly less than 5 per cent. We rarely resort to hypnotics and give morphine and its derivatives only to truly psychotic individuals. Perhaps the particular technique employed at the Grace Hospital necessitates the use of sedatives and hypnotics and these, in conjunction with high fever, produce this really unusual number of deliriums.

CLARENCE A. NEYMANN, M.D., Chicago

A CONFERENCE ON MARRIAGE AND FAMILY PROBLEMS

To the Editor—The changing trend in medicine and education was shown by the recent conference on teaching of Marriage and Family Problems, held at the University of North Carolina, Chapel Hill, N. C., July 6 to 11, under the direction of Prof. Ernest Groves of the sociology department. The important part the physician must assume in the teaching of sex education, preparation for marriage and family adjustments is evident from the list of topics presented by physicians at this conference. The conference stressed the necessity for the physician becoming aware of the sociological problems of medicine, which form part of the problems presented by preventive medicine and mental hygiene. The nonmedical marriage counselor is attempting to advise on matters of sexual adjustment, family relations and behavior problems and even contraception because heretofore the physicians have largely ignored these phases of public health. The gynecologist, psychiatrist and obstetrician in scattered instances have been cognizant of these problems in treating their patients. The conference brought out the need for scientific sex information concerning human beings and felt that college courses should make such information available to all students who may request such information. For such purposes it is necessary to correlate medical facts with sociological application, which is the newest approach to the teaching of sex education, marriage preparation and family relations.

For marriage advice the ideal arrangement is for the family physician to be properly trained to serve as a competent marriage counselor, calling on specialists when necessary. May I call attention again to the necessity, therefore, of including such training in the regular medical school curriculum, as was also pointed out recently in the article on preparation for marriage by Dr. Robert L. Dickinson in the *American Journal of Obstetrics and Gynecology* 31: 165-168 (Jan.) 1936.

The wide field of topics discussed is shown by a list of the papers presented both by physicians, sociologists, psychiatrists, psychologists and teachers.

Physicians presented the following:

Medical Aspects of Preparation for Marriage, Dr. Eva Dodge Winston, Salem, N. C.
Problems of Pregnancy That Need to be Understood by Married People, Dr. R. A. Ross, Duke University Medical School, Durham, N. C.
Premarital Mental Hygiene Factors in Marriage Adjustment, Dr. Malet E. Goudge, Durham, N. C.
Preparation of College Students for Marriage and Life: A Presentation of Courses Given at New York University Heights Center, Dr. Mar Pichel Warner, New York.
Medical Viewpoints on the Safe Period, Dr. Benjamin Varner, New York.
Problems of Child Care, Dr. A. H. London, Durham, N. C.
What Should a Medical Premarital Examination and Interview Include? Dr. Malet Pichel Warner, New York.

Nonmedical papers presented were as follows:

The Psychology of Childhood—Emotional Development, Fay Allen.
Intellectual Development—Behavior Problems, Phyllis Barlow, Philadelphia Child Clinic in a Clinic, Philadelphia.
The Family and the Law—Marriage and Divorce, Harry D. Fox, Ford, New York.
Food Needs and Problems of Children, Katherine Hottel, Virginia Medical College, Richmond, Va.

Teaching the Marriage Course in a Coeducational College Mrs Clyde A Miner director of personnel Guilford College N C
The Work and Problems of a Maternal Health Association Gladys Gaylord Maternal Health Association Cleveland
The Role of the Teacher in Counseling and the Limitations of His Functions Ralph P Bridgman director National Council of Parents Education New York
College Instruction and Preparation for Marriage Ernest R Groves, professor of sociology University of North Carolina
Education for Marriage Through the Churches L Foster Wood Federal Council of the Churches of Christ in America New York
Juvenile Delinquency Professor W B Sanders University of North Carolina
Common Problems of the Married Woman Gladys Hoagland Groves author Chapel Hill N C
Marriage Problems Due to Woman's Changing Status Ernest R Groves professor of sociology University of North Carolina
Education for Family Life for High Schools Sadie J Swenson Technical High School Springfield Mass

The students and their parents are demanding adequate preparation for improving marriage and family relations, and the timorous colleges can well follow the courageous example of the University of North Carolina, under the leadership of Professor Groves

I am submitting this as a physician who is actively engaged in the practice of medicine and who deals daily with many of the problems mentioned I believe this information will encourage social workers, teachers and parents to urging their physicians into becoming actively interested in these problems

MARIE PICHEL WARNER, M.D., New York

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST

ALBUMIN IN URINE

To the Editor—In THE JOURNAL Oct 12 1935 page 1210 appears a query and answer regarding employment examinations and the establishment of standards including one for limits of albumin in the urine we are mentioned as being suppliers of the equipment Is the limit of 10 mg of albumin per hundred cubic centimeters of urine universally considered as a maximum where the line shall be drawn at least as a preliminary step? Is this limiting figure recognized by those medical examiners who are handling the employment work for some of the larger concerns? Do you know of any industrial concerns or associations that have attempted to lay down standardized examination specifications which include the albumin phase? Where can such information be obtained? We are greatly interested in this special field of employment for our albumin standards I should like to be sufficiently informed so that I might approach the medical director of any company and point out that there are limits to albumin and that such determinations should be quantitative that 10 mg per hundred cubic centimeters of urine and below may be disregarded that 20 30 and 40 mg may mean so and so

W New York

ANSWER—These pertinent questions are difficult to answer So far as one can ascertain without extensive inquiry by questionnaire, there are no generally accepted criteria in the field of employment examinations Each industrial medical department has created its own standards and these vary in different industries and for different types of employment The expected duration of employment, the type of work to be done and the age of the applicant are all variable factors In the original query, the criteria for the employment of motor vehicle drivers was mentioned specifically and in such instances, when the lives of passengers and others depend on the driver's good health, rigid qualifications are justified Such high requirements would not be reasonable, however, in the acceptance for temporary employment of labor, as in nonhazardous construction work

The limiting figure of 10 mg of protein per hundred cubic centimeters of urine as normal is derived from the general practice of life insurance medical rating and from clinical experience For example, the finding of 10 mg of albumin per hundred cubic centimeters of urine intermittently would not increase the rating (or the presumed life expectancy) under age 45 but over this age it would increase the premium rate 25 per cent On the other hand, 20 mg or more not constantly

present at any age would justify an increase in premium rate of from 25 to 50 per cent or even rejection of the risk If the albuminuria is constant, that is, found uniformly on repeated urine examinations, the increased rating would be still higher and many of these applicants for insurance would be rejected Additional impairments, such as hypertension, would warrant rejection without repeated urine examinations

It is realized, of course, that the objectives of examinations for life insurance and for employment may be quite different If, however, the industrial concern has existent a "sick benefit" service or a pension plan, the problems become similar The similarity of these two fields of prognostic medicine depends on whether or not the employment is expected to be permanent or transient If the objective of employment examinations is merely to weed out those who are particularly poor risks from the point of view of accidents (reducing losses under the employer liability laws), the limit of 10 mg of albumin per hundred cubic centimeters of urine is far too rigid Clark and Drinker (Industrial Medicine, National Medical Book Company, New York, 1935) do not include urinalysis in the routine of employment examination They state that "applicants should be rejected on physical grounds only when their employment would make them a menace to themselves, to others or to property" This definition of the criteria for rejection for employment may be far too liberal if the employer is interested in the health of his employees

Even profuse proteinuria, especially in young persons, may exist without seriously affecting their risk or longevity, as in orthostatic albuminuria The proof that albuminuria is orthostatic in character may mean acceptance for employment instead of rejection The medical service of employment offices cannot afford to take the time necessary to determine the clinical significance of albuminuria when found in a prospective employee, particularly at a time when there is a superabundance of unemployed labor Although at times the consequences may prove most unfair to a few individuals, it is necessary to create arbitrary criteria of acceptability There is no uniformity of opinion concerning these as yet It may be wise also to recall that considerable renal impairment may exist with but traces (much less than 10 mg per hundred cubic centimeters) of albumin in the urine In these instances, however, physical examination, including determination of the arterial tension, should reveal disease The problem of economic reconstruction and employment of those physically handicapped has recently been considerably advanced in Philadelphia (Stroud, W D The Rehabilitation and Replacement in Industry, THE JOURNAL, Nov 2, 1935, p 1401)

Extensive inquiry among the offices of medical examiners of the larger industrial concerns might yield pertinent information

MAGNESIUM SULFATE INTRAVENOUSLY IN HYPERTENSION

To the Editor—Please give details as to the use of magnesium sulfate intravenously in the treatment of hypertension also references

PAUL K JENKINS M.D. Miami Beach Fla

ANSWER—The pharmacologic actions of magnesium sulfate are different when injected intravenously or intramuscularly from the action when administered by mouth (Meltzer, S J M Rec 68 965, 1905) There is no catharsis, but a cerebral depression and reduction in muscle tone (Meltzer, S J Inhibitory Properties of Magnesium Sulfate, THE JOURNAL, March 25, 1916, p 931) Anesthetic properties develop when it is injected and these effects are apparently associated with reduction of the spinal fluid pressure and the bulk of the brain, presumably because of cerebral dehydration (Weed, L H, and McKibbin, P S Am J Physiol 48 512 [May] 1919 Foley, F E B, and Putnam, T J Am J Physiol 53 464 [Oct] 1920 Auer, John, and Meltzer, S J J Exper Med 23 641 [May] 1916) Because of the cerebral effects and because of the antitetic action intravenous magnesium sulfate has been employed especially in the management of eclampsia and the late intoxications in pregnancy (Adair, F L, and Stieglitz, E J Obstetric Medicine, Philadelphia, Lea & Febiger, 1934) It is then administered as a hypertonic solution (10 per cent) in doses of about 10 cc. every four hours for six or eight doses (McNeile, L G and Vruwink, John Magnesium Sulfate Intravenously, THE JOURNAL, July 24, 1926, p 236 Bowman, E C South M J 18 351, 1925 Blackfan, K D and Hamilton, B Boston M & S J 193 617 [Oct. 1] 1925) Remarkable control over eclamptic convulsions have been reported, with an associated reduction of the arterial tension In view of the oft reiterated suggestion that eclamptic convulsions are etiologically correlated with cerebral edema (Zangemeister, Ztschr

f *Geburtsh u Gynäk* 79 1, 1916 Slemons, J M Value of Blood Pressure Determinations in the Practice of Obstetrics, *THE JOURNAL*, Sept. 8, 1917, p 778) and the known dehydrating effect of intravenous magnesium sulfate, it has been assumed that the pharmacodynamics involves cerebral dehydration. Improvement of the circulation to the vasomotor center presumably accounts for some of the reduction in the diastolic tension (Baker, B M, and Bordley, James, III *Bull Johns Hopkins Hosp* 38 320 [April] 1926) The effects of magnesium sulfate are primarily expressed in relieving the hypertensive state but are without great benefit to the course of hypertensive arterial disease. Intravenous injection of magnesium sulfate is said also to aid in the absorption of retinal exudates in hypertensive disease (Lissner, H H *California & West Med* 40 330 [May] 1934)

In acute glomerular nephritis with hypertension and azotemia, magnesium sulfate is said to diminish the irritability and reduce twitching movements (Blackfan and Hamilton, cited before. Aldrich, C A *J Intern Med Soc* 25 471 [Sept] 1935) However administration of magnesium sulfate by any route to nephritic patients may be distinctly dangerous The elimination of the salt may be greatly impeded in nephritic individuals and thus elevation of the magnesium content of the blood may occur Coma due to increased plasma magnesium has been reported as occurring after single oral purgative doses of the salt (Herschfelder, A D *Clinical Manifestations of High and Low Plasma Magnesium*, *THE JOURNAL*, April 7 1934, p 1138) Magnesium sulfate is also a cardiac depressant and on intravenous injection may cause severe cardiac reactions abrupt collapse simulating a state of shock.

Despite the various favorable reports for intravenous medication with magnesium sulfate in hypertensive arterial disease, the general application of this measure would be unwise It may be justified in certain acute emergencies, such as eclampsia or when cerebral edema is presumed to exist. Hypertensive arterial disease is a chronic progressive and insidious disorder, often asymptomatic for many years, the therapeutic effects of magnesium sulfate are too transient and fleeting to be of permanent or curative value. Medication requiring frequent injection (whether hypodermically, intramuscularly or intravenously) should be limited to urgent situations, any injection (especially intravenous) is attended with some risk It has been demonstrated repeatedly that, with a few exceptions, hypertensive patients who feel relatively well will not long continue medication by injection. Long continued therapy is essential to arrest the progression of hypertensive arterial disease Magnesium sulfate should be considered a relatively dangerous drug in the presence of nephritis and/or renal functional impairment.

MERCURY IN SYPHILIS

To the Editor—What is the best preparation of mercury to use with the needle in syphilis? Is mercury by mouth efficient? If so what is the best preparation? Is it as satisfactory as mercury intramuscularly? Is mercuric succinimide efficient? I have given the succinimide one third grain (0.02 Gm.) every second or third day for two or three months without producing salivation or anything else I have given it in two-thirds grain (0.04 Gm.) doses every fifth day without causing a disturbance. Should mild salivation be caused by mercury preparations for the best results? Please omit name.

M D Pennsylvania.

ANSWER.—For intramuscular use in the treatment of syphilis the soluble and insoluble mercurial salts were in the past used quite extensively The soluble salts such as succinimide, bichloride and benzoate and the insoluble, such as salicylate and gray oil had popular vogue. During the last ten years there has been a steady decrease of the use of mercury intramuscularly because it has been found that bismuth has a higher therapeutic index a lower incidence of toxicity, and fewer local reactions at the site of injection. The therapeutic advantages of bismuth preparations over mercury preparations have been supported in the numerous studies reported in the literature.

Mercury succinimide is still used by some syphilotherapists when bismuth is not tolerated well and occasionally patients are encountered in whom a daily injection of a soluble salt such as the succinimide will produce satisfactory therapeutic effects when bismuth has failed These cases are rare however The soluble salts are absorbed quickly and likewise excreted quickly so that if the succinimide is used, daily injections should be given Mercury by mouth has no place in the treatment of early or serious complications of syphilis In the elderly person with a benign syphilis or occasionally in the patient with hepatic syphilis it may be used It is not as therapeutically efficient as intramuscular mercury The preparations used by mouth are yellow mercurous iodide in 0.016 Gm. doses or mercury with chalk in 0.055 Gm. doses.

Salvation is not an index of thorough mercurialization but is rather indicative of the fact that the patient had pyorrhea much constructive dental work with many crowns, or a "dirty" mouth before the mercurial therapy was started. Prophylactic treatment of the teeth and gums is necessary in this type of patient before the mercury is given Accordingly, mild salivation is not essential in the treatment of syphilis by mercury.

In the selection of a bismuth preparation it is advisable to choose one that has a high content of metallic bismuth. (See New and Nonofficial Remedies)

POLLEN DISTRIBUTION IN MAINE

To the Editor—In *THE JOURNAL* July 19, is a reply to a request for information about hay fever resorts in Maine The editorial answer is inadequate and appears to be based solely on an individual ragweed concentration count in the high altitude forest such as Rangeley Lakes The very extensive sea coast of Maine in islands capes and long indentations gives the heat natural sea air limitation to ragweed air pollution I regret that the public does not yet understand that highways of travel, as well as the wind carry ragweed pollen Cars are good agar plates for the collection and transportation of pollen There has been less traffic contamination as well as less wind borne contamination over mountains and forests The numerous islands and forest protected headlands on our Maine coast are nearly free from hay fever Among such headlands, almost surrounded by ocean is Eastport which has only one highway approach with little travel over it until this year Such conditions obtain at perhaps a hundred other points on the Maine coast No area east of the Rocky Mountains is zero to ragweed Its prevalence is entirely in accordance with a kindergarten knowledge of physics and geography I am pleased to state that several towns this year have made appropriations to pull up and destroy ragweed Such towns earn the right of publicity for their intelligent and in due time profitable action

CHARLES B SILVESTER, M D Portland Maine

ANSWER—The answer to Dr Albers was not "based on an individual ragweed concentration count in the high altitude forests such as Rangeley Lakes" It was based on the results of two seasonal pollen studies made at Rangeley Lakes, together with the results of studies made in the Gaspé Peninsula at Eastport, Maine (see answer), at Bar Harbor and at Boston. The conclusions drawn also involved experience gained in many years of atmospheric pollen study in more than a hundred localities in North America, including some twenty points along the Atlantic and Gulf coasts The answer did not attempt a comprehensive discussion of the hay fever resorts in Maine but was an effort to select, by means of available information, the most nearly pollen free point affording first class hospital facilities The protest seems to be concerned mostly with (a) defending the merits of the numerous coastal hay fever resorts of Maine, (b) introducing a new theory of pollen distribution.

(a) No statistics or other proof is offered to support the claims made, and no definite place better than the Rangeley Lakes area is suggested unless the plea for Eastport is to be so interpreted By rereading the published answer it will be seen that Eastport was not condemned On the contrary its merits were weighed on the basis of comparative statistics

As to the amount of hay fever in the sparsely settled islands and headlands of the Maine coast, conflicting reports have been published for the last sixty years (See annual lists of places reported as "immune not immune and partially immune," published by the United States Hay Fever Association from 1874 to the present time.) This is primarily a clinical approach to the problem—a trial and error method—and one that has never proved very satisfactory (Wyman Morrill *Autumnal Catarrh*, [Hay Fever], Cambridge, Mass, Riverside Press 1876, p 57) It will doubtless be continued indefinitely by those who do not fully accept the thesis (Rackemann, F M, and Smith L B *Ragweed Hay Fever Symptoms and Pollen Concentration Compared* [1930] *New England J Med* 204 708 [April] 1931 Hopkins, Marjorie *Effect of Weather Variations upon the Symptoms of Hay Fever Patients* *J Allergy* 2 145 [March] 1931 Feinberg S M, and Durham O C *Hay Fever in Chicago and Suburbs Clinical Field and Air Observations* *Illinois M J* 63 464 [May] 1933) that hay fever symptoms vary in intensity directly with the quantity of pollen encountered and by those who doubt (Rackemann F M *Clinical Allergy—Asthma and Hay Fever*, New York, Macmillan Company 1931 pp 253-258 Vaughan W T *Allergy* St. Louis, C V Mosby Company 1931 p 110) that the pollen contact of sensitive persons may be determined with practical accuracy by the use of atmospheric pollen slides

The inquirer seems particularly anxious that due publicity shall be given to the several towns which have this year made appropriations to pull up and destroy ragweed He should have designated these places But every one knows that appropriations are not always adequate or effective One city aside several thousand dollars for ragweed extermination this year but the fund was used up in the first two days of it

campaign and before any appreciable inroads had been made on the ragweeds. Another large city recently spent in one season approximately \$1000 per square mile of its area (\$165,000 in all) with the purpose of making the city a hay fever refuge. No doubt a number of pollen-sensitive people who lived near extensive weed patches were slightly benefited but the total result was disappointing in that the pollen slides exposed by the United States Weather Bureau revealed more ragweed pollen in the air than during any previous season of record.

The variation in kinds and quantities of pollen inhaled by sensitive persons engaged in ordinary pursuits depends on many varied and elusive factors, and an elementary knowledge of geography and physics is not sufficient to measure the end result. Atmospheric pollution is not a local affair as proved by the large amount of atmospheric pollen found in forested areas as much as 75 to 100 miles from weed-infested areas (Durham O. C. Pollen Studies in Selected Areas, *THE JOURNAL*, April 27 1935, p 1486).

On the basis of the arguments advanced in this protest one would readily conclude that the islands off the North Carolina or Texas coast would be perfect refuges for hay fever victims, but atmospheric studies have proved the exact opposite. A sea coast location has the admitted advantage of ocean breezes but these are not constant and if the hinterland is an agricultural area, nothing can stop pollen laden winds from blowing over the coast. Thus, Atlantic City is an excellent hay fever resort when the wind blows from the ocean but a very poor one when the wind blows from the land. Miami, Fla. has absolutely no pollen in the air when the wind blows from the ocean and almost none when the wind blows from the land because the Everglades have comparatively few farms and almost no ragweeds.

(b) The theory advanced, namely, that highways of travel are important sources of pollen transport, is new and original. No proof is offered and no explanation given as to how an "agar plate" even of gigantic size could collect more than comparatively insignificant amounts of pollen, or how after collecting it could then liberate it again in an otherwise pollen-free locality.

The lower several thousand feet of air contains during the pollen season large amounts of pollen (Scheppegrell, William. Airplane Tests of Hay Fever Pollen Density in the Upper Air, *M J & Rec* 119 185 [Feb 20] 1924). A cubic mile of air on days of moderate ragweed contamination contains about a pound of ragweed pollen (approximately 200 billion pollen grains). Heavy concentrations of nearly a hundred pounds per cubic mile have been recorded. With ordinary wind velocities of from 10 to 20 miles an hour it can be seen what enormous amounts of pollen are quickly moved about. No artificial carrier could possibly approach this result.

SUNBURN OINTMENTS

To the Editor—I have used numerous ointments for treatment of sunburn among them boric acid ointment and hutesin picate the only disadvantage being that they soil the clothes or discolor them. Now what ointment could you recommend that would be effective and yet not possess these obnoxious features? There is a widely advertised ointment that claims such features (Noxzema) yet from some of my patients who have used it I have heard both praise and condemnation of the product. Has this particular ointment been investigated by you as to the possible ingredients? Please omit name and city. M.D. New Jersey

ANSWER—Various ointments can be used advantageously in the treatment of sunburn. Five or ten per cent boric acid in cold cream an ointment containing solution of aluminum subacetate 1 part, wool fat 2 parts and zinc paste (without salicylic acid) 3 parts, and, in severe sunburn, tannic-acid containing ointments, are of value. The use of liquids or lotions obviates some of the objectional features of ointments and are also effective. Calamine lotion to which has been added 8 to 10 per cent of solution of aluminum subacetate, or solution of aluminum subacetate diluted with 15 parts of cold water may be used as a compress or local applications of equal parts of olive oil and lime water to make an emulsion.

The American Medical Association has never published anything on "Noxzema" nor has it been examined by our own Laboratory. It was however, analyzed by the chemists of *Good Housekeeping Magazine* who reported:

The sample appears to consist essentially of an emulsion of water calcium and ammonium soap with some saponifiable oil or fat. It contains also small amounts of borax glycerin and volatile oils (camphor oil of cloves).

Noxzema has no particular advantages as an ointment for sunburn over any mentioned and has all the disadvantages of an ointment as far as greasiness and messiness are concerned.

CHANGES IN TASTE SENSATION

To the Editor—A man aged 59 married appears to be in perfect condition for his age. His only complaint is that any starchy food or sugary taste brassy and unpalatable. He is a traveling salesman active with a good appetite and full of energy. There is no loss of weight and no symptoms of any kind appear except as mentioned. The patient is about 6 feet (183 cm) tall and weighs about 190 pounds (86 Kg). He is active in gait and gesture. The tongue is slightly coated. A few carious teeth have recently been filled. The throat shows no changes of note. Endocrine neuromuscular skin bone and joint examinations gave no observations of note. The blood pressure is 158 systolic 98 diastolic. The pulse is regular and the rate is 74 a minute. The heart shows normal rhythm and no murmurs. The urine contains no albumin or sugar the specimen is clear. The abdomen shows average peristalsis no masses and no tenderness. The bowels move fairly well. The patient takes an occasional laxative. He has recently taken salts with copious evacuation and no improvement in the condition of which he complains. The lungs are normal. While the foregoing does not represent all the observations that could be obtained it will be stated that no blood chemistry and no other laboratory or x-ray data have been sought since the patient does not feel sick and does not care to undergo extra expense unless it is justified in his own mind. Please omit name. M.D. Mississippi

ANSWER—There is no organic disturbance that would affect taste, particularly for starches and sugars. Sometimes arteriosclerotic involvement of the tongue and of the mucous membranes produces burning sensations and changes in taste.

POISONING POSSIBILITIES FROM BUFFING AND POLISHING ADJUVANTS

To the Editor—As plant physician of the Wright Aeronautical Corporation Paterson N. J. I am desirous of obtaining definite information as to the effects (poisonous if any) of the following material on the human being: tripoli manufactured by the Plating Products Company Hansen VanWinkel and Nunning & Nunning of Newark N. J. red rouge manufactured by the same firm mutton tallow manufactured by the Chandler Chemical Company of Cleveland and emeric (grade 126) and (grade 150) manufactured by E. Reed Burns of Brooklyn. These substances are used at our plant mostly by polishers who are obliged to handle these substances and many of the men claim that they unconsciously insert their fingers in their mouths and also touch the moist surfaces of the mucous membranes of the nose and eyes. What I am anxious to know is what effect if any these substances have on a person when it is handled in this manner also what effect if any it would have if part of it is inhaled. Do the substances contain anything poisonous or injurious? FRANK A. BARLOW M.D. Paterson N. J.

ANSWER—Since buffing and polishing adjuvants as manufactured by various concerns are quite similar as to chemical constituents, it is desirable that this answer apply to all such products rather than to those of any one manufacturer. Tripoli is a cryptocrystalline siliceous mineral derived in this country chiefly from southern Illinois and southern Missouri. Because of its peculiar electrostatic properties, it does not readily lend itself to dust formation, even when in fine, dry particles. Although silicosis caused by this material is practically unknown, it is believable that if the substance actually entered the lungs in sufficient quantities and over prolonged periods of time, silicosis would be produced. This substance, as used as a polishing agent, is ordinarily combined with other substances in the following approximate formula: tripoli, 50 per cent silica, 30 per cent, stearic acid, 10 per cent, paraffin (or other) wax, 10 per cent.

Red rouge is red iron oxide (Fe_2O_3). This substance is used extensively in the polishing of plate glass. Gross exposures associated with glass polishing and in the manufacture of this rouge have provided no evidence of its being a source of dusty lung disease in any form. A large number of roentgen examinations have been made of workers highly exposed in dusty areas. This is borne out by the experiments of the United States Public Health Service. A governmental report (Miller J. W., and Sayers, R. R. The Response of Peritoneal Tissue to Injected Dusts, *Pub Health Rep* 49 80 [Jan 19] 1934) states that "the response of the peritoneal tissue to this dust is therefore one of inertness." As used in polishing and buffing this red rouge may be incorporated with tallow, waxes, fatty acids or other bases. Such substances, rather than the rouge itself, may occasion a dermatitis.

Mutton tallow has long enjoyed extensive household and professional use in various emollients. Notwithstanding, it may become rancid and lead to a dermatitis or, in the absence of rancidity, may prove to be the source of comedones.

Emery (aluminum oxide Al_2O_3), or carborundum (silicon carbide SiC), as used in polishing, may give rise to much dust but again it may be stated that such dusts are relatively innocuous compared with the highly injurious action of silica.

Unmentioned in this query but much used in polishing are French chalk, rottenstone and other calcium minerals. None of these have led to genuine dusty lung diseases. At times there

may be used in the polishing of chrome plated materials a chrome-containing agent. This chromate is highly irritating and has led to the production of characteristic chrome holes" and chrome dermatitis. This discussion tends to exculpate practically all the substances mentioned in the query as being without harmful properties except as producers of skin disease or conceivably paraffinomas. Nevertheless the occupation of polishing and buffing is to be accepted as a dangerous one. The incidence of pneumonia is high, tuberculosis at least in past decades, stands out, low grade respiratory diseases are common, postural hazards are definite, continuous vibration may lead to tenosynovitis and related disorders. In addition to the dermatitis from the greasy substances used as adjuvants to polishing, skin lesions may arise from mechanical agencies and from the glues used in the resurfacing of the polishing wheels. The polisher and buffer may perform his duties in an atmosphere laden with dust from cotton, linen, synthetic abrasives, glues, limestone and metal dust from the parts being polished or buffed, so that in the final analysis this trade is to be rated as a somewhat hazardous one.

PRECOCIOUS UNILATERAL HYPERTROPHY OF BREAST

To the Editor—A girl aged 10½ years, 52 inches (132 cm) tall, weighing 74 pounds (33.6 Kg.) had the usual diseases of childhood and a tonsillectomy in 1928. Her general health was from good to excellent. About May 1, 1935 she fell into an open manhole striking the anterior surface of the chest. No visible contusion was produced but there was pain over the chest especially the lower part of the thorax in breathing. This pain and aching continued intermittently for six weeks. About August 10 the mother noticed a slight enlargement of the left breast especially around the nipple and areola. I first examined the child at this time. The right breast showed no enlargement or development. Palpation of the left breast showed a rounded but not nodular enlargement about the size of a shelled almond loosely adherent to the nipple and areola but freely movable over the pectoralis muscle. The enlargement was moderately tender and the patient complained that even light pressure produced discomfort. About October 1 the patient was seen in consultation and examined by a general surgeon who advised watchful waiting and the application of iodine ointment for a month. November 1 she was examined by the same general surgeon who considered either the removal of a small portion of the enlargement which had now reached the size of an unshelled almond for biopsy or roentgen therapy. He decided against biopsy to avoid mutilation of the breast and to conserve cosmetic appearance in later years and suggested roentgen therapy. The advice of two roentgenologists differed and roentgen therapy has been deferred owing to the fact that one competent man advises that roentgen treatment would be useless unless a malignant condition existed and might even arrest the development of normal breast tissue. There is no involvement of the left axillary or cervical glands. I then consulted two pediatricians who after taking the history and making an examination, advised against treatment and diagnosed the case as a precocious unilateral normal development of breast tissue. No one consulted has been markedly positive in his opinion as to diagnosis and prognosis and all stated frankly that in their experience they had seen only a limited number of parallel cases. Reference to the medical literature has not been helpful. At the present time there is no development in the right breast. The left breast is visibly and palpably enlarged and if any change has taken place during the period of observation two things I believe are noteworthy: namely that at times there seems to be a slight variation in the size of enlargement as proved by inspection and palpation and fullness at times or wrinkling at times in the nipple and areola also the enlargement does not seem to be as adherent to the nipple as on early examination. No menstruation is present nor are there more than few signs that the child is approaching puberty. Naturally I refrain from advising any procedure that will mutilate or destroy what will eventually be this child's left breast both from the esthetic and the maternal angle yet if this is a malignant condition due to trauma I must advise radical surgery and must do so in the near future. Your suggestions as to diagnosis, treatment and prognosis will be greatly appreciated. Kindly omit name.

M D Wisconsin

ANSWER—The enlargement of the breast probably represents a precocious unilateral prepuberty hypertrophy. The relationship between the possible trauma and the condition of the breast is highly questionable. In addition to the precocious unilateral prepuberty development the presence of a discrete mass probably represents a state of so-called puberty mastitis. In this condition the enlargement is due to a hyperplasia of the perimammary and periacinus connective tissue and of the duct and acinous epithelium. This condition is common between the tenth and thirteenth years of life. It is usually bilateral but sometimes unilateral. It is possible, but not likely, that the patient is suffering from an actual tumor of the breast induced by trauma. The differential diagnosis depends on the exact nature of the mass. In "puberty mastitis" the lesion assumes definite and very characteristic features. The swelling forms a disklike or spherical tumor situated in the region of the nipple and areola and varying from 3 to 5 cm in diameter. If the clinical observations support this diagnosis both surgical intervention and radiation therapy are contraindicated and there

should be no treatment except careful observation. If the clinical examination of the tumor does not coincide with the classic manifestations in "puberty mastitis" and particularly if the mass shows evidence of progressive enlargement, the nature of the lesion must be established by means of biopsy. The weight of evidence in this case favors diagnosis of precocious unilateral puberty hypertrophy. The differential diagnosis of this condition is given in "Tumors of the Breast," by G. L. Cheate and Max Cutler, Philadelphia, J. B. Lippincott Company, pages 21-24.

USE OF SALINE SOLUTIONS IN THROMBOANGIITIS OBLITERANS

To the Editor—Good results have been reported with the use of intravenous injections of 5 per cent saline solution in the treatment of thromboangiitis obliterans. Will you kindly advise me as to the specific action of the solution? Please advise me also as to who first discussed the intracutaneous injection of physiologic solution of sodium chloride to test the circulatory condition of an extremity. Please omit name.

M D New York.

ANSWER—Use of intravenous injections of 5 per cent sodium chloride solution in the treatment of thromboangiitis obliterans is not regarded as a specific treatment. It is merely a means employed to hasten the development of collateral circulation when major vessels have been occluded. While the beneficial results have been noted in hundreds of cases, the mechanism by which this benefit is produced is not established. A striking increase in blood volume follows the intravenous injection of hypertonic salt solution and persists from two to four hours. Such an increase in the amount of circulating fluid within the blood vessels probably opens up capillary circulation that is ordinarily closed. It may have some stretching effect on the larger vessels. The salt injected is excreted slowly, usually requiring forty-eight hours for total excretion. It rapidly leaves the blood stream after injection and undoubtedly enters the body tissues. The accompanying water thus added to the soft tissues combats the tendency to dehydration and perhaps promotes the development of collateral circulation. The intracutaneous injection of physiologic solution of sodium chloride to test the circulatory condition of an extremity was proposed by Milton B. Cohen. The article appeared in *THE JOURNAL*, May 23, 1925, p. 1561.

TREATMENT OF PUS FROM URETHRAL FISTULA

To the Editor—What treatment would you recommend for a discharge of pus (now negative on smear for gonococci) from an opening one-eighth inch away from the meatus? Gonococci were present in a urethral smear, but the discharge has ceased and urinalysis is also now negative. Nine injections of Corbus Ferry Filtrate (Parke Davis & Co.) intracutaneously weekly have been given the last two being each 0.5 cc in quantity.

M D, New York.

ANSWER—It usually is possible to clear infection from these channels by the injection of the milder protein silver solutions at frequent intervals. To do this a small probe-pointed needle is passed to the depths of the sinus and the fluid injected as the needle is withdrawn.

At times these channels can be destroyed by passing a fulgurating wire to their depths and turning on the current.

If a para-urethral sinus is sufficiently close to the urethra the intervening mucous membrane can be severed. Care should be taken that the incision extends completely to the depth of the sinus, otherwise an ideal structure for the perpetuation of a gonorrheal infection is left, should the patient again acquire the disease.

BILATERAL SCIATICA

To the Editor—I have a patient who because of a bilateral sciatica is able to get relief only by lying with his hips in an acutely flexed position (the thighs flexed on the abdomen). I shall appreciate it if you will advise me as to what apparatus will retain his thighs in this position during sleep. Is there any recent method of treatment that might relieve or cure his condition? Are there any men who specialize in this? If so will you please give me their names? Please omit name.

M D Maryland

ANSWER—When a patient is suffering from a severe and resistant sciatica and particularly from a bilateral sciatica a lumbar puncture should be made to ascertain whether there is an intraspinal pathologic condition. This puncture should be made low preferably between the fifth lumbar vertebra and the sacrum as the spinal block may be in the lower portion of the canal pressing on the roots of the cauda equina. The fact that the patient gets relief only in acute flexion of the thighs is not in keeping with the ordinary symptoms of sciatica.

due to pathologic changes in the lower lumbar spine or sacro-lumbar junction. The position can be maintained only by balanced traction, placing the thighs in flexed position on an inclined plane. However, in view of the bilaterality and the unusual position of relief, the question of intraspinal pressure should by all means be settled first. Any experienced orthopedic surgeon ought to know how to manage a case of simple sciatica. If intraspinal pathologic change is proved or strongly suspected, the services of a neurologic surgeon should be enlisted.

TRAINING INFANTS TO BLADDER AND BOWEL CONTROL

To the Editor—In *Time* February 17 under Medicine Mrs Gruenberg of the Child Study Association of America makes the following statement in part: "There has been a definite reaction against the practice of beginning to train infants to bladder and bowel control during the first weeks of life. Specifically we suggest that mothers should not begin trying to train their children in bowel control much before the age of eight months, bladder training fifteen to seventeen months is early enough. This is the first time I have read this opinion. Is it accepted as best at the present time? If so I wonder what is the danger if any of starting earlier."

ARTHUR B. DAVENPORT M.D., Tunkhannock Pa.

ANSWER—As in so many other things, a medium course seems the wiser and more feasible policy. Trying to train an infant to bladder and bowel control in the first few weeks of life is futile so far as the former is concerned. The latter commonly consists at that early age of using a suppository or a soap stick at regular times for a baby who normally has only one or two stools a day. This can hardly be called habit control. Control of the bowels is, however, quite possible and desirable for obvious reasons, perhaps in the majority of instances beginning around the third or fourth month. The use of a suppository, or soap stick until a conditional reflex is established, is a justifiable and efficient method of establishing the habit at that age but, of course, must not be kept up indefinitely. Bladder control is a far more difficult thing to establish. There is "no danger, if any" in starting earlier, but success is rarely attained before the end of the first year, and only too frequently not for a long time after that. It is worth trying, however, somewhere between the middle and the end of the first year. Babies vary greatly in this respect, and some individualization is desirable. At best, "house breaking" is not as simple and easy in the baby as it is in the dog.

MUSCULAR OR NEURITIC DISTURBANCE

To the Editor—I have an unusual case on hand of neuritis of the sensory nerves involving the upper and lower extremities, the abdominal and chest muscles, the pectoral and intercostals and the fifth and eighth nerves. Pain, stiffness and a constriction like feeling of the muscles are the common symptoms of each nerve section involved. There is no loss of reflexes or tactile sense. Deep muscular sense is altered. There is no paralysis but the patient is confined in bed because of severe fatigue and myasthenia. The cranial nerves were involved last although head ache and pain in the cervical region occurred early. Blood counts, chemical examinations of the urine and the temperature remain normal. The case is of nine weeks standing. Have you any information of such cases? Have any been reported in the literature? Any information as to the etiology and treatment will be appreciated or any suggestion that may be of help in clearing up this case.

M.D. New York.

ANSWER—The symptoms indicated do not suggest the diagnosis of a neuritis, and there is no possibility of making a diagnosis on the basis of the observations reported. It is possible that the primary disturbance is muscular rather than nervous.

DRIBBLING AFTER URINATION

To the Editor—A patient is troubled by the persistent dribbling of a few drops of urine after voluntary micturition is finished. The amount is small, just enough to stain the underclothing but is annoying to the patient and cannot be controlled. The urine is normal as is the urinary tract except for a history of an acute nonspecific prostatitis about five years ago. Kindly omit name.

M.D. Maryland

ANSWER—If the patient is old enough to have hyperplastic changes in the prostate gland, this may be the cause of the dribbling. Early in the course of prostatic hypertrophy the enlarging gland interferes with the sphincteric action, resulting in dribbling.

Disturbed innervation to the bladder from a cord lesion may also cause dribbling. The cause of the dribbling should be investigated both by cystoscopic examination and by a neurologic study.

RHEUMATIC NODULES IN RHEUMATIC FEVER

To the Editor—A child aged 11 years has been confined to bed for nine weeks with acute rheumatic fever involving all the large joints and including the ribs. Heberden nodes have developed along the occipito-parietal suture. The child is suffering also from a mitral regurgitation from a previous attack. I should like to know whether these nodes have any relation to the rheumatic fever. I should also like to know whether you have heard of any cases similar to this.

NATHAN STEINBERG M.D. Philadelphia

ANSWER—Heberden nodes are small, bony outgrowths occurring on the joint of the terminal phalanges. They are associated with hypertrophic osteo-arthritis and may be the first or the only manifestation.

The nodes described in the query are rheumatic nodules and are a frequent manifestation in rheumatic fever. They occur most typically at the tendinous insertions of the muscles, and the region described is one of the regions where they are most likely to be found. Next in order of frequency would probably be close to the wrist or elbow or the knees, but they may be found over the shoulder or hip or shoulder blades, and much less frequently elsewhere. They are a manifestation of rheumatic fever just as is arthritis, chorea or carditis. They should always be looked for in doubtful cases, in which they may be the determining manifestations.

CARCINOMA OF LARYNX

To the Editor—Some very interesting figures and comments are made regarding carcinoma of the larynx in *Recent Advances in Radium* by Ward and Smith, published in 1933 by P. Blakiston's Son and Company (pages 197-201). Contard's results using x-rays alone (21 per cent of eight year arrested cases) speaks favorably for irradiation (p. 200) while surgery though results are equally good gives a lesser degree of conservation of function and a varying operative mortality which averages about 15 per cent. See also *Treatment of Cancer of the Larynx* K. Amersbach and L. Krause *M. Klin.* March 9 1934.

The question of the form of therapy giving the best results is not settled but it is my opinion that the following is as near the truth as we know it at the present time.

A. Intrinsic carcinoma with involvement of the vocal cords alone can be treated by either surgery or irradiation and the efficacy will be more dependent on the experience of the surgeon or radiologist than on the type of treatment. With irradiation there is a better conservation of the voice with surgery the technical procedures have been established longer. Possibly the solution will be a combination of surgery and irradiation. At present most workers are in favor of surgical treatment because of the following.

There is little difference recorded as yet between the results over comparable periods because surgery has been long accepted as the method of treatment most workers are surgeons. The last part of the foregoing statement is not meant to imply that the eminent laryngologists are biased but rather that it is only natural to view the stars through one's own telescope.

B. For lesions more advanced, i.e. with involvement of cartilage or glands the treatment is palliative at the present time. Therapy should be either surgery plus radium (Hamer's method) or external irradiation.

HAROLD A. HILL M.D., San Francisco

MAPHARSEN AND SYPHILIS

To the Editor—In *Queries and Minor Notes* in *THE JOURNAL* July 18 page 232 headed Mapharsen and Syphilis a question dealt with the treatment of a carpenter aged 42 with secondary syphilis. After fourteen injections of mapharsen and ten injections of insoluble bismuth the patient was found to have a partially positive spinal fluid formula. It showed a two plus Wassermann reaction and a partially positive first zone colloidal gold curve. This has the appearance of a spinal fluid picture which is returning to normal and not that of fulminating nervous system involvement.

Tryparsamide was recommended in alternation with a heavy metal. Since an appreciable percentage of patients with secondary syphilis have positive spinal fluids and since in the majority of these patients spinal fluids become negative under a standard course of treatment of neocarsphenamine and a heavy metal I think that routine treatment should at least have been mentioned in the answer. Only two arsenicals were discussed. One was mapharsen the newest arsenical used in the treatment of syphilis which has not been completely appraised. The other was tryparsamide a quinquivalent arsenical its usefulness limited to central nervous system syphilis. The method of choice it seems to me in this patient would be an intensive standard course of treatment with one of the proved arsphenamines namely neocarsphenamine or arsphenamine in alternation with a heavy metal for a reasonable period before considering a very new or a highly specialized drug for the treatment of a very usual clinical variety of syphilis.

The answer satisfactorily covered the uses and limitations of mapharsen. It seems to have omitted however the standard treatment course as outlined by recent study of the Cooperative Clinic Group.

ARTHUR G. SNOOK M.D. Dallas Texas

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in THE JOURNAL, June 6, 1936

Hospitals Approved for Intern Training

St. Luke's Hospital, Jacksonville Fla
Jennie Edmundson Memorial Hospital Council Bluffs Iowa
St. Joseph's Mercy Hospital Detroit
St. Mary's Infirmary St. Louis
St. Mary's Hospital Orange N J
Aultman Hospital Canton Ohio
Frankford Hospital Philadelphia

Hospitals Approved for Residencies in Specialties

Alameda County Hospital Oakland Calif Medicine obstetrics
gynecology and surgery
Lutheran Hospital Omaha Neuropsychiatry
Mercy Hospital Canton Ohio Surgery
State Sanatorium, Wallum Lake R I Tuberculosis

Hospitals Approved for Additional Residencies

Fairmont Hospital of Alameda County San Leandro Calif Tuberculosis
State University Hospital and Crippled Children's Hospital Oklahoma City Pathology and radiology

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA Montgomery June 29 July 1 Sec Dr J N Baker 519
Dexter Ave Montgomery
ALASKA Juneau Sept. 1 Sec. Dr W W Council Juneau
ARIZONA Phoenix, Oct 67 Sec Dr J H Patterson 826 Security
Bldg Phoenix
ARKANSAS Basic Science Little Rock Nov 2 Sec. Mr Louis E
Gehauer 701 Main St Little Rock Medical (Regular) Little Rock
Nov 10 Sec Dr A S Buchanan Prescott Medical (Eclectic) Little
Rock Nov 10 Sec Dr Clarence H Young 207 1/2 Main St Little
Rock
CALIFORNIA Sacramento Oct 19 22 Sec Dr Charles B Pinkham
420 State Office Bldg Sacramento
COLORADO Denver Oct 6 Sec Dr Harvey W Snyder 422 State
Office Bldg Denver
CONNECTICUT Basic Science New Haven Oct. 10 Prerequisite to
license examination Address State Board of Healing Arts 1895 Yale
Station New Haven Medical Hartford Nov 10 11 Endorsement
Hartford Nov 24 Sec Dr Thomas P Murdock, 147 W Main St
Meriden
DISTRICT OF COLUMBIA Washington Jan. 11 12 Sec Commission
on Licensure Dr George C Ruhland 203 District Bldg Washington
FLORIDA Jacksonville Nov 16-17 Sec Dr William M Rowlett
P O Box 786 Tampa
GEORGIA Atlanta, Oct 13 Joint Sec State Examining Boards
Mr R C Coleman 111 State Capitol Atlanta
IDaho Boise Oct 6 Commissioner of Law Enforcement Hon
Emmitt Pfost 205 State House, Boise
ILLINOIS Chicago Oct 20-22 Superintendent of Registration
Department of Registration and Education Mr Homer J Byrd Spring
field
IOWA Basic Science Des Moines Oct. 13 Sec Prof Edward A.
Benbrook Iowa State College Ames
KENTUCKY Louisville Dec 2-4 Sec State Board of Health Dr
A T McCormack, 532 W Main St, Louisville
LOUISIANA New Orleans December Sec Dr Roy B Harrison
1507 Ibernia Bank Bldg New Orleans
MAINE Portland, Nov 3-4 Sec Board of Registration of Medicine
Dr Adam P Leighton 192 State St. Portland
MARYLAND Regular Baltimore Dec. 8 Sec Dr John T O Vora
1215 Cathedral St Baltimore Homeopathic Baltimore Dec 8 9 Sec
Dr John A Evans 612 W 40th St., Baltimore
MASSACHUSETTS Boston Nov 17 19 Sec Board of Registration in
Medicine Dr Stephen Rushmore 413 F State House Boston
MICHIGAN Lansing Oct 14 16 Sec Board of Registration in
Medicine Dr J Earl McIntyre 202 3-4 Hollister Bldg Lansing
MINNESOTA Basic Science Minneapolis Oct. 6-7 Sec. Dr J
Charley McKinley 126 Millard Hall University of Minnesota Minn-
apolis Medical Minneapolis Oct. 20 22 Sec., Dr Julian F Dubois
150 St Peter St., St Paul
MONTANA Helena Oct. 6 Sec., Dr S A Cooney 7 W 6th Ave
Helena
NEBRASKA Basic Science Lincoln Oct 6-7 Dir Bureau of Exam-
ining Boards Mrs Clark Perkins State House Lincoln
NEW HAMPSHIRE Concord Sept. 10 11 Sec. Board of Registration
in Medicine Dr Charles Durcan State House Concord
NEW JERSEY Trenton Oct. 20-21 Sec Dr James J McGuire
24 W State St. Trenton

NEW MEXICO Santa Fe Oct 12 13 Sec Dr Le Grand Ward
Santa Fe
NEW YORK Albany, Buffalo New York and Syracuse Sept. 21 24
Chief Professional Examinations Bureau Mr Herbert J Hamilton, 315
Education Bldg Albany
NORTH CAROLINA Endorsement Raleigh Nov 30 Sec. Dr Ben J
Lawrence 503 Professional Bldg Raleigh
NORTH DAKOTA Grand Forks Jan 5-8 Sec Dr G M Williams-
4 1/2 S 3rd St., Grand Forks
OKLAHOMA Oklahoma City, Dec. 9 Sec Dr James D Osborn, Jr.
Frederick
OREGON Basic Science Portland Nov 21 Sec Mr Charles D
Byrne University of Oregon Eugene Medical Portland Jan. 3-7
Sec Dr Joseph F Wood 509 Selling Bldg Portland
PUERTO RICO San Juan Sept 1 Sec Dr O Costa Mandry Box
536 San Juan
RHODE ISLAND Providence Oct 1 2 Chief Division of Examiners
Mr Robert D Wholey 366 State Office Bldg Providence
SOUTH DAKOTA Pierre Jan 19 20 Dir Division of Medical Licensure
Dr Park B Jenkins Pierre
VERMONT Burlington Feb 10 12 Sec Board of Medical Registra-
tion Dr W Scott Nay Underhill
VIRGINIA Richmond Dec 9 13 Sec. Dr J W Preston 281
Franklin Road Roanoke
WISCONSIN Reciprocity Madison Sept 8 9 Sec Dr Robert E
Flynn 401 Main St., La Crosse Basic Science Madison Sept. 26
Sec Prof Robert N Baner 3414 W Wisconsin Ave Milwaukee

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Sept.
14 16 Ex Sec Mr Everett S Elwood 225-S 15th St. Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Philadelphia
June Sec Dr C Guy Lane 416 Marlboro St Boston
AMERICAN BOARD OF INTERNAL MEDICINE Written examination will
be held simultaneously in different centers of the United States and
Canada in December Practical or clinical examination will be given in
St Louis in April Chairman Dr Walter L Biering 406 Sixth Ave.
Des Moines
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written exami-
nation and review of case histories of Group B candidates will be held
in various cities in the United States and Canada, Nov 7 Applications
must be filed at least sixty days prior to the examination Sec Dr Paul
Titus 1015 Highland Bldg Pittsburgh (6)
AMERICAN BOARD OF OPHTHALMOLOGY New York, Sept 26. Sec.
Dr John Green 3720 Washington Blvd St. Louis
AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan 9
Sec Dr Fremont A Chandler 180 N Michigan Ave. Chicago
AMERICAN BOARD OF OTOLARYNGOLOGY New York Sept 25 26. Sec.
Dr W P Wherry 1500 Medical Arts Bldg Omaha
AMERICAN BOARD OF PEDIATRICS San Francisco Oct 22 24 Balu-
more and Cincinnati in November Sec Dr C A Aldrich 723 Elm St.,
Winnetka Ill
AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York, Dec
29 30 Sec Dr Walter Freeman 1028 Connecticut Ave Washington D C
AMERICAN BOARD OF RADIOLOGY Cleveland Sept 25 27 Sec. Dr
Byrl R Kirklin Mayo Clinic Rochester Minn
AFRICAN BOARD OF RADIOLOGY Chicago Dec 4-6 Sec Dr Gilbert
J Thomas 1009 Nicollet Ave. Minneapolis

Minnesota June Report

Dr Julian F Du Bois, secretary, Minnesota State Board of
Medical Examiners reports the oral, written and practical
examination held in Minneapolis, June 16-18, 1936 The exami-
nation covered 12 subjects and included 60 written questions
An average of 75 per cent was required to pass Thirty-one
candidates were examined 30 of whom passed and 1 failed.
Five physicians were licensed by reciprocity and 1 physician
was licensed by endorsement The following schools were
represented

| School | PASSED | Year Grad | Per Cent |
|--|--------|--------------|-------------|
| Northwestern University Medical School | (1933) | 91.4 | |
| University of Minnesota Medical School | (1934) | 83.1 | |
| 87.5 (1935) 81.5 82.1 * 83.1 * 90 (1936) 80.6 | | | |
| 83.4 * 83.4 * 83.4 84.5 85.2 * 85.2 85.3 * 86.3 87 * | | | |
| 87 87.2 89.3 * 89.4 90 93.2 * | | | |
| Creighton University School of Medicine (1933) | 85.1 | (1936) | 82.5 |
| University of Pittsburgh School of Medicine | (1933) | 81 | 8.5 |
| Marquette University School of Medicine | (1936) | 85.2 85.2 | 8.2 |
| University of Wisconsin Medical School | (1934) | | 81.3 |

| School | FAILED | Year Grad | Per Cent |
|--|--------|--------------|-------------|
| University of Minnesota Medical School | (1936) | | |

| School | LICENSED BY RECIPROCITY | Year Grad | Per Cent |
|---|-------------------------|--------------|-------------|
| University of Arkansas School of Medicine | (1933) | Arkansas | |
| University of Colorado School of Medicine | (1935) | Colorado | |
| Northwestern University Medical School | (1930) | Illinois | |
| University of Minnesota Medical School | (1935) | Louisiana | |
| Queen's University Faculty of Medicine | (1926) | Wisconsin | |

| School | LICENSED BY ENDORSEMENT | Year Grad | Per Cent |
|--|-------------------------|--------------|-------------|
| University of Minnesota Medical School | (1935) | Illinois | |

* This applicant has received the M.D. degree and will receive a
21 D degree on completion of internship

Book Notices

Administration of Workmen's Compensation By Walter F. Dodd
Cloth Price \$4.50 Pp 845 New York Commonwealth Fund London Oxford University Press 1936

Ever since the enactment of the first workmen's compensation law in the United States, there have been almost continuous changes in the state statutes, commission regulations and methods of administration. All who are interested in workmen's compensation and in the problems of governmental administration will find this study helpful not only in its discussion of the many intricate problems involved but also in its presentation of those methods of administration which have proved most satisfactory. The author first presents a historical sketch in which he discusses the common law liability defenses as developed by the courts prior to the adoption of workmen's compensation laws. These common law defenses are the fellow servant doctrine, the assumption of risk, and contributory negligence. Insufficient compensation for the injured workmen, wastefulness of the system, delay, and antagonism between employer and employee are some of the conditions of the liability system which commissions and individuals sought to ameliorate in their search for a new remedy. This remedy was found in a form of insurance copied largely from English law and experience. The amount of discussion devoted to the various methods of administration of the workmen's compensation acts in the United States is an indication of the proportions to which the system has grown as an insurance business.

The primary objective in the early administration of workmen's compensation was to provide relief to employees while recovering from injuries. Medical care was largely incidental and not utilized to the best advantage in shortening the period of disability. Over the last twenty-five years the change in attitude toward the importance of medical care under workmen's compensation is in many instances striking. The author presents fairly the points of view of interested parties on medical problems that have demanded attention. Those who hope to find in this work of defense or encouragement of some of the unfair methods of providing medical care will be disappointed.

The compensation statutes, which with few exceptions make the employer, which means the insurer, responsible for paying medical benefits, have given these parties a financial interest in keeping medical costs as low as possible. This is done in most cases by the control of the employee's physician. The worst feature of this commercialization of medical practice by delivering bargaining power into the hands of a few has been the exploitation of the health of the employee.

The author recommends that all insurance and commercial clinics and hospital associations or other organizations which operate to treat industrial injury cases for profit should be abolished by law, and that the treatment of all compensation cases, except for first aid, should be confined exclusively to a panel of physicians nominated by the officers or a committee of the county medical society. He adheres to the principle that the employee should be given considerable voice in the selection of his own physician, thus encouraging the patient's confidence in the physician, an essential element in recovery. In other parts of this work there are discussions on types of insurance, regulation of insurance carriers, noninsurers measures of compensation, workmen's compensation and accident prevention, lump sum settlements, noncompensable industrial injuries, administrative organization, and the progress of workmen's compensation.

The author expresses the opinion that 'Much remains to be done toward bettering the content and administration of compensation laws. This need should not be lost sight of because of present movements for unemployment, old age and health insurance including insurance for injuries that are not industrial. Workmen's compensation may be affected by these institutions, if they are adopted, but the compensation plan in its administration and in its actuarial basis must be kept separate if the cost of compensation is to continue as an expense charged to industry with respect to accidents and diseases attributable to the industry. The charge to industry of the cost of workmen's compensation should not be united with other types of social insurance. Workmen's compensation should be an obligation of industry, other types of social insurance if undertaken, should be an obligation of society, of which industry is but a part.'

This work is timely and illuminating in many phases of workmen's compensation administration. In a study that appears to have been so carefully done, it is to be regretted that the author did not include some discussion of the efforts being made by cultists and irregular practitioners to establish themselves on an equal basis with the medical profession in the treatment of compensable injuries. In general this book will be welcome and valuable assistance to all who are interested in improving the administration of workmen's compensation in the United States.

Manual of Emergencies Medical Surgical and Obstetric Their Pathology Diagnosis and Treatment. By J. Snowman M.D. M.R.C.P. Third edition. Fabrikoid. Price 10s. Pp 401. London John Bale Sons & Danielsson Ltd 1936.

This little book has made an excellent impression. Packed within its covers is a wealth of sensible information and advice concerning the most urgent situations in medical and surgical practice. The general plan is to consider each condition under the headings of pathology and physiology, symptoms, diagnosis, prognosis and treatment. A wide field is covered. The first section deals with the dangerous emergencies in diseases of the respiratory system and includes hemorrhages, spasmodic laryngitis, spasm of the glottis, edema of the larynx, asthma, foreign bodies and injuries to the trachea, acute pulmonary edema, massive collapse of the lung, and pneumothorax. The second section deals with the emergencies of heart disease such as cardiac dyspnea, auricular fibrillation, anginal attacks, pericardial effusion and heart wounds. The common causes of sudden loss of consciousness and of convulsions are discussed. The short section dealing with intestinal obstruction, intussusception, strangulated hernia, acute pancreatitis and abdominal injuries adequately point out the more common danger signals. Twenty-four pages is devoted to emergencies occurring in connection with diseases of the urinary organs. The section on the various poisons is full and valuable. Seventy pages is devoted to the dangerous obstetric emergencies including the hemorrhages of pregnancy, extra-uterine gestation, rupture of the uterus and eclampsia. This book is valuable to read in anticipation of emergencies, when they occur it will be a comfort to have it at hand.

Skaz y lyudni patologichna anatomii klinika patogenez patofiziologii [By] N. M. Krol. Le rage chez l'homme. Anatomie pathologique clinique pathogénèse et pathophysiologie. Paper. Price 7 krb. Pp 355 with 33 illustrations. L'kharkov Derzhmedvidar 1936.

This contribution from the Ukrainian Psychoneurologic Academy is based on a study of seventy-five clinical cases of rabies, in seventeen of which a histopathologic study was made. Eight of the latter group were studied by the method of serial sections of the entire cerebrospinal axis. The lesions were focal in character and were found at all levels. Two predominant groups were separated, the inflammatory and the degenerative. In some cases the glial proliferation resembled that of a postvaccination encephalitis and suggested the possible influence of antirabic inoculations. The author disagrees with K. Schaffer, who maintained that most pronounced inflammatory changes were found in the spinal cord segment corresponding to the level of the initial lesion (bite). The alterations of the glial cells were of the grave type described by Nissl. The author disagrees with the opinion of H. Pette and gives support to the view of Spielmeyer that there is nothing characteristic or pathognomonic about the alterations in rabies which would enable one to distinguish it from the various types of epidemic encephalitis. Thus, he believes, his observations substantiate one of the fundamental concepts of the general theory of infections of the nervous system, namely, the variability of alterations developing under the influence of the same infectious virus. His studies demonstrate the impossibility of differentiating on the histologic alterations alone between the rabies of the inflammatory type of reactions and the various types of epidemic encephalitis. The differentiation can be made on a combined clinical and histologic study, the finding of the Negri bodies and animal inoculations. The author makes an interesting attempt to correlate the clinical symptoms with pathologic alterations. He relates the complex of symptoms, which he designates as 'sympathetic tempest' with the lesions of hypothalamus. While admitting the importance of Bonhoeffer's concept of nonspecificity of psychic reactions in infectious

psychoses, he believes that the brain may react in a specific manner in response to a particular infection. An extensive bibliography and a chart of differential histologic diagnosis of acute nonsuppurative infections of the central nervous system are appended.

The Chemistry of Natural Products Related to Phenanthrene. By L. F. Fieser. Associate Professor of Chemistry, Harvard University. Cloth. Price \$6.50. Pp. 358. New York: Reinhold Publishing Corporation, 1936.

The developments during the past few years in the chemistry and physiology of the sterols constitute one of the most fascinating stories in biologic and chemical research. Newly isolated sterols have provided the keys to many puzzling problems in physiology, pharmacology and therapeutics, but even this tremendously rapid growth represents only a small step in the much wider elucidation of fundamental biologic phenomena which the near future promises. Because the subject is relatively new and because its development has been so rapid, a comprehensive and critical evaluation of this field has become urgently necessary. This need has now been ably supplied by Professor Fieser with an unusually well written book. The author has reviewed the literature to Feb. 1, 1936, thus this volume contains all but the most recent contributions. The subjects covered include the chemistry of phenanthrenes, resin acids, cancer-producing hydrocarbons, sterols and bile acids, sex hormones, heart poisons and saponins. The text is replete with structural formulas. Data are presented on methods of extraction of naturally occurring products, on methods of synthesis (or "pseudo-synthesis") of these and related compounds and on their physiologic effects, so far as the latter are known. The elucidation of the chemical structure of these substances is considered at length. The bibliography is extensive. The author is to be congratulated on a beautifully concise and lucid presentation of a very difficult subject. This book will be an indispensable acquisition to the library of all those interested in this fundamental field.

Gefässmissbildungen und Gefässgeschwülste des Gehirns. Von Prof. Dr. Eilund Bergstrand, Direktor des Instituts für allgemeine Pathologie und pathologische Anatomie des Karolinschen Instituts in Stockholm. Prof. Dr. Herbert Olivecrona, Direktor der neurochirurgischen Klinik in Stockholm, und Prof. Dr. Wilhelm Tönnis, Leiter der neurochirurgischen Abteilung des staatlichen Luitpoldkrankenhauses in Würzburg. Paper. Price 24 marks. Pp. 181, with 137 illustrations. Leipzig: Georg Thieme, 1936.

This work is another of the excellent series of monographs on neurosurgical subjects that have appeared from the Neurosurgical Clinics in Stockholm. In the present instance Professor Bergstrand of the Institute for General Pathology and Pathologic Anatomy, Stockholm, and Professor Tönnis of Würzburg have collaborated with Professor Olivecrona. The monograph presents in clear form the authors' experience in a large series of cases of vascular neoplasms and malformations, as well as a comprehensive review of the relevant literature. The authors have classified these lesions as follows:

1. Angioma cavernosum.
2. Angioma racemosum.
 - (a) Telangiectasis.
 - (b) Sturge-Weber's disease.
 - (c) Angioma racemosum arteriale.
 - (d) Angioma racemosum venosum.
 - (e) Aneurysma arteriovenosum.
3. Angioidculoma (hemangioblastoma of Cushing and Bailey, or Lindau's disease).
4. Angioglioma (of Roussy and Oberling).

The pathologic anatomy, symptomatology and treatment of each is discussed. The monograph is well illustrated. There is an extensive and comprehensive bibliography.

Experimentelle Undersøgelser over en transplantabel Leukose hos hvide Mus. Af B. C. Rask-Nielsen. [Experimental Studies on Transplantable Leukosis in White Mice]. With an English summary. Paper. Price 12 kronor. Pp. 159, with 39 illustrations. Copenhagen: Levin & Munksgaard, 1936.

This doctorate thesis deals with the details of experiments on a transmissible leukosis in white mice, starting in a spontaneous instance. Successful transmission was obtained by subcutaneous or intravenous injection of leukosis cells in mice after roentgenization or injection of trypan blue. The peculiar cells were round and of varying size, a narrow rim of basophilic non-granular cytoplasm enclosing a round or curved nucleus with

a fine chromatin network and from two to five nuclei. These cells occurred in varying numbers in the blood as well as in local growths and infiltrations, there also developed myeloid hyperplasia in the marrow and spleen. Comparing this instance with previously described forms of transmissible mammalian leukosis, it appears that Korteweg observed a similar variety in 1929. These two instances are peculiar mainly in that a sudden neutrophil leukocytosis developed before the appearance in the blood of the characteristic cells. As in other forms, the disease in the present case depended on the proliferation of malignant cells, which the author suggests may have been immature and pathologic myeloblasts.

L'immunité au cours de la tuberculose. Etude expérimentale et clinique. Par Jean Paraf. Préface du Professeur F. Bezançon. Bibliothèque de phthisiologie sous la direction de Léon Bernard. Paper. Price 30 francs. Pp. 141. Paris: Masson & Cie, 1936.

This book, which is a new monograph in the well known "Bibliothèque de phthisiologie," founded by Léon Bernard, is a brief but interesting exposition, the central theme of which appears to be rationalization of BCG vaccination on the basis of immunology, and removal of the method from the field of empiricism. As such it is worth the attention of all physicians interested in this subject. An important role in immunity is ascribed to allergy, which, in the words of the author and Jules Bordet, if not part of immunity at least comes to its assistance. In Paraf's experience the most resistant infants and animals vaccinated with BCG are those in which a mild superinfection with virulent bacilli from without has increased the degree of allergy. Tuberculin treatment and the therapeutic use of BCG are discussed in the light of their relation to allergy.

Prostitution in the Modern World. A Survey and a Challenge. By Gladys Mary Hall, M.A. With an introduction by Charles E. Parnes, D.D., Regius Professor of Divinity, Cambridge. Cloth. Price \$2. Pp. 200. New York: Emerson Books Inc., 1936.

This volume stresses the great changes in the problem of prostitution resulting from the effects of the great war. The most significant change, the increase in the noncommercial form of promiscuous sex relationships, leads the author to define prostitution "to include paid and unpaid forms of sex promiscuity," a definition at marked variance with almost all other writers, who make barter an essential element in prostitution. Except for Great Britain, only fragmentary data are presented on the extent and practice of prostitution and the nature and effectiveness of legislation on prostitution in the chief countries of the world. The conclusion is reached that commercialized prostitution is decreasing and that unpaid promiscuity is increasing in nearly all the countries of the world. In the United States both forms of promiscuity are reported to have increased. The data presented, however, are insufficient to show the increase of commercial prostitution in this country and no reference is made to Vice in Chicago by W. C. Reckless, with its detailed statistics on this point for one American city. Important factors in prostitution, according to the author, are in women (1) desire for luxuries rather than economic need, (2) housing and neighborhood conditions due to poverty, (3) loneliness, monotony or other work conditions, (4) alcohol, (5) assault in childhood, (6) knowledge of contraceptives, (7) mental defect in a smaller proportion of cases than generally supposed, (8) temperament, (9) desire for sex experience, and in men (1) a social belief in the masculine need for sex relations, (2) curiosity and adventurousness of youth, (3) marital maladjustment and (4) demand for sex relations as an important individual experience. Two chapters are devoted to traffic in women and children and to the results of sexual promiscuity and abstinence. The final chapter is a challenging reply to the new morality which consists 'in the view that temporary unpaid sex relations outside marriage are not merely permissible but desirable not only as preparation for marriage or without prospect of marriage but during marriage itself and with the knowledge and acquiescence of the marriage partner.' The author's conclusion that the need on occasion for a deliberate canalizing of the creative energy in the direction of other than sexual purposes 'is a statement of her own convictions rather than a generalization from her data. Although the volume contains useful comparative data, it falls far short of an adequate treatment of its subject. Its defects are chiefly due to the unwarranted extension of the term prostitu-

tution to include all sexual promiscuity and to the difficulties inherent in an attempt to make a world-wide survey of the problem in the absence of scientific studies in the different countries

Undersøgelse over en Gruppe Actinomyces Isolerede fra menneskets svamp Af Rigmor v. Magnus [Studies on a Group of Actinomyces Isolated from Human Pharynx] With an English summary Paper Price 6 kroner Pp 132 with 4 illustrations Copenhagen Levin & Munksgaard 1936

In 1923 Orskov demonstrated the presence of branching organisms in the human pharynx. This discovery depended mainly on direct microscopic observation of growing cultures on agar, in making smears in the usual way the branchings are easily broken up. The present report, which is a thesis for the doctor's degree, presents the results of an extensive study of this group of organisms, 130 strains of which were isolated from the pharynx and nasopharynx. The culture and other characteristics of the organisms, which appear to be non-pathogenic, are described. An interesting observation is that most of the strains, especially those belonging to the acid group, produce the enzyme which by its action on human red blood corpuscles renders them agglutinable to human serum in general, including the serum of the person whose corpuscles are examined (the so-called T agglutination described by Thomsen)

The Medical Formulary and Prescription Manual. A Treatise on Prescriptions and Prescription Writing. By Morris Dauer Ph.G. Chief Pharmacist at Kings County Hospital Borough of Brooklyn City of New York. Approved and adopted by the Department of Hospitals City of New York September 13 1934. Fabrikoid Pp 297 Brooklyn N.Y. The Author 1935

This little volume contains a great deal of valuable information on the prescription and compounding of medicinal agents. It includes, in addition to descriptive material and tables of various kinds, 957 separate preparations. Even allowing for duplication in different dosage forms of the same drug, the number of remedies in this formulary surely exceeds the necessities of rational therapeutics. Many irrational mixtures are included, the section on glandular preparations, which contains such preparations as "Tablet of Pineal Gland" and "Tablet of Suprarenal Gland," is particularly objectionable. It is not clear why almost the whole range of therapeutic substances should be covered separately as "Diabetic Medicinal Preparations." The prescriptions are numbered consecutively throughout the book, this leads readily to prescribing by number, a hazardous practice which has caused many accidents. It is hoped that in future revisions of this volume the objectionable features will be eliminated (the author might with benefit consult N. N. R. and Useful Drugs). Much of the material is excellent and it is unfortunate that a book otherwise so useful should contain so much irrational material. The printing and binding are unusually well done.

Die Porphyrine. Ihr Nachweis, ihre Physiologie und Klinik. Von Dr. med. habil. Curt Carrière Assistent an der Hautklinik der Medizinischen Akademie in Düsseldorf. Boards. Price 9 marks Pp 103 with 34 illustrations Leipzig Georg Thieme 1936

This is an interesting review of the significance of the porphyrins in biology and clinical medicine. The porphyrins are chemically closely related to the other blood pigments (hemin, bile pigment) and to chlorophyll. The chemistry of the porphyrins is discussed from the medical standpoint. Blood pigment, porphyrins and chlorophyll are composed of four heterocyclic pyrrole rings, to which methyl and ethyl groups are attached. The chemical formulas of the more important compounds are described. Then the qualitative and quantitative methods of isolation are given. The biologic properties of the porphyrins are numerous. The best known is their photosensitizing action. These substances have a special affinity for the skeletal system. Porphyrins have been found normally in the red blood cells, urine, bone marrow and other structures. Porphyrins are increased in the urine in various febrile diseases that lead to red blood cell destruction, also after arsenic medication and in malaria, pernicious anemia and hemolytic icterus. Liver cell destruction also causes an increased excretion. The clinical forms of porphyrinuria, acute, congenital and toxic, are described. The porphyrinopathies are divided into (1) primary and (2) secondary. There is a bibliography of 252 references and an index.

Les encéphalites aiguës post infectieuses de l'enfance. Par Marié Thérèse Comby. Préface du Dr J. Comby. Paper. Price 30 francs Pp 172 with 6 illustrations Paris Masson & Cie 1935

The term "encephalitis" has come into general use only since the great epidemic swept the world in 1917-1919. Prior to that time acute encephalitis was not recognized except for those types due to syphilis, trauma or sepsis. Many cases caused by other agents, presumably the filtrable viruses, have now come to light. This volume gives the reports on forty-five patients, all children, showing a wide variety of symptoms and signs pointing to a diffuse lesion in the brain. Epidemic (lethargic) encephalitis is excluded. The group is diffuse. Some cases followed vaccination, others followed chickenpox, measles, scarlet fever, diphtheria and other childhood diseases. Others appeared without preceding disease. The presentation of such a wide variety of material, without more complete classification, only leads to confusion. Although the bibliography is somewhat useful, the book itself cannot be highly recommended.

A Third Index of Patented Mothproofing Materials. By R. C. Roark and R. L. Busbey. Division of Insecticide Investigations. Bureau of Entomology and Plant Quarantine. United States Department of Agriculture. Washington D. C. Paper. Pp 104. Washington D. C. 1936

This volume is just what its title indicates it is. Patent numbers are given and the patents briefly described. Toxicities and allergic reactions are not mentioned.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Accident Insurance. Streptococcal Infection or Staphylococcal Infection as Cause of Death.—The defendant insurance company agreed to pay certain benefits if the death of the insured resulted "directly and independently of all other causes from bodily injury effected solely through external, violent and accidental cause." These benefits were not to be payable if the death resulted from "physical or mental infirmity, or directly or indirectly from illness or disease of any kind." The insured slipped on the back steps of his house and fell, sliding down several steps. A boil that he had on his right arm was found to be broken and bleeding after the fall, but the insured appeared to be in good physical condition and made no complaint of being in pain. On the night of the day following the fall, however, he was restless and suffered pain in the region of his left buttock. The following morning he walked with a limp, dragging his left leg. A painful red area about the size of the palm of the hand developed on his left buttock and he was forced to go to bed. At times his temperature was normal and at other times he had alternate periods of sweating and fever and chills. He grew worse during the next few days and continually indicated the pain in his left buttock as the cause of his suffering. On the third and fourth days after the fall, swelling set in about the insured's knees. He died on the seventh day after the fall from "septicemia, septic pneumonia, and septic arthritis." The beneficiary obtained judgment in the trial court and the insurance company sought a reversal of that judgment in the Supreme Judicial Court of Massachusetts.

The defendant contended that staphylococci, coming from the boils from which the insured suffered periodically during his lifetime, caused the death and that the causation was not affected by the fall. The beneficiary argued, on the other hand, that the fall activated otherwise harmless streptococci present in the body of the insured. Two physicians, testifying for the beneficiary, in answer to hypothetical questions, stated that the fall caused lowered resistance of tissues in the region of the left buttock, activating streptococci, which in a harmless form are present in every one, and that the infection spread through the blood stream to the insured's knees, developing into septic arthritis. These witnesses admitted that the septicemia might have been brought about by staphylococci from the boils, as was contended by the medical witnesses for the

insurance company, but testified that the symptoms were more properly referable to a conclusion of streptococcal infection. The alternately high and low temperatures and involvements of the joints, as well as other symptoms, were typical of streptococcal infection and not consistent with staphylococcal infection, which, if it had started from boils, would have become active sooner than it did. Staphylococcal infection, the witnesses continued, is marked by a uniformly high temperature with no long swings from one extreme to the other.

The testimony for the beneficiary, the court concluded, was sufficient to justify a submission of the question to the jury, and the court could find no reason to disturb the judgment for the beneficiary.—*Kramer v New York Life Ins Co (Mass)*, 200 N E 390

Health Departments Records as Public Documents—The appellant, Dr P E Marks, was the superintendent of the bureau of infectious diseases of the city of Pittsburgh. In connection with a pending suit by a beneficiary against an insurance company, Dr Marks was served with a subpoena requiring him to produce the records of his bureau relative to the insured, showing when the insured was reported to the bureau as being tuberculous. Dr Marks appeared in court pursuant to the subpoena but, on the advice of the city solicitor, refused to produce the records on the ground that it would be against public policy so to do. The court adjudged the witness to be in contempt of court. Thereupon Dr Marks appealed to the superior court of Pennsylvania.

There is, said the court, no express statutory provision that the data compiled by the department of health shall constitute public records, except in a very few instances, and the expression of these few instances implies the exclusion of the rest. An examination of the statutes relating to the department of health shows two broad general aims and purposes in view: (1) the collection of vital statistics, such as births, deaths and marriages, (2) the preservation of the public health and the prevention of disease. Data under the first class are gathered for public use and inspection, and the statutes requiring them to be furnished provide that official certificates of the statistics so furnished shall be given to the public on the payment of a small fee. These are public documents, receivable in evidence as an exception to the hearsay rule. But information gathered or received for the preservation of the public health and the prevention of disease is not always and in all cases designed or intended for inspection by the public. It may be contrary to the public interest to allow it to be made public. In the absence of statutory pronouncement on this subject, the officer in charge must be allowed to decide what information so received is proper for publication or general inspection and what should be withheld in the public interest. The court expressed itself as in agreement with the statement made by the assistant city solicitor, who presented this case on appeal, as follows:

These records are in no true sense of the words "public records" they are departmental records. To thwart the important functions of the Health Department by placing their confidential data in the hands of the general public would effectively impair the important work performed by this Department in the prevention, control and treatment of infectious diseases. It is earnestly submitted that the interests of the public in protecting itself and those afflicted with dangerous infectious diseases far outweighs any benefit that insurance companies or other litigants might gain by reason of ready access to departmental records.

The judgment of the trial court, adjudging the witness in contempt, was therefore reversed.—*In re Marks (Pa)* 183 A 432

Malpractice Liability of Anesthetist for Injury to Patient's Eyes Due to Ether—The plaintiff underwent an operation for the removal of a thyroid cyst. The defendant, a physician, was engaged to administer the anesthetic. He was assisted by a nurse provided by the hospital. Alleging that the defendant negligently administered the ether, resulting in serious injury to her eyes, the plaintiff sued the defendant. At the close of the evidence a motion by the defendant for a directed verdict was denied. A verdict was rendered for the plaintiff and the defendant appealed to the Supreme Judicial Court of Massachusetts.

There is no evidence, said the Supreme Judicial Court, that the defendant did not possess the standard of skill which the law requires him to possess, nor is there any testimony in the record that the defendant departed from the usual technique in handling the anesthetic. The fact, warranted by the evidence, that the plaintiff's eyes were injured by the administration of ether by the defendant does not alone warrant the inference of fault on the part of the defendant. In the absence of expert affirmative evidence of fault in the administration of ether the basic question is whether the defendant in administering the ether did use the care and skill which the law requires. There is nothing in the record to exclude the reasonable inference, the court said, that the nurse in pouring the liquid ether spilled it on the outside of the cone and that it found its way to the plaintiff's eyes to their harm. If such was the fact the defendant was not responsible. The nurse was furnished by the hospital and there is no evidence that the defendant directed or failed to direct her other than to say that the liquid ether she poured into the cone was "enough." In the opinion of the court, the trial court should have directed a verdict for the defendant. The Supreme Judicial Court, therefore, entered judgment for the defendant.—*Alucken v Linn (Mass)*, 200 N E 566

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine, Boston, Oct. 22 Dr Franklin P Lowry 313 Washington St. Newton Mass. Secretary
American Academy of Ophthalmology and Otolaryngology New York, Sept. 26-Oct 3 Dr William P Wherry, 107 South 17th St. Omaha Executive Secretary
American Association of Industrial Physicians and Surgeons Atlantic City, N J Oct 5-6 Dr Volney S Cheney, Armour and Co., Union Stock Yards Chicago Secretary
American Association of Obstetricians, Gynecologists and Abdominal Surgeons Bretton Woods N H Sept 14-16 Dr James R. Bloss, 418 Eleventh St. Huntington W Va Secretary
American Clinical and Climatological Association Richmond Va., Oct. 19-21 Dr Francis M Rackemann 263 Beacon St. Boston Secretary
American College of Surgeons Philadelphia Oct 19-23 Dr Allen B Kanavel 40 East Erie St. Chicago Secretary
American Congress of Physical Therapy New York Sept. 7-11 Dr Nathan H Palmer 921 Canal Street New Orleans Secretary
American Hospital Association Cleveland Sept 28-Oct 2 Dr Bert W Caldwell 18 East Division St. Chicago Executive Secretary
American Public Health Association New Orleans Oct. 20-23 Dr Reginald M Atwater, 50 West 50th St. New York Executive Secretary
American Roentgen Ray Society Cleveland Sept 29-Oct 2 Dr Eugene P Pendergrass, 3400 Spruce St. Philadelphia, Secretary
Associated Anesthetists of the United States and Canada, Philadelphia Oct 19-23 Dr F H McMechan 318 Hotel Westlake Rocky River Ohio Secretary
Central Association of Obstetricians and Gynecologists Detroit, Oct. 15-17 Dr Ralph A Reis 104 South Michigan Blvd. Chicago Secretary
Colorado State Medical Society Glenwood Springs Sept 9-12 Mr Harvey T Selman 1612 Tremont Place Denver Executive Secretary
Delaware Medical Society of Rehoboth Oct 12-14 Dr William H Speer 917 Washington St. Wilmington Secretary
Idaho State Medical Association Boise Aug 31-Sept 4 Dr Harold W Stone 105 North Eighth St. Boise Secretary
Indiana State Medical Association, South Bend Oct 6-8 Mr Thomas A Hendricks 23 East Ohio St. Indianapolis Executive Secretary
Inter State Postgraduate Medical Association of North America St. Paul Oct 12-16 Dr W B Peck 27 East Stephenson St. Freeport 18 Managing Director
Kansas City Southwest Clinical Society Kansas City Mo Oct 5-6 Dr J V Bell 1103 Grand Ave. Kansas City Mo Secretary
Kentucky State Medical Association Paducah Oct 5-8 Dr Arthur T McCormack, 532 W Main St. Louisville Secretary
Michigan State Medical Society Detroit Sept. 21-24 Dr C. T. Ekelund 35 West Huron St. Pontiac Secretary
Mississippi Valley Medical Society Burlington Iowa Sept. 30-Oct. 2 Dr Harold Swanberg 510 Maine St. Quincy Ill Secretary
Nevada State Medical Association Reno Sept 23-26 Dr Horace J Brown 20 North Virginia St. Reno Secretary
Northern Minnesota Medical Association, Fergus Falls Aug 31-Sept. 1 Dr Oscar O Larsen Detroit Lakes Secretary
Ohio State Medical Association Cleveland Oct. 7-9 Mr C. S. Nelson 79 East State St. Columbus Executive Secretary
Oregon State Medical Society The Dalles Oct 8-10 Dr Morris L. Bridgman 1029 S W Taylor St. Portland Secretary
Pennsylvania Medical Society of the State of Pittsburgh Oct 5-8 Dr Walter F. Donaldson 500 Penn Ave. Pittsburgh Secretary
Southern Minnesota Medical Association Albert Lea Aug. 30-31 Dr Harold C. Haben 102 Second Ave. Rochester Secretary
Virginia, Medical Society of Staunton Oct. 13-15 Miss Agnes A Edwards 1200 East Clay St. Richmond Secretary
Washington State Medical Association Yakima, Aug 31-Sept 2 Dr Vernon W Spickard 1303 Fourth Avenue Seattle Secretary
Wisconsin State Medical Society of Madison Sept 8-11 Mr J G Crownhart 119 East Washington Avenue Madison Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St Louis

11 641 776 (June) 1936

- Inadequacy of Normal Collateral Coronary Circulation and Dynamic Factors Concerned in Its Development During Slow Coronary Occlusion. C J Wiggers Cleveland—p 641
- *Significance of Rheumatic Fever in Etiology of Coronary Artery Disease and Thrombosis. H Gross and B S Oppenheimer New York—p 648
- Arnto-Carotid Circulation Time in Prolonged Therapeutic Fever. I Kopp Boston—p 667
- Ligation of Coronary Arteries in Javanese Monkeys. I Introduction. General Experimental Results Especially Changes in Ventricular Electrocardiogram. A de Waart C J Storm and A K J Koumans, Batavia Java—p 676
- *Use of Intermittent Venous Compression in Treatment of Peripheral Vascular Disease. Preliminary Report. W S Collens and N D Wilensky Brooklyn—p 705
- Apparatus for Production of Intermittent Venous Compression in Treatment of Peripheral Vascular Disease. W S Collens and N D Wilensky Brooklyn—p 721
- Auricular Sound. P Cossio and E G Fong, Buenos Aires Argentina South America—p 723
- Electrocardiographic Changes Following Coronary Sinus Occlusion in the Dog's Heart. L Gross, Gertrude Silverman and A M Master New York—p 734
- Digitalis Eosinophilia. J Romano and A J Geiger New Haven Conn—p 742
- Functional Capacity of Normal Pericardium. Experimental Study. M H Fineberg Cleveland—p 748

Rheumatic Fever and Coronary Artery Disease and Thrombosis.—Gross and Oppenheimer studied the postmortem material of 3,264 cases, in which they found thirty instances of coronary arteriosclerosis concomitant with rheumatic valvular disease. They believe that the association may have been purely coincidental. Either the valvular or the vascular lesion predominated and apparently was responsible for the clinical picture observed during life. There was no proved etiologic relationship between the initial valvular lesion and the subsequent development of coronary arteriosclerosis. The two lesions may be independent and unrelated. If a causal relationship did exist, coronary arteriosclerosis would occur with greater frequency at an earlier age in patients with rheumatic heart disease. The coronary arteries of young patients with rheumatic heart disease are usually free of arteriosclerotic changes. Despite the rather frequent involvement of the coronary arteries during the course of acute rheumatic fever it has not been possible to establish such an entity on clinical grounds. To diagnose coronary disease from the electrocardiogram is unsafe. Published electrocardiograms indicating such relationship are equivocal, since similar changes may appear during acute rheumatic fever, aortic insufficiency pericarditis or coma. Though the association of rheumatic valvular disease and coronary sclerosis is a rarity and the diagnosis is difficult, it has seemed to the authors that in some cases such a diagnosis might be suspected. In an individual with signs and symptoms of rheumatic heart disease who survives middle life and later develops anginal pain not attributable to aortic disease active rheumatic fever or pericarditis the coexistence of coronary disease is to be suspected. Rare cases of angina pectoris in mitral stenosis without evidence of active rheumatic fever occur. In the absence of aortic insufficiency, an electrocardiogram may be of great help. The greatest and most significant reason for the very infrequent association of rheumatic and coronary disease is that rheumatic fever appears early in life and ordinarily runs its course before the usual period of degenerative heart disease. In several instances of severe coronary sclerosis the associated rheumatic valvular lesions were insignificant and

such as are frequently found at necropsy of persons dying of other diseases. Similarly, in several cases of advanced rheumatic valvular disease the coincidental arteriosclerotic lesions of the coronary arteries were of no significance. In still others neither the vascular nor the valvular lesion was of more than pathologic interest, and the patient had presented neither history nor symptoms indicative of rheumatic heart disease or coronary arteriosclerosis. Cases may be cited of rheumatic subjects at or beyond middle life in whom coronary disease corresponds roughly to the age of the individual.

Intermittent Venous Compression in Treatment of Peripheral Vascular Disease.—Collens and Wilensky endeavored to incorporate the beneficial effects of venous obstruction and release in the treatment of peripheral vascular disease by utilizing an apparatus designed to produce alternating periods of venous congestion and release of congestion. Sustained venous compression at from 30 to 60 mm of mercury for two minutes followed by a release of this pressure for another two minutes resulted in clinical benefits. The technic consisted of applying venous compression at the mid thigh alternating with release in periods of two minutes for as long as twelve hours continuously each day. The criteria employed in determining the effectiveness of treatment consisted of (1) a walking test, (2) a hot water immersion test (Landis), (3) oscillometric readings, (4) relief of pain, (5) healing of ulcers and (6) effect of treatment on skin temperature. Following treatment there was relief of pain, increase of skin temperature of the extremity, increase in walking efficiency, increase in vascularity (permitting amputation at lower levels) and healing of chronic indolent ulcers associated with vascular obstruction.

American Journal of Cancer, New York

27 217 420 (June) 1936

- Hormone Pathogenesis of Adenocarcinoma of the Breast. A Lacasagne Paris France—p 217
- Effect of Injections of Estrin on Incidence of Mammary Cancer in Various Strains of Mice. V Surrentz E L Burns Marian Moskop and L Loeb St Louis—p 229
- Breaking Down Resistance of Albino Mice to Transplantation of Tumors Induced by 1 2 5 6-Dibenzanthracene in Different Strain of Albino Mice. M R Lewis and E G Lichtenstein Baltimore—p 246
- Experimental Production of Malignant Tumors in Albino Rat by Means of Ultraviolet Rays. H H Beard, T S Boggress and E Von Haam New Orleans—p 257
- Spindle-Cell Tumors and Leukemia in Mice After Injection with Water Soluble Compound of 1 2 5 6-Dibenzanthracene. H Burrows and J W Cook London England—p 267
- Benign Hepatomas in Mice of CBA Strain. L C Strong and G M Smith New Haven Conn—p 279
- *Chemotherapy Investigations in Cancer, with Reference to Influence of Some Lead Preparations on Tar Tumors in Mice. D L Woodhouse Birmingham England—p 285
- Further Study of Effect of Cyanide on Rat Sarcoma. J C Krantz Jr, Ruth Musser C J Carr and W G Harne Baltimore—p 293
- Spectrographic Studies of Cancer and Normal Blood Plasma. I Absorption Spectrums of Fractionated Cancer and Normal Rat Blood Plasma. A J Allen Rachel G Franklin and E B Sangar Philadelphia—p 296
- Id. II Absorption Spectrums of Fractionated Cancer and Normal Human Blood Plasma. Rachel G Franklin E B Sangar and A J Allen Philadelphia—p 391
- Sex Hormones and Prostatic Pathology. S E Owen and M Cutler Hines Ill—p 308
- *Multiple Primary Cancers. M Burke Madison Wis—p 316
- Chondroblastic Sarcoma. Note. H Bergstrand Stockholm Sweden—p 326
- Some Notes on Malignancies of the Heart. J A Polla and L J Gogol Los Angeles—p 329
- Problems in Diagnosis of Cancer of Stomach. A J Delano Paterson, N J—p 334
- Hemangioma of the Male Breast. Case Report. C C Johnston, Baltimore—p 341

Chemotherapy Investigations in Cancer.—Woodhouse concludes from his experiments that not one of the lead compounds investigated was a suitable agent for controlling frankly malignant growths. It is possible that in those cases in which the lead injections caused inhibition of growth the epitheliomas were less active than usual. This is in keeping with the conclusion of Eggers who found that some hexose-lead compounds were able to cause rat tumors of low virulence to disappear but had no influence on the more malignant sarcoma 39. In the authors' experience true epitheliomas produced by tar in mice are very lethal although the percentage of metastases is not high. He finds, therefore, that even compounds such as

benzene-sulfonyl-glycine, which are able to oppose grafted tumors with a good measure of success, do not appreciably inhibit the more "virulent" strain of neoplasm. It is felt, however, that the type of tumor utilized in the investigation is more closely allied to spontaneous cancer, and, if experiment should devise a nontoxic substance capable of destroying this form of growth, the greater part of human cancers would come within its sphere of attack.

Multiple Primary Cancers—Because multiple primary cancers have been found to occur oftener than expected among necropsy cases at the State of Wisconsin General Hospital, Burke tabulates such cases and computes their incidence. In a period of eleven years ended in October 1935 2,889 deaths occurred and 2,033 necropsies were performed, 583 disclosed cancer, an incidence of 28.6 per cent, which approximates that found at Michigan and at the Mayo Clinic and apparently reflects a certain degree of selectivity in these institutions for cancer patients. There were forty-six cases of multiple primary cancers, representing an incidence of 7.8 per cent, thus far the highest to be reported in any series of cases, surgical (morbidity) or necropsy (mortality). Thirty-five of the cases occurred in males, eleven in females. However, the entire necropsy series discloses a 2:1 preponderance of males over females. The heredity factor was positive in fourteen cases, negative in twelve cases and incomplete or unelicited in twenty cases. Except in four cases the tumors were synchronous. In seven of the cases one of the tumors was a sarcoma. The commonest type of multiple cancer, the basal-cell epithelioma, was conspicuous for its rarity in the series (three instances). Besides the forty-six cases there was a miscellaneous collection of seventeen cases failing for one reason or another to satisfy fully the criteria for multiple malignant conditions. A cancer is defined as a definite, atypical, invasive growth, it is not mere local hyperplasia, in the absence of metastases it must show definite local invasive activity. Nine of these cases showed one true cancer and an atypical, invasive hyperplasia of the prostatic epithelium that had not yet reached the stage at which it could be considered a definite tumor. Two cases represented an analogous condition in which the bladder epithelium and a gastric myoma were exhibiting the invasive tendency. In one case there was one malignant tumor and an embryonic rest from Rathke's pocket in the proper site for a possible craniopharyngioma. In two cases there was one malignant growth and another tumor, benign histologically but fatal. There was one case each of embryonic carcinoma of the kidney pelvis with multiple papillomas of the larynx with recurrences after radium therapy, adenocarcinoma of the stomach with lymphosarcoma of mesenteric origin and fibrillar astrocytoma of the brain (cerebellum) in which a retinoscope revealed a tumor in the right eye, removal of which was not permitted at necropsy. The author's series shows a higher incidence of multiplicity, 7.8 per cent, than any thus far reported. Inclusion of any or all of the seventeen cases not satisfying the criteria for multiple growths would raise the figure to 10.8 per cent if all were included. Any factor producing an increase in single cancers is bound to produce at least a corresponding increase in multiple cancers, and as one consequence of this increase the notion of rarity formerly associated with this condition has vanished. It is not unlikely that in an appreciable number of cases now coming to necropsy because of cancer itself another true or incipient cancer would be found if complete and careful microscopic examination were the rule. Such examination of current necropsy material is apt to reveal not just an absolute but a relative increase in multiple cancers.

American Journal of Orthopsychiatry, Menasha, Wis.

G 183:340 (April) 1936

- Hostility Patterns in Sibling Rivalry Experiments D. M. Levy New York—p. 193
Evaluation of Masculinity Factor in Boarding Home Situations O. B. Markey and Helen Noble Cleveland—p. 253
First Interviews as an Experiment in Human Relations E. V. Emery New Haven Conn.—p. 263
Preliminary Standardization of Vineland Social Maturity Scale E. A. Doll Vineland, N. J.—p. 273
Treatment Techniques for Mental Retardation in a School for Personality Disorders in Children J. W. Ackerman and C. F. Menninger Topeka, Kan.—p. 294

Annals of Internal Medicine, Lancaster, Pa.

9:1619-1808 (June) 1936

- Disturbances of Endocrine Balance and Their Relation to Diseases of Metabolism C. N. H. Long Philadelphia—p. 1619
Comparison of Effectiveness of Glutamic Acid Hydrochloride and Dilute Hydrochloric Acid as Replacement Therapy in Anacidity Measured by Fractional Gastric Acid Titration and Hydrogen Ion Concentration Curves H. Shay and J. Gershon Cohen Philadelphia—p. 1673
The Medical and Economic Advantages of Roentgenographic Chest Survey of All Hospital Admissions F. J. Hodges Ann Arbor Mich.—p. 1639
Chronic Arthritis A General Disease Requiring Individualized Treatment E. E. Irons Chicago—p. 1658
Treatment of Pneumonia with Serum Containing Type-Specific Heterophile and Neutralizing Antibodies V. B. Callomon and J. Ungar Jr. Pittsburgh—p. 1664
Some Factors in Etiology of Psychoneuroses L. Casamajor, New York—p. 1677
Solitary Ulcer of Ileum and Ulcer of Meckel's Diverticulum P. W. Brown and J. deJ. Pemberton Rochester Minn.—p. 1684
*Errors in Interpretation of Cardiovascular Symptoms and Signs P. D. White Boston—p. 1703
*Initial Ventricular Complex of Electrocardiogram in Coronary Thrombosis L. Feldman Chicago—p. 1714
Late Recrudescence in Encephalitis Lethargica with Succession of New Manifestations at Intervals of Years: the Problem of Prognosis A. Gordon, Philadelphia—p. 1725

Errors in Interpretation of Cardiovascular Symptoms.

—White enumerates the twenty-eight conditions of pain mentioned by James Herrick that have been confused with coronary thrombosis. Dyspnea is often misinterpreted. The common breathlessness of neurocirculatory asthenia in a nervously tired person or in one who is "soft" and physically unfit has often been treated as cardiac dyspnea with restriction in exercise and with digitalis therapy when almost the opposite measures are indicated. Dyspnea of pulmonary origin is less commonly confused with cardiac dyspnea, but the error is made often enough to warrant much care in analysis. Chronic bronchitis with emphysema and weakness of the left ventricle with pulmonary vascular congestion and emphysema are the two conditions which in an elderly person, especially in the winter, are likely to be mistaken for each other. A chronic as well as an acute asthmatic state may be caused by congestion of the lungs secondary to heart disease. This is not widely appreciated. When there is marked mitral stenosis, the most common symptom is dyspnea on effort or in attacks (with or without asthma) or constantly. Such dyspnea is certainly to be ascribed to pulmonary vascular engorgement. But it is still the rule to attribute wrongly this dyspnea to heart, or rather myocardial, failure. To be sure, the dyspnea and pulmonary engorgement are due to the heart disease but they are not due to myocardial failure. Palpitation is due to the consciousness of forceful, rapid or irregular heart action. It is never in itself a sign of heart disease and should never be prognosed and treated as such until the patient has been carefully studied. It may imitate a cardiac neurosis or even neurocirculatory asthenia unless properly handled at the outset. The most common condition associated with palpitation is neurocirculatory asthenia, of which it is frequently the chief symptom. It is quite a common error for an overactive heart to be misjudged in size. The forceful apex impulse produces a widespread movement of the anterior chest wall, which may be seen and felt several centimeters beyond the cardiac apex itself. If the outermost point of this impulse vibration is taken as the left edge of the heart, and especially if the measurement is made following the curve of the chest rather than tangentially from the midsternal line a gross and misleading error results. It is a less common error to underestimate the size of the heart. On a few occasions it is possible to misjudge grossly the size of the heart on hasty examination when a fairly forceful impulse is felt near or in the midclavicular line in patients with mitral valve disease whose hearts are very large and whose powerful right ventricles may displace the anterior chest wall while the true apex impulse is in or near the left anterior axillary line. During a severe infection especially rheumatic fever that attacks the myocardium dilatation of the left ventricle may give rise to a mitral diastolic murmur (and in some cases even an accompanying thrill) which was thought pathognomonic of mitral stenosis in the absence of free aortic regurgitation producing the so-called Austin Flint murmur. The author believes that the murmur is due to the relative mitral stenosis (dilatation of left ventricular cavity and undeformed mitral valve), rather

there is any aortic regurgitation or not. Other diseases may cause temporary mitral diastolic murmurs as the result of left ventricular dilatation, this is especially the case in severe anemia due to any cause. When there is pulmonary vascular congestion in marked mitral stenosis, it is not primarily myocardial failure that is responsible but the mechanical influence of the valvular defect.

Electrocardiogram in Coronary Thrombosis—Feldman examined 108 electrocardiograms of patients with coronary thrombosis, paying particular attention to the changes in the initial ventricular complexes. Eleven tracings showed no changes in either the initial or the final ventricular complexes. Forty-five cases showed changes in the final ventricular complex (ST and T waves) only. Fifty-one records showed conspicuous Q waves in association with characteristic changes in the ST segments and T waves. Nineteen of these, belonging to the Q₁ group and almost always associated with the final ventricular deflection of the T₁ type, often displayed a conspicuous Q wave in lead I, while the other QRS deflections in this lead were small. Twenty tracings of the fifty-one were classified into the Q₂ group and were accompanied by the final ventricular deflection of the T₂ type. There were twelve curves showing Q₁T₂ only. In one case this was inconspicuous two days after the attack, only to become prominent three days later. Changes in the initial ventricular complex without accompanying changes in the final ventricular complex are rare in acute coronary thrombosis. Such a curve would speak, instead, for an old infarction. Most of the cases in which there were posterior infarctions showed tracings of the Q₂T₂ type, while the rest, either having multiple infarctions or a single posterior one, displayed curves that did not conform to either Q₁ or Q₂ groups. Other changes in the initial ventricular complex, such as marked reduction in amplitude or the development of intraventricular conduction disturbances, may occur in coronary thrombosis.

Annals of Otol., Rhinol and Laryngology, St Louis

45 307 608 (June) 1936

- Study in Transillumination L. Richards Boston—p 307
Fundamentals of Allergic Rhinitis with Particular Reference to Ionization (Iontophoresis) L. W. Dean St. Louis—p 326
How Does the Organ of Corti Distinguish Pitch? M. H. Lurie Boston—p 339
Mechanics of Middle Ear Prosthesis A. G. Pohman Omaha—p 351
Some Sphenopalatine Syndromes Review of Sluder's Observations on Sphenopalatine Ganglion H. W. Lyman St. Louis—p 362
The Fifth, Ninth and Tenth Nerves in Bronchial Asthma K. Phillips Miami Fla—p 373
Autonomic Nervous System Some Fundamentals for Otolaryngologists D. R. Higbee San Diego Calif—p 385
Pathways Involved in Pains of Nasal and Paranasal Origin Referred to Lower Cervical and Upper Thoracic Segments and Upper Extremity A. Kuntz St. Louis—p 394
Ciliated Nasal Epithelium Its Culture in Vitro Preliminary Report A. W. Proetz and Marian Pnngsten St. Louis—p 400
Spontaneous (Nontraumatic) Atlanto-Axial Subluxation I. Frank Chicago—p 405
Satisfactory Method for Irradiation of Malignant Disease of Esophagus N. J. Birkbeck, J. O. Beavis and H. R. Huston Dayton Ohio—p 412
Telangiectasia of the Nose Treatment by Micro-Injection of Sclerosive Fluid H. I. Biegeleisen New York—p 416
Treatment Other Than Operative of Nasal Accessory Sinuses W. Mithoefer Cincinnati—p 420
Rhinoliths Report of Three Cases Review of Literature. J. Snyder and M. Feldman Baltimore—p 430
Plasma Cell Tumors of Nose and Nasopharynx. L. Blumenfeld Brooklyn—p 436
Pharyngeal Lymphatics as a Focus of Infection L. E. Brown Akron Ohio—p 447
Extensive Bilateral Subdural Abscess Microscopic Study of Meninges and Brain Report of Case W. R. Geraghty Baltimore—p 452
Intravenous Anesthetic in Tonsillectomies W. H. Turnley Stamford Conn—p 464
The Physical Chemistry of Vasography O. J. Dixon and E. R. Harrouff Kansas City Mo.—p 467
Prevention of Postauricular Fistula by Periosteal and Subcutaneous Tissue Flaps W. A. McNichols Dixon Ill—p 475
Improved Technic for Submucous Turbinatectomy H. I. Harris Los Angeles—p 481
Treatment of Laryngeal Diphtheria Statistical Study of 655 Cases J. Eschenbrenner Wichita Falls Texas—p 485

Prevention of Postauricular Fistula—McNichols states that of sixteen radical mastoid operations done in the last ten years in private practice, thirteen patients have dry epithelized

cavities, one died of meningitis after a primary skin graft and two were so unfortunate as to have moist ears with post-auricular fistula. One of these was an old scarlet fever ear and the other patient had diabetes. Both refused further surgical treatment. The operations were done as near as possible after the teachings of Kerrison with the facial canal well lowered. A Siebenmann flap was done on the ear canal, which, according to Rae, is the best. Following a study of the literature, a flap was sought that would permit closure of post-auricular wounds, provide wide opening for drainage through the external auditory canal and encourage growth of the epithelial covering. To cover and fill the mastoid cavity and tip, the adjacent periosteum, together with a fatty subcutaneous tissue, was chosen. A typical postauricular incision for the radical operation is made, and then at the upper tip of this incision a new incision is made at the right angles, upward and backward, for a distance of about 2 inches, dividing all tissues down to the bone. This flap is elevated, the anterior flaps are elevated and pushed forward, and the membranocartilaginous meatus is completely separated from the posterior wall of the bony meatus. After the mastoidectomy has been completed, the margins are beveled carefully. The skin of the anterior flap is now dissected from the subcutaneous tissue and periosteum. This dissection is carried down into the membranous canal. A thin bladed knife is now introduced into the membranocartilaginous canal and, hugging the floor, an incision is made outward until it bisects the incision from behind. The flap is used to form the roof, so there is no obstructing ledge below to interfere with free drainage. The periosteum and subcutaneous tissue are freed from the skin in the posterior flap. The under flap is freed from above downward to a distance of about 1½ inches behind the primary incision. This allows the graft to be moved forward and sutured by interrupted chromic sutures to the periosteal and fat graft from the anterior flap. Great care is taken to tie all bleeding vessels and to have the mastoid cavity free of blood and debris before the periosteal flaps are brought into place. The posterior auricular wound is then closed by vertical mattress silkworm-gut sutures. The membranocartilaginous flap is held in place by packs. The after-care is the same as for all mastoids.

Archives of Pathology, Chicago

21 727 874 (June) 1936

- Reaction to Presumptive Kahn Test in Patients with Bejel (Nonvenereal Syphilis) E. H. Hudson Deir-er Zor Syria—p 727
*Lipid Composition of White Blood Cells in Leukemia E. M. Boyd Kingston Ont—p 739
Chemotropic Reactions of Polymorphonuclear Leukocytes to Various Micro-Organisms Comparison M. McCutcheon and H. M. Dixon Philadelphia—p 749
Teratoma Explanation of Its Cause Based on Organizer Theory of Embryology J. Krafka Jr. Augusta Ga—p 756
Embolic Pulmonary Lesions Produced in Rabbits by Human Fat Containing Fatty Acids or Soaps E. F. Hirsch Chicago—p 765
Shwartzman Phenomenon in Kidneys of Rabbits Observations on Effects of Intravenous Administration of Bacterial Filtrates I. E. Gerber New York—p 776
*Acquired Resistance to Tuberculosis with Investigations into Validity of Ranke's Classification H. S. Reichle and Mae Gallavan Cleveland—p 797
Pathogenesis and Histopathology of Experimental Pneumonia in Rats F. D. Gunn and W. J. Nungester Chicago—p 813

Lipid Composition of Leukocytes in Leukemia—Boyd determined the lipid composition of the white blood cells, by oxidative micromethods, for nine patients with chronic myelogenous leukemia, eight with chronic lymphatic leukemia, one with acute myeloid leukemia, two with Hodgkin's disease and thirty normal adults. He found that the phospholipid and free cholesterol in the blood leukocytes are decreased in chronic lymphatic leukemia and increased in chronic myelogenous leukemia, and, of the two the most marked change occurs in the phospholipid fraction. As a result of these differences, total fatty acids and total lipid are lower in the lymphatic than in the myelogenous type. Owing to the difference in free cholesterol, the total cholesterol in the leukocytes is lower in chronic lymphatic leukemia than in chronic myelogenous leukemia. There are no consistent changes in the neutral fat or in the cholesterol esters, the latter being low in most blood leukocytes. The range of values for the total lipid in the leukocytes of

normal adults is sufficient to include all the values found in leukemia. In general, the values in chronic lymphatic leukemia fall in the lower part of the normal range, and the values in chronic myelogenous leukemia in the higher part. When this fact is compared with the previous observations that the lipid of the granulocytes tends to be higher than that of the lymphocytes, it appears that the differences in leukemia are due to differences in the relative percentages of lymphatic and myeloid types of cells in the buffy layer of blood, and not to a change in the metabolism of the blood leukocytes in leukemia.

Acquired Resistance to Tuberculosis—Reichle and Gallavan observed eighty-one cases, eight cases of primary tuberculous infection and seventy-three cases of reinfection. The patient who has a primary tuberculous infection usually dies not because of a pulmonary or intestinal lesion but as a result of hematogenous dissemination from that point. The Negro patients in the authors' series were a factor definitely tending to decrease the number of cases of lymphatic and hematic blockade. Thus, although 73.1 per cent of the white patients belonged in the group in which a "lymphatic block was present," only 44.1 per cent of the Negroes were represented in this group. In the group in which a hematic block was present the Negroes were represented by 58.5 per cent and the white patients by 71.6 per cent. Almost half of the Negroes (47 per cent) had subacute pulmonary tuberculosis, whereas almost half of the white patients (43.9 per cent) had chronic fibrous pulmonary tuberculosis. The type of disease is of distinct importance in the determination of lymphatic and hematic blockade, for the incidence of efficient lymphatic blockade rises from 30 per cent in cases of subacute pulmonary tuberculosis to 90.9 per cent in cases of chronic fibrous tuberculosis, the incidence of efficient hematic blockade being 45 and 77.2 per cent, respectively. Reisner's observations that blockade against an extrapulmonary lesion is less efficient than that against a pulmonary lesion is perhaps suggestive that in 50 per cent of the cases of extrapulmonary lesions there was a break in the lymphatic blockade and in 75 per cent a break in the hematic blockade. That chronic tuberculous disease of the lungs is rarely associated with the same condition in any other organ, however, is shown by the fact that in only two cases was there associated pulmonary and extrapulmonary disease. These results must be interpreted as a manifestation of resistance

used in the study. Antitoxin titrations of serum show that the response to two doses of plain toxoid is distinctly better than the response to one dose of the alum precipitated toxoid. Of those receiving one dose of alum-precipitated toxoid only 44 per cent developed more than 0.01 unit, whereas 80 per cent of those receiving two doses of plain toxoid developed more than 0.01 unit of antitoxin. Only 11 per cent of those tested showed antitoxin increases at the ten to twelve week titration when compared with the four to five week titration, and 14 per cent of a control group showed antitoxin increases in from one to four months with no artificial antigenic stimulus other than the Schick test. For the comparison of the antitoxinogenic value of diphtheria antigens it would seem advisable to establish as short a period as possible to measure the antitoxin response and to include a control group, particularly if the test group resides in an institution with a possible diphtherial environment.

Colorado Medicine, Denver

33 449 520 (July) 1936

- The General Practitioner and Allergy T. D. Cunningham and J. C. Mendenhall Denver—p. 462
Postoperative Treatment Based on Physiologic Principles J. R. Plank Denver—p. 465
Some Otolaryngologic Problems Encountered in Daily Practice H. L. Hickey Denver—p. 469
Evipal Anesthesia for Minor Surgical Procedures C. L. Wilmoth Denver—p. 473
Colloid Cyst of the Third Ventricle J. R. Jaeger, Denver—p. 475

Delaware State Medical Journal, Wilmington

8 93 142 (June) 1936

- *Psychiatric Implications of Endocrine Disturbances M. A. Tarumian Farnhurst—p. 93
Habit Formation Case P. F. Elfeld Farnhurst—p. 98
Manic Depressive Psychosis Cases of Depression J. W. Ballard, Farnhurst—p. 101
Personal Inadequacy Resembling Dementia Praecox Case Report C. Uhler Farnhurst—p. 105
Difficulties in Differential Diagnosis of Manic Depressive Psychosis and Schizophrenia B. G. Lawrence Farnhurst—p. 108
Psychiatric Uses of Intravenous Sodium Amytal J. A. Morrow Farnhurst—p. 110
Multiple Nephritis with Pseudo-Athetosis and Short Confused Period in Syphilis Treated with Neosarphenamine G. J. Gordon Farnhurst—p. 114
Some Problems in Physical Diagnosis in Mental Cases Joan F. McGreevy Farnhurst—p. 120

Psychiatric Implications of Endocrine Disturbances—Tarumian believes that approximately 5 per cent of all mental deficiency is caused by glandular irregularities either of the inherent type or due to some infection received in intra uterine life. Glandular treatment of the mother, particularly in the thyroid cases in which there is a hypofunctioning will often prevent the condition from arising in the child. Early thyroid treatment will result in at least a near normal individual but the treatment must be instituted at least before the second year of life. All deviations from the normal produce mental traumas that result in maladjusted individuals, if not properly treated. This is particularly true in the sexual field, as propagation being one of the strongest instincts in human life inability to carry on the function results in a marked feeling of inferiority with a compensatory reaction resulting in all types of abnormal behavior. If abnormal individuals find it impossible to obtain equality through social methods, antisocial methods will be used. The boy who is different from the crowd because of some glandular bodily deformity broods back and finally seeks relief from his pent up emotions by seeking attention from the crowd. Physical deformity in adolescence is well recognized as one of the important etiologic factors of juvenile delinquency. Antisocial habits are thus formed which continue into adult life. Hypersecretion of certain glands causes a physical and mental unrest forcing the individual to seek new activity and excitement. He may resort to drugs and alcohol as a relief from the abnormal drive. Should the individual not receive relief through antisocial acts he becomes introspective and possibly introverted. Neuroses and psychoses develop readily. They seek compensation and excuses for their own inadequacy. Psychiatrists have been inclined to scout the theory that there is such a thing as functional insanity. Some feel that all these conditions are due to glandular disturbances. The delicate yet at present vaguely understood relation between the endocrine

Arch. of Physical Therapy, X-Ray, Radium, Chicago

17 321 384 (June) 1936

- Development of Short Wave Therapy E. Schliephake Giessen Germany—p. 327
Physical Properties of Bone A. Steindler Iowa City—p. 336
Tonsillitis J. F. Jaros Chicago—p. 346
Investigation of Electrostatic and Magnetic Field of Short and Ultra short Waves (Radiotherapy) D. H. Kling Los Angeles—p. 352
New Electrode Technic for Therapeutic Ionization (Iontophoresis) S. Benson Chicago—p. 363

Arkansas Medical Society Journal, Fort Smith

33 35-48 (July) 1936

- Low Back Pain R. A. Milliken Little Rock—p. 35
Blastomycosis of Larynx Complicating Carcinoma Report of Case T. E. Fuller Texarkana—p. 37
Agenesis of Abdominal Muscles in New Born Infant D. Smith Hope—p. 39

Canadian Public Health Journal, Toronto

27 261 312 (June) 1936

- The Problem of Heart Disease in Adults J. A. Oille Toronto—p. 261
Death in Safety Week N. L. Burnette Ottawa Ont—p. 267
Partnership in Public Health Nursing Alma C. Haupt, New York—p. 272
*Antitoxinogenic Value of Plain and Alum Precipitated Toxoid N. T. Schuhardt Galveston Texas and E. B. M. Cook Austin Texas—p. 275
Overseas Immigration Medical Service H. B. Jeffs Ottawa Ont—p. 282

Plain and Alum-Precipitated Toxoid—Schuhardt and Cook compared the antitoxin response to one dose of alum-precipitated toxoid and two doses of plain toxoid in persons having less than 0.01 unit of original antitoxin. The alum-precipitated toxoid contained 15.5 Lf units (the volume of toxin flocculating with one unit of antitoxin) per cubic centimeter and was prepared from the same lot as the plain toxoid (17 Lf)

the sympathetic nervous system and the glands of internal secretion make it extremely difficult to arrive at any definite conclusion. Since glandular conditions are often amenable to treatment before the period of puberty, it is essential that the diagnosis be made early and treatment instituted. Examination for abnormalities of the glandular system should be carried on on all children, even as their eyes and throats are examined for pathologic manifestations.

Georgia Medical Association Journal, Atlanta

25 185 226 (June) 1936

- The Fifth Lumbar Vertebra as Cause of Low Back Pain T P Goodwyn and H W Jeruigan Atlanta—p 185
Dilation and Concentration Tests of Kidney Function W E Storey Columbus—p 188
Fusospirochetal Diseases of Lung J P Tye Albany—p 192
Use of Merthiolate Intravenously in Typhoid Fever Report of Nine Cases L H Goldsmith Atlanta—p 197
Myosarcoma of Round Ligament Report of Case J D Martin Jr and F F Rudder Atlanta—p 202
Influence of Pregnancy on Tuberculosis W W Daniel Atlanta—p 203
New Treatment for Septicemia W S Dorrough Atlanta—p 204

Journal of Bacteriology, Baltimore

31 575 668 (June) 1936

- Use of Semisolid Agar for Detection of Bacterial Motility R P Tittler and L A Sandholzer Rochester, N Y—p 575
*Preparation of Nontoxic Shiga Dysentery Vaccines by Irradiation with Soft X Rays Preliminary Note. Helen Norris Moore and H Kersten Cincinnati—p 581
Interesting New Species of Luminous Bacteria F H Johnson Princeton N J and I V Shunk Raleigh N C—p 585
Aerobic Dissimilation of Lactic Acid by Propionic Acid Bacteria C Erb H G Wood and C H Werkman Ames Iowa—p 595
Dissimilation of Normal Heterolactic Dissimilation by Addition of Hydrogen Acceptors M E Nelson and C H Werkman Ames Iowa—p 603
Studies on Hemolytic Streptococci II Streptococcus Pyogenes. Alice C Evans Washington D C—p 611
Utilization of Lactose by *Escherichia coli* Mutabile C J Deere Anna Dean Dulane and I D Michelson Memphis Tenn—p 625

Preparation of Shiga Dysentery Vaccines by Irradiation.—Moore and Kersten investigated the possibility that the changes accompanying the killing of bacteria with heat are not identical with those produced with x-ray killing and that a vaccine prepared by irradiation of organisms with soft x-rays might be less toxic than one prepared by killing with heat, yet retain all its antigenic properties. The bacteria were prepared for irradiation by wiping off eighteen-hour slant cultures of *Shigella dysenteriae* (Shiga) and bringing the resulting suspensions in salt solution to a turbidity of 500 on the Fuller scale. In order that the suspension during irradiation might occupy a small enough space to be placed in the most intense part of the x-ray beam near the focal spot of the tube, it was concentrated by centrifugating for ninety minutes at 4,000 revolutions per minute, the supernatant liquid being decanted and resuspended in 1 cc of sterile sodium chloride solution. These concentrated suspensions were irradiated in small glass dishes placed at a distance of 5 cm from the focal spot of a copper target gas x-ray tube (Kersten 1934) whose radiation had the K α (1.54 angstroms) and the K β (1.38 angstroms) lines of copper as its most intense parts. The tube was operated at 38 peak kilovolts, with a current of 20 milliamperes, and the time of irradiation varied from thirty to 300 minutes. After irradiation the suspensions were made up to 10 cc. with sterile sodium chloride solution and tested for sterility before use. As a test for the antigenic power of the x-ray vaccines rabbits were given 0.4 cc. of living organisms intravenously. Control animals were given equal doses to determine whether the toxicity of these amounts was sufficient to kill. Of thirty animals receiving from 1 to 4 cc. (1 cc. doses) of vaccine irradiated from thirty to 100 minutes, seventeen died after receiving from one to three inoculations and thirteen survived the test dose of living organisms. Of fifteen animals receiving from 1 to 4 cc. (1 cc. doses) of vaccine irradiated for from 120 to 300 minutes two died as a result of intercurrent infections and the remaining thirteen survived the test dose for immunity. All control animals receiving heat-killed or living organisms died within from twenty-four to thirty-six hours after inoculation. It appears that vaccines receiving large doses

of x-rays are rendered nontoxic and retain their antigenic properties, while vaccines receiving small doses of x-rays, even though these doses are more than sufficient merely to kill the organism, produce vaccines that are still toxic.

Journal of Comparative Neurology, Philadelphia

64 1184 (June 15) 1936

- Experimental Study of Thalamocortical Projection of the Macaque Monkey A E Walker Chicago—p 1
Evolution of Medial Geniculate Body J W Papez Ithaca N Y—p 41
Experimental Analysis of Pelvic Autonomic Ganglions in Cat A Kuntz and R L Moseley St. Louis—p 63
Studies of Living Nerves V Alcoholic Neuritis and Recovery C C Speidel Charlottesville Va—p 77
Experimental Studies on Afferent Innervation of Cat's Heart W A Nettleship Baltimore—p 115
Correlated Anatomic and Physiologic Studies of Growth of Nervous System of Amphibia XII Quantitative Relations of Spinal Cord and Ganglions Correlated with Development of Reflexes of Leg in *Amphystoma punctatum* Cope G E Coghill Philadelphia—p 135
Innervation of Teeth Analysis of Nerve Fiber Components of Pulp and Periodontal Tissues and Their Probable Significance A D Brashear Rochester N Y—p 169

New England Journal of Medicine, Boston

214 1229 1274 (June 18) 1936

- Trichinosis with Especial Reference to Changed Conceptions of Pathology and Their Bearing on Symptomatology G Blumer, New Haven Conn—p 1229
*Syndrome of Alkalosis Complicating Treatment of Peptic Ulcer Report of Cases with Review of Pathogenesis Clinical Aspects and Treatment H Jeghers and H H Lerner Boston—p 1236
Unusual Case of Nevus Vasculosus F H Baehr Springfield Mass—p 1244
Progress in Anesthesia in 1935 R. F. Sheldon Boston—p 1246

Alkalosis Complicating Treatment of Peptic Ulcer.—Jeghers and Lerner cite three cases of peptic ulcer in which treatment by the usual alkaline and Sippy regimen resulted in the development of hypochloremia and alkalosis. This syndrome is known to follow persistent pyloric obstruction. It is not so well appreciated that it may also develop without organic obstruction if alkaline powders are given in the presence of impaired ability of the body to utilize basic ions. Persistent vomiting, renal disease, anemia, hematemesis, low salt intake, excessive perspiration, liver disease and excessive doses of alkalis can all impair the acid-base regulating mechanism. Persons with impaired renal function are invariably sensitive to small doses of alkalis. It seems probable that alkalosis can develop in persons with normal renal function only if one or more additional factors besides excessive intake of alkalis are present. Persistent alkalosis can impair renal function by causing calcification or tubular nephritis. Nitrogen retention invariably accompanies alkalosis and hypochloremia. A characteristic clinical as well as laboratory picture develops which makes the diagnosis relatively easy. At first the symptoms may be vague, such as mild gastric disturbances followed by a distaste for milk, nausea and vomiting, associated with abdominal pain. The individual often shows peculiar mental deviations. Soon after, severe headache, quite frequently in the occipital region, or manifest as a sense of pressure on top of the head, may develop. Dizziness or a sensation of light-headedness, marked on motion of the head, commonly appears. Aching or cramplike pains in the muscles or joints are characteristic. Tingling sensations in the extremities may appear. Spasms and later definite spontaneous tetany may develop. The more severe cases often show slight fever, rapid pulse, slow respirations, flushed face with injection of the conjunctivae and dehydrated skin. Reflexes are usually hyperactive, and sensory hyperesthesia may develop. At times, rather than spastic phenomena the patient may show weakness, followed by prostration and drowsiness. Death follows eventually if treatment is not instituted. At the onset the urine is alkaline, increased in amount (occasionally up to 2,000 or 3,000 cc.), with low fixed specific gravity and often containing traces of albumin. Later the urinary output diminishes. The phenolsulfonphthalein test reveals a depression to as low as 10 per cent or less excretion in two hours. The blood chlorides may drop from 500 mg to a level of 350 mg per hundred cubic

centimeters Enough sodium chloride should be given to keep the chlorides at a high level The blood nonprotein nitrogen rises characteristically and often reaches values of 100 mg or more A valuable test in the diagnosis of alkalosis is the estimation of the alkali reserve of the blood, which usually shows a marked rise, especially in the more severe cases Sodium chloride therapy is highly successful

New Jersey Medical Society Journal, Trenton

33 327 384 (June) 1936

- Address of the President Prophecy of Medical Practice in the Future.
M W Newcomb Brown s Mills—p 333
*Polyglandular Disease G Crile Cleveland—p 336
The Medical Examination of Industrial Workers E E Evans Penns
grove—p 341
Goiter Surgery C G Heyd, New York—p 345
John Bull M D Personal Observations in England During March
1936 H S Read Atlantic City—p 352
Three Decades of Honorable Service. N B Van Etten New York—
p 358

Polyglandular Disease—Crile points out that there is no organ that stands by itself and functions as if it had rented space in the human body and ran a show to suit itself Every organ is tied up with other organs, and the organism as a whole functions by virtue of the various parts played by this or that organ All the organs are coordinated by the only tissue of the body that can be conditioned—the nerve tissue. Therefore it is impossible to think of nerve tissue, whether it be brain, spinal cord, a nerve fiber, the sympathetic chain or the sympathetic complex, as performing a function by itself alone. In attacking the various diseases peculiar to civilized man in particular, one should attack them by attacking a neuroglandular group rather than by an attack on a single organ. Exophthalmic goiter is a good example of a neuroglandular disease In twenty-three cases of primary exophthalmic goiter the author did a primary denervation of the adrenal and the entire disease disappeared, including the hyperplasia, sweating and emotionalism Neurocirculatory asthenia closely resembles hyperthyroidism It presents a pure example of a pathologic physiology in the adrenal-sympathetic system Therefore it should be cured by denervation of this system

New Orleans Medical and Surgical Journal

88 733 790 (June) 1936

- The Doctor and the Public C P Gray Monroe La—p 733
Stanford Emerson Chaille Dean Teacher and Friend J A. Danna,
New Orleans—p 737
*Autogenous Vaccine Therapy in Pediatrics C J Bloom New Orleans
—p 738
Use of Abduction Splints in Fractures of Humerus J W Faulk
Crowley La—p 746
Tonsillectomy by Diathermy (Electrocoagulation) M P Boebinger,
New Orleans—p 750
Advantages of Repairing Old Birth Canal Injuries at Time of Delivery
T B Sellers and J T Sanders New Orleans—p 755
Leiomyoma of Prostate Report of Case. J G Pratt New Orleans
—p 763
Caisson Disease (Compressed Air Disease Diver s Paralysis) L J
Bienvenu Opelousas La—p 767

Autogenous Vaccine Therapy in Pediatrics—Bloom used autogenous vaccines in forty-six cases of common cold, thirty-five of asthma thirty-three of pyelitis and eleven of furunculosis Cold vaccines gave either good or fair results in only 28.4 per cent of the cases Immediate protection is the exception to the rule Small initial with increasing doses not exceeding 1 cc. at frequent intervals and over a long period, are advocated. The seasonal change of the flora of the upper respiratory tract justifies additional observations as to what organisms shall be included and the further consideration of a perennial vaccine In selected cases, vaccines in bronchial asthma gave 25.7 per cent cures and noticeable improvement in 40 per cent The bacterial focus or foci of infection must be sought, the method of culturing should follow a definite routine in every case. Deductions warrant continued use of vaccines in the treatment of bronchial asthma of bacterial origin The result of vaccine therapy in the cases of resistant pyelitis in which other treatments except cystoscopy have been used with negative results gave a 45.5 per cent cure. Vaccines appear especially effective when more than one organism has been removed The treatment of pyelitis by vaccine should be encouraged and continued. There was a 100 per cent cure in the eleven cases of furunculosis.

Philippine Islands Med Association Journal, Manila

16: 203 264 (April) 1936

- Maternal Mortality of Manila. Honoria Acosta Sison Manila—p 203
Present Concept of Therapeutics of Malaria A Ejercito Manila—
p 207
Nephroptosis Among Filipinos J Eduque, A T Zavalla and B R
Diño Manila—p 221
Blindness Among Filipinos A R Ubaldo and C D Ayuyao Manila.
—p 223
Identity and Incidence of Flagellated Protozoan Parasite Found in
Human Urine Ana Vazquez Colet and M Tuboqui, Manila—
p 231
The Problem of Cross Connection Appeal to the Medical Profession
M Mañosa Manila—p 235
Treatment of Marked Retroversion of Uterus by Alfieri s Method F
Calderon Manila—p 243

16 265 328 (May) 1936

- Scientific Study of Population Problems S de los Angeles Manila—
p 265
The Test of Labor B Roxas and A Baens Manila—p 271
*Fatal Case of Paralytic Ileus Associated with Severe Strongyloides
Infestation Suggesting Internal Autoinfection J O Nolasco Cebu,
and C M Africa Manila—p 275
Apparatus for Extraction of Obstetric Forceps M Ortiz—p 285
Pathogenesis of Exophthalmic Goiter (Parry s Disease Graves Disease
Basedow s Disease) M M Gallardo Dumaguete—p 291

Ileus Associated with Strongyloides Infestation.—Nolasco and Africa report a fatal case of intestinal obstruction due to paralytic ileus associated with a severe infestation with *Strongyloides stercoralis* The discovery of filariform larvae in the muscular and serous coats of the jejunum, ileum, appendix, large intestine and liver tends to confirm the theory advanced by Gage, Ophüls and Nishigori that reinfection in strongyloidosis can take place in the intestine Traumatism was evident and was shown by marked congestion and swelling of the mucosa of the small intestine and the formation of small submucous abscesses in the large intestine. The vomiting and abdominal distention and tenderness with tympanism before death and the postmortem observations of intestinal obstruction without any apparent gross organic cause can be explained only by a massive invasion of the intestinal wall The weak condition of the patient and the stasis of the intestinal contents possibly induced a larger number of the infective forms to penetrate the intestinal wall That there was an overwhelmingly extensive infestation was also shown by the abundant larvae found in the feces at necropsy That the presence of the larvae in the deeper layers of the intestinal wall and liver was not due to postmortem migration is indicated by the presence of inflammatory changes such as tubercle formation around the larvae In spite of the usual absence of alarming symptoms, strongyloidosis must be regarded as a serious disease The patient s infestations had been observed since admission to this colony in June 1930 His death could not be attributed to any cause other than the heavy infestation with *Strongyloides*

Western J Surg, Obst. & Gynecology, Portland, Ore

44 313 386 (June) 1936

- Surgical Treatment of Facial Paralysis L Davis and D Cleveland.
Chicago—p 313
Maternal Mortality Study in Seven Cities of the Pacific Coast—1913
and 1934 T F Bell Oakland Calif—p 318
Abortion Deaths R E Watkins Portland Ore—p 338
Ectopic Gestation R O Shea Seattle—p 342
Toxemia Group C W Page Berkeley Calif—p 343
Puerperal Hemorrhage. C W Page Berkeley Calif—p 346
Induction of Labor C W Page Berkeley Calif—p 348
Septicemia. H A Stephenson San Francisco—p 349
Study of Maternal Mortality in San Francisco Oakland and Berkeley
1932 1933 and 1934 T F Bell Oakland Calif assisted by D A.
Dallas and A M Vollmer San Francisco and C W Page Berkeley
Calif—p 355
Lingual Thyroid Comprehensive Review Division VII M L McG
gomery San Francisco—p 373

Wisconsin Medical Journal, Madison

35 413 500 (June) 1936

- Postoperative Neurologic Complications H W Woltman Rochester
Minn—p 427
Spinal Cord Injuries E M Hammes St Paul—p 436
Fever Therapy in Tabes Dorsalis Multiple Sclerosis and Dementia Pa
lytica E D Schwade Milwaukee—p 446
Tularemia Etiology Diagnosis and Treatment S B Peskin Mad
—p 448

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1 1091 1142 (May 30) 1936

- Birth Control, Contraception and the So-Called Safe Period. J. Young —p 1091
Treatment of Myasthenia Gravis. L. Minski and A. B. Stokes —p 1095
Id. H. J. Wade —p 1099
Treatment of Amblyopic Eye. W. H. Summerskill —p 1101
Treatment of Fusospirillary Infection of Gums. C. B. Henry —p 1104

Indian Medical Gazette, Calcutta

71 181 244 (April) 1936

- Man Made Malaria in India. J. A. Sinton —p 181
Treatment of Neurosyphilis with Monkey Malaria. Preliminary Note. R. N. Chopra and B. M. Das Gupta —p 187
Bacteriologic Studies in Epidemic Dropsy. C. L. Pasricha, A. J. H. deMonte, K. Banerjee and S. Lal —p 189
New Type of Choleraephage—Type M. C. L. Pasricha, A. J. H. deMonte and S. K. Gupta —p 194
Description of Bacterium Pseudo-Carolinus. C. L. Pasricha and G. Panja —p 196
Pitfalls in Ophthalmic Practice. C. R. Chakraverti —p 199
A-O Tuberculin in Ophthalmology. B. P. Banaji —p 203
Response to Pilocarpine in Cases of Asthma. Dharmendra —p 204
So-Called Mystery Disease of Calcutta (Jhin Jhinia or Thar Tharia). R. N. Chopra and R. N. Chaudhuri —p 205
Technic for Putting Up Fracture of Clavicle. R. L. Raymond —p 209
Natural Spirillum Minus Infection in White Mice. R. Knowles, B. M. Das Gupta and S. Sen —p 210

Treatment of Neurosyphilis with Monkey Malaria.—Not having a suitable case of tertian malaria available at the time, Chopra and Das Gupta treated two patients suffering from optic atrophy, with a history of syphilis and a moderately positive Wassermann reaction, with monkey plasmodium. The first patient showed a marked refractoriness to infection with Plasmodium Knowlesi. After the initial inoculation there was a long incubation period, the temperature was never high and the infection died out spontaneously within a week. A second injection of 0.8 cc. of blood was tried without infection resulting whereas the same dose from the same animal given to the other patient at the same time produced alarming symptoms. The complete failure of the second injection may be ascribed to a degree of tolerance being acquired by the patient from the previous infection. In the second case there was a high temperature with a low parasite count similar to that seen in quartan infection, and marked cerebral symptoms developed which were easily controlled with small doses of atabrine and quinine. There is no doubt that the reaction of the pupils to light is more brisk and the mental condition of the patient has greatly improved. He is no longer apathetic and is now demanding to go to his home. His speech, though still blurred, is clearer than before. An ophthalmic examination showed that so far as the fields of vision and the appearance of the retina are concerned there is no change. The patient is being kept under observation. It appears that an attack of monkey malaria in human subjects confers immunity or a marked degree of tolerance to reinfection. How long this tolerance is maintained is now being studied.

Irish Journal of Medical Science, Dublin

No. 124: 145 192 (April) 1936

- The Growth of Populations. F. Kane —p 145
Juvenile Rheumatism and Prevention of Heart Disease. C. J. McSweeney —p 158
*Observations on Treatment of Tetanus. E. T. Freeman —p 166
Assistant Diagnosticians. J. T. Wigham —p 171
The Bundle-Branch Block Controversy. Survey of Literature. P. T. O'Farrell —p 175

No. 125: 193 240 (May) 1936

- Neonatal Mortality in Dublin. W. R. F. Collis —p 193
Mediastinal Gland Tuberculosis in Young Children. Dorothy Price —p 200
Calcium Metabolism in Relation to Disease. Ella G. A. Webb —p 209
Some Features of Calcium Metabolism. W. Sheldon —p 220

Observations on Treatment of Tetanus.—Freeman cites five cases of tetanus four with short incubation periods and one of intermediate length, in four of which recovery occurred

and one of which was fatal. The death was due to circulatory failure but was directly attributable to bronchopneumonia. Serum was given freely intravenously and intramuscularly. The dosage was from 160,000 to 200,000 units in each case. Chloral hydrate was used partly in one case. Phenobarbital, especially phenobarbital sodium, was employed in all the cases with excellent results. In the third case tribrom-ethanol was tried, with remarkable sedative effect. In the fourth and most convulsive case tribrom-ethanol was employed night and morning for thirteen days, producing almost continuous anesthesia. The dose given was midway between the total anesthetic dose and the obstetric dose for the patient's weight. This patient received in all 997 cc. of the drug. The result was excellent. In the fifth case it was employed by night for twelve nights. Feeding was chiefly by dextrose solutions of various kinds. With patience, especially when half awake, the patients could be induced to swallow slowly. The conclusions reached are that phenobarbital is of great value and much superior in tetanus to the older hypnotics, and that tribrom-ethanol appears to be a drug of inestimable value. It stops the spasm greatly, relaxes the rigidity, and substitutes sleep and rest for the most intense agony of body and anxiety of mind.

Medical Journal of Australia, Sydney

1 665-696 (May 16) 1936

- Approach to Interpretation and to Treatment of Psychoneuroses and Psychoses. C. I. McLaren —p 665
Some Aspects of Thoracic Surgery. P. S. Messent —p 670
A. J. Thomas's Modification of the Thomas Knee Splint. J. C. Storey and A. J. Thomas —p 675

Practitioner, London

136 669 796 (June) 1936

- Treatment of Patients with Abnormal Blood Pressure. J. Hay —p 669
Arteriosclerosis. General Considerations. G. Evans —p 679
*Abdominal Manifestations of Arterial Disease. C. E. Lakin —p 693
Cerebral Manifestations of Arterial Disease. D. McAlpine —p 705
Surgical Aspects of Arterial Disease. W. H. C. Romanis —p 717
Estimation of Blood Pressure and Its Relation to Life Assurance. R. Hilton —p 729
Investigation of Diseases of Salivary Glands. R. T. Payne —p 735
Interlobar Empyema. W. Broadbent —p 747
Spinal Anesthesia in Peptic Perforations. J. W. Riddoch —p 750
Physical Effects of Conception Control. F. J. McCann —p 752
Contraception in General Practice. E. F. Griffith —p 767
Favorite Prescriptions. No. VIII Pharmacopoeia of Brompton Hospital for Consumption and Diseases of Chest. W. E. Lloyd —p 777

Abdominal Manifestations of Arterial Disease.—Lakin asserts that in considering the abdominal manifestations of arterial disease it is essential to distinguish between the effects of disease of the abdominal aorta and its branches and a group of symptoms encountered in certain cases of disease of the coronary arteries of the heart. In recognizing cases of coronary occlusion in which pain is experienced within the abdomen rather than within the chest, the importance of an exact history both of the present and of any previous attack cannot be stressed too highly. It is exceptional for the pain to be entirely abdominal, and the sufferer in addition to his complaint of epigastric pain will often state that he also feels pain behind his breast bone. It may be possible to obtain a past history of retrosternal pain coming on after walking a distance and causing so much distress that the sufferer has to stand still till relief is obtained. In an attack the presence of dyspnea accompanying the abdominal pain would point strongly to a cardiac rather than to an abdominal cause. Examination of the heart may show characteristic abnormalities thus signs of enlargement may be present the first sound of the heart may be deficient in muscular tone, or possibly a pericardial rub is audible. A sphygmomanometric reading reveals an abnormally low blood pressure, and specific electrocardiographic observations such as inverted T waves, a P-dee curve or intraventricular or auriculoventricular block may confirm the diagnosis. Within twenty-four hours of the onset pyrexia and leukocytosis are usually to be found. Acute coronary occlusion with cardiac infarction when giving rise to abdominal pain may be confused with acute abdominal conditions, such as perforated peptic ulcer, biliary colic or acute pancreatitis, yet an exact history and careful clinical examination usually suffice to make the distinction fairly certain. Pain and vomiting may be encountered in either but complete absence of rigidity in the abdominal muscles would be strongly in favor

of a cardiac origin of the pain. There are cases in which angina and cholecystitis coexist and in which surgical treatment of the diseased gallbladder has led to some alleviation of the anginal attacks. In the group of cases in which cholelithiasis gives rise to symptoms resembling abdominal angina the existence of dyspnea would strongly favor a coronary origin for the pain, whereas rigidity of the right rectus abdominis would inculpate the gallbladder. A careful examination of the heart should be carried out in all such cases and a cholecystogram may be of service.

Bull et Mém de la Soc Med des Hôpitaux de Paris

52 873 934 (June 8) 1936

- *Septicemia with *Streptococcus Viridans*. R. A. Marquary and Mlle S. Huguet.—p. 874
- Clinical and Histopathologic Study of Naimism in Course of Chronic Nephropathy. Case. E. Lesne, C. Oberling and C. Launay.—p. 881
- Botulism Following Ingestion of Spinach. Antitoxin and Toxoid Treatment with Recovery. Two Cases. Gilbert Dreyfus, A. Ravina, J. Weill, E. Orinstein and Wimphen.—p. 891
- Blood Protein Dysequilibrium in Course of Anaphylactoid States. Treatment with Intradermal Autoglobulin Therapy. G. Aubry, Thiodet and Ribere.—p. 896
- Rheumatismal Colitis. Case. R. A. Gutmann and Robert Wallich.—p. 898
- Splenic Infantism of Cooley Type. M. Sendrail, A. Lyon and J. Lascerre.—p. 902
- *Diabetes of Mature Age or, Better, Dysglycemias of Old Age. M. Renaud and Petit-Maire.—p. 905

Septicemia with *Streptococcus Viridans*—Marquary and Huguet describe a clinical syndrome caused by *Streptococcus viridans* and characterized by a septicemia with streptococci without involvement of the heart and carrying usually a favorable prognosis. These septicemias should be differentiated from those caused by hemolytic streptococci, clinically as well as bacteriologically. A case was reported of a woman, aged 30, in whom the disease was characterized clinically by two periods. The first, from the first to the ninth days, was characterized by sudden onset, even temperature, herpes and no other objective signs. The second from the ninth to the twentieth days, was characterized by oscillating temperature, splenomegaly, a splenopneumonic syndrome and for one week purulent expectoration. *Streptococcus viridans* was found in the blood on the ninth day of the disease, but search for the port of entry for the streptococcus was not satisfactory, although it was most probably the tonsils. The prognosis of streptococcal infections of this nature is usually good and the course follows neither that of a bacterial endocarditis nor that of a hemolytic streptococcal infection.

Dysglycemias of Old Age—According to Renaud and Petit-Maire, diabetic conditions are encountered frequently in old age and form a perfectly homogeneous group in which clinical and etiologic individualization offer a benign prognosis. Several case reports indicate that most of the patients of this age group who develop glycosuria fall in the class of those having a syndrome rather than a disease, which the authors prefer to call dysglycemia. These patients display common characteristics from the standpoint of appearance, discovery only during a routine examination, association with vascular, renal and nervous degenerations and benign evolution and prognosis. Treatment should be directed toward correcting the functional disorders or at least lessening their frequency and toward regulating the manner of life of the individual, especially his activity and nutritive regimen.

Revue Med.-Chir des Maladies du Foie, Paris

11 177 256 (May-June) 1936

- Bengal Rose Test and Blood Hemolysis. M. Naville.—p. 177
- *Value of Bilirubin Test for Diagnosis of Hemorrhagic Diseases of Nervous System. G. Boudin and E. Panayotopoulos.—p. 204
- Investigations on Endocrine Function in Diabetes Mellitus. L. Corail, L. Antonietti and J. Paillass.—p. 210
- Use of Olive Oil Duodenally in Vascular Disorders. L. Isemeine and J. J. Blanc.—p. 219
- Archie Abscess of Liver in Tropical Countries. Emetine Treatment. C. Massias.—p. 229

Bilirubin Test in Diagnosis of Hemorrhagic Diseases—Boudin and Panayotopoulos performed the classic direct van den Bergh reaction on the serum of a number of patients with hemorrhagic diseases of the nervous system to determine

the importance of bilirubin in differentiating between cerebral hemorrhage and cerebral softening. The results of these tests on thirteen patients were inconstant. In any case, the test seemed to have no special value in the differential diagnosis between hemorrhage and cerebral softening. In spite of this negative conclusion it was possible to say that, if the bilirubin test was strongly positive, hemorrhage was likely.

Schweizerische medizinische Wochenschrift, Basel

66 609-632 (June 27) 1936

- *Significance of Bronchoscopy and Bronchoscopic Therapy for Diagnosis and Treatment of Bronchial and Pulmonary Diseases. A. Seeliger.—p. 609
- Researches on Pathogenic Action of BCG. B. Galli-Valerio and M. Bornand.—p. 612
- *Chloride Content of Cerebrospinal Fluid and Blood in Course of Tuberculous Meningitis. E. Martin, R. S. Mach and R. Junet.—p. 616
- Anatomy, Histology and Physiology of Intrathoracic Organs from Point of View of Division of Adhesions. O. M. Mistal.—p. 619
- Use of Antipyretics in Treatment of Pulmonary Tuberculosis. F. Grandjean.—p. 621
- Modification of Deviation of Complement by Admixture of Blood. M. Goldstein.—p. 624

Bronchoscopy in Diagnosis and Treatment—Seeliger shows that, owing to improved technique and instrumentation, the indications for bronchoscopy have been greatly increased. Every sign of bronchial obstruction makes bronchoscopy advisable. He thinks that, whenever there is coughing, dyspnea, asthma-like wheezing and contraction of the ribs, bronchoscopy should be resorted to, for in such cases a foreign body may be detected and diagnostic errors avoided. He cites a number of cases in which foreign bodies were overlooked and the patients were treated for a long time on the basis of an erroneous diagnosis. He shows that bronchoscopy cannot be dispensed with in pulmonary atelectasis. He differentiates between true, acute atelectasis and secondary atypical atelectasis. He says that bronchoscopy has therapeutic value only if it reveals a growth or an obstruction, or if a complicating suppuration has developed that has to be drained. Its diagnostic significance is of much greater importance, particularly in cases in which the advisability of a thoracoplastic intervention or of a lobectomy has to be decided. The author discusses thoracoscopotherapy in pulmonary abscesses and in bronchial dilatations. Twelve cases of acute putrid pulmonary abscesses were treated with this method. The abscesses had existed for from four to eight weeks and the treatment required from six to twelve weeks. The number of bronchoscopic sessions varied between four and eight. The author says that bronchoscopotherapy as a rule effects cure in from 70 to 75 per cent of the acute pulmonary abscesses. However, even if bronchoscopy does not effect cure, it is a necessary preparatory measure for a surgical intervention. This applies particularly to the chronic abscesses, in which cure is much more difficult than in acute abscesses. In bronchial dilatations, the therapeutic results of bronchoscopy vary considerably. Some bronchiectases, particularly the relatively new ones that developed as sequels to pulmonary abscesses were cured. In a material of fifty cases complete anatomic cure was obtained in 14 per cent and improvement in 80 per cent, while in 6 per cent the treatment was a failure. Discussing the use of bronchoscopy in pulmonary tuberculosis the author says that it was long regarded as inadvisable. His observations do not bear this out, except that he advises against it during acute exacerbation and hemoptysis. Bronchoscopy gives exact information about the condition of the tracheobronchial tree and it may be of therapeutic value in the removal of intrabronchial tuberculous formations or in the aspiration of a complicating suppuration.

Chloride Content of Blood in Tuberculous Meningitis—Martin and his associates investigated the chloride content of the cerebrospinal fluid and of the blood in patients with tuberculous meningitis. On the basis of their observations they reach the following conclusions: 1. There is a relationship, but not a mathematical one, between the chloride content of the cerebrospinal fluid and that of the blood. 2. The decline in the chloride content of the cerebrospinal fluid during meningitis is explained by the reduction of the blood chloride. This decline which is particularly great in the course of tuberculous meningitis is explained by the considerable hypochlo-

emia which attains values that are exceptional for clinical conditions. 3 Parallel with the hypochloremia there appears in tuberculous meningitis a hypochloruria which in some cases may have diagnostic value. 4 The reduced chloride contents of the cerebrospinal fluid and of the blood in tuberculous meningitis are not the result of a loss but rather the consequence of a retention of chlorides in the tissues.

Minerva Medica, Turin

1 585 608 (June 23) 1936

Tuberculosis in Prostitutes F B Omizzolo—p 585

Röntgen Aspects of Collapsed Lung Following Artificial Pneumothorax L Menozzi—p 590

*Vagal Mechanism of Hypoglycemia Secondary to Administration of Hydrochloric Acid by Mouth F Romeo—p 596

Hypoglycemia Secondary to Administration of Hydrochloric Acid—Romeo made determinations of glycemia in patients suffering from hypochlorhydria or anachlorhydria but who were otherwise normal. All determinations were made on patients with a fasting stomach and repeated every fifteen minutes during the two hours following administration of a certain treatment that varies in the three different days of the test. The treatment consisted in oral administration of 150 cc. of a 6 per cent hydrochloric acid solution on the first and second days. On the second day, however, it was preceded by an injection of 1 mg of atropine. On the third and last day the patients were given only an injection of 1 mg of atropine. The administration of hydrochloric acid by itself produced hypoglycemia, which failed to take place when the acid was given after the atropine injection. The simple injection of atropine produced hyperglycemia. The author states that in normal conditions the gastric wall is directly stimulated by hydrochloric acid during the process of digestion. The stimulation produces gastric reflexes, which are transmitted through the vagus nerve to the pancreas. The reflex stimulation of the pancreas results in an increased secretion of insulin by which glycemia is maintained within normal limits. The threshold of the production of the gastropancreatic reflexes is lowered in patients suffering from hypochlorhydria and the reflexes take place by stimulation of a hypochloric gastric secretion. The increased concentration of hydrochloric acid in the gastric secretion, following the administration of the acid, results in the increase of gastropancreatic reflexes, in which hyperinsulinemia and consequent hypoglycemia originate. As atropine paralyzes the parasympathetic the vagal reflexes fail to reach the pancreas when hydrochloric acid is given after the atropine injection. These facts account for the lack of modification of glycemia and the presence of slight hyperglycemia when the patients were given atropine followed by hydrochloric acid. The presence of hyperglycemia following administration of a single injection of atropine solution points out the part of the blockage of the vagal reflex in the production of hyperglycemia in these patients. The author states that his results indicate the vagal nature of the gastroduodenopancreatic reflexes.

Policlinico, Rome

43:1315 1354 (July 20) 1936 Practical Section

*Intraspinal Injections of Phenolsulfonphthalein in Treatment of Endogenous Chronic Arthritis. G Boschi—p 1315

Influence of Seasons and Temperature on Tolerance of Animals of Laboratory to Fish Poison M Pergola—p 1318

Echinococcus Cysts with Neoplastic Degeneration Case F Amantea—p 1321

Phenolsulfonphthalein in Treatment of Arthritis—Boschi reports satisfactory results with intravenous injections of phenolsulfonphthalein in the treatment of endogenous chronic arthritis. The injection is given by the following technic. A few cubic centimeters of cerebrospinal fluid is removed just before the injection is made. The injection is prepared by dissolving between 3 and 9 mg of phenolsulfonphthalein in 1 or 2 cc of double distilled water and then made slightly alkaline. Just before the intraspinal injection is made, 1 cc of cerebrospinal fluid is withdrawn and added to the solution of phenolsulfonphthalein. The injection produces high fever which lasts for a few days in the course of which the development of arthritis is greatly and favorably modified. The pain

ful inflammatory and muscular disturbances subside and the patient completely recovers at the subsidence of the febrile reaction. One injection usually is sufficient, but it is advisable to repeat it within two or three weeks as a consolidation for the results of the first injection. None of the author's patients had a recurrence.

Prensa Medica Argentina, Buenos Aires

23 1463 1516 (June 17) 1936

*Allergic Gastropathy with Pyloric Syndrome C Bonorino Udaondo and L V Sanguinetti—p 1463

Rheumatic Fever Forms and Treatment. J J Beretervide—p 1467

Dyslopia of Ascending Cecum Cecum in Left Hypochondrium Case

Teresa Malamud—p 1473

Changes of Vision by Lesions of Left Occipital Lobe M Balado

E Adrogue and Elizabeth Franke—p 1475

Table for Instruments to be Used in Operations V J Bertola—p 1500

Question of Pneumoperitoneum in Pulmonary Tuberculosis S Diaz Malaver and A O Purnik—p 1500

Uremia in Chloropenia Complicating Gestosis J C Lascano—p 1503

Allergic Gastropathy with Pyloric Syndrome—Bonorino Udaondo and Sanguinetti's patient, aged 29, suffered from asthma in childhood. At present he was suffering from urticaria and pain in the epigastrium and a condition that gave the clinical and roentgen picture of complete spasmodic occlusion of the pylorus. Injections of 0.5 mg of atropine twice a day controlled the condition in three days, after which he was given 10 cc of his own blood twice a week until he had received fifteen injections. One year later the disorder recurred, but after the patient had been treated by the same method as before it subsided. After this the patient was successfully treated by nonspecific sensitization with epinephrine, peptones and a milk diet. The authors state that calcium, atropine and epinephrine treatments are useful as coadjuvants of allergic gastropathies but that desensitization does not give the best results in controlling the allergic condition. Nonspecific sensitization by autohemotherapy, protein therapy and pepsin therapy, in association with drugs regulating the sympathetic system and exclusion of certain foods from the diet, are of benefit to the patients. However more interesting and promising are the results of specific sensitization as reported by Thiers and Chevallier in the *Presse medicale* May 2, 1936. The treatment in short consists in the subcutaneous injection of an antigen obtained by ultrafiltration of the substance to which the patient has an allergic reaction. This substance is removed from the stomach by catheter one hour after having been ingested and then prepared by ultrafiltration, dilution of the ultrafiltrate in artificial serum, and neutralization and finally tyndallization of the product obtained. This treatment produces specific sensitization.

Semana Medica

43 1949 2020 (June 25) 1936 Partial Index

Acute Anterior Poliomyelitis Problem of Contagion. R. Cibils Aguirre—p 1949

Grave Ulcerous Colitis Technic of Ileostomy R Finochietto—p 1958

Parulent Pleurisy in Infants Cases M J Del Carril and I Diaz Bobillo—p 1974

*Early Clinical Diagnosis of Tumors of Testicle. G Iacapraro—p 1981

Cranial Trauma Surgical Treatment Surgeon—p 2003

Influenzal Polyneuritis with Acute Ataxia Cases A Cicinelli and M Ilari—p 2006

Diagnosis of Cancer of Testicle—Iacapraro states that early in the development of testicular cancer there is an asymptomatic period characterized by the presence of a small zone of induration in an almost normal testicle with normal epididymis, spermatic cord, tunica vaginalis and scrotum. As the induration may also be caused by syphilis, the failure of intense antisyphilitic treatment, for about ten days, indicates immediate surgical examination of the testicle, which is made under local anesthesia and includes small incision of the scrotum, exteriorization of the testicle, small incision of the tunica vaginalis and visual examination of the tunica albuginea, which in testicular cancer is abnormally vascularized. The diagnosis of tumoral testicle is made by the lack of adhesion of the tunica vaginalis to the testicle and the normal condition of the membrane and of the epididymis, detected by pinching these structures between the thumb and the forefinger. If there is no abnormal vas-

cularization of the tunica albuginea, exploratory orchotomy and biopsy are indicated. Immediate castration is indicated (1) if the tunica albuginea is abnormally vascularized and (2) in cases of enlarged testicle the size and character of which were not modified by intense antisiphilitic treatment. The author emphasizes the importance of early diagnosis and treatment of testicular cancer because the development of the tumor is simultaneous with that of metastases to the semilunar and aorticorenal ganglions through the lymphatic routes, as soon as ganglionic metastases exist, treatment is useless. Sometimes roentgen irradiation results in reduction of the tumor and its complete disappearance, but it does not modify the course of progressive cachexia. Roffo's test gives only 50 per cent of positive results in cases of testicular cancer. The patients in the author's group were seen late in the development of cancer, when the tumor was already present and supra-abdominal adenopathies were manifested, that is, at a time when satisfactory results are not obtainable.

Deutsches Archiv für klinische Medizin, Berlin

179 1112 (May 30) 1936 Partial Index

- *Leads from Thoracic Wall in Clinical Electrocardiography H. Hecht—p 1
- *Qualitative and Quantitative Thrombocytic and Leukocytic Pictures in Tetanus J. Arneith—p 51
- *Tumor Cells in Sternal Puncture Demonstration of Metastases of Malignant Tumors in Bone Marrow K. Rohr and R. Hegglin—p 61
- Bilateral Thrombosis of Renal Veins in Adults L. Heilmeyer and O. Lippross—p 80
- Rest Carbon and Some Carbon Containing Substances in Deproteinized Gastric Juice F. Diehl—p 86
- Total and Neutral Chloride Contents of Gastric Juice L. von Berkesy—p 99

Leads from Thoracic Wall in Clinical Electrocardiography—Hecht shows that a number of electrocardiographic curves obtained from the customary leads cannot be subjected to an exact clinical evaluation. The question arises whether with leads from the thoracic wall it will be possible to explain these obscure conditions. Of the various systems that have been devised recently to take leads from the thoracic wall, the author considers that of Wilson the best and he suggests that a fourth and fifth lead be added to the customary three. He regards as especially suitable for the leads (1) the third rib at the right sternal edge (fourth lead near the right side of the heart, over the base and near the auricle), (2) the sixth intercostal space in the left anterior axillary line (fifth lead near the left side of the heart, over the apex and distant from the auricle). The author found that, with the aid of these two leads, normal hearts always produce the same typical curves, regardless of whether they are of the levotype, the dextrotype or of the normal axial position. The pathologic heart, however, shows over the thoracic wall entirely different conditions. Thus it is always possible to differentiate the "predominating curves" into those of simple deviation of the axis of the heart of normal persons and those indicating pathologic changes of the myocardium in patients with heart disease. The fourth lead is near the auricle, whereas the fifth lead is nearly a pure ventricular electrocardiogram. Beginning changes of T and of ST waves for instance in auricular fibrillation, can be clearly demonstrated in the fifth lead. In addition to this, the new leads make it possible to differentiate more clearly the onset and extent of the toxic impairment of the myocardium (digitalis). The fourth lead, which is near the auricle, demonstrates clearly biphasic P waves. In twenty-two patients in whom the electrocardiographic aspects conflicted with the clinical examinations the new leads clarified matters in that they revealed conditions which corresponded to the clinical aspects.

Thrombocytic and Leukocytic Pictures in Tetanus—Arneith maintains that there exists in tetanus no neutrophilic stage of defense with deviation to the left. This indicates that the toxin of tetanus (in contradistinction to most other infectious diseases) has no neutrotropic affinity. The qualitative blood picture of the lymphocytes shows likewise a different behavior in tetanus than in the other infectious diseases in which they usually show a deviation to the right. In tetanus, the lymphocytes show, in contradistinction to the neutrophils, a decided deviation to the left usually with simultaneous increase in their absolute values. The author describes the

behavior of the thrombocytes in several cases of tetanus. His studies on the thrombocytes revealed that the toxin of tetanus does not cause great qualitative changes. There is only a slight deviation to the left (in the direction of the young forms), in that the larger roundish forms and the simple longish forms show a slight increase. In addition to this there is a deviation to the left as far as the size of the thrombocytes is concerned ("macroreaction").

Tumor Cells in Sternal Puncture—Rohr and Hegglin say that in their study of bone marrow specimens, which were obtained by sternal puncture, they often observed cells and groups of cells that are found neither in the normal marrow nor in the marrow of patients with diseases of the blood. Careful studies revealed that some of these cells had the characteristics of tumor cells. The authors resorted to puncture of the sternum in seventy-four cases of malignant tumors, of which twelve showed metastases in the bone system. In ten of these twelve the sternal punctate contained tumor cells, but in the two other cases the demonstration failed, in spite of the fact that the necropsy demonstrated sternal metastases. The authors classify tumor cells in the sternal punctate in the parvicellular and macrocellular types. Parvicellular types are found especially in cases of bronchial carcinoma, macrocellular types mostly in carcinomas of the prostate and of the stomach. However, the tumor cells in the sternal punctate permit no definite conclusions as regards the location of the primary tumor.

Jahrbuch für Kinderheilkunde, Berlin

140 293 348 (May) 1936

- Further Studies on Werlhof's Morbus Maculosus E. Schiff and C. Hirschberger—p 293
- Cervitamic Acid Metabolism in Children F. Widenbauer—p 297
- *Reticulocyte Count in Blood Diseases During Childhood W. Heuberg—p 311
- *Clinical and Etiopathogenic Aspects of Chorea Minor O. Kröner—p 329

Reticulocyte Count in Blood Diseases in Children—According to Heuberg, the clinical significance of reticulocytes is still in dispute, but the majority of investigators agree with Naegeli, who sees in their appearance the most reliable and earliest sign of a hyperfunction of the bone marrow. In accordance with this they are regarded as one of the most important criteria of blood regeneration in anemias and of the regenerating action of various physical, hormone and chemical therapeutics. Following a discussion of the factors that increase the reticulocytes, of the morphologic characteristics of the reticulocytes and of the technic of staining and counting them, the author gives his attention to the various disorders of childhood, in which the regenerative activity is indicated by fluctuations in the number of the reticulocytes. First he discusses cow's milk anemia, giving the clinical history of two typical cases. In one case the initial value of the reticulocytes was relatively high and, in accordance with this, the increase during the process of recovery was comparatively slight. In the other, rather mild, case the stimulus seemed too slight to tax the reticulocyte reserves noticeably. The author discusses a case of nonregenerative anemia in idiocy. The anemia developed after several years of an exclusive cow's milk diet, the child refusing any other food, and terminated fatally. In this case the number of reticulocytes was comparatively small (only 15 per thousand before death). The author thinks that the prolonged existence of the cow's milk anemia and the extreme depletion of the iron depots was the reason the anemia assumed secondarily a nonregenerative character. In goat's milk anemia he found that blood regeneration was earlier and more severely inhibited than in feeding with cow's milk. Goat's milk anemia responds noticeably to liver therapy, and the rise in reticulocyte values is occasionally greater than during the remission in pernicious anemia. In a case of anemia resulting from nutritional disturbances, a considerable increase in reticulocytes was observed simultaneously with the improvement in the dyspepsia. In celiac disease although the anemia was rather mild there was a considerable increase in reticulocytes soon after treatment was begun. In postinfectious anemia the improvement was likewise accompanied by a rise in the reticulocyte count. Observations in cases of hemolytic icterus and hemolytic anemia corroborated reports in the literature in that extremely high reticulocyte values were noted. The author says that pernicious anemia is the only type of anemia in which it

reticulocytes do not show higher values. However, as soon as remission sets in they increase greatly. In a case of lymphatic leukemia that terminated in death the reticulocyte count was low (12 per thousand) in spite of the severe anemia that existed. In children with exudative lymphatic diathesis the reticulocyte count, like the anemia, remained stationary for a considerable period.

Chorea Minor—In a study of 122 cases of chorea minor, Kröning reached the following conclusions: 1 Chorea minor is a neuro infection of independent etiologic significance. 2 The viruses of chorea and of rheumatism are related or even identical. This is indicated by the frequent concurrence of chorea and rheumatism, the great incidence of the disorders during the spring months and in children between the ages of 8 and 12 years, the pathologic changes in the heart and pharynx, identical blood pictures and Aschoff's nodules. 3 In consideration of the uncertainty and variety of the bacteriologic observations in chorea minor, it is impossible to speak of a specific organism for this disorder. 4 The rheumatic virus has the greatest choreogenic action, but other viruses may cause chorea by their exacerbating action on rheumatism. Toxic chorea is a choreatic syndrome that can be produced by various toxins. 5 The reaction of the nervous system that is the basis of the development of chorea minor is of an allergic nature, as in the case of rheumatic infections. 6 Predisposing factors for the development of chorea minor are heredity, poor living conditions, tonsillitis and other conditions that reduce the resistance of the organism. 7 The chorea virus is characterized by considerable dispersion adsorption and neurotropism. The dissemination of the virus in the central nervous system is possible in two ways, by the cerebrospinal fluid and hematogenously. 8 In chorea minor the process is not limited to the striatal apparatus and the cerebellar tract but spreads to the entire nervous system, cerebral cortex, cerebellar system, brain stem and nerve trunks. 9 The hyperkinesis is caused by the action of the virus, the shifting of the threshold for motor stimuli and the constitutional characteristics of the organism. 10 In addition to the infectious cause, a hormone factor plays a part in the pathogenesis of chorea minor (high incidence of the disorder in girls, in pregnant women and during the spring months). 11 The therapy of chorea minor is anti-infectious, sedative and symptomatic.

Zentralblatt für Gynäkologie, Leipzig

60: 1265-1328 (May 30) 1936

*Acute Pulmonary Edema During Birth and Birth Shock. E. Hesse—p. 1267

Extra Annual Pregnancy. H. Huckel—p. 1276

*New Symptom for Retention of Placental Remnant. V. Föderl—p. 1283
Corpus Luteum as Corpus Liberum in Abdominal Cavity. K. Podleschka and F. Kriegstein—p. 1285

Fibromyoma of Tube. W. Schmisch—p. 1290

Unilateral Absence of Adnexa. S. Schwarz—p. 1292

Acute Pulmonary Edema During Birth.—Hesse points out that under the term "acute pulmonary edema in pregnancy" a few cases have been reported in which acute pulmonary edema developed with more or less severe symptoms of shock, although there were no signs of cardiovascular disease or of eclampsia. He gives the histories of three fatal cases in which the necropsy revealed acute pulmonary edema. His cases show the following typical symptoms. During parturition or immediately after delivery, there appears a threatening collapse with severe circulatory disturbance, cyanosis, cold sweat, small pulse, dyspnea, pulmonary stasis and pulmonary edema but the patients do not lose consciousness or have convulsions. The author points out that these symptoms correspond to the clinical aspects of so-called toxic shock. He says that, in contradistinction to shock caused by nervous reflex, secondary wound shock can be traced to the so-called capillary toxins. He thinks that the theory of the elicitation of shock by capillary toxins explains the clinical processes during shock, namely, failure of the circulation in case of intact heart and, in spite of adequate central vasomotor regulation, pallor, dyspnea, pulmonary edema, inspissation of the blood, disturbances in the coagulation and the formation of edema. He points out that, if the reported cases are compared with this symptomatology, acute pulmonary edema during birth can be classified with the conditions of true shock.

Symptom of Retention of Placental Remnant.—Föderl produces maximal contraction of the uterus by intravenous injection of posterior pituitary extract, then grasps the uterus as in Crede's method and by lateral and axial movement of the four fingers that are at the posterior uterine wall a careful palpation is made of the posterior wall, the lateral portions and the tubal corners. The fundus uteri, its anterior wall and the adjoining lateral portions are palpated in such a manner that, while leaving the hands in the position as in Crede's maneuver, the free hand of the examiner explores these portions by lateral movements with the finger tips. If the uterus has the same compactness everywhere, the test is negative. However, if a depressed area or an area of reduced compactness is felt, a placental remnant has been retained. The method permits not only the detection of comparatively small remnants but also their location, and it is not dangerous for the patient. The author concludes that this test should be made in all cases of postpartum atony and whenever the inspection of the placenta makes the retention of a placental remnant seem possible.

Wiener klinische Wochenschrift, Vienna

49: 769-800 (June 19) 1936 Partial Index

*Variability of Intestinal Bacteria and Its Etiologic Significance for Enteric Disturbances in Nurslings and Children. A. Reuss and A. Hassmann—p. 769

Injuries by Strong Current and Vascular System. P. Huber—p. 771

Serologic Diagnosis of Gonorrhea and Tuberculosis in Existing Seropositive Syphilis. R. Brandt—p. 775

Treatment of Syphilis and Gonorrhea with Artificially Produced Fever. W. M. Simpson—p. 779

Unilateral Absence of Ovary and Uterine Tube in Light of Biologic and Anatomic Knowledge. J. Lariachneider—p. 784

*Clinical Method of Blood Culture for Demonstration of Organisms in Circulating Blood. H. Reichel—p. 784

Variability of Intestinal Bacteria in Nurslings.—Reuss and Hassmann describe investigations that caused them to ascribe to the variability of intestinal micro-organisms an important part in the development of enteric disturbances and of the so-called alimentary disturbances in nurslings. They gained the impression that the group of paracoli bacilli, which, standing between coli and paratyphoid, probably develop by variation and represent either temporary or permanent modifications, are an important factor in the alimentary-infectious etiologic complex. Their more or less toxic (antigenic) action could be demonstrated by different methods, by cutaneous tests, by the action on the surviving rabbit intestine and by agglutination reactions. Further it was demonstrated by culture experiments as well as by observations on animals that such mutations from the coli to the paracoli group take place within the intestine. There develop pathogenic and contagious modifications, which in turn become the source of ectogenic infections. It is probable that this mutation takes place in nurslings usually by way of the so-called endogenic infection of the small intestine, under the influence of alimentary flora. For this reason the authors think that the hitherto strict differentiation between nutritional disturbances of alimentary and of infectious origin should be dropped. The ectogenic infection with paracoli strains seems to be most effectively controlled by the administration of lactic acid milk. However, it has yet to be clarified to what extent endogenic mutation can be influenced by the composition of the food. The authors think that the clinical significance of the variability of the bacteria goes far beyond the problem that has just been touched on. They call attention to the sudden appearance of a case of scarlet fever, without any indications as to the source of infection. They think that in such cases the assumption of a modification of a streptococcus strain might be more justified than the search for a bacillus carrier, and that similar considerations might be justified in erysipelas and in diphtheria.

Demonstration of Organisms in Blood.—Reichel shows that for the diagnosis of endocarditis lenta the demonstration of the organisms in the circulating blood (usually Streptococcus viridans) is of great importance. He developed a method that is simple enough to be used by the physician without especial training in bacteriologic studies. Into each of two tubes (filled with 10 cc. of bouillon) he places a blood specimen (15 cc. into one, 2.5 cc. into the other). For greater exactness he

recommends the use of duplicate tubes (four in all). The bouillon tubes are placed in the incubator (at 37 C.) After several hours it can be observed that the erythrocytes have settled in the curvature, without the formation of a solid clot. Above the erythrocytes there is a veil of fibrin. Positive cultures show, after from eighteen to twenty-four hours (in rare cases not until the third day), bacterial cultures in the veil of fibrin. If too much blood has been placed in the tube it forms a clot, and if too little has been used the fibrin veil is absent and the bacterial colonies are on the sediment of erythrocytes. If the correct quantity of blood is used there always forms a fibrin cloud in which the organisms grow into macroscopically visible colonies. After the colonies have grown to maturity, the micro-organisms can be brought to more abundant growth by simply shaking the test tube or by transfer to blood agar or other culture mediums. The author asserts that in cases of endocarditis lenta this procedure gives positive results even if the blood slide remains sterile.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

May 30 1936 (No. 10) pp. 721-800 Partial Index

Etiology and Pathogenesis of Ulcerative Disease of Stomach L. S. Girshberg—p. 729

*Clinical Roentgenologic Method of Recognition of So Called Chronic Colitis S. M. Ryss and E. F. Rotermel—p. 733

Magnesium Sulfate as Narcotic in Psychiatric Practice E. M. Maidanskiy and A. V. Semichov—p. 739

Mycosis of the Nail and Campaign Against It V. N. Levitan—p. 744

Blood Transfusion in Dermatology E. S. Kalkind—p. 750

Treatment of Enterobiosis V. Tarasov—p. 752

Study of Chronic Colitis—Ryss and Rotermel present a clinical and roentgenologic study of 100 cases of chronic colitis. A careful history, palpation of the intestine, examination of feces after a three-day diet of Schmidt including the determination of ammonia and of organic acids, and a roentgenologic study of the mucosal relief of the large intestine according to the method of Knothe were carried out in each case. The authors divide their material into three groups: (1) dyskinesia, (2) colitis and (3) enteritis. They designate as dyskinesia a syndrome characterized by motor disturbances of the intestine without an accompanying morphologic alteration of the mucosal relief. In a group of forty-four patients presenting dyskinesia with a duration of the condition of from one to ten years, thirty-four suffered from obstinate constipation, in seven constipation alternated with diarrhea, in one there were periodic diarrheas and in two the intestinal habit was normal. Thirty-two had attacks of colic. Functional disturbances of the vagal-sympathetic nervous system were present in twenty-eight. Feces were normal in thirty-four. Roentgenologic studies of the mucosal relief of the large intestine revealed no pathologic alterations. Thirty-one cases were diagnosed as colitis on the basis of the clinical history, examination of the feces and roentgenologic observations. The clinical symptoms were those of constipation alternating with diarrhea, diarrhea, tenderness along the course of the large intestine—spontaneous or elicited by palpation—splashing sound over the cecum and hypertonic state of the intestine. The earliest morphologic alteration in the intestinal mucosal relief in these cases is a widening of the mucosal folds and loss of autoplasmic function of the folds. The cases of acute colitis give a more characteristic picture with irregular interruptions in the markedly widened mucosal folds, fine starlike shadows and niches. The widening of the mucosal folds is caused by edema while the starlike shadows and niches represent ulcerations. In the third group of enteritis the roentgenologic studies revealed no anatomic alterations in the large intestine though its behavior was that of the irritable hypertonic type. The authors conclude that roentgenologic study of the mucosal relief is valuable in establishing the segment involved and the presence and the degree of morphologic and functional alterations of the large intestine. The study of feces establishes the degree of functional disturbances of the various segments of the large and small intestine. They suggest that dyskinesia of the large intestine based on functional disturbance of the intestine in the absence of inflammatory alterations of its mucosa be considered an independent clinical syndrome.

Acta Medica Scandinavica, Stockholm

89 1228 (June 12) 1936 Partial Index

Gastric and Intestinal Mucus: Its Properties and Physiologic Importance W. N. Boldyreff—p. 1

*Further Experiments with Method to Secure More Abundant Growth of Tubercle Bacilli G. Wihman—p. 28

*Liver Diuresis as Result of Rhythmic Function of Liver F. Gerritzen—p. 101

Pathophysiology of Obesity S. Leites and A. Agaletzkaia—p. 199

An Abundant Growth of Tubercle Bacilli—After mentioning the disadvantages of other methods that are used for the purpose of obtaining a more abundant growth of tubercle bacilli, Wihman describes his own method as follows: The ordinary centrifugation tube is replaced by an especially constructed larger one, which has a flat bottom and a bottom plate that is used as a slide. This round slide is placed on the bottom of the centrifugation tube before the fluid is poured in. Following centrifugation, the fluid is poured off in such a manner that the tube is brought slowly into the horizontal position. As a rule, the round bottom slide likewise falls into the horizontal position (that is, with the top downward). If the slide should stick to the bottom it can be loosened with a platinum wire. The round slide is taken out and stained in the usual manner according to Ziehl-Neelsen. During microscopy it is placed on an ordinary slide. Sputums can be examined with this new method, provided they are first treated with antiformin or some other agent of homogenization. Comparative studies on twenty specimens of sputum proved the superiority of this method over the older ones. The author says that the round slide can be used also for other bacteria. In this connection it is pointed out that the round slide on the bottom of the centrifugation tube had been used earlier by an Italian author in the examination of the cerebrospinal fluid in chronic diseases of the central nervous system, in which the form elements are found in small numbers. The author points out further that he found why the methods that are to secure a more abundant growth of bacilli often give unsatisfactory results. He observed that the sputums contain fatty substances which, on account of their lower specific gravity, rise to the top and carry the bacilli with them. On the basis of this fact, he developed a simple method for obtaining a more abundant growth of bacilli. He places the sputum in the incubator (at 37 C.) until it is autolytically dissolved. Then it is poured into a glass cylinder and several hours later the cylinder is placed in a water bath of 80 C., which favors the rising of the fat to the surface. Following this, several loopfuls are taken from the surface layer and are placed on a slide for examination. The author recommends the combined use of centrifugation and the surface layer method.

Rhythmic Function of Liver—Gerritzen points out that on the basis of animal experiments and of clinical observations Forsgren advanced the hypothesis that the liver functions rhythmically, there being a rhythmic alternation between its glycogen storage and its bile secretion. Forsgren found that, when the glycogen content of the liver increased by 1 Gm., the weight of the liver increased by 43 Gm. From this fact he concluded that, along with the glycogen, water is stored. This conclusion was confirmed by the microscopic picture of the liver in the various stages of function. During the period of predominating assimilation, glycogen and water are stored; during the dissimilation phase the glycogen disappears from the liver and water is given off at the same time. In answer to the question as to what happens to this water the author says that it may be assumed that it will be excreted by the kidney, in that it acts as a solvent for the dissimilation products that are excreted in the urine. He made seventy-two experiments on fifty-seven persons, who drank 75 cc. of water every hour and whose urine was measured every hour for twenty-four hours or longer. It was found that the rhythmic function of the liver is reflected in the diuresis. The diminutions in the diuresis which occurred at 9 a. m., 1 p. m. and 6 p. m. the author ascribes to the intake of food because the food to be dissolved takes water from the organism; this water being detracted from the diuresis. Later experiments (on thirty-five persons) proved that the meals did in fact have this influence on the diuresis. The author concludes that his experiments proved that the rhythmic function of the liver which Forsgren proved to exist in animals exists also in human subjects.

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CHOLECYSTOGRAPHY

CHAIRMAN'S ADDRESS

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CHICAGO

Cholecystography, as brought forth by Graham, Cole and their co-workers, is quite generally accepted in determining whether or not the gallbladder is functioning normally. The work of Kirklin, Moore, Stewart and others has done much to prove the accuracy of the method. Through careful cholecystographic studies and with an abundance of available material, Kirklin has had an excellent opportunity to check his roentgenographic observations operatively and pathologically. Other investigators have also done much work which has substantiated the original work of Graham and Cole. Since the method was originated there has been ample time and sufficient operative and pathologic study to prove its accuracy. There is practically no procedure in diagnosis which has demonstrated so conclusively its accuracy and importance when made under proper conditions, namely, close cooperation and control of the patient from the time the dye is taken until the last film is made.

The importance of cooperation of the patient is demonstrated in many ways. First, the patient should refrain from taking any fatty foods by mouth from the time the dye is administered until after satisfactory films have been obtained. It is also important that the patient be carefully instructed regarding the importance of movement and breathing during the x-ray exposures. Slight movement will oftentimes obliterate a normal gallbladder shadow. It is not uncommon during the course of the radiographic examination to be unable to outline the gallbladder on one film but on the second film, taken immediately following, to see a normally filled gallbladder. This is usually due to movement. With this fact in mind, it is essential that the patient be informed that it is imperative that there be no movement or breathing during the x-ray exposures and that the exposures should be made as rapidly as possible to obviate any movement. The various positions in which the examinations are made have been described so thoroughly by other writers that I will not go into the details of the procedure in this paper. Occasionally it is necessary in the presence of a shadow in the right upper quadrant which is located in the area of the dye-filled gallbladder to make lateral exposures in order to state definitely whether or not the shadow is within the gallbladder. I have found the lateral examination of value in differentiating intracholecystic shadows from extracholecystic shadows.

Cholecystographic examinations were done on ninety-five individual patients. Of these forty-nine were females, forty-six were males, and the average age was 42 years. Of the ninety-five patients examined, seventy showed normal visualizations. All the ninety-five patients had symptoms thought to be due to gallbladder disease. Many interesting facts have been learned in the compilation of the material for this paper, the most interesting observation being the frequency with which a normal cholecystographic response was obtained in the presence of symptoms that were interpreted as being due to gallbladder disease by competent internists. It seems rather unusual that in the presence of so-called gallbladder symptoms only twenty-two pathologic responses were obtained radiographically in these ninety-five cases, all of which had been carefully worked up clinically. Three patients failed to retain the dye for fifteen minutes and the lack of filling was not considered sufficient evidence to warrant a diagnosis of nonfunction. These patients refused further examination.

It is not my intention to try to prove the superiority of cholecystography over the time proved clinical examination but rather to correlate all the observations and determine whether they are in accord or at variance as regards the clinical changes presented by the patient. I was prompted to undertake this investigation because of some rather embarrassing operative results that followed the reports of pathologic gallbladders after one cholecystographic examination. The operation was usually performed a month or so following the radiographic examination. I do not mention this interval between the radiographic examination and the operation as an alibi, it did, however, furnish food for thought. The following reasoning was pursued. First, was it not possible that the gallbladder or the cystic duct was inflamed during the time at which a negative radiographic response was obtained and later the inflammation and edema either in the gallbladder or in the cystic ducts had subsided and at the time of operation the gallbladder appeared normal and the surgeon thought it inadvisable to remove it? One might even go further and in the presence of edema in the cystic duct obtain a nonfilling gallbladder, and at operation with removal of the gallbladder the pathologic report would show a normal gallbladder. It is well known that inflammation in other parts of the body, namely, the ostea of the accessory sinuses of the face and head, inflamed during acute infections, obstruct drainage and later return to normal. It is my belief that the same fact can be rightfully applied to the gallbladder or cystic duct. With these points in mind I thought that it would be advisable and important to investigate all nonfilling gallbladders and subject the patient to at least a second examination after a period of a month before stating whether or not the gallbladder was functioning.

It was my object when this work was undertaken to obtain 100 nonfilling gallbladders. After the 100 were obtained it was my intention to place fifty of the patients on a normal diet as controls and fifty on a gallbladder diet, rich in fats, with the addition of dehydrocholic acid. I am reporting only the cases in this series in which the gallbladder diet plus the dehydrocholic acid were used. The management which was carried out as a routine measure on the patients varied according to the individual but consisted essentially of frequent feedings made up of as much milk, cream, butter and eggs as the patients could tolerate, plus pureed vegetables and pureed fruits. Most patients were fed every hour or two. In addition to the foregoing, most of the patients were on antispasmodics and dehydrocholic acid. The dosage of dehydrocholic acid was $3\frac{3}{4}$ grains (0.25 Gm.) three times a day with meals.

Any one familiar with cholecystographic examinations is aware of the emptying power inherent in fats such as milk, cream and yolk of eggs. Many investigators have proved conclusively that small stones in the gallbladder have been expelled after the patient has been on a diet rich in fats. I believe that it is possible to have a small stone in the neck of the gallbladder or the cystic duct, and obtain a nonfilling gallbladder. In the same patient after the ingestion of foods rich in fat it is not uncommon at the second examination to procure a normal cholecystographic response. The presence of multiple stones in the gallbladder which can be definitely outlined does not militate against the possibility of a normal functioning gallbladder radiographically. This fact has been proved by many investigators and in this series there are a number of patients showing multiple stones in the gallbladder who on repeated cholecystographic examinations showed a normal response. It is not my intention, however, to intimate that the majority of gallbladders containing stones function normally. This observation has been made repeatedly. A patient with a nonfunctioning gallbladder will frequently show multiple soft stones after a month's interval, having been on milk, cream, egg yolks and dehydrocholic acid.

While I have not reached my goal, owing to lack of time and to the difficulty in obtaining patients with gallbladder symptoms who show a negative response, I believe that the facts obtained are at least worthy of some consideration. Although the number of patients that I have had has been limited and far below my expectation I do not hesitate to make this statement. A patient with fairly typical gallbladder syndrome following one negative gallbladder response does not conclude the necessity for immediate operative intervention as the patient frequently will show a normal cholecystographic response at a later examination. Before any patient is subjected to surgery he or she should be reexamined radiographically after an interval of one month or, even better, reexamined after an interval of a month with the patient having been on a diet rich in fats during the intervening period. Many writers emphasize the importance of the presence or absence of stones as an indication for operation, therefore a second examination may be helpful in establishing these facts.

Another rather interesting observation in this series of cases was the bizarre symptomatology in patients who showed a negative cholecystographic response. Some of these patients had only vague symptoms referable to the gallbladder, their chief complaints

being generalized abdominal distress, constipation and irritable bowel. Many were tender on palpation over the colon and in the epigastrium. The clinical course of many of these patients seems to parallel quite accurately the cholecystographic response, that is, taking a patient with symptoms attributed to gallbladder disease followed by a negative cholecystographic response, there was usually a marked improvement of the symptoms following medical management including dehydrocholic acid. Likewise the cholecystographic response at this time was either improved or normal. These same patients who frequently showed an exacerbation of symptoms and were immediately subjected to cholecystographic examination usually showed a poorly functioning or a nonfunctioning gallbladder. From these observations it would appear that, in the absence of stones, proper medical management favorably influences the symptomatology of the patient, and the function of the gallbladder is correspondingly improved radiographically. A few patients showed no improvement after a rather prolonged medical regimen and likewise showed no improvement in the radiographic gallbladder appearance. Owing to the fact that the gallbladder could not be visualized in these patients it was impossible to state whether or not stones in the gallbladder were responsible for the nonfilling or possibly the gallbladder and cystic duct were incorporated in a mass of adhesions. Unfortunately, from a statistical point of view, none of these patients have as yet been subjected to surgery.

For a matter of convenience and clarification, I have divided the series of ninety-five cases into eight classes:

- 1 Normal responses, seventy. Eighteen were rechecked.
- 2 Pathologic response followed by a normal response, eight.
- 3 Stones in the gallbladder, with normal responses on two or more examinations, two.
- 4 Stones in the gallbladder with poor responses, four.
- 5 No dye in the gallbladder on two or more examinations, five.
- 6 Normal response followed by nonfilling one.
- 7 Unsatisfactory responses, patient vomited dye, did not cooperate, three.
- 8 Variable responses, that is, responses would be normal one time, poor the next, normal, poor, two.

The oral method of examination was used in this series. One would infer that the oral ingestion of the dye is very satisfactory, as only three of the patients in this series were unable to retain it for a sufficient period of time which was felt to be necessary for its absorption. I have also made the deduction that, if a patient will retain the dye for one-half hour or longer, enough will be absorbed to give a satisfactory shadow in the presence of a normal functioning gallbladder. This statement is made in view of the fact that a number of patients vomited a half hour after the oral administration of the dye, and the gallbladder cast a normal radiographic shadow.

CONCLUSIONS

- 1 In this series a large percentage of the patients with symptoms referable to the gallbladder gave normal cholecystographic responses. Seventy patients of the total of ninety-five, or 73 per cent, showed a normal functioning gallbladder.
- 2 Eight, or 40 per cent of the twenty patients with nonfunctioning gallbladders showed a normal response radiographically after medical management.
- 3 Of the twenty patients, five or 25 per cent showed a negative cholecystographic response on two or more occasions even after medical management.

4 From past experience substantiated by the results of this series, one negative cholecystographic response is not an indication for immediate operative intervention even in the presence of gallbladder symptoms. I believe that more than one negative radiographic examination is necessary before the patient should be subjected to surgery. The presence of gallstones is probably the most important indication at this time for surgical intervention. Cholecystography after a gallbladder regimen will often clarify this important query.

1439 South Michigan Avenue.

CAUSES OF BLINDNESS IN PENNSYLVANIA

FROM THE MEDICAL AND SOCIAL ASPECTS

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Unfortunately, in the various state acts relating to blind persons there is such a wide variation in the definition of blindness and in the procedure by which the blindness of an individual is determined that it has been extremely difficult, if not impossible, to gather together data of such a nature that they can be studied on the basis of any uniform standard.

In an effort to overcome this difficulty and to establish a uniform definition of blindness and classification of the causes of blindness, there was organized some years ago a Committee on Statistics, a body composed of representatives of the American Foundation for the Blind, the National Society for the Prevention of Blindness, the American Association of Workers for the Blind and the Statistical Committee of the Section on Ophthalmology of the American Medical Association. Out of the deliberations of this committee have come certain recommendations and suggestions which, if generally adopted, will give a uniformity of statistics on blindness that has not heretofore been available.

The enactment of legislation in Pennsylvania for blind relief, very shortly after the recommendations of the Committee on Uniform Statistics had been made public, presented an opportunity for putting these recommendations into effect on a large scale.

The Pennsylvania blind relief law, while conforming in many respects to similar laws in other states, differs from all the others on three major points—the method of its administration, the procedure to be followed in determining the causes of blindness and the definition of blindness.

In Pennsylvania there has been for more than twenty years an established organization for the administration of the Mother's Assistance Fund, known in some states as Widow's Aid. This fund is administered by county boards of trustees who serve without pay. It is supervised by the parent organization in the state welfare department. Social welfare programs are carried on by qualified paid workers. When acts were passed for relief for the blind and for assistance to the aged, it was wisely provided that responsibility for their administration should also be placed in the hands of these

already efficiently functioning boards. This method of administration has served as a model for many other public health and social welfare programs in Pennsylvania and other states.

The method decentralizes relief and brings blind recipients in close touch with the agents of the state who distribute the grants. It makes possible certain other social services, services that a small pension cannot provide but which most individuals and their families need. The person who needs teaching or is employable is brought to the attention of the agency skilled in teaching the blind or to employment officers, who are often able to find work for the capable. Health problems of the pensioner and his family are referred to the family physician, if there is one, and otherwise to the organization best equipped to deal with them. But probably the most valuable factor in administering relief through the Mother's Assistance Fund is the opportunity it affords to protect family contacts against unnecessary eye hazards. Social workers taught to organize a sound social hygiene program and trained to recognize deviations from the normal eye conditions can secure for their wards the medical care and continued treatment which are often the sole means of preventing blindness.

The regulations of the act require every applicant to submit himself to an accredited ophthalmologist for examination and they further provide that the ophthalmologic reports pass through the hands of a supervising ophthalmologist attached to the staff of the department of welfare. This makes possible a uniformity of judgment and diagnoses which can be secured in no other way. Of all the other states having blind relief laws, Missouri alone provides for a similar procedure.

These provisions have made available for study and analysis what is probably the largest single series of reasonably descriptive reports of blind eyes up to the present time. It is estimated that they represent about 50 per cent of all the blind in the state, and from the data contained there can be deduced, with a fair degree of accuracy, the relative percentages of the various ophthalmic diseases which are the sole or main contributing cause of blindness, the underlying etiologic factors, the distribution of the blind throughout the state, and the predominance of the various causes and their relation to the prevailing occupations in the locality found, the relation of prevalence of blindness in certain localities to accessibility to competent medical assistance, blindness due to ignorance, carelessness or poverty, blindness due to traumatism, accidents to the good eye of one-eyed persons, heredity, and so on. While we intend to elicit eventually much information of value from both the medical and the social aspects, the present communication is limited to a more or less general survey and classification of the various causes of blindness.

At the outset it is only fair to state that the final analysis must be faulty to a certain extent. It should be considered that the applicants, in most instances, submitted themselves for examination long after all activity of the primary disease had subsided—in the majority of cases many years after—and sometimes with one or two empty sockets. The examining physician seeing a person for the first time, with no case record of the disease before him, is compelled to base his diagnosis on the appearance of the eye at the time of examination and to the frequently faulty history by the patient himself. It should be considered also that much of the substance of the reports necessarily depends on the

Valuable help was rendered by Mrs. Bernice English of the Council for the Blind, State of Pennsylvania.
Read before the Section on Ophthalmology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

answers of elderly, ignorant or otherwise unreliable patients, or even intelligent ones with a tendency to distort facts

The reviewer, with or without reason, was often made to feel that the given diagnosis was not always correct and thus because of no fault of the examiner. For example, such diagnoses as congenital microphthalmus or congenitally undeveloped globes might easily be the sequelae of ophthalmia neonatorum. One report, illustrating the extreme difficulty of eliciting information from the patient, stated "Eye enucleated. No injury. Pathology not known." Many other examples might be mentioned. The primary disease given was

TABLE 1—*Causes of Blindness*

| Congenital Anomalies | | Cornea | |
|------------------------------|--------------|------------------------------|--------------|
| Glaucoma.. | 53 | Keratitis interstitial (1%) | 124 |
| Defective globes | 197 | Keratitis ulcerative | 104 |
| Albinism | 10 | Keratitis undetermined | 12 |
| Anophthalmos | 10 | Keratitis exposure | 2 |
| Neuroretinitis | 2 | Keratitis marginal | 1 |
| Coloboma of choroid | 2 | Corneal dystrophy | 12 |
| Cataract | 229 | Keratoconus | 8 |
| Optic atrophy | 20 | Keratomalacia | 2 |
| Coloboma of optic nerve head | 2 | | |
| Total (4.5%) | 534 | | |
| Traumatism | | Uvea | |
| Penetrating wound of globe | 950 | Uveitis (10.5%) | 1,404 |
| Uveitis | 91 | | |
| Sympathetic ophthalmia | 232 | | |
| Keratitis | 72 | | |
| Insect bite | 4 | | |
| Burns | 149 | | |
| Hemorrhage into vitreous | 8 | | |
| Rupture of choroid | 5 | | |
| Cataracts | 66 | | |
| Detachment of retina | 26 | | |
| Optic atrophy | 91 | | |
| Optic tracts and centers | 4 | | |
| Neuroretinitis | 17 | | |
| Total (14.65%) | 1,754 | | |
| Lids | | Lens | |
| Carcinoma of lids | 2 | Cataract senile (22.49%) | 2,666 |
| | | Cataract juvenile | 22 |
| | | Cataract diabetic | 4 |
| | | Cataract endocrine | 6 |
| Conjunctiva | | Retina | |
| Ophthalmia neonatorum (3.9%) | 470 | Retinitis vascular | 244 |
| Purulent conjunctivitis | 71 | Retinitis diabetic | 82 |
| Gonorrheal conjunctivitis | 17 | Retinitis nephritic | 43 |
| Diphtheritic conjunctivitis | 2 | Retinitis pigmentosa | 236 |
| Trachoma | 64 | Retinitis leukemic | 2 |
| Photophthalmia | 4 | Detachment of retina | 83 |
| Pemphigus | 12 | Senile macular degeneration | 21 |
| Pterygium | 10 | | |
| Total | 650 | Total | 710 |
| Globe | | Vitreous | |
| Glaucoma chronic | 1,465 | Hemorrhage into vitreous | 13 |
| Glaucoma acute | 116 | Abscess of vitreous | 2 |
| Total (13.34%) | 1,581 | | |
| | | Optic Nerve | |
| Glaucoma juvenile | 8 | Optic atrophy simple (10.1%) | 1,202 |
| Tumors | 4 | Papilledema | 60 |
| | | Neuroretinitis | 293 |
| Total | | | |
| | | Miscellaneous | |
| | | Amaurosis | 4 |
| | | Nystagmus | 2 |
| | | Total | 6 |
| | | | 11.62 |

often, therefore, mere conjecture and it is fortunate that the act makes it a requirement that the examining physician must be an accredited ophthalmologist, one whose opinion is of value.

While the causes of blindness as given in the series as a whole are reasonably reliable, the same cannot be said with regard to the underlying etiologic factors, which are given in table 1. Even with all our modern facilities an underlying etiologic factor often cannot be found much less in these examinations, in which it was almost always necessary to obtain the information from the applicant himself. Every clinician knows how a patient will associate one disease with another or with some accident which might or might not be material. The supervising examiner has taken the liberty of rejecting a number of given etiologic factors such as when for example, influenza, eyestrain or diseased

tonsils was given as the cause of senile cataract. It could be plainly seen that often an examiner had thoughtlessly jotted down the patient's statement. But whenever a reasonable underlying cause was given it was accepted as positive, even though the examiner himself had expressed a doubt.

The tabulation is of the eyes of those who, with visual acuity of less than 3/60 or 10/200 with both eyes, were defined as blind persons according to the original act. In the last act, approved July 9, 1935, one with visual acuity of 3/60 or 10/200 or less was defined as a blind person.

In order to serve the purpose of this report best and to avoid overlapping, one diagnosis only, the primary disease which was considered to be the main cause of blindness, was chosen from the data. Complications, sequelae and secondary disorders are not mentioned. Also, because in so many instances the cause of blindness was found to differ in the two eyes of one individual, eyes and not persons are enumerated.

In arranging the various diseases into the twelve groups comprising the present classification, some explanation is in order. The compilation of such a large number of reports by so many physicians made it necessary, of course, to condense terms and to modify them to a considerable extent in many instances.

Those cases of congenital anomalies the report of which indicates more than one disease entity are grouped under "defective globes." These include also such notations as underdevelopment or malformations. Classified under penetrating wound of the globe are included not only those reported as penetrating wounds but also intra-ocular foreign bodies, adherent leukoma, gunshot wounds, eyes lost in explosions, and other injuries vaguely described but resulting in the loss of an eye.

Such diagnoses as iritis, iridocyclitis, kerato-iritis, plastic iritis, cyclitis and complicated cataract are placed under the heading of uveitis. This group includes all disorders of the uveal tract except when there was a definite diagnosis of choroiditis or the description warranted, but even some of these are grouped under uveitis if, in addition, there were other changes noted such as complicated cataracts. Chorioretinitis, retino-choroiditis and chorioretinal atrophy are all grouped under choroiditis.

It is considered permissible to include among senile cataracts all those diagnosed as diabetic in which the lenses became opaque after the age of 50 years, although a notation is made of the associated diabetes. Needless to state, in numerous instances in which the cause of blindness is given as senile cataract there was a previously existing retrolenticular condition that could not be determined. This can be inferred from the numerous absolutely blind persons with senile cataract. All nontraumatic intra-ocular lesions due primarily to vascular disease such as hemorrhages and exudates in the retina, embolism, thrombosis, proliferans, angio-sclerosis and so on, are included under vascular retinitis.

All those diagnoses such as retinochoroiditis, choro-retinitis and optic neuritis which resulted in optic atrophy, and also those cases which were designated as secondary optic atrophy or optic neuritis without notation of any other lesions, are classified as neuro-retinitis.

It will be seen that the most frequent cause of blindness in this tabulation is senile cataract, 22.49 per cent. Of the total number of these eyes, 2,666, 1,927 were

not operated on for various reasons—through neglect, unwillingness or other reasons on the part of the patient, or because of poor operative risk. The remainder, 706 eyes, were failures, either because of postoperative complications or of some previously existing retrolental lesion. This is certainly a small proportion of the great number of cataract operations performed.

Traumatism is next in importance as a cause of blindness, 14.68 per cent. This percentage of blindness due to trauma is no indication of the great number of individual eyes lost through accident. For the past fifteen years approximately 450 eyes each year have been lost by industrial accidents and in no year has there been more than twenty double eye accidents.

Glaucoma of the adult type occurred in 13.34 per cent of all cases. Of the total number, 768 were operated on, at least 120 received inadequate treatment, as indicated in the reports, and 204 received no treatment whatever.

Uveitis, with a percentage of 12.63, is extremely high when it is considered that choroiditis and the traumatic and postoperative disorders of the uvea are not included in this group.

Simple optic atrophy ranks next, with about 10 per cent of the total.

TABLE 2—*Given Etiologic Factors Other Than Traumatism, Senility and Congenital Anomalies*

| | | | |
|-------------------|-----|------------------------|-----|
| | 17 | Scarlet fever | 50 |
| | 2 | Tuberculosis | 20 |
| | 3 | Unknown organisms | 71 |
| Endocrine disease | 5 | Diabetes | 94 |
| Leukemia | 2 | Purpura haemorrhagica | 2 |
| Syphilis | 60 | Black fever | 2 |
| Myopia | 272 | Disseminated sclerosis | 6 |
| Diphtheria | 8 | Hydrocephalus | 10 |
| | 4 | Infantile paralysis | 2 |
| | 2 | Pituitary disease | 12 |
| | 72 | Cardiovascular disease | 270 |
| | 12 | Nephritis | 53 |
| Local Infections | 25 | Page's disease | 2 |
| Carbuncle | 3 | Toxemia | 73 |
| Measles | 23 | Erysipelas | 2 |
| Arthritis | 5 | Brain tumor | 105 |
| Pregnancy | 14 | Other tumors | 4 |
| Sinusitis | 4 | Typhoid | 14 |
| Influenza | 41 | Consanguinity | 2 |
| Smallpox | 8 | Encephalitis | 6 |

The percentage of ophthalmia neonatorum, 3.9, ranks lower than congenital anomalies, with 4.48 per cent.

In general it will not be possible to apply these causes of blindness universally throughout the United States. This can readily be understood from the wide variation in causes of blindness and the percentages, when the total figures for the whole state are broken down into counties. These differences appear to bear a distinct relationship to the industries predominant in the community, the racial and other characteristics of the population, the facilities for adequate care and the general understanding of the need for such care in the early stages of any eye disease. For instance, through those sections of Pennsylvania in which mining is the predominant industry, a high percentage of the blind population have lost their sight as a result of explosion accidents which have at one time destroyed both eyes. In certain other areas which are extremely rural and in which there is little or nothing in the way of specialized medical service, large percentages of the blind have lost their sight from causes which would or might have yielded to prompt treatment in the early stages, and also such conditions that could have been corrected by operation. Again, such diseases as trachoma, which

is the most common cause of blindness in certain states, is extremely rare as a cause of blindness in Pennsylvania.

Table 2 must be considered of questionable value both from the standpoint of the actual underlying etiologic factor as has been explained, and also with regard to the number. For example, probably most of the 470 cases of ophthalmia neonatorum were gonococcal infections, yet gonorrhea is given as the underlying cause of the loss of only seventeen eyes. The same may be said of syphilis with relation to interstitial keratitis. On the other hand, the numbers seventy-two, fifty and forty-one for meningitis, scarlet fever and influenza, respectively, are undoubtedly exaggerations.

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ABSTRACT OF DISCUSSION

DR. E. V. L. BROWN, Chicago. The payment of goodly sums of money to the blind in the shape of pensions has again added to our knowledge of conditions which cause blindness this time in an industrial and mining state, Pennsylvania. The only previous highly valuable report was from an agricultural state, Missouri. The unusual significance of these two reports is due to the fact that the laws in these states require an examination of the eyes by an accredited eye doctor. Three other states namely, Colorado, Idaho and Oklahoma and the District of Columbia now require examination by an eye doctor but no reports concerning the causes of blindness found in these states have appeared, so far as I can learn. In Pennsylvania the information obtained by the local eye doctor is passed on by a state supervising examiner, at present Dr. Cowan. Dr. Cowan has wisely edited, i. e., interpreted, the reports thus furnished him and arranged and classified them according to diseases and etiologic factors. He estimates that the report covers about half of the actual number of blind in the state. If the roughly 12,000 eyes thus reported on come from 6,000 individuals this would make around 12,000 blind in the state. This 12,000 figure, when put alongside the 1930 federal census figure of 4,373 blind in Pennsylvania demonstrates how effective a money inducement is in bringing out an otherwise undisclosed condition. The Missouri law did much the same thing. In these increasingly accurate statistics, some well known and some heretofore less well determined facts stand out. For instance, senile cataract was the diagnosis in 22 per cent of those who became blind in Pennsylvania. Trauma caused 15 per cent of the blindness. Seventeen per cent for uveal disease is surprisingly high. Four per cent for ophthalmia neonatorum shows what advance prevention work is making. Glaucoma rates high with 13 per cent congenital anomalies run 5 per cent. Dr. Cowan first excludes trauma and congenital anomalies. He then excludes "senility" as a cause but does not state just what he means by senility as a cause of blindness. This might well include the 22.5 per cent caused by senile cataract, and then the three—trauma, congenital anomalies and senile cataract—would add up to 42 per cent. However, the long list of forty other etiologic factors determinable applies to only 1,898, or 16 per cent of the 11,852. This 16 per cent with known etiology plus the 42 per cent excluded with known etiology makes 58 per cent in which the cause of blindness in Pennsylvania may be considered to be known. But there are an equal number in the state who are not pensioned. We are therefore confronted with the startling fact that, in what is undoubtedly the best report our country has so far been able to produce with a very large number of eyes, 12,000, all examined by eye doctors, one of the older states of the country has to admit that the cause of blindness is unknown in nearly three fourths of the cases. It is highly desirable first that other states follow and that more reports on the diseases in these eyes and the causes be made.

DR. WILLIAM H. CRISP, Denver. The problem of furnishing financial and other help for the blind is by no means simple. The need for a definition of blindness arises largely out of the need for a standard on which to base the assignment of charity to those who because of loss of sight are prevented from gaining their livelihood. The standard of blindness, from

the economic point of view, is actually bound to vary with the individual case. A former patient of mine with vision of about 20/240 or less than 10 per cent of normal, was successful in profitably raising young plants that were bought by the farmers in his neighborhood. Yet another man with better vision than this will be quite unable to earn a living. Technically, my old gardener had 100 per cent loss of industrial vision as measured by the standard adopted by the industrial commission of the state of Colorado. The patient's mental and moral equipment play an extremely important part in the problem, and the kind of work he attempts to do and to which his mentality can adapt itself is also extremely important. In some telephone services there are very efficient blind operators engaged in special services. The rules for provision of pensions to the blind, of course, make allowance for this phase of the problem. Statistics have been multiplied seemingly without end. Yet often the information afforded is far from reliable. Statistics are useful only as a basis for future action. Information about the blind in Pennsylvania is useful, as indicated by Dr. Cowan, as a basis for provision of various social services to the blind, including care of their general health, facilities for education and training, and opportunities for employment. Statistics have also an educational and prophylactic value in dealing with the general public. Unfortunately, some unreliable features of the information obtainable can never be altogether remedied because of remoteness of the time when loss of vision occurred, lack of technical records, and often inaccuracy in technical records because of carelessness or ignorance on the part of the general physician. Some causes of blindness seem rather hopelessly beyond control. Among these is the miscalculated dynamite explosion, from which so many of Dr. Cowan's miners lost both eyes. The attempt to remedy the condition of these patients is usually very discouraging, but it is often worth making if some sight remains in at least one eye.

DR. CONRAD BERENS, New York. Dr. Cowan should be congratulated on his careful study of 6,000 cases which is almost double the number we reported on before this section last year. The group studied by our Committee on Statistics of the Blind is a fairly accurate cross section of students in schools for the blind in the United States. Our observations agree quite closely in certain respects with Dr. Cowan's statistics. Our figures in regard to the hereditary and congenital causes of blindness are naturally much higher (51 per cent) because our studies were concerned principally with young children. These studies clearly indicate the need for treating this group with greater intelligence. More thorough examinations and more carefully prepared records of the initial examinations of these cases will aid materially in obtaining the necessary statistical data regarding etiology. Possibly the examination and treatment of these cases are better organized and more thorough in Pennsylvania than they are in many other states, for Dr. Cowan's statistics do not show quite so clearly, as do the national statistics, the great need for improved methods in diagnosis and treatment. We found many children in these schools for the blind who should never have been admitted and many who could have been released had they received proper treatment. On behalf of the Committee on Statistics of the Blind, I again urge the continued cooperation of every ophthalmologist in this work. Initial examinations must be more thorough and records more complete if the data which our committee is assembling are to be valuable in directing programs for the prevention of blindness and for research in the etiology of diseases that result in blindness. Additional studies similar to those made by Dr. Cowan and by our committee are needed to maintain interest in these problems.

DR. ALFRED COWAN, Philadelphia. What I have said is the result of analysis of the data collected in the first year after the enactment of the law. There are twice this number of reports to consider by now. This first report lacks a certain value for this reason. When the law was enacted and administration begun there came at once a group of applicants for pensions composed of persons who had been blind for a number of years up to seventy, eighty and ninety. Data of this kind, of course, are not nearly so valuable as they will be in the future years. In the future the reports of more recently

blinded persons will be available. I do not think that the etiologic factors given here are of much value. The causes given are those recorded on the reports by the examining physicians. In many of these cases senile cataract was given as the diagnosis, when I know for a certainty, without having the privilege of writing it down, that there were some other conditions long before the cataract developed. Under a law in which the examiner is an accredited ophthalmologist, we shall have real data. This was to be a model law, and in the first draft it was required that the ophthalmologist be certificated by the board of ophthalmic examiners. That is in the act, but there was added "or one legally allowed to practice ophthalmology." In other words, they just emasculated that part of the act which we should like to retain as a qualification for the man who makes the examination. I think it would be fine if some thing could be done in that respect in future acts.

CINCHOPHEN—IS THERE A SAFE METHOD OF ADMINISTRATION?

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In this paper we shall attempt to answer the question "Can cinchophen be given safely if given carefully?" The question itself implies that cinchophen is a dangerous drug.

Cinchophen, phenylcinchoninic acid, seems to have been discovered in 1887 by Doebner and Gieseke¹ and to have been introduced into medicine under the trade name of atophan in 1908 by Nicolaier and Dohrn. Since that time it has been used extensively for gout as well as for other forms of arthritis and for the relief of pain of all types. In 1932 Hench² listed thirty-two drugs known to contain cinchophen or its derivatives as the active constituent and stated that he had accumulated the names of 500 remedies advertised in American drug lists as cures for rheumatism or as uric acid solvents, many of which undoubtedly possess cinchophen as the base. It has been estimated by White³ that the annual consumption of cinchophen and its derivatives in the United States is about 90,000 pounds.

No serious effects were noted from cinchophen until 1913, when Phillips⁴ described certain skin reactions as indicative of an idiosyncrasy to the drug. In 1922 Schroeder⁵ called further attention to its toxic effects. The first case of jaundice attributed to cinchophen was reported in 1923 by Worster-Drought⁶ and the first fatal case with jaundice two years later by Richard Cabot⁷. In the decade that has elapsed, an increasing

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Owing to lack of space this article has been abbreviated in THE JOURNAL by the omission of a tabulation of all published and unpublished cases of cinchophen poisoning that the authors were able to find to date. The complete paper will appear in the authors' reprints.

1. Doebner O. and Gieseke, M. Ueber A Phenylcinchoninsäure und ihre Homologen. Benzaldehyd Brenztraubensäure und Anilin. *Justus Liebig's Ann d. Chem.* 242:291, 1887.

2. Nicolaier Arthur and Dohrn Max. Ueber die Wirkung von Chinolincarbonsäure und ihre Derivate auf die Ausscheidung der Harnsäure. *Deutsches Arch. f. klin. Med.* 93:331, 1908.

3. Hench P. S. Derivatives of Cinchophen and Their Toxicity. *Proc. Staff Meet. Mayo Clin.* 7:427 (July 20) 1932.

4. White E. P. C. Study on a Series of Arthritic Patients Under Continuous Mono-Iodo-Cinchophen Treatment with Special Reference to the Action of the Cinchophen Molecule on the Liver Tract. *J. Lab. & Clin. Med.* 17:17 (Oct.) 1931.

5. Phillips John. Skin Rashes Following the Administration of Atophan. *J. A. M. A.* 61:1040 (Sept. 27 pt. 1) 1913.

6. Schroeder A. Cases of Cinchophen Poisoning. *Lancet* 84:1141 (Sept. 7) 1922.

7. Worster-Drought Cecil. Atophan Poisoning. *Brit. M. J.* 1:141 (Jan. 27) 1923.

8. Cabot R. C. Acute Yellow Atrophy. *Boston M. & S. J.* 102:1122 (June 4) 1925.

number have been reported. In 1930 Rabinowitz⁹ was able to collect fifty cases. In 1933 Weir and Comfort¹⁰ gathered together 117 cases, the mortality rate being 51 per cent. At the present time we are able to bring the total number of cases of jaundice following the administration of cinchophen or its derivatives to 191.

Snyder and his associates,¹¹ however, have reported recently the routine treatment of 2,500 cases of chronic arthritis with cinchophen over a ten year period without a single case of liver damage. These authors feel "that the fatal cases of acute yellow atrophy of the liver attributed to cinchophen were either coincidences or in some way were due to lack of control in administration of the drug." Eaton¹² has treated several thousand patients with cinchophen intravenously and has never seen a case of jaundice following its administration. Snyder and his associates hazard the assumption that "if all cinchophen administration were stopped immediately, acute yellow atrophy would still go on in the general population at the same rate." Lehman and Hanzlik¹³ also reject most of the clinical evidence on the ground that it "is distinguished by the *post hoc ergo propter hoc* type of reasoning." They conclude further that cinchophen toxicosis lacks an adequate experimental basis, especially as regards injury to the liver. It is necessary for us to take issue with these views, for we believe that there is adequate evidence, both clinical and experimental, of the definite toxic effect of cinchophen on the liver.

In 1913 Biberfeld¹⁴ reported that he had observed the death of one dog from severe degeneration of the liver after the administration of two 5 Gm doses of atophan with an interval of several days between the doses. Churchill and Van Wagoner¹⁵ in 1931 reported that after the administration of cinchophen to dogs the liver, on microscopic examination, "showed varying degrees of liver necrosis from small areas of coagulation necrosis just beneath the capsule—to complete disappearance of liver cells in small areas." One year later Myers and Goodman¹⁶ found definite evidence of liver damage in both dogs and rabbits following the ingestion of cinchophen. In 1933 Barbour and Fisk¹⁷ examined the livers of dogs that had received the drug and reported "widespread necrosis with little of the normal architecture of the organ preserved" and stated that "the injury produced by each of these drugs (i.e., cinchophen, tolysin and sodium salicylate) was as definite as that caused by such well known liver poisons as phosphorus and chloroform." These workers therefore seem to have obtained definite experimental evidence of the hepatotoxic action of cinchophen and its derivatives.

It is, of course, obvious that the vast majority of patients are able to take cinchophen over long periods of time without apparent injury. The nature of the peculiar hypersusceptibility that results in the occa-

sional case of jaundice and death is obscure. Our purpose in this paper, however, is to review the reported cases in an effort to ascertain, if possible, what relationship exists between dosage and toxicity and whether or not cinchophen can be given safely if given cautiously. The Council on Pharmacy and Chemistry has suggested that "physicians should be educated in the use of this dangerous drug, as in the case of other dangerous drugs." This implies that there is a proper and an improper method of administration. We have reviewed the literature with this one question in mind: Can cinchophen be given safely if given carefully?

It should be recalled that the pharmacopoeial dose of cinchophen is 0.5 Gm, or 8 grains. Sollmann¹⁸ states that "the usual dosage is 0.5 to 1.0 Gm four times per day" and advises that it be "stopped with the first appearance of gastro-intestinal disturbance, skin rashes or jaundice." Short and Bauer¹⁹ consider the usual dosage to be from 1.5 to 3 Gm a day and state that between 10 and 13 Gm is necessary for the

TABLE 2—Mortality Reported Cases of Jaundice Following Administration of Cinchophen or Its Derivatives

| Method of Administration | Death | Recovery | Total |
|-------------------------------|------------|-------------|------------|
| Oral only | 84 (48%) | 91 (52%) | 175 (100%) |
| Intravenous only | 8 (27.3%) | 8 (22.7%) | 11 (100%) |
| Combined oral and intravenous | 1 (25%) | 3 (75%) | 4 (100%) |
| | 83 (46.5%) | 102 (53.2%) | 190 (100%) |
| Outcome not stated | | | 1 |
| Total | | | 191 |

TABLE 3—Primary Diagnosis

| Diagnosis | Cases | Diagnosis | Cases |
|------------------|-------|-----------------------|-------|
| Gout | 6 | Sinusitis | 1 |
| Arthritis | 70 | Eczema | 1 |
| Rheumatism | 52 | Grip | 5 |
| Scleritis | 8 | Angina pectoris | 1 |
| Neuritis | 7 | Lymphangitis | 1 |
| Cholecystography | 6 | Trauma | 1 |
| Lumbago | 4 | Acute rheumatic fever | 1 |
| Infected tooth | 2 | Pleurisy | 1 |
| Liver damage | 2 | Not stated | 22 |
| Total | | | 191 |

complete therapeutic effect. Graham²⁰ advises that the drug be given for four days and then withheld for four days. The dose of neocinchophen, according to Sollmann, is the same as that of cinchophen. Neocinchophen has been considered nontoxic, its limited solubility precluding the possibility of toxicity.

Table 1 summarizes all the published and unpublished reports of cases that we have been able to find to date. A number of points are of interest as one studies this table, especially the variable relationship between total dosage and outcome. Small doses have often caused death, whereas large amounts have frequently not proved fatal. It is significant that discontinuance of the drug with the appearance of vague symptoms of jaundice has not sufficed to prevent a lethal termination in the majority of fatal cases. Another important point, not shown in the table, is the "time factor," to which Sir William Willcox²¹ first

9 Rabinowitz, M. A. Atrophy of the Liver Due to Cinchophen Preparations. *J. A. M. A.* 95: 1228 (Oct. 25) 1930.

10 Weir, J. F. and Comfort, M. W. Toxic Cirrhosis Caused by Cinchophen. *Arch. Int. Med.* 52: 685 (Nov.) 1933.

11 Snyder, R. G., Traeger, C. H., Zoll, C. A., LeMoine, C. K. and Lust, F. J. The Use of Cinchophen in the Treatment of Chronic Arthritis. *J. Lab. & Clin. Med.* 21: 541 (Feb.) 1936.

12 Eaton, E. R. Systemic Treatment for Chronic Arthritis. *Clin. Med. & Surg.* 42: 224 (May) 1935.

13 Lehman, A. J. and Hanzlik, P. J. Cinchophen Toxicosis. *Arch. Int. Med.* 52: 471 (Sept.) 1933.

14 Biberfeld, J. Zur Wirkungsweise des Atophans. *Ztschr. f. exper. Path. u. Therap.* 13: 301, 1913.

15 Churchill, T. P. and Van Wagoner, F. H. Cinchophen Poisoning. *Proc. Soc. Exper. Biol. & Med.* 28: 581 (March) 1931.

16 Myers, H. B. and Goodman, Louis. Cinchophen Hepatitis. *Arch. Int. Med.* 49: 946 (June) 1932.

17 Barbour, H. G. and Fisk, M. E. Liver Damage in Dogs and Rats After Repeated Oral Administration of Cinchophen Ethyl Ester of Para methyl phenylcinchonic Acid (Tolysin) and Sodium Salicylate. *J. Pharmacol. & Exper. Therap.* 48: 341 (July) 1933.

18 Sollmann, Torald. *A Manual of Pharmacology*, ed. 4. Philadelphia, W. B. Saunders Company 1932.

19 Short, C. L. and Bauer, W. Cinchophen Hypersensitivity. *Report of Four Cases and Review.* *Ann. Int. Med.* 6: 1449 (May) 1933.

20 Graham, George. The Treatment of Gout. *Proc. Roy. Soc. Med. (Sect. Therap. & Pharm.)* 20: 1 (Jan.) 1927.

21 Willcox, William. Toxic Jaundice. *Lancet* 2: 1 (July 4) 1931.

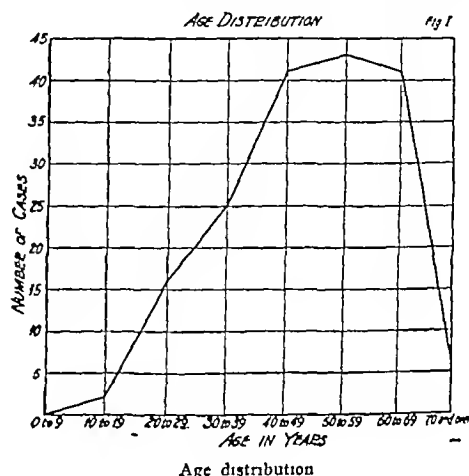
directed attention—that is, the variable length of time between the use of the drug and the first appearance of symptoms—a delayed effect such as is seen in chloroform poisoning. The initial symptoms have frequently appeared weeks or months after the discontinuance of the drug. Death may not occur until long after the period of cinchophen administration. In many of these patients the destructive processes in the liver appear to be irreversible, for in spite of treatment they progress to death in nearly half of the victims.

Table 2 gives a comparison of the mortality rate with the different methods of administration in this total group of 191 cases. It is noteworthy that the death rate from the oral administration was about 48 per cent, from the intravenous method 27 per cent, and from the combined oral and intravenous administration 25 per cent. This might be considered to suggest that the intravenous method is safer than the oral. We are inclined to attribute the difference, however, to the small number of cases in the intravenous group and to a small total dose of cinchophen. The total number of cases, 191, with eighty-eight known deaths and a mortality rate of 46.8 per cent, is significant. Many authors have suggested that the actual incidence of cinchophen poisoning is much greater than the reported cases would indicate. We are in accord with this view.²²

The accompanying chart shows the age distribution of the reported cases by decades. It may be noted that the peak occurs between the ages of 40 and 70. It is noteworthy, however, that two cases occurred in the second decade and sixteen in the third. It seems probable, therefore, that susceptibility is not a matter of age. The higher incidence after the age of 40 is probably to be attributed to the greater use of cinchophen, for

It will be seen from table 3 that cases occurred following cinchophen administration in a great variety of conditions, practically all of them painful and including six cases of gout.

Table 4 illustrates the late or delayed manifestations of liver damage following continued cinchophen administration. In the first case a standard dose of the drug was taken daily for six months. No symptoms appeared until three weeks before death. In the second case the same dosage was taken for eight weeks



Two weeks after the administration of cinchophen jaundice appeared, followed in five weeks by death. The third case is of particular interest, for this patient had used cinchophen in large doses for three years without apparent ill effects until suddenly jaundice appeared, and death resulted in ten or twelve days. The fourth case is significant because a very small amount of neocinchophen was taken for only three weeks, and because an interval of nine and a half months elapsed before death occurred. In the fifth case the dosage was moderate, and death did not occur until five months after the drug had been discontinued. It is noteworthy that the procedure followed in the third case was that recommended by Graham, i. e., three or four days of drug administration followed by a four day rest period. Graham was trying to find a "safe" method of administration.

These five cases are of great interest in connection with the method of action of cinchophen, for they indicate that the necrosis of the liver is not an allergic manifestation but rather an abnormal susceptibility. From the standpoint of dosage, method and carefulness of administration, however, the significant facts are, first, that three of these patients were able to take the drug for long periods of time without symptoms, second, that fulminating acute yellow atrophy did eventuate, and, third, that in two of the cases an interval of several months elapsed between discontinuance of the drug and death.

In table 5 the effect of neocinchophen is shown. It has been thought by many that neocinchophen because of its lessened solubility, is not toxic. These seven patients, however, are reported to have taken neocinchophen only, and yet five of them died—a mortality rate of 71.4 per cent. Tolysin and novotophan are trade names for neocinchophen. The fourth, sixth and seventh cases are of particular interest because of the small doses that proved fatal.

TABLE 4—Chronic Dosage—Late Effects

| Case No. (Author) | Drug | Dosage | Result | Liver at Autopsy |
|---------------------------------------|---------------|--|--|--|
| 34 (Lowenthal, Mackay, Lowe) | Atophan | 1.5 Gm daily for 6 mos | Death 3 wks after onset of symptoms | Acute toxic necrosis (538 Gm) |
| 35 (Lowenthal, Mackay, Lowe) | Atophan | 0.5 Gm t i d 3 days per week for 8 wks * | Death stopped cinchophen 2 wks before onset of jaun- dice 5 wks before death | Acute toxic necrosis (744 Gm) |
| 45 (Relchle) | Cinchophen | 205 Gm in 1926 157 Gm in 1927 117 Gm in 1928 | Death after jaundice of only 10-12 days duration | Acute toxic necrosis (757 Gm) |
| 168 (Bloch, Rosenberg) | Neocinchophen | 0.5 Gm t i d for 3 wks | Death 9½ mos after drug had been stopped | Toxic cirrhosis (1 000 Gm) |
| 169 (Bloch, Rosenberg) | Farastan | 0.5-1.0 Gm t i d at intervals for 18 mos | Death did not take drug within 5 mos of death | Toxic cirrhosis (1 200 Gm) gastric ulcer |

* Drug prescribed in manner suggested by Graham, i. e., not over four days in succession with an interval of four days.

the common types of chronic pain are encountered more frequently during these years.

The sex distribution does not seem to be important. There were 110 females (60.4 per cent) and seventy-two (39.6 per cent) males in the 182 cases in which the age was stated.

22 Palmer, W. L., Woodall, P. S., and Wang, K. C. Cinchophen and Toxic Necrosis of the Liver—A Survey of the Problem. *Tr. A. Am. Physicians*, 1936, to be published.

Table 6 illustrates the disastrous results that may follow the ingestion of very small doses for brief periods. In the first case the patient took only 15 grains (1 Gm) a day for one week. No symptoms appeared until three weeks later, and death occurred a month later. In the third case 30 grains (2 Gm) was taken daily for two days only, the first symptoms appeared fifteen weeks later, and death resulted after three or four more weeks. In the fourth case 15 grains was given daily for fifteen days while the patient was in the hospital, there were no symptoms until two weeks later at home, death occurred twenty-two days later. The fifth case is especially significant. Seven and a half grains (0.5 Gm) of cinchophen was given each night for five nights. The patient was instructed by her physician to stop the drug if any gastro-intestinal disturbance developed. She did so five days later when she reported to her physician with slight jaundice, but the necrosis of the liver steadily progressed to death thirty-one days later.

These five cases, to our minds, proved conclusively that even the smallest doses of cinchophen given for very brief periods may prove fatal. They also show clearly the futility of relying on close observation and withdrawal of the drug with the first appearance of symptoms. It is then usually too late, for the disease marches steadily forward.

It is apparent that cinchophen is not a drug like digitalis or ergot or emetine, which is toxic only in large doses and which, when used in small doses, gives adequate warning of toxicity. It is, on the contrary, a drug that may be fatally toxic even in very small doses. The necrotic changes in the liver may progress to death even when the first symptoms do not appear until several weeks or months after the administration of cinchophen. The very earliest symptoms may be only a signal, already too late, that the steady march of death has begun.

Instances have been cited in which the long continued use of cinchophen has been without apparent harm until the sudden appearance of jaundice followed by dramatic death. In some cases the administration of very small doses of the drug under careful observation with immediate withdrawal on the first evi-

TABLE 6—*Small Doses—Acute Effects*

| Case No (Author) | Drug | Dosage | Result | Liver at Autopsy |
|------------------|------------|---|--|---|
| 64 (Walker) | Cinchophen | 64 Gm in 1 wk. | First symptoms appeared 5 wks after stopping drug; death occurred 11 days later | Acute toxic necrosis (8.0 Gm) |
| 73 (Willcox) | Atophan | 0.3 Gm t i d for 8 days July 10 to 18 | First symptoms Aug 8 died Sept 5 | Not mentioned typical symptoms of acute necrosis of liver |
| 97 (Rhea) | Cinchophen | 2.0 Gm daily for 2 days | First symptoms appeared 15 wks after ingestion of drug; died 3-4 wks later | Acute toxic necrosis (978 Gm) gastric ulcer |
| 109 (Winfield) | Cinchophen | 10 Gm daily for 15 days while in hospital | First symptoms appeared 2 wks later at home; death resulted in 22 days | Refused |
| 162 (Fraser) | Cinchophen | 0.5 Gm q noc for 5 days; advised to stop if gastro-intestinal disturbance developed | Reported to physician 5 days later with slight jaundice; cinchophen stopped; death followed in 31 days | Acute toxic necrosis (1,050 Gm) |

dence of toxicity has nevertheless proved fatal. It is therefore concluded that there is no safe method for the administration of cinchophen.

ABSTRACT OF DISCUSSION

DR. MANDRED W. COMFORT, Rochester, Minn.: The authors' answer to their question "Is there a safe method of administering cinchophen?" is irrefutable. There is no safe method of administering cinchophen. Regardless of the precautions taken, occasional instances of cinchophen poisoning will occur. I do not believe that the reported cases of toxic cirrhosis following the use of cinchophen include anywhere near all the instances of poisoning. There are undoubtedly hundreds of unreported cases throughout the world. Fifteen cases encountered at the clinic since 1933 are unrecorded as yet. The morbidity and mortality following the use of cinchophen must be reduced to a minimum. This can best be accomplished by (1) governmental limitation, so that it is dispensed and administered only on prescription of physicians, and (2) by members of the medical profession limiting the indications for its use. The danger of cinchophen poisoning is so real that we believe at the clinic that the drug should not be used when there is an effective substitute, but since there is no effective substitute in the treatment of gout, we concur in the belief of our colleague Dr. Hench that its intermittent use is justifiable "in cases of gout not only during the attacks of gouty arthritis but in the intervals thereafter in order to prevent the next attack and to ward off, if possible, the much more important residual and potentially fatal lesions in the cardiovascular system." We do not use it in any other disease. Until these steps are taken, mortality and morbidity can be reduced it seems to me, in at least three ways. 1. Use of the drug should be discontinued when the first manifestation of toxicity appears. In five, or 15 per cent, of the cases which we encountered use of the drug was continued for from one to two weeks after toxic symptoms had appeared or the drug had been repeatedly taken again and again after repeated warnings. One of these patients died. I agree with the authors that poisoning will occur in spite of this precaution. 2. The danger of taking further cinchophen

TABLE 5—*Neocinchophen Only*

| Case No (Author) | Drug | Dosage | Outcome | Liver at Autopsy |
|---------------------------------|---------------|---|----------|--------------------------|
| 60 (Ross) | Tolysin | Unknown dose intermittently for 2 mos. | Death | Acute toxic necrosis |
| 69 (Ross) | Tolysin | Irregularly for 2-3 wks probably not over 8 Gm in all | Recovery | |
| 95 (MacGregor) | Neocinchophen | 0.3 Gm t i d Rx refilled several times | Death | No necropsy |
| 106 (Davis) | Tolysin | 0.63 Gm 4 times daily for 19 days | Death | No necropsy |
| 163 (Bloch and Rosenberg) | Novatophan | 17.5 Gm in 1 mo | Recovery | |
| 167 (Bloch and Rosenberg) | Novatophan | 7.7 Gm in 3 mos occasionally 0.15 Gm thereafter | Death | Subacute toxic cirrhosis |
| 168 (Bloch and Rosenberg) | Neocinchophen | 0.5 Gm t i d for 3 wks total (31.5 Gm) | Death | Toxic cirrhosis |
| 7 cases—mortality 71.4 per cent | | | | |

SUMMARY AND CONCLUSION

In the past decade there have been described 191 cases of jaundice following the administration of cinchophen or its derivatives, including neocinchophen. Of these, eighty-eight ended fatally, a mortality rate of 46.3 per cent. The actual incidence of this sequence is undoubtedly much higher than the published reports

should be impressed on the patient who has recovered from cinchophen poisoning. Two of our patients took more cinchophen after being warned, and they died. 3 Surgical procedures should be avoided. Of the sixty-one fatal cases reviewed by Weir and me, in eight, or 13 per cent, the patients died following surgical procedures. Operative procedures on patients who have toxic cirrhosis attributable to cinchophen are almost always fatal. A review of such cases leaves little doubt that the lives of these persons could have been saved, or their illness prevented, had these precautions been taken.

DR D R CLIMENKO, Cold Spring Harbor, N Y. I do not believe that the phenylcinchoninic acid derivatives are hepatotoxic substances in the ordinary meaning of the term. When one speaks of a hepatotoxic substance, such as chloroform or phosphorus, one means a substance that will always produce a certain type of tissue damage, and that the damage which will be produced will be proportional to the amount of the noxious substance that has been administered. This is obviously not true in the case of cinchophen, as the authors themselves have pointed out. Acute yellow atrophy has occurred after the administration of extremely small quantities of the drug, on the other hand, Dr Hensch has described at least two cases in which individuals have taken as much as 50 pounds of the drug over a period of years without any definite deleterious action. In my own animal experimental work I have only been able to corroborate Hanzlik's results. In a series of animals that has now extended to over 200 rabbits and forty dogs, oral administration of either cinchophen or neocinchophen, in doses up to and including 1,200 mg per kilogram (that is, a dose of 1,200 grains, or 78 Gm, for the average sized adult) has shown no hepatotoxic action. My second point has to do with the frequency of toxicity from cinchophen in man. There is no reasonable doubt in my mind that cases of acute yellow atrophy have occurred in man as a result of the administration of cinchophen. I feel equally certain that a large number of the cases so described in the literature have other etiologic agents present that might equally well be responsible for the terminal condition. For example, I should like to describe more fully the case the authors quoted, the case described by Reah in the *Lancet*, Sept 3, 1932, of a man who died fifteen weeks after the administration of 4 Gm of cinchophen. Fifteen weeks after the administration the man was admitted to the hospital suffering from acute abdominal distress and jaundice. Sixteen days after the onset of acute symptoms he died. Post-mortem examination showed the presence of a peptic ulcer, endarteritis and toxic cirrhosis. The clinical history described him as a chronic alcoholic. Nor is this an isolated case, for I have collected some twenty similar ones. One of the best is a case described by Dr Rake of London. A man was admitted to the hospital with jaundice and an acute abdominal condition. Laparotomy was performed under chloroform anesthesia. The man died three days later. Post-mortem examination showed a chronic cirrhotic liver on which was superimposed an acute degenerative process. The clinical history describes the patient as a chronic alcoholic. Yet the death is described as one of cinchophen poisoning.

DR R GARFIELD SNYDER, New York. The authors have tried to prove that there is no safe method of administering cinchophen but they have provided only circumstantial evidence to substantiate their claims. The fact that acute yellow atrophy occurred in a few isolated cases in which cinchophen had been administered prior to the onset of jaundice does not in any way prove that death in these cases was due to the use of cinchophen. It may merely have been a coincidence, as the number of cases of acute yellow atrophy reported from unknown causes far exceeds the number of cases reported as being due to the use of cinchophen. It is therefore obvious that on the clinical evidence alone it is not justifiable to state that cinchophen has ever caused acute yellow atrophy. It is true that cinchophen salts can be recovered from the liver in cases in which death occurred from acute yellow atrophy. The finding of cinchophen derivatives in the liver however does not necessarily prove that they caused liver damage because cinchophen is normally excreted through the liver. From a pathologic standpoint the gross and microscopic appearance of the liver in cases supposedly due to cinchophen poisoning does not in any way differ from the gross and microscopic appearance

of the liver in cases in which acute yellow atrophy developed from unknown causes. In regard to experimental evidence, most authors cite the work of Barbour and Fisk (*J Pharmacol & Exper Therap* 48 341 [July] 1933) as proving the toxicity of cinchophen for the liver cell. As a matter of fact, subsequent to Hanzlik's questioning of this work Barbour and Gilman (*J Pharmacol & Exper Therap* 55 400 [Dec] 1933) tried to duplicate their results and absolutely failed. There is at present no technique known for the production of acute yellow atrophy in animals by cinchophen. From a clinical point of view my associates and I have been using cinchophen for a period of ten years in our private practices and in the clinic of the Hospital for Ruptured and Crippled and Roosevelt Hospital without ever having a fatal result. In all my experience I have seen only one slight case of jaundice, which lasted two weeks. It cleared up completely and did not in any way interfere with the patient's general health or the successful treatment of the case.

DR CHAUNCEY D LEAKE, San Francisco. Practical ideas on the toxicity of the cinchophens are necessarily inferior when derived experimentally from animals, no matter how carefully controlled, in comparison with similar notions obtained from its clinical use in man. The reason is a statistical one, since relatively few animals can be employed whereas hundreds of thousands of human beings take the drugs. Physicians are concerned with avoiding an untoward reaction in any single patient. An excellent survey of the chances of obtaining an unfavorable reaction to a drug in a large series of individuals has been made by A J Clark (*Tr Med-Chir Soc. Edinburgh, in Edinburgh M J*, January 1935). In using any drug a physician must balance the hazard of its use against the disease hazard in his patient. There is always some therapeutic hazard. The wise physician will strive to keep this at a minimum. In regard to the cinchophens, clinical evidence indicates that neocinchophen is less hazardous to use than cinchophen.

DR WALTER L PALMER, Chicago. I wish to second what the chairman has said with regard to the commercial interest involved. It is enormous. It comes, if I am correct, from one source.

DR LEAKE. We all happen to know that source, unfortunately, it is not to the credit of the company.

DR PALMER. I was interested in what Dr Comfort said with regard to the role of surgical procedures. We have noted such a relationship in one or two of our own cases and it is described frequently in the literature. Apparently the anesthetic, even an ether anesthesia, adds enough additional damage to the liver to initiate the appearance of symptoms or at least make them worse. With regard to gout, I find myself again at odds with some of my colleagues. I do not treat very much gout but my associates in Chicago who treat some very bad cases tell me they are able to handle these patients satisfactorily over a period of years without cinchophen. With regard to the question raised by Dr Climenko about the relation between dosage and toxicity, I admit readily that there is not that definite relationship one likes to see between cause and effect but this I believe is explained by assuming a hypersusceptibility the cause and nature of which are entirely obscure. I would like to tell of an experiment of Dr Sutton's. Dr Sutton gave a patient cinchophen for one week and jaundice appeared. Several weeks later the patient asked for cinchophen and he was given 1 grain (0.065 Gm) daily for three days. Nothing happened and so the dose was increased to 2 grains (0.13 Gm) daily for two days, a total of 7 grains (0.46 Gm) in five days. Jaundice appeared, the patient became acutely ill but eventually recovered. To my mind this observation possesses the quality of the crucial laboratory experiment. With regard to the question Dr Snyder raised as to whether or not these cases of acute yellow atrophy may be due to unknown causes or to the cinchophen, I feel that cinchophen in these instances is of unknown cause. We know that acute toxic necrosis of the liver is a toxic process. The microscopic picture is the same in the poisoning of the liver from chloroform, phosphorus, trinitrotoluene and numerous other substances. Wilson in England wrote an excellent article on this subject in which he listed a large number of hepatotoxic compounds. I feel that cinchophen is very definitely one of these drugs.

VOLUNTARY FOOD HABITS OF
NORMAL CHILDRENCLIFFORD SWEET, M.D.
OAKLAND, CALIF

During the past fifteen or more years I have been urging parents in my office and in public addresses to allow their children full choice of both kinds and amounts of food from the family table. When this advice has been followed from infancy no food difficulties have arisen, but when other tactics have been followed and reeducation of both parents and child must be undertaken a period of observation and detailed report is valuable and usually necessary.

This discussion will differ from others on the subject with which I am acquainted because it is based entirely on experience gained in private practice with children living in the home with their parents, while other writers have recorded the behavior of children in institutional groups.¹ Also the foods offered after infancy have been those that appear usually on the average well stocked family table without restriction as to mixtures or the free use of sugar, such as Davis used in her earlier classic studies.² I have emphasized the child's complete freedom of choice more strongly than Aldrich³ has in his delightful and thoroughly sound book on cultivating the child's appetite. A period, usually three weeks, during which, while free from all restraint, the child's behavior is carefully recorded and reported, has been found to be an excellent means of winning the cooperation of parents and of gaining accurate information concerning the food habits of the entire family. This method of study I have not seen reported. Finally, I believe that the practices and methods which the physician finds useful in his daily contact with patients should be more frequently presented in professional meetings and periodicals in order that they may, when sound, become more generally used and, subjected to criticism and modification, grow inevitably toward perfection, which is the ideal of medicine.

My daily experience indicates that a great number of mothers are still "getting food into their children." Too many colleagues are advising them that certain foods must be taken regularly or are paying so little attention to this aspect of child training that the mother is left adrift to follow her own devices, modified by the constant bombardment of sales propaganda for milk, cereals, vegetables and less worthy foods to which she is subjected. During the past ten years I cannot recall a resident or intern in the Children's Hospital who, in response to my question "What will you tell the mother when she tells you her child will not eat?" has not answered "I don't know, but I suppose I'd tell her to make him eat the food he should have." Evidently in their minds food was to be prescribed and given as were drugs, baths and enemata.

In all fairness, I must hasten to add that I am certain that the medical profession is not altogether to blame for the conduct of parents concerning the food intake of their children. The desire to feed some one is an inseparable part of the maternal instinct, and the belief (the stock in trade of quacks) that there is some method of feeding which, if followed closely, will prevent many if not all the ills of human beings dies hard. When I advised the mother of a boy of 6 years not to urge or coax him to eat she said "Oh yes, our doctor has cared for him since he was born and he has always told me that, and I've read Dr. Aldrich's book on 'Cultivating the Child's Appetite' which has helped me a great deal, but we still coax him to eat." That evening his father had staged a race with him in order to get him to gulp down his dinner, all to no avail because he had vomited it at midnight in the course of an acute infection.

Most mothers whom I see, except those who have been carefully trained to do otherwise, worry because their children do not eat satisfactorily. Rarely is the answer to my question "has he a good appetite?" an unconditional "yes." Usually the reply is "No, it is very poor," or "I can't get him to eat vegetables," or "He doesn't like meat," or "I just can't get milk down him" or "He eats an egg only when I force him." At best a favorable reply is modified by "Fairly good except vegetables" or "I guess it is all right, but he doesn't eat enough to satisfy me." And I am certain that modern mothers still pray "Oh! dear Lord, I beseech Thee Wilt Thou not make my children fat and me thin?"

When questioned concerning the methods used to get a meal down which satisfies parental anxiety, the reply indicates coaxing or entertainment to take his mind off his food, so that eating may become largely passive, the application of sporadic and ineffectual force interspersed with prolonged and oft repeated lectures on the great values of certain foods, especially vegetables. (I am quite certain that the average California child can't easily spell vegetable because the letters f-i-g-h-t come up out of his subconscious mind to confuse him.)

Usually the offensive is carried on alternately by one parent or the other, while the one whose turn it is to rest silently or openly sides with the culprit. When the child happens to be hungry or the food especially suits his taste and he eats a big meal the parents fairly flap their wings and crow "good child, you have eaten your dinner," and then the child fully realizes how valuable his mealtime behavior is as a weapon.

Here is the soil that will nourish any and every sort of behavior problem to thrive in an atmosphere of faulty family relationships.⁴ In the face of such a situation we might well pause and ask ourselves, for what are we profited if we shall bring up a perfectly nourished generation, handicapped from its earliest days in the development of those qualities of the spirit which alone make life beautiful?

Fortunately this is not an unsolvable problem since every healthy child will eat an adequate diet⁵ if it is provided for him and if his food education is carried on along reasonably sound pedagogic lines.

¹ Davis Clara M. What Infants on the Self Selected Diet Experiment Eat. *Tr Sec Dis Child A. M. A.* 1930 pp 137-146.

² An ample diet for the purpose of this discussion is that generally accepted as such consisting of milk from 16 to 24 ounces in addition to that contained in other foods one or more eggs meat one or two helpings a vegetable cooked or raw at least once daily fruit raw and cooked once or twice daily cereal as bread and cereal with butter cheese jam and other incidentals and fish oil in some form as prescribed.

Read before the Section on Pediatrics at the Eighty-Seventh Annual Session of the American Medical Association Kansas City Mo. May 15 1936.

¹ (a) Davis Clara M. A Practical Application of Some Lessons of the Self Selection of Diet Study to the Feeding of Children in Hospitals. *Am. J. Dis. Child.* 46: 743-750 (Oct.) 1933. (b) Koehn Martha and Morrell Elsie Food Requirement of Girls from Six to Thirteen Years of Age. *ibid.* 47: 548-558 (March) 1934. (c) Tisdall F. F. Inadequacy of Present Dietary Standards. *Tr Sec Pediat. A. M. A.* 1935 pages 95-108.

² Davis Clara M. (a) Self Selection of Diet of Newly Weaned Infants. *Am. J. Dis. Child.* 36: 651-679 (Oct.) 1928. (b) What Infants on the Self Selected Diet Experiment Eat. *Tr Sec Dis Child A. M. A.* 1930 p. 137-146.

³ Aldrich C. A. *Cultivating the Child's Appetite*. New York: The Macmillan Company 1928.

⁴ Sweet Clifford. My Child Won't Eat. *Arch. Pediat.* 47: 582 (Sept.) 1930.

The young mother must be taught that the formula prescribed for her infant is made sufficient to allow him all the food he wants and that it should be offered at prescribed intervals. When additional foods are prescribed they should be given in small amounts, and if they are resisted a taste for them should be taught gradually. Human nature has always yielded more readily to seduction than to violence.

Few mothers realize that the components of a balanced diet need not all be eaten every day. They must be assured that a commonly taken and necessary food should be omitted without opposition for days whenever the child tires of it, the child's body has abundant stored up supplies to draw on during the holiday, and when he needs the food he will take it gladly.

E. J., a girl, aged 11 months, was brought to me because she was refusing milk, although she was taking vegetables, cereals, orange juice, cod liver oil and eggs readily. The mother was instructed to omit all milk until the baby showed signs of wanting it. After she had frantically telephoned me many times to report that the baby still didn't show signs of wanting milk, I asked her to place a bottle where the child could see it and await results. Finally, on the eleventh day the child nearly scrambled off a table in an attempt to reach the bottle. Earlier in practice I would have offered that baby every known concoction of milk and would have failed in the end.

Children who are allowed to omit a food at will do not develop a lasting dislike for it as they do when it is forced on them against their will. When mothers are taught to substitute "he has not yet learned" for "won't," there will seldom be lasting difficulty in cultivating a taste for new foods. Many persons do not like such delectable foods as celery, grapefruit and olives when they first taste them, and might I mention tea, coffee, tobacco and beer?

Intervals between meals should be varied to fit the needs of the individual. Some very young infants who do not eat well and whose food doesn't agree with them will thrive on a five hour schedule.

M. B., a very unhappy infant of 4 months, who cried night and day, spat up continuously and was troubled with an allergic dermatitis, became a happy infant with a clear skin who gained 9 ounces (256 Gm.) the first week after she was on a five hour schedule.

Often after a few days on a five hour schedule the infant will voluntarily return to the four hour interval and should be allowed to do so. Regularity will enable the mother to give her child better care, but she must not become the servant of regularity.

H. M., at the age of 7 years was brought in by his mother in despair because she could not get him to eat. When I asked her to let him choose his own diet she was loath to do it and was certain that I should either give him a tonic or give her some new way to whip him into line. I finally won her cooperation by asking her to follow my advice for three weeks, keeping a careful record of his food intake, unknown to him. He began at once to take an ample diet but omitted the mudday meal. He is now 15 years of age an unusually large muscular athletic boy who still eats morning and evening only. Incidentally when I reviewed his record as an infant I found that he omitted his night feedings very early and took only three meals a day much earlier than most infants do.

C. A., born July 24, 1935 with a birth weight of 7 pounds 2 ounces (3,233 Gm.) was seen December 3 at the age of 4 months referred by a colleague in another city with the following note: Began vomiting at 10 days. At 1 month given two weeks trial on atropine and thick feeding. Then operated to find a fusiform cartilaginous thickening in the first portion of the duodenum, forming a complete constriction. Course subsequently favorable except dislikes food and vomits daily about one half of food given.

On admission the weight was 13 pounds 4 ounces (6,010 Gm.). The child was brought in because it had lost 9 ounces (256 Gm.) and during the past two weeks was unable to retain food. It was forced to eat, a meal often lasting from one to two hours with the father carrying on after the mother became exhausted. It had been fed every three hours. It had a violent distaste for milk and was put on orange juice, ripe banana, cereal with butter and sugar, and apple sauce. The orange juice was given ad lib and other food at five hour intervals.

December 4 the report states "Can't get a thing into her except orange juice." The mother was advised not to force food.

December 10 the weight was 12 pounds 11 ounces (5,745 Gm.), a loss of another 9 ounces in six days, but the mother was encouraged because the child was now taking meals well and cried when food was taken away. It was put on a white milk mixture with lactose, orange juice, cod liver oil and iron ammonium citrate, 50 per cent solution, 15 drops daily to correct moderate anemia.

December 24 the weight was 13 pounds 8 ounces (6,123 Gm.) a gain of 13 ounces (370 Gm.) in fourteen days. It was taking 7 ounces at a feeding, at times as much as 10 ounces without regurgitation. The bowel movements were too hard to pass easily. Lactose was partially replaced by Vitavose. Vegetables were prescribed to be given twice daily. The baby was taking all food well and was in good condition.

Jan. 7, 1936, the weight was 14 pounds 3 ounces (6,435 Gm.) a gain of 11 ounces (313 Gm.) in fourteen days. The baby was eating well. A mild allergic dermatitis had appeared on the face and body. The bowel movements were normal. It was in excellent condition.

February 4 the rash was worse. Evaporated milk was ordered in place of fresh pasteurized milk, and barley flour instead of Pablum.

March 3 the weight was 15 pounds 12 ounces (7,144 Gm.), a gain of 10 ounces (284.5 Gm.) in twenty-eight days. The baby had an acute infection of the upper respiratory tract. It was noted that the rash was made worse by tomato juice. The mother was giving the barley flour uncooked as she had the Pablum. She was instructed to put the baby in a sleeping bag so that she could sleep with both eyes closed at night.

March 30 the weight was 17 pounds (7,711 Gm.) a gain of 18 ounces (510 Gm.) in twenty-seven days. It was sleeping soundly and had taken as much as 13 ounces at a feeding without discomfort or vomiting. It was on a five hour schedule, taking 10 or 12 ounces morning and night. At the other two meals it took vegetables and 5 or 6 ounces of milk mixture. The skin was clear. There were normal bowel movements. The baby was in excellent condition. A happy mother and infant.

Malnutrition has been overemphasized until it has become a menace to the peace of mind of mother. The slender child with excellent turgor and development for his age is labeled underweight by comparison with standard height, weight and age tables too frequently. Physicians can be of great service by carefully studying such children, reassuring the anxious mother and giving her a written statement that she may use in future discussions of the subject.

Forced feeding has its place in medical practice but when used it should be a therapeutic measure carried out under specific orders to accomplish a definite purpose.

The first step in the solution of any problem is a clear understanding of the problem to be solved. This is especially true of behavior problems, which have in them so many variables of heredity and unknowns of environment. Therefore, if it can be done without harm to the child, he should for a time be allowed to direct his own behavior while the parents become only observers and confidential informants. At the end of the observation period the problem has either disappeared or has lost enough variables and unknowns to fall within the means of fairly simple solution. When the food problems of older children present themselves I ask for a period of three weeks in which the child

may choose his own food as a guest at the family table while I am forwarded a weekly report of his food intake. Usually before the weeks have elapsed the child is eating a varied diet, and I often have difficulty in getting the third week's report because the mother has lost interest in the problem.

At the end of the observation period one has gained a good working knowledge of the foods that make up the family diet, which is otherwise difficult to obtain in private practice. This furnishes a basis for constructive criticism if it is needed and for sound teaching of such fundamental dietetics as

1 For practical purposes one vegetable is as good as another, that, after all, a carrot is only a root vegetable, while spinach is only one of many leafy ones. That raw vegetables, which many children prefer, may wholly or in part supplant cooked ones with no loss except the energy which the more complete digestion of cooked food makes available, and that this loss has no importance in a diet which contains such energy producing foods as meat, fish, eggs and milk, that vegetables should be cooked in the least possible amount of water and no water discarded,^{1c} that having eaten a large vegetable salad, the child need not then eat the vegetables served in the course, or that a mealtime, other than breakfast, or for that matter days spent without a morsel of vegetable passing the lips is not altogether lost if only the child does not come to cry out with those wandering children of old, "my soul abhorreth" vegetable.

2 That meat is a valuable food for which fish is the only complete substitute, while broth has no value except as a vehicle for other foods, and that cheese adds nothing to the diet except milk content.

3 That cereals served in the much advertised form of hot mushes do not gain any values not present in them when served as bread, as crackers or as ready to eat, packaged dry cereal, preferably sufficiently "whole grain" to retain their vitamin B complex. The time honored hot cereal is cooked on top of the stove, bread is at least as thoroughly cooked in the oven, while the dry cereals are generally more thoroughly cooked than either.

4 That not every child needs a quart of milk daily and that he should be given credit for the milk he takes with other food as well as that drunk.

5 That a diet too high in fat not only decreases appetite but prevents digestion, absorption and consequently growth, therefore cream should not be used too freely and cod liver oil should be given in the amounts and forms prescribed by the child's physician.

6 That temporary loss of appetite may mean nothing except that the child is not hungry, while a more prolonged absence usually is the first symptom of illness and the most dependable symptom of the need for a careful physical examination.

7 And especially that the father's duty is only to earn the money to buy food and the mother's to put it in suitable variety and form on the table.

Very frequently, after keeping a written record for a short time, the mother is surprised to find that the child is eating much more than she had thought and is convinced that her child's voluntary intake is sufficient. Also the period of three weeks has been found sufficient for the child to indulge in and recover from any orgies that he may indulge in with his first taste of freedom. For example during the first few days desserts and other foods high in sugar may be eaten to excess, but the child soon returns to the other foods,

often omitting dessert for days at a time.^{2a} Any child may at times eat a peculiar meal, often having periodic recurrence of the desire to limit his diet for a meal or two to some particular food. If this does not occur too often or last too long, and my own conviction is that it will do neither, it should pass unnoticed.

D S., a large well nourished boy who was a very bad eater earlier in his life but now takes a very satisfactory diet, makes a meal on bread and milk about five or six times a year, no matter what other foods may be on the table. At first it was very difficult to persuade his mother to remain calm while he ignored the excellent dinner she had been at much pains to plan and prepare, to eat with evident enjoyment "baby food" as she called it.

Often, though not invariably, the child will voluntarily omit the food to which he is hypersensitive. With this omission anorexia, irritability, constipation or manifest allergic signs and symptoms may quickly disappear. The withdrawal of foods to which the child is hypersensitive often has a magic effect on appetite and disposition. The strict interdiction of all foods from his diet which the child says "I do not like" for a few days or weeks often changes at least the greater number of them to the highly desirable list for which he will then ask. This is a splendid example of negativism of which Aldrich³ writes. Recently I saw a boy of 8 years who had always resisted milk. Forty-eight hours after milk was removed from his diet he asked "Doctor may I please have some milk on my cereal?"

Also at the end of the observation period whatever faulty food habits the child has are clearly apparent and the parents can then be instructed to carry out definite steps in the process of reeducation. If the child takes too much milk, certain meals, preferably dinner, can be given without milk or the milk may appear only as dessert. However, parents must be warned not to hold any food up as a bribe. The child who is said not to like meat seldom dislikes it but has not learned to chew it sufficiently to swallow it, so after accumulating a ball of several partially chewed pieces removes them from his mouth. Within a few days he can be taught to eat meat if it is given to him in single small pieces and no more is given until the first has been chewed and swallowed.

I am certain that no normal healthy child can long resist the demands of his body for food when there is added to it the example of the other members of his family eating the food that appears on the table or omitting it without remark in an atmosphere of comradeship and enjoyment. He soon learns that the tastes of one member of the family cannot be too constantly consulted in planning meals and this lesson may form the very foundation stone for the building of a happy and generous personality, resting firmly on the realization that in all mutual human relationships he must give thought to others as well as to himself.

CONCLUSION

1 Too many parents are still carrying on an ineffectual and harmful struggle with their children in order to "get in" a complete diet.

2 Physicians must not only prescribe diets but carefully instruct parents in methods of carrying out the child's food education.

3 Healthy children, if allowed to do so, will voluntarily choose an adequate diet from a well supplied family table.

242 Moss Avenue.

ABSTRACT OF DISCUSSION

DR. W. C. C. COLE, Detroit The physician can rarely find any physical basis for anorexia. It is seldom a matter of dietetics or nutrition. The problem is usually one of conflict between the child and his environment. The failure to eat well is either a protest against too rigid regulation of the child's diet or is a weapon used in keeping the parent under control. Obviously, juggling the diet or the giving of various combinations of vitamins or the administration of so-called tonics can accomplish nothing. A great deal has been learned about the physiology of nutrition, but the psychology of feeding has been largely neglected. It has been learned that certain foods are very desirable in the human diet and that a proper balance is important to a satisfactory state of nutrition, but little has been learned about getting children to take willingly the foods which it is thought they should have. As a result, the benefits that should be derived from improved knowledge have to a considerable degree been offset by an increase in the psychologic problems associated with eating. Perhaps attempts have been made to regulate the child's eating habits too closely. Much consideration is given to the composition of the food but little attention is paid to its appearance, variety or palatability. Many babies now receive most of their food from cans the contents of which can be identified only by referring to the label. The mother gets the impression from physicians, from magazine articles, from the various government bulletins and particularly from the high pressure advertising of those who sell foods that if she fails to get the specified things into her child as directed he surely will not be well. Individual tastes and peculiarities are seldom taken into consideration and the child is expected to fit into the mold that has been built for him. If he has normal human reactions, he soon objects to such regulation and offers strenuous resistance. The more he resists, the more the mother urges. The child almost invariably wins and the problem of anorexia is well begun. By the end of the second year it has become a fixed habit. It is striking that the problem is seldom seen in large families or the lower social groups, where the mother is too busy or lacking in education to give her child scientific attention. As lowly an animal as the guinea-pig will voluntarily select a balanced diet if it is available and if he is left to his own discretion. Yet we insist on rigidly regulating what and when our babies eat. It is apparent that if we are to control the problem of chronic anorexia we must respect the child's individuality and approach the question from a sound psychologic point of view. Dr. Sweet is to be highly commended for bringing this vital subject before us and for giving us the benefit of his experience and observation.

DR. J. D. BOLD, Iowa City Certain groups of children rarely present feeding problems. Noteworthy examples are the inmates of orphanages and children required to follow a strictly prescribed dietary because of disease. Health surveys of the children in better types of orphanages and of children receiving wisely chosen therapeutic diets show a better level of nutrition than is observed in the average child in the public school. These facts indicate that feeding problems encountered in private practice depend on something other than the child. Most pediatricians will grant that the parents primarily are at fault. I am not convinced that there is any one type of treatment that can be recommended for meeting these problems. We shouldn't direct our attention to the child when it is the parent that is the chief offender. Since the earliest time there have been self-choice diets. That is the type of diet management that has always existed and with that there have been varying degrees of subnormal nutrition. With the dietary practices that are common among adults and children in this country, a child cannot be expected to choose an adequate diet from the foods that are commonly placed before him. The foods commonly used are inadequate for the best nutrition. The child in choosing his own diet, can be expected to choose only something poorer than the total of the foods that are offered to him. Before self-choice diets can be recommended as a desirable form of management our national food habits must be markedly improved. The problem is primarily one of educating parents and children in the physiology of normal nutrition. It is one of giving to the child the initiative in as large a measure as possible and from the earliest practicable moment.

This is in agreement with the plan of self-choice diets. It is one of directing the child's habits through intelligent persuasion on the part of the parents. Lastly, the practice should be one of avoiding making the child's habit control an avenue or outlet for the parent's emotional unrest and maladjustment.

DR. CLIFFORD SWEET, Oakland, Calif. I hoped I might get some good, healthy objections here so I could act as a child does when some one tries to force him to eat—resist. I have gotten no serious disagreement, except that apparently Dr. Boyd is not quite so ready as I am to trust the child to choose his own food. I think that Dr. Boyd and I are not in disagreement, because I mean to take the emphasis off what the child eats and place it on teaching parents to make available to the child what he should eat, and to allow him, especially when he is not hungry, to omit his food at will until he is ready to take it. In more than fifteen years of following this practice, when I have been able to win the mothers to the plan of letting their infants take as much or as little food as they want from the beginning, there has been no difficulty whatever. I have failed to make this plan work many times because I couldn't get the cooperation of the parents. This morning the mother of one of my former patients in Oakland was calling me up to tell me that her baby is still not eating. She said "I try your plan sometimes but then I go back again." Every time a parent starts to educate the child in one direction and, before she gets very far, weakens and goes back to the old way, the problem is multiplied many times. I wish that pediatricians would try this plan of letting the child eat as he pleases for a while and see what he eats. Then at least the problem will have clarified itself in a short time and they will know whether there is anything to correct, and what they have to do in order to correct it.

POSTPRANDIAL INSULIN

INDIVIDUALIZING TIME OF ADMINISTRATION
OF INSULIN

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Recent progress in the treatment of diabetes mellitus has done much to increase the life expectancy and happiness of the patient. It has also increased and complicated the difficulties and responsibilities of the physician, who now, besides watching diet, urines and blood sugars must decide whether or not to give insulin, whether to use the common brands of insulin or a new, more slowly acting insulin, when to give the injections, how much to prescribe and how to prevent and treat reactions. He must guard against undue optimism on his own part and on the part of the patient, who often regards insulin as a diabetic panacea and forgets that diabetic complications are more frequent than before and that hypoglycemic reactions and "sugar spills" are still to be reckoned with. It has been the aim of this study to emphasize certain of these problems in the management of the diabetic patient and to indicate ways of individualizing the patient.

It is now generally recognized that a safe and effective time for the administration of insulin is before meals since "the maximum effect of an injection of insulin occurs in an hour, in contradistinction to that of the peak effect of food on the blood sugar which takes place in half that time. Neither statement is absolute, the latter particularly is subject to variation. It is not so well known that in selected cases it may

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105: 359 (Aug. 3) 1935.

be even safer and more convenient to vary the insulin schedule with relation to food intake. The level of blood dextrose is subject to diurnal fluctuations quite independent of the ingestion of food, and it is important that maximum insulin action coincide with the more elevated levels. Jacob Mollerstrom,² following the work of Forsgren, has emphasized the rhythmic nature of glycogen metabolism in the liver and has pleaded for the administration of insulin with due regard for endogenous rhythm as well as for meal hours. That this would be the ideal method of treating the diabetic patient cannot be denied, but it is expensive and in many cases an impractical method for large hospitals and private practices, since it requires numerous blood analyses and prolonged observation of the patient in a carefully controlled environment.

FRACTIONAL URINES

To facilitate the study of a diabetic patient it is wise to examine the urine several times a day. This method of evaluation of diabetic status is in use in diabetic services throughout the country, but, since it has still not been generally adopted by practitioners at large and is an important aid in individualizing the patient, the method used at the Kings County Hospital during this study will be discussed briefly at this point. Each day four specimens are collected, measured and analyzed:

- 1 All urine passed from bedtime to breakfast
- 2 All urine passed from breakfast to lunch
- 3 All urine passed from lunch to dinner
- 4 All urine passed from dinner to bedtime

More or fewer specimens may be taken to meet certain contingencies or the times of collection may be varied to suit the doctor, but the principle of dividing the daily urine for fractional examination has demonstrated its value and should be more widely used, especially by those who do not have elaborate laboratory facilities. The food intake, especially the available carbohydrate, being known, it is easier to prevent glycosuria than when twenty-four hour or casual urines alone are taken.

At the Kings County Hospital during the study, it was found convenient to divide the diet as prescribed by the physician into three meals containing approximately equal portions of fat, carbohydrate and protein and to adjust only the insulin dosage unless the total daily number of grams of one of the foodstuffs was to be changed. In private practice using fractional methods it is easy to vary both the amount of food and the insulin at frequent intervals, depending on the amount and time of the glycosuria and the convenience of the patient, such as working hours.

REPORT OF CASE

A patient on a diet of 150 Gm of carbohydrate and 90 Gm each of protein and fat (carbohydrate 150, protein 90, fat 90, calories 1,770) received 50 Gm of carbohydrate and 30 each of protein and fat at each meal. During twenty-four hours, receiving 10 units of insulin before each meal he passed 1,200 cc. of urine containing 2 per cent dextrose, or a total loss of 24 Gm a day. Instead of reducing the amount of carbohydrate ingested or increasing the amount of insulin fractional urines were taken, showing that specimens 2 and 3 contained no dextrose and that all the dextrose was passed between dinner and breakfast. With this lead and by more careful study of the patient's glycosuria after dinner, it was found that by giving finally 5 units before breakfast and 15 units after dinner, there was no longer glycosuria, the total amount of insulin taken and the diet remaining the same.

² Mollerstrom Jacob. Periodicity of Carbohydrate Metabolism and Rhythmic Functioning of the Liver. Arch. Int. Med. 52: 649 (Nov.) 1933.

CLINICAL INVESTIGATION OF POSTPRANDIAL INSULIN

In an effort to learn whether reactions would occur more often with the routine administration of insulin after meals than with the conventional schedule, the patients of the female diabetic inpatient department of the Kings County Hospital were given insulin immediately after meals every other day. On alternate days the patients were given insulin as usual before eating and the number of reactions (insulin shocks severe enough to be recognized by patient or nurse) was carefully noted. A note was also made of the number of "spills," that is, the presence of dextrose in one of the fractional urines. The diet and insulin dosage were kept constant in each case. There were 1,052 insulin injections in the first (postprandial) series, and 1,055 in the second. There were eleven reactions (1.05 per cent) in the first series and ten (0.95 per cent) in the

Reactions and 'Spills'

| | Number of Injections | Percentage of Reactions | Percentage of Spills |
|--------------|-------------------------|----------------------------|-------------------------|
| After meals | 1 052 | 1 05 | 2 1 |
| Before meals | 1 055 | 0 95 | 1 9 |

second. There were twenty-two "spills" in the first series and twenty in the second. As can readily be seen, there was almost no difference in the number of reactions and in the number of "spills" in these unselected series, nor were there any complaints from the patients.

It is essential not to misunderstand the purpose of this experiment. The results are not quoted to support a program of routine postprandial insulin. This would obviously be as wrong as any other inflexible schedule and probably less justifiable physiologically than the method now in common use. The experiment does however show that postprandial insulin administration is safe and feasible and should be considered in cases which present difficulties in diabetic management. As many observers have demonstrated, it is sometimes necessary to give insulin at unusual hours, before, after and between meals, and even late at night. It has even been found desirable occasionally to have one dose given as late as between midnight and breakfast.

There are definite indications for considering a change in insulin schedule for the diabetic patient.

1 Any patient who cannot be kept free from shocks on his present regimen should be carefully studied from the point of view of his insulin timing.

2 Patients with gastro-intestinal upsets will often require insulin after meals. Tuberculous or post-operative patients, for example, who are vomiting may be kept free from shocks if the dosage of insulin is regulated according to the amount of food the patient has actually ingested and kept down rather than according to a theoretical diet which he may refuse to eat or may be lost by emesis.

If the present trend toward allowing diabetic patients greater freedom in their diets continues, radical changes in hospital routines may ensue. This is especially true if it is followed to the extremes (still foreign to American ideas) suggested by Adolf Lichtenstein³ of Stockholm, who following the lead of Stolte of Breslau, permits diabetic children to eat what they wish as long as there is satisfactory weight gain and no

³ Lichtenstein Adolf. Nord med tidskr. 35: 1329 (Aug. 31) 1935. See comments in Lancet 2: 1068 (Nov. 9) 1935.

acidosis Here it may be wise to give insulin after seeing what the patient has actually eaten, not according to what he may eat

Under certain circumstances an intelligent diabetic patient may elect to postpone his usual dose of insulin. Such a situation sometimes arises when he may have to eat away from home, for example at a public function, where he cannot predict or change the menu. In such a case many diabetic patients can quickly estimate the amount of insulin which they need and take it after the meal.

Situations sometimes arise in which the conventional insulin schedule has had unpredictable disastrous results. This was rather dramatically shown in an experience of Dr. Greene's,⁴ in which a patient, after administering 25 units of insulin, found that she missed one of the ingredients of the meal. She went to her grocery shop and on the way engaged in conversation with a neighbor, delaying long enough to go into severe shock and coma. I have also seen an epidemic of shock in a hospital ward when the elevator bringing the food broke down. These examples are not given so much to condemn giving insulin before meals as to illustrate that when it is given in this way the cooperation of an intelligent patient or staff is necessary.⁵

CONCLUSIONS

1 It is urged that the insulin schedule be carefully studied in order to individualize the patient. This will necessitate giving insulin usually before but sometimes after meals or at odd times.

2 With the use of newer, more slowly acting, insulins, either alone or in combination with a rapidly acting insulin, the necessity for close study of the time of insulin administration will be increased.

3 Insulin should be given with regard to the actual food intake of the patient rather than in relation to a theoretical diet. This is especially true with relation to tuberculous or postoperative patients, children, or those with capricious appetites or vomiting.

4 Fractional examination of the urine is more desirable in the study of the diabetic patient than twenty-four hour specimens.

5 In a large series of injections it was found that the number of shocks and the incidence of glycosuria was approximately the same whether insulin was given before or after meals.

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ABSTRACT OF DISCUSSION

DR. RALPH H. MAJOR, Kansas City, Mo. When those of us who are interested in insulin first began to treat patients with this new and powerful therapeutic method we followed a routine of giving the patient his insulin half an hour before meals and wondered at first why some patients got along so well and others did so badly. Further observations showed clearly that in many instances there was an apparently more rapid absorption of insulin than in others. Up to the present time there has been no way of estimating the rapidity of this absorption except by studying the individual patients and examining either the urine in separate specimens or by making repeated blood sugar examinations. I have found the repeated blood sugar examinations preferable but there are serious objections to carrying them out in outside practice. I wholeheartedly subscribe to the idea emphasized by Dr. Plotz that the estimation of the urine along with the gain in weight and general condition is by far the most important laboratory procedure. I have been much interested in several patients I have

seen recently who showed very high blood sugars following their meals and an hour later went into insulin shock. These patients had been getting insulin in the customary fashion, a dose half an hour before meals, but careful study of their blood sugar showed that they apparently had a very slow absorption of insulin, the peak not coming before two and one-half or three or on some occasions four hours, with the result that the patient's blood sugar went up quite high following the meal. He spilled over sugar and then the insulin began to get in its effect and he had a shock a short time after showing a large amount of sugar in the urine. These patients are perhaps a great deal more common than ordinarily supposed. Many of the difficulties mentioned by Dr. Plotz may be obviated by the introduction of insulin protamine, which he has mentioned. My experience with this form of insulin has been limited, but I am certain from that limited experience that patients react differently to insulin protamine, just as they react differently to ordinary insulin. The divergence is not nearly so great, but at the same time it will be necessary to individualize the slow acting insulin the same as we do with the insulin we are employing today.

DR. RUSSELL M. WILDER, Rochester, Minn. An effective way of handling many patients is to give a dose of insulin without food late in the evening. Some very severe cases can be handled with two injections in this manner, one dose before breakfast and the second dose at 8 or 9 o'clock in the evening. It is not true, as at first was taught, that every dose of insulin must immediately be buffered by food. That depends on the height of the blood sugar level and the time of day at which the insulin is given, and if a patient misses a dose or forgets to take a dose of insulin before a meal, there is no objection, and indeed it is highly important, that he should take the dose immediately after the meal. Mild cases of diabetes and moderate cases never have been very difficult to manage, but all of us have had experience with so-called brittle cases with high blood sugars at one time and reaction to insulin, with a rapid falling of blood sugar and the development of symptoms of insulin shock at other times of the day. It is not unlikely that the insulin of eight or ten years ago was slower in its action than the highly purified water soluble insulin with which the manufacturers recently have been supplying us. We saw fewer cases of this brittle type before than we do now. The insulin as it is supplied to us at the present time is as pure as granulated sugar. It is rapidly absorbed and its effect thus is more explosive. The insulin of a few years ago possibly contained zinc, perhaps other metals, as contaminants, and these metals delayed its action. This perhaps is the explanation of why we are having so much more trouble now than we used to have. Dr. Plotz mentioned insulin protamine and other longer acting insulins that recently have been introduced. I hope that those who haven't been able to see them may come to the diabetes exhibit and study some of the charts that are there of patients who have received insulin protamine. We have been experimenting with different types of diets and different types of administration of this new drug and are very much pleased to find that our best results occur when a single dose of the insulin protamine is given before breakfast in the morning. This of course, is most convenient for the patient. We have demonstrated clearly that in the average case the action of insulin protamine extends into the second and third day, as a cumulative effect. This adds to the difficulty of judging the dose but permits administration of insulin at whatever time of the day is most convenient. The advantages in insulin protamine and other longer acting insulins are first this matter of convenience, second a continuous insulin action over the twenty-four hours. The duration of action of regular insulin is not over six hours. Unless one gives four injections a day there must be periods when the patient is not receiving any help. Such periods probably are dangerous, at least they are harmful. The use of insulin protamine overcomes this difficulty.

Milk and Vitamins—Milk contains all the known vitamins. While each of the vitamins may be found in other foods also and some of them often in higher concentrations there are few if any other foods which furnish all these vitamins in such well balanced proportions as does milk.—Sherman H. C. Food and Health, New York, Macmillan Company 1934.

⁴ Greene, C. H. Personal communication to the author.

⁵ An interesting article emphasizing the importance of postprandial insulin has recently appeared. Sinden, Anthony Jr. Opium Time to Administer Insulin. Arch. Int. Med. 57: 949 (May) 1936.

ALCOHOL INJECTION IN THE TREATMENT OF MAJOR TRIGEMINAL NEURALGIA

FRANCIS C GRANT M D
PHILADELPHIA

Clinically the diagnosis of major trigeminal neuralgia is not difficult. A vicious lancinating paroxysmal pain in either side of the face referred to the tongue or teeth, the upper or lower lip, nose or forehead in man or woman of 50 or 60 especially if a characteristic burst of pain can be excited by slight irritation of a particular point on the tongue lips or cheek, constitutes briefly the syndrome called *tic douloureux*. Relief from this dreadful pain can be afforded only by blocking the sensory pathways in the trigeminal nerve either peripheral to the gasserian ganglion or between the ganglion and the brain stem.

Surgical measures to sever the sensory root of the fifth nerve have been repeatedly described and standardized, but the value of peripheral block with alcohol of the appropriate branch of the trigeminal nerve as a means for relieving the pain of *tic douloureux* and as an aid in the differential diagnosis of this condition has received less attention.

In this country the extra-oral subzygomatic technic described by Levy and Baudouin¹ is most commonly used in the injection of the mandibular and maxillary branches of the fifth nerve. The intra-oral method devised by Schlösser² and advocated by Ostwald,³ as well as the maneuvers necessary to inject the gasserian ganglion itself described by Hartel⁴ and so strongly advised by Harris,⁵ have met less favor. Patrick⁶ in 1907 and again in 1912 reported satisfactory results with the Levy-Baudouin method and did much to popularize it. In 1922 I⁷ published two reports describing certain refinements making for greater accuracy in performing the injection by this technic and hence more satisfactory clinical results. Horrax and Poppen⁸ in 1935 reported a large series of successful injections employing the extra-oral subzygomatic approach.

Any description of the technic used in injecting the maxillary or mandibular branches of the trigeminal suggests that they can be reached with ease and accuracy. But these nerves are roughly 3 mm in diameter and lie from 4.5 to 5.5 cm beneath the skin. Complete relief of pain demands that the alcohol be injected directly into the nerve sheath. Certain fixed external landmarks exist and fairly precise instructions can be given for the direction and depth of the injecting

needle. But these external landmarks will have slightly different relationships to the deeper structures in brachycephalic or dolichocephalic individuals. Hence the practice of this technic on the cadaver prior to its clinical application cannot be too strongly urged.

The armamentarium necessary for alcohol injection consists of two hypodermic needles 1.5 and 3 cm in length with two 2.5 cm syringes and two 22 gage lumbar puncture needles. The bevel of these needles should be shortened by polishing to a 22.5 degree angle. If the bevel is long as in the standard needle, the point alone may be in the nerve sheath. Hence alcohol can leak out through the heel of the bevel and not enter the nerve. A protractor for measuring angles with a centimeter scale on its base and small bits of cork to act as stops to fit on the shafts of the needles and thus determine the depth of penetration together with 10 cc of 2 per cent procaine hydrochloride and 5 cc of absolute alcohol complete the necessary equipment.

The patient is placed on the back with the head elevated on a sand pillow and turned to expose the cheek area through which the injection is to be made. Local anesthesia is always used and never injected deeper than the zygoma. If the deeper structures as well are

TABLE 1—Major Trigeminal Neuralgia 185 Cases

| Males | 67 | Females | 118 |
|-------------------|-----|------------------|-----|
| Right fifth nerve | 102 | Left fifth nerve | 88 |

TABLE 2—Age Incidence

| | No of Cases | | No of Cases |
|-------|-------------|--------|-------------|
| 20-30 | 2 | 60-70 | 50 |
| 30-40 | 7 | 70-80 | 12 |
| 40-50 | 26 | 80-90 | 5 |
| 50-60 | 66 | 90-100 | 2 |

TABLE 3—Division Involved

| | | | |
|-------------|----|--------------|----|
| Left first | 6 | Right first | 4 |
| Left second | 22 | Right second | 73 |
| Left third | 40 | Right third | 70 |

infiltrated with procaine it may be difficult to determine whether resulting anesthesia is due to procaine having reached the nerve or to alcohol. A general anesthetic is unsatisfactory because the pain reaction caused by the entrance of the needle point into the nerve is the only definite evidence that the needle has been properly placed. When the patient complains of pain in the upper or lower lip, a drop or two of alcohol is injected. The area is then tested for anesthesia and, if loss of pain sensation can be demonstrated, 0.75 cc of absolute alcohol is injected. Complete anesthesia should be produced. If the needle point is properly engaged in the nerve some force will be required to introduce the alcohol.

TECHNIC

Injection of the Supra-Orbital Nerve—This nerve is injected as it emerges from the supra-orbital foramen. The supra-orbital notch is easily palpated in the orbital ridge. A hypodermic needle is inserted through the skin directly into the foramen. The plane of this foramen is usually at an angle with the midline from without inward. The needle on engaging the foramen in the ridge may be directed slightly outward to enter the canal itself. Care must be taken to hug the bone closely with the needle tip to avoid infiltration of alcohol into the orbit. When the needle enters the nerve pain

Read before the Section on Nervous and Mental Diseases at the Eighty-Seventh Annual Session of the American Medical Association Kansas City, Mo., May 13, 1936.

¹ Levy, Fernand and Baudouin, Alphonse. Les injections profondes dans le traitement de la neuralgie faciale rebelle. *Presse med* 13 108 (Feb. 17) 1906.

² Schlösser. Heilung peripherer Reizzustände sensibler und motorischer Nerven. *Ber d Ophth. Gesellsch. Heidelberg* 31 324-34 1903-1905. Erfahrungen in der Neuralgiebehandlung mit Alkohol einspritzungen. *München med. Wchnschr.* 54: 902 (April 30) 1907.

³ Ostwald, F. Traitement des neuralgies rebelles par les injections profondes d'alcool. *Presse med* 12 812 (Dec. 16) 1903.

⁴ Hartel, Fritz. Ueber die intracranielle Injectionsbehandlung der Trigeminal Neuralgie. *Med. Klin.* 1 582 (April 5) 1914. Die Behandlung der Trigeminal Neuralgie mit intracranialen Alkoholeinspritzungen. *Deutsche Ztschr. f. Chir.* 126 429 (Feb.) 1914.

⁵ Harris, Wilfred. Trigeminal Neuralgia and Its Treatment. *Lancet* 1: 367 (March 14) 1931.

⁶ Patrick, H. T. The Treatment of Trifacial Neuralgia by Means of Deep Injections of Alcohol. *J. A. M. A.* 40 1567 (Nov. 9) 1907. The Technic and Results of Deep Injections of Alcohol for Trifacial Neuralgia. *Ibid.* 58 135 (Jan. 20) 1912.

⁷ Grant, F. C. Anatomic Study of Injection of Second and Third Divisions of Trigeminal Nerve. *J. A. M. A.* 78 794-797 (March 18) 1912. Alcohol Injection of Second and Third Divisions of Trigeminal Nerve. Clinical Results with More Exact Technic. *Ibid.* 78 1730-1731 (June 10) 1912.

⁸ Horrax, Gilbert, and Poppen, J. L. Trigeminal Neuralgia. *Surg. Gynec. & Obst.* 61: 394 (Sept.) 1935.

will radiate over the forehead toward the hairline and down the bridge of the nose. The nasal branch is often difficult to block, for it may divide from the main trunk of the supra-orbital well within the bony canal.

Injection of the Maxillary or Second Division—The landmarks for this injection are the external auditory canal and the lower border of the zygoma, which is



Fig. 1—Alcohol injection of maxillary division on right showing angle of needle from above downward and anesthesia produced by successful injection.

easily palpable. The needle is inserted just below the zygoma at a point 3 cm anterior to the anterior bony edge of the auditory canal. The mouth should be widely opened to throw the coronoid process of the mandible forward clear of the needle. From this 3 cm

TABLE 4—Results of Injections

| | | | |
|---------------------------|----------------------------|---------|------------|
| Total injections | 331 | | |
| Trigeminal neuralgia | 260 | | |
| Malignant disease of face | 81 | | |
| | Results in 331 Injections | | |
| | Successful | Failure | Percentage |
| First division | 10 | 9 | 10 |
| Second division | 124 | 31 | 20 |
| Third division | 166 | 35 | 21 |
| | Duration of Relief of Pain | | |
| | Patients | Months | |
| First division | 7 | 11+ | |
| Second division | 107 | 14+ | |
| Third division | 117 | 16+ | |

mark the needle is introduced inward forward and upward at an angle of 115 degrees with the skin surface from above downward and from before backward. The needle passes upward and forward in the plane of the external canthus of the eye but is directed behind the eye as though it were pointed at the optic nerve. At a depth of about 5 cm bone will be encountered; the pterygoid plate of the sphenoid. The outer end of the needle must now be slightly depressed so that the point will pass in front of this obstruction and enter the pterygopalatine fossa. Without change in direction the needle is now advanced from 0.5 to 0.75 cm farther and should encounter the nerve. When the nerve is touched the patient will instantly complain of severe pain in the upper lip and the ala of the nose; 0.75 cm of alcohol can now be injected.

The only hazard connected with injection of the maxillary division is too deep penetration of the needle; 6.5 cm is the maximum depth compatible with safety, although in a long narrow skull this penetration might result in puncture of the nose or orbit. The orbital structures should, of course, be most carefully avoided. Paresis of the external rectus muscle and diplopia have followed too deep an injection. Fortunately, this muscle paralysis is usually only temporary.

In a certain percentage of cases, as has been shown, the pterygoid wing may extend so far upward and forward and the pterygopalatine fossa be so deep that the nerve cannot be reached by this approach. Some of

TABLE 5—Complications Following Injections

| | |
|--|------|
| External rectus palsy following injection of second division | none |
| permanent | 0 |
| Facial paralysis following injection of third division | 1 |
| Ulceration of mouth following injection of second division | 4 |

the unsuccessful attempts to inject the maxillary nerve are due to these abnormalities in the anatomy of the structures that surround it.

Injection of the Mandibular Nerve—The anterior edge of the bony wall of the external auditory meatus and the lower edge of the zygoma again form the external landmarks. The mandibular notch of the jaw is palpated through the skin. A point 2 cm in front of the anterior edge of the external auditory canal will center on the mandibular notch. The needle is inserted at this point and directed inward at right angles with the skin in the horizontal plane and slightly upward at



Fig. 2—Same patient showing angle of needle from before backward.

an angle of 110 degrees from above downward in the vertical plane. At a depth of $3\frac{1}{3}$ to 4 cm bone is encountered and by lowering the point of the needle 1 or 2 mm one advances it another 0.5 cm to encounter the nerve. As the needle point engages the nerve the patient will complain of pain in the lower lip and tongue. No anatomic obstacle prevents injection of the mandibular nerve by this route. In about 25 per cent of cases the plane of the foramen ovale contains

ward sufficiently from the midline for the needle point to enter it. Hence the injection of the ganglion may be made if indicated. If the needle point is dropped too low and the penetration is too deep, the nasopharynx is entered. More frequently the needle is directed too far posteriorly and the eustachian tube encountered, causing pain in the ear. If this occurs the needle should be withdrawn a centimeter or two and directed slightly more anteriorly. The chief reason for lack of success in reaching the mandibular nerve is too deep insertion of the needle as the result of introducing it too low and encountering bone behind the location of the nerve.

This report is based on a series of 331 injections of the various branches of the trigeminal nerve. Two hundred and fifty injections were given to 185 patients suffering from major trigeminal neuralgia. Eighty-one injections were performed on sixty-nine patients suffering from pain in the trigeminal area due to malignant disease of the lips, tongue, cheek, nose or maxillary sinus. The tables show the age incidence, sex, laterality, branch of the trigeminal injected, percentage of successful injections and average period of relief from pain. The statistics in the cases in which injection was done for malignant conditions are included only in the last two groups. Lastly the rare complications are recorded.

Alcohol injection of the peripheral branches of the trigeminal nerve by the technic described is a valuable procedure. By its use a positive diagnosis of major trigeminal neuralgia can be reached. If a patient has pain in the face and if the branch of the trigeminal nerve supplying the skin area to which the pain is referred is successfully blocked, producing anesthesia and relief of pain, this is definite proof that the pain traveled over sensory pathways in the fifth nerve. But if the expected anesthesia is produced and the pain is not relieved, the case is one of the vague group described by Cushing⁹ and by Glaser¹⁰ as atypical facial neuralgia and further procedures directed against the fifth nerve are useless. Many an unnecessary section of the sensory root of the trigeminal could have been avoided if this test had first been applied.

Early sufferers from *tic douloureux* shy away from an immediate operation and demand nonoperative relief. Alcohol injection will afford this for more than a year at least. Furthermore, the patients become accustomed to the anesthetic area on the face and when they return for operation are completely satisfied to learn that a subtotal avulsion of the sensory root will not markedly increase this anesthesia while permanently relieving the pain.

In eleven cases in this series the patients presented themselves for operation but were so starved and dehydrated on account of the pain caused by eating or drinking that a preoperative nerve block was necessary. With the pain relieved, proper water intake and nourishment could be given to make them fit subjects for operation. Fourteen patients were over 75, two over 90. Relief of pain by alcohol injection was obviously much to be preferred to operation.

With regard to the cancer cases little need be said. Attention has been drawn previously to the value of blocking appropriate nerves to relieve the continuous and distressing pain only too often accompanying

malignant disease of the face.¹¹ This seems a simple act of mercy all too infrequently employed. Not only is the pain stopped but radical treatment no longer causes suffering. And occasionally the ability to sleep, eat and accept intensive treatment without pain has rallied these people to the point at which complete disappearance of the malignant tumor has occurred.

The disadvantages of alcohol injection briefly are that it is a painful procedure, that even in experienced hands the nerve may not be successfully blocked, and that occasionally a temporary external rectus or facial palsy may result.

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ABSTRACT OF DISCUSSION

DR. WALTER E. DANDY, Baltimore. My reaction to Dr. Grant's paper is one of surprise. How could such a good surgeon perform so many alcoholic injections? The operative attack is so safe and the result is permanent. I do not like alcoholic injections. There are, of course, some indications for them but these are not frequent. Occasionally one may have difficulty in making a differential diagnosis between glossopharyngeal neuralgia and trigeminal neuralgia, or between trigeminal neuralgia and one of the obscure pains in the face, but such uncertainties are uncommon. Then, too, in malignancy or in a very senile patient whose tenure of life is quite brief alcoholic injections may be in order but for the ordinary patient with trigeminal neuralgia, I cannot believe that there is any indication. Injections are very painful at best, and patients who have had one are very reluctant to endure another, especially when relief is only temporary. A patient with trigeminal neuralgia must look forward to repeated injections every year or year and a half until the end of life. Usually the pain of the injection is such a terrible ordeal that they are even willing to suffer the pain for some time before again consenting to another injection. My feeling is that as soon as the diagnosis is made, the only form of treatment is section of the sensory root of the fifth nerve either partially or totally, as the case demands. I usually put the situation before a patient telling him that he can have the alcoholic injection with temporary relief or have the operation which will take practically no risk now in safe hands and it is very uncommon indeed, for anybody to choose the alcoholic injection.

DR. J. GRAFTON LOVE, Rochester, Minn. I will present the results of the experiences I have had at the Mayo Clinic with the use of alcohol injection in major trigeminal neuralgia. We have had practically no experience with the use of alcohol in the malignant conditions about the face. At the clinic we ordinarily recommend from one to three deep injections of alcohol before advising operation or accepting the patient's request for operation. As Dr. Grant stated the injection of alcohol serves to clinch the diagnosis. It educates the patient to the feeling of absolute numbness which it gives him in lieu of the pain. In decrepit patients or patients with far advanced heart or kidney disease the operation is contraindicated. The latter indication for alcohol injection, however, is met less and less frequently, for we have recently completed a series of more than 300 operations on the trigeminal nerve by the trans-temporal approach, without a death. Alcohol injection is recommended for patients who have had trigeminal neuralgia for only a short time, for patients in whose history there is some doubt as to the true diagnosis of the condition and for patients in whom an operation even of this mild risk, is contraindicated. All patients suspected of having trigeminal neuralgia are seen by a neurosurgeon in consultation with a member of the neurologic department. The neurosurgeon recommends the type of treatment to be carried out. If alcohol injection is decided on the patient is referred to the department of oral and plastic surgery. These surgeons devote all their time to diagnosis and treatment of conditions about the face. They have been doing alcohol injections for years. The injections are given under gas anesthesia so that the patient experiences no pain. I too have had the experience of recom-

⁹ Cushing, Harvey. The Major Trigeminal Neuralgias and Their Surgical Treatment, *Am J M Sc.* 160:157 (Aug) 1920. The Role of Deep Alcohol Injections in the Treatment of Trigeminal Neuralgia. *J A M A.* 75:441 (Aug 14) 1920.

¹⁰ Glaser, M. A. Atypical Neuralgia. *Arch Neurol & Psychiat.* 20:53* (Sept) 1928.

¹¹ Grant, F. C. Relief of Pain by Nerve Section. *J A M A* 92:116 (Jan 12) 1929.

mending alcohol injection to a patient who has had a previous injection and having it flatly refused. The patient said he would rather keep the pain than be subjected to the injection under a local anesthetic. I think that has been the experience of most people. After one or, at most, three injections of alcohol, we advise or meet the patient's request for a division of the sensory root. We carry out the transtemporal operation, subtotal section of Frazier or the complete section of the sensory root between the ganglion and the pons.

DR. PETER BASSOE, Chicago. With the great improvement in the radical surgical treatment of trifacial neuralgia, I now feel it my duty to try to persuade the victims to have operation rather than alcohol injection. Still some patients prefer the injection treatment. I note with interest that Dr. Grant uses a different landmark for the deep injection of the middle branch than the one recommended by Levy and Baudouin. I have found the latter landmark satisfactory and have had more difficulty with the lower branch. As to the use of injection in differentiating between trifacial and glossopharyngeal neuralgia, I have had a peculiar experience. I have seen only five or six cases of glossopharyngeal neuralgia, and two of them were complicated by trifacial neuralgia. I have found that injection can be made fairly painless by first injecting procaine and epinephrine. I congratulate Dr. Grant on having paralyzed only the sixth nerve, as I have also paralyzed the third nerve several times. Fortunately this paralysis soon disappeared.

DR. ERNEST SACHS, St. Louis. I have seen many cases of pain in the face in which I was unable to make a positive diagnosis of trigeminal neuralgia. Possibly because I am in St. Louis I see many cases of the late Dr. Sluder in which differential diagnosis is extremely difficult. In those cases, as Dr. Grant has said, I think it is invaluable to try the alcohol injection first to establish the diagnosis. Then there is also a limited number of cases as he said in which the pain has existed for a very brief time. In those cases I think the alcohol injection first is of distinct value.

DR. JAMES RUDOLPH JAEGER, Denver. I have had the experience in a number of instances of having produced a complete anesthesia over the particular division of the fifth cranial nerve. I have injected and then finding that the neuralgia persisted over that division. In other words, I do not think that a satisfactory area of anesthesia with pain still referred to that area is always positive evidence that the pain is not that of tic douloureux. If one gets anesthesia and still has the pain typical of tic douloureux in the anesthetic area, it certainly leads one to believe that the pain exists in the ganglion itself or at least in the root of the fifth nerve between the ganglion and its foramen of exit from the skull. In a number of cases in which I produced good anesthesia over the root of the fifth nerve by alcohol injection subsequent section of the sensory root cured the neuralgia. I do not think that alcohol block in the peripheral branch is always of diagnostic value in true major trifacial nerve pain. As Dr. Grant has said, most neurosurgeons prefer not to inject the ganglion. They are fearful of this procedure. It is my belief that the person who does a good complete ganglion injection with alcohol must be a very brave person. As yet I have not developed the courage to do the ganglion injection.

DR. A. L. SKOOG, Kansas City, Mo. I am wondering if Dr. Grant has had experience with cases that seem to have been restored by injection of the branches. Some fifteen years ago Dr. Adson of the Mayo Clinic referred to me a patient for repeated injections. She was an elderly woman with advanced arteriosclerosis, hypertension and a bad heart. She was not considered a good risk for operation. She had a blood pressure of 270 systolic on several occasions. The second and third branches of the right side were involved. I made six or seven injections in the course of two years. Then she went on requiring no injections, apparently free from pain for some time like five years and died. Unfortunately we had no autopsy. She was 77 or 78 at the time of her death. Possibly enough alcohol had been injected on several occasions to produce a sclerosis and more or less complete blocking of pain.

DR. GRANT, Philadelphia. Alcohol injection has a definite place in the treatment of trigeminal neuralgia. Certain patients refuse operation; in others the diagnosis between

true and atypical facial neuralgia is difficult and alcohol injection is a very satisfactory way to differentiate between these conditions. Lastly, a successful alcohol injection with relief of pain accustoms the patient to the numb area in the face so that when operation is performed with permanent removal of the pain the patient will know just how his face will feel. I must disagree with Dr. Dandy that a radical operation is the primary treatment for these cases. Dr. Sachs has, I am sure, had the same experience that I have had. I have seen cases of atypical neuralgia so closely simulating the true major neuralgia that immediate operation seemed entirely justified. The sensory root was completely severed and the trigeminal sensory area rendered permanently anesthetic. But the pain continued and furthermore the patients complained bitterly about the anesthesia of the face. I have never seen a case in which, following a successful peripheral alcohol injection, failure to relieve pain was noted, that was subsequently relieved by sensory root section. It is as an aid in differential diagnosis and the avoidance of unnecessary sensory root resection that peripheral alcohol injections are most valuable. Dr. Hassin commented on the position from which the second division injection was made. The original Levy and Baudouin technique punctured the cheek farther forward. When I was practicing this technique on the cadaver, as is noted in a paper published in 1923, I found that if the injection was made from a point 5 cm in front of the external auditory canal and the needle was inserted too deeply, the optic nerve could be injured. The injection from the 3 cm mark in front of the external auditory canal does away with this danger. I believe that the second division may be reached just as easily from this point as from farther forward. None of these techniques for peripheral alcohol injection of the maxillary or mandibular branches should be attempted on a patient without careful experience on the cadaver.

OCULAR HYPERTENSION IN GLAUCOMA

ERRORS IN OPERATIVE TECHNIC LIKELY TO CAUSE
FAILURES IN OPERATIONS FOR ITS CONTROL

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Since the operative procedures to be discussed for the reduction of increased intra-ocular tension have to do directly with the anterior segment of the eyeball, it seems advisable to consider only this portion of the eye.

It is assumed that the cases judged operable have been thoroughly worked up, with the elimination of all conditions likely to interfere with or subsequently nullify the possible success of an operation. Constitutional, metabolic, nutritional states, tissue change due to age, and focal infections all have to be determined and weighed as to their influence on tissue repair, hemorrhage or infection. As Colonel Elliot¹ puts it: "Eliminate all sources of endogenous sepsis, observe scrupulous sepsis." The latter point was strongly emphasized by Clifford Walker last year. He showed that even small particles of foreign matter in a trephine tip were the source of irritation, congestion and infection. The judgment skill and care in carrying out operative procedures should further be safeguarded by keeping the patient quiet, using hypnotics or even a general anesthetic. The Van Lint² lid block, a thoroughgoing local anesthetic and a retrobulbar anesthetic by way of the capsule of Tenon or by a chiasm ganglion block should be used.

Read before the Section on Ophthalmology at the Eighty-Sixth Annual Session of the American Medical Association, Jan. 23, 1933, May 14, 1936.

¹ Elliot, R. H. A Treatise on Glaucoma, ed. 2 (Oxford: H. K. Lewis, 1932).
² Publications, London: Frowde, 1922. Trephining Arch. Ophth., 81, 803 (Dec.) 1932, personal communication to the author.
³ Personal communication to the author.

The type of operation to be done is based on the estimated change in tissues and any alteration in the position of the parts involved in an eye with hypertension, and carried out only after proper measures—local and systemic—have been thoroughly tried and have failed. The consensus is that medical measures are apt to be carried on too long, permanent damage occurring, or that the patient has waited too long before seeking advice and operation. Should the tension be too high to operate safely, an anterior or posterior sclerotomy may be necessary to reduce tension and deepen the anterior chamber.

Light, dextrous, deliberate, clean-cut operative methods with the least amount of trauma to the tissues always secure the best results. Rough handling or bruising of tissues, so that a congestive irritation is set up, delays healing and encourages infective processes.

Magitot² says "All operations, iridectomy, cyclodialysis, sclerecto-iridectomy, may have good or bad results. This does not depend upon the technic but upon the nature of the local condition, the vascular disorder. The glaucoma is a symptom, the hypertension a disease."

The classification of the types of glaucoma and the operative procedures most commonly used as suggested by Gradle³ will be followed.

The therapeutic iridectomy is aimed at the reestablishment of the normal pathways for the drainage of intra-ocular fluids. Its object is to make a limbic incision, to excise a portion of the iris, to free the filtration angle before anterior peripheral synechias have solidly formed, to open a free passage between anterior and posterior chambers and to revive the equilibrium of inflow and outflow of ocular fluids by way of the iris circulation and filtration angle.

The Incision—In the words of von Graefe⁴ (a) it should be as eccentric as possible in order to remove the iris as far as its ciliary attachment (this is essential to success), (b) the aqueous should be allowed to escape slowly.

The usual tendency in making a keratome incision especially if the anterior chamber is shallow, is to make the incision too far forward in the cornea in attempts to avoid the iris, or if all allowance is not made for the corneal curve or the position of the eye when the patient looks down the incision is made too obliquely, producing a corneal shelf posteriorly as shown in post-operative microscopic sections. In either event, the iris cannot be removed up to its root, a portion is left to adhere in the filtration angle.

If the incision is made with a keratome its insertion and withdrawal should be deliberate, on a plane with the iris. If the handle is too far forward the tip will catch the iris, dragging the iris away from its root, causing pain and hemorrhage, should the forward movement be persisted in, the operator endeavoring to make his incision wide enough, the zonula and lens may be injured. In withdrawing the keratome is when most errors are committed the handle is carried far forward allowing the tip to scrape along the anterior capsule of the lens and the iris is forced backward, causing undue pressure on the zonula at the same time that the wound gapes, permitting an expulsive loss of aqueous. A knife incision when the anterior chamber

is shallow is safer, although even here care in cutting out slowly should be observed. In these cases an iridectomy ab externo is an excellent procedure.

The width of the incision too should be enough to allow easy instrumentation for the iridectomy and not large enough to encourage too rapid a loss of aqueous or a large prolapse of iris or even the ciliary body.

The Iridectomy—Von Graefe thought that "a large portion of the iris should be excised, the more intense the symptoms the more extensive the excision." In the cases considered for this operation today in the early stage, one is apt not to follow this dictum, removal of the iris at its root establishing a free communication between the anterior and the posterior chambers, and the reestablishment of circulatory equilibrium make it unnecessary to form a large coloboma which gives a most annoying dazzling from too much light entering the eye. The iris forceps should be slid over the posterior lip of the wound closed and opened only 2 mm over the sphincter of the iris, which it grasps lightly. Attempts at entering the wound with conjunctiva, of the anterior lip over the tip of the forceps, or attempts to grasp the iris by tipping the forceps strongly backward may produce a dialysis of the iris, break the zonula or dislocate the lens. The iris should be drawn out slowly until just taut, cut through the sphincter on one side and then gently torn from its base from 3 to 4 mm and again cut. Continued dragging upward may tear the iris entirely out or leave the iris pillars firmly incarcerated in the angles of the wound.

Toilet of the Wound—The iris pillars should be stroked easily or floated by saline solution into position, from periphery toward the pupil no pressure being used. The conjunctiva should be placed in position and sutured if necessary, so as not to allow it to slide down and buckle into the wound a deep vascularization taking place from this faulty position of the conjunctiva.

Some surgeons believe that atropine instilled after an iridectomy is superfluous and wait for iritic signs and symptoms to arise before so doing. It is essential to make this instillation of atropine a routine, unless for any reason, as in peripheral iridectomies, for forty-eight hours the pupil is to be drawn down with miotics for the purpose of keeping the iris out of the wound. A traumatized iris is bound to react by slowing up of the blood stream the contents of the blood vessel being exuded into the area, blocking the filtration angle, or leading to an infection, unless studied with a slit lamp under magnification and measures adopted accordingly. This is not appreciated until irreparable damage has been done or at least started the stimulation of cellular proliferation going on to wound repair.

The Lagrange⁵ sclerecto-iridectomy is an operation as is the Elliot trephining and the Holth⁶ iridencleisis procedure, to establish extra-ocular pathways for the drainage of intra-ocular fluids. The object of this operation is an excision of a portion of sclera in the filtration angle under a conjunctival flap, sectioning the scleral spur, opening up the suprachoroidal space, and excision or not of a portion of the iris.

⁵ Lagrange P F On the Production of a Filtering Cicatrix in Chronic Glaucoma Ophthalmoscope 5 467-472 (Sept 1) 1907 On the Filtering Cicatrix in the Cure of Glaucoma ibid 6 363-374 (May 1) 1908

⁶ Holth S Iridencleisis antiglaucomatosa Ann ocnul 137 345 375 (May) 1907 Sclerectomie avec la pince emporte-pièce dans le glaucome de préférence après incision à la pique ibid 142 115 (July) 1909

³ Gradle H S A Critique of Glaucoma Operations Am J Ophth 18:730-735 (Aug) 1935

⁴ von Graefe, Albrecht Arch Ophth 4 127 1858 New Sydenham Soc. Proc., 1859 p 368

In the original operation, when a knife incision is used with a removal of the scleral segment by scissors or knife (Kalt) cut or Vacher punch, the least amount of trauma to parts involved is done and the sclerectomy covering is usually adequate. This too can be said of the modified operations with the keratome, although here the incision into the anterior chamber is further forward, not sectioning the scleral spur.

The errors in technic with the incision occur in making the incision too far back, so that the ciliary body is injured, in making the sclerectomy too wide and too long (as when first advised it was 7 by 1 mm). The ciliary body and processes bulge forward into the wound. Should the sclerectomy be too narrow, much less than a millimeter in width, it closes over from episcleral connective tissue growth surely and rapidly.

This operation offers a nicety of judgment and skill to be demonstrated only by a surgeon accustomed to doing it.

The iridectomy, whether complete or peripheral, should be such as not to leave iris incarcerated in the wound. Lagrange and Holth insisted on this, although later Holth found that iris incarcerations were of aid in forming a filtering cicatrix. He later devised and continues to carry out the iridencleisis procedure. It might be said here that the iridodialysis done by Spratt² can be done in these cases, especially when an active iris can be controlled with miotics long enough to have the aqueous go directly through from the posterior chamber into the peripheral anterior chamber and into the fistulous opening. When this does not occur, the iris persisting to prolapse or, when the iris is atrophic, the root of the iris should be excised, leaving the iris sphincter intact for whatever miotic action is necessary, avoiding the disturbing coloboma.

Lagrange always insisted on early massage in these cases keeping the tension between 12 and 25 (Schiotz) if possible. As with the trephine, if the sclerectomy is too large, hypotony with its ensuing degenerative changes may follow.

The toilet of the wound is done with the same care as in the therapeutic iridectomies with a suturing of the conjunctiva and the instillation of atropine. One is reminded that careful observation of the reaction of the iris to injury subsides in a few days, when the atropine can be discontinued. When continued longer it may act as an irritant, defeating the object of its instillation.

The trephine operation in this country and in many European eye clinics is the operation most used for filtering purposes, for chronic uncompensated (late stages) compensated hypertensive cases and infantile types of glaucoma. The first fault likely in carrying out this operative procedure is in making the conjunctival flap.

Colonel Elliot says

- 1 Fashion a wide-based conjunctival flap avoid injury of the subjacent tissues as much as possible whilst raising it
- 2 Carry the dissection as low as possible.

The trauma involved in securing this conjunctival flap perhaps not too large if not done lightly and speedily with avoidance of pressure on the globe may cause a delay in the formation of the anterior chamber. This too may follow a buttonholing of the flap.

Colonel Elliot makes a strong point of splitting the cornea, not cutting it, and Calhoun¹ believes that this should be properly done to ensure the placement of the trephine well on the cornea.

If the conjunctiva with subconjunctival tissue and episcleral tissue is dissected well onto cornea to the limit seen in the microscopic sections—done cleanly leaving no episcleral tissue to allow the trephine to slip about—it would seem that splitting the cornea is an added trauma, with additional raw edges and subsequent irritation.

In the aged little subconjunctival tissue is present, it is essential that episcleral tissue from the insertion of the superior rectus muscle should be taken down with the conjunctiva to avoid a thin conjunctiva over the trephine opening, avoiding a fistula or subsequent infection, should a virulent conjunctivitis supervene at any time. Case reports show that this may happen and yet several writers have traced this possibility to an iris strand in the wound, keeping up a local irritation or a quiet iritis which leads on to an infection.

Complications are believed to follow the use of too large a trephine—2 mm—too free drainage followed by hypotony. Colonel Elliot uses nothing else and has had no bad results or regrets from using this size trephine. My experience with the 2 mm trephines was that the conjunctival flap seemed to lie flat on the opening and even be drawn into it from the hypotony that ensued, forming an excellent bridge for newly formed connective tissue to grow under it. Ciliary body, ciliary processes, vitreous and even lens have been seen in these wounds. The usual size trephine is 1.5 mm, which, unless sharp, requires much effort to make an opening when the latter is made, it is ragged and often incomplete and leads to early wound closure from connective tissue formation. No scleral hinging is advised for this reason. A suture may be placed in the segment to be excised with the ends run through the hollow trephine shaft. The trephine advised and used by Walker is good for this purpose. The corneoscleral disk if lost need not worry the operator, and usually the escape of aqueous and bulging of the iris into the wound keep the disk out of the anterior chamber, especially if the trephine just cutting through the corneosclera is gently and slowly removed.

The site of the trephine opening by its author is half cornea and half sclera. Some writers believe that it should be well forward in the cornea, but most surgeons believe that cornea tissue proliferates easily closing the opening. Others believe that this occurs if the opening is scleral in position.

A number of men lay the failure of a trephine opening to remain open permanently to the fact that the corneoscleral disk has not been removed cleanly. Sections of the disk should be completely lined or at least partly lined by Descemet's membrane. Uninfected wounds of the corneoscleral region, when bathed by aqueous humor manifest no tendency to the development of granulation tissue and remain open indefinitely.

The complications of iridectomy are the same as those mentioned in the two previous operations, perhaps more so, as the area of operation is limited.

Errors are committed in simply cutting off the top of the iris as it is bulging into the wound leaving the root of the iris to swing into the wound later in cutting away enough iris so that when replaced it is not well away from the wound margins, in reaching for an iris which does not prolapse readily or at all. It is in the latter attempts that the zonula is broken and vitreous presents.

In the replacement of the iris gentle massage on the cornea or a stream of physiologic solution of saline

chloride may float it into place. All writers condemn the use of the spatula in the trephine opening as a source of injury to the lens and zonula.

Suturing the conjunctival wound, instillation of atropine when the iris has been traumatized and the use of massage in certain cases in which filtration is slowed up temporarily by a blood clot or iritic exudate is strongly advised. With the restoration of the anterior chamber and more or less normal ocular fluid, failure of drainage through the opening, and closure of this fistula, or absorption by way of the conjunctival and episcleral vessels is unlikely.

Iridencleisis—This method of extra-ocular drainage, popularized by Holth, is becoming more used in this country for the same type of cases for which the Lagrange and trephine operations are done. In the secondary types following cataract operation it has seemed to be of help.

The same steps as in therapeutic iridectomy are carried out with the modification of Holth, using a punch excision of a millimeter strip of sclera in the filtration angle. The first cut in the iris is as mentioned, cutting the iris meridionally through the sphincter, with the resultant temporal or nasal portion of the iris placed under the conjunctiva as a tube or flattened out exposing the epithelial layer under the conjunctiva. This represents an interposition of material between the cut ends of Descemet's membrane, over which the corneal endothelium does not grow. When the iris has become atrophic with loss of much of the pigment, filtration seems to stop with the formation of connective tissue from both the iris and the surrounding episcleral tissue.

Spaeth has shown that the lining of the filtration scar is made up of iris epithelium. Verhoeff earlier thought that the iris tissue atrophied and became stretched and cracked in areas allowing the aqueous to flow into the separated fine connective strands making up the rest of the cicatrix.

Hemorrhage into the anterior chamber is often prevented, Gjesing believes, if a retrobulbar anesthesia with epinephrine is used. He has also said that iridencleisis offers no more lasting good result than other operations for glaucoma.

Infection through the filtration area as well as sympathetic ophthalmitis has been reported.

Cyclodialysis—This is Heine's operation for the intra-ocular drainage of the aqueous. Instead of a keratome the sclera is usually incised with a knife underneath a conjunctival flap 4 to 5 mm from the limbus. The ciliary body may be cut into, causing profuse hemorrhage. The separation of the ciliary body from the sclera by breaking through the sclera, may be done so roughly that injury to the ciliary body later sets up an iridocyclitis. An iridectomy may be done before or even afterward, when the root of the iris is broken away from its peripheral adhesion. The breaking up of the suprachoroidal trabecular by the spatula is of help in opening up the suprachoroidal space but if persisted in too violently more than 13 mm behind the limbus damage to the emissaria and contents the lymphatics and cortex veins may occur.

Early failures of this operation were due to a limited opening from 2 to 3 mm, avoiding a large dialysis of the ciliary body. Quick replacement followed the

return to increased ocular tension. A wide dialysis allows the ciliary body to sag, and the pull of the ciliary muscles, if not atrophied, both meridional and circular for a time at least keeps the suprachoroidal space open. Aqueous interposed between the raw surfaces prevents adhesions from forming. In many cases, as soon as the tension begins to rise again, these parts are pushed together, shutting off drainage.

It may be a temporary procedure much like repeated anterior sclerectomies in secondary glaucoma cases due to an iridocyclitis. It has been said that interference with vascular and nerve supply to the ciliary body is such as to decrease the supply of aqueous formed giving a satisfactory result as far as hypertension of the eye is concerned. Increased ocular tension after a cataract operation seems to do favorably with this operation.

CONCLUSION

The causes of failure in operations for the control of intraocular tension appear to be due to

- 1 A well advanced ocular pathologic condition at the time of operative intervention
 - 2 The operative procedure not being the best one, in view of the tissue changes present
 - 3 Definite errors in operative technic and after-care
- 20 East Fifty-Third Street

ABSTRACT OF DISCUSSION

DR HARRY S. GRADLE, Chicago. In all forms of glaucoma, the object of the surgeon is to restore a status of normal pressure equilibrium. The pressure equilibrium of the eye has a coarse balance in the form of the choroidal reservoir and a finer balance wheel in the aqueous humor. The ophthalmic surgeon can influence in any eye with a normal or an abnormal tension the outlet of the aqueous alone. He cannot influence the total fluid content of the eyeball; he cannot influence the formation of the aqueous; he can influence only to a certain extent the elimination of the aqueous from that eye. There are three possible ways in which that can be performed. The normal elimination may be restored through the chamber angle and the canal of Schlemm; a new passage may be opened between the ciliary body and the sclera whereby the aqueous can filter into the suprachoroidal spaces and there be absorbed; or an extra-ocular drainage may be formed for the aqueous. The type of operation to be employed must depend on the eye in question and it is extremely difficult to lay down any set rules. If firm anterior adhesions between the iris root and the posterior surface of the cornea have been formed it is a physical impossibility to open up the chamber angle to restore the normal drainage of that eye. No spatula and no knife ever devised can free the chamber angle adhesions so that the chamber angle may again be opened to normal function. The formation of a new intra-ocular drainage path as exemplified by the cyclodialysis operation, is not a difficult procedure, but the application of that principle is limited to a small number of cases. It is obviously impossible for a pathway to remain open between the ciliary body and the sclera if there is an excessive amount of pressure on the other side of the ciliary body. In other words if the pressure within that eyeball is high it is entirely impossible for a cyclodialysis to be successful. The final type of operation is that of extra-ocular drainage. Now which types are to be employed and why is success attained in some and not in others? It stands to reason that the cases in which a real iridectomy may be performed for the purpose of opening up normal drainage paths are extremely limited in number. The acute uncompensated glaucomas and some of the forms of secondary glaucoma. The greatest difficulty lies in determining what operative procedure to use in the compensated forms of glaucoma. Here in the last year a very definite clue has been obtained in the chamber angle examination of Otto Barkan who has shown whether or not one can hope to open a

pathway into the suprachoroidal spaces and thereby produce intra-ocular drainage, or whether the angles are so closed up and so pigmented that it will be necessary to do a type III operation

DR. CHARLES N. SPRATT, Minneapolis. An important observation by Thomas Henderson is to be found in the *Ophthalmic Review* of 1907. In a series of thirty-three eyes on which iridectomy had been done, he reports a stump of iris 1 mm in width after the flap operation. After the von Graefe section this iris stump averaged 0.75 mm. It seems to me that the iris tongue is the problem in all glaucoma operations. For twenty years I have done both the Lagrange and the trephine operation, the former being preferred because it is easier. It is difficult to make an iridectomy without leaving considerable iris base when operating through a trephine opening. Six years ago I combined the Lagrange operation, done beneath a pocket flap, with an iridodialysis instead of iridectomy. This was following a suggestion of de Wecker in 1894, who combined anterior sclerotomy with iridodialysis. The orbit is injected with procaine hydrochloride and a suture is placed in the superior rectus for fixation. An incision is made in the conjunctiva 10 mm above the limbus and a pocket flap is made as in the cataract extraction. A mattress suture is placed in the conjunctiva before the eye is opened. The suture adds to the safety of the operation and is more easily placed at the beginning than at the end. A typical Lagrange is next made with a narrow von Graefe knife. The flap of sclera is incised with scissors or, if one prefers, with a punch. The iris is grasped at its periphery with iris forceps, which are then pushed forward toward the center of the pupil. The iris separates at its attachment at the ciliary body, forming a dialysis. Thus no iris stump is left to block the wound and there is a round pupil. The objections to this operation are, first, hemorrhage, and second, possible injury to the lens. The latter does not take place as the iris, held by the forceps, protects the lens and any blood is rapidly absorbed. I have now records of ninety-six eyes that have been operated on by this method and these have been under observation from two months to six years. I have had five failures, that is, the tension has not remained down. Some of the eyes in which the tension has been lowered have shown loss of visual field and deterioration of the central vision.

DR. PHILIP D. O'CONNOR, Chicago. In making the keratome incision the tendency is to go too far forward in the cornea or to enter the anterior chamber at such an angle that there is a flange of cornea posteriorly. In either case it is impossible to do a proper iridectomy. This cannot be emphasized too much. These errors in technic can be avoided by making the incision with a knife as in the Lagrange operation. I should like to ask Dr. Weeks if he uses a subconjunctival injection of procaine before he makes the conjunctival flap in doing the trephine operation. I have made the flap with and without the injection. It seems much easier and the results better when the subconjunctival injection is made. There is less trauma, more episcleral tissue is on the under surface of the flap, the junction with the cornea is more clearly defined, and there is less danger in buttonholing the flap. Should splitting of the cornea be necessary the extent of the splitting is lessened, especially if a 15 mm trephine is used, as advocated by Dr. Weeks.

DR. WEBB W. WEEKS, New York. The indications for the type of operation called for are judged by the appearance of each eye viewed microscopically before and after operative procedures. These studies indicate that, in primary acute congestive glaucoma and in early chronic congestive glaucoma not relieved by local or general treatment when anterior proliferative synechiae have not had time to organize the basal iridectomy often permanently relieves the increased ocular tension. In the chronic glaucoma cases of some duration, in which the anterior proliferative synechiae are definitely organized into the connective tissue formation and permanent damage has occurred to the filtering spaces of Fontana, and in many cases of secondary glaucoma the filtering operations, namely, the trephine, the Lagrange, the iridencleisis and the cyclodialysis procedures seem to be definitely indicated. Filtering operations, even the Elliot trephine operation, require a massage of the eyeball sometimes from the very first day after operation to dislodge a plug of exudate or hemorrhage, so that no irritation will occur sufficient to start a cellular proliferation and subsequent closure of the filtering wound by a cicatrix.

Clinical Notes, Suggestions and New Instruments

BLACK SPUTUM ANTHRACOSIS AND SILICOSIS IN THE SAME PATIENT

HAROLD C. LUETH, M.D., EVANSTON, ILL.
V. A. GANT, M.S., AND DON C. SUTTON, M.D., CHICAGO

Pigmentation of the lungs following the inhalation of air containing small carbon particles is a well known condition. Anthracosis is so commonly asymptomatic that it is generally regarded as a harmless pathologic curiosity. The inhalation of silica dust, however, is responsible for definite symptoms and marked lung changes. Recently we were afforded the opportunity of observing a patient in whom the harmlessness of anthracosis and the marked symptomatology of silicosis were demonstrated. The expectoration of large quantities of black sputum with the clinical observations of silicosis made this case unusual enough to report.

REPORT OF CASE

F. K., a white man, aged 56, entered ward 15 of the Cook County Hospital Feb. 5, 1935, complaining of cough, extreme fatigue on exertion, and occasional night sweats. Early in December he "caught cold," which condition lasted for ten days, although the fatigue and the exhaustion persisted. The slight cough became worse, so that two weeks before admission he expectorated large quantities of black sputum.

As a young man he worked in the coal mines near Oklahoma City for twenty-five years without any impairment of health. During an acute corvza he occasionally saw small black flecks in the sputum. As the result of a strike he left the mines in 1925 and came to Chicago seeking employment. The next four years he worked as a shipping clerk and was free from illness. Adverse business conditions left him without employment for six months. Then he accepted a job in a machine shop cleaning castings with a compressed air sand blast. Celluloid eye shields were the only protective devices offered. He soon developed a dry cough, the common complaint of the fellow workmen. After nine months this cough was productive, with the expectoration of black sputum. Sharp pleural pains, fever, hemoptysis and weakness followed, forcing him to bed for six weeks. At the end of this time all symptoms had disappeared except an occasional expectoration of black sputum. When he returned to work he was transferred to the paint department. This new work suited him better and he continued at it for a year without any illness, until discharged for economic reasons. During the first winter of unemployment (1931-1932) he had a typical acute bronchitis with fever, cough and weakness, which provoked a return of the black sputum. It lasted a month. After this the occasional cough with the expectoration of light gray sputum was the sole complaint. There were recurrences of the acute bronchitis during the next two years but they usually subsided in from four to eight weeks. However the cough became chronic and the sputum darker in color with other alarming symptoms so that he entered the hospital.

On admission the patient was slightly emaciated and did not appear acutely ill. Both cheeks were flushed and the buccal mucosa and the pharynx were red. The chest was symmetrical and slightly enlarged and the expansion was moderately diminished. Respirations were shallow and frequently interrupted by paroxysms of coughing. Dulness was present over both bases, tactile fremitus was diminished and there were few moist rales throughout the lungs. The blood pressure was 122 systolic, 84 diastolic. Cyanosis was absent. The heart, abdomen and extremities were normal.

Blood urine and gastric tests were normal. The sputum was repeatedly negative for tubercle bacilli.

Röntgenologic examination of the chest on entrance showed dense infiltration of the upper halves of both lungs with several well defined oval areas in the lower parts. Three weeks later a second series of plates was taken to exclude the possibility of a metastatic malignant condition. The lungs were and the gastro intestinal tract were normal. The oval areas were still present although considerably smaller. Old calcified hilus glands were seen and a fine reticular infiltration of distinct honeycomb markings was clearly discernible. There had been sufficient clearing of the original process to demonstrate silicosis.

X-ray films taken a year later showed a slight clearing of the fibrosis of the lungs

A bronchoscopic examination was made by Dr S J Pearlman of the ear, nose and throat department. He reported uniform black pigmentation of the entire bronchial mucosa

The patient was kept in bed and given a high caloric diet. During the first week there were periods of fever to 99.4 F, and after that none. His appetite returned when he was afebrile and he soon regained his weight and strength. The second week after admission the dullness disappeared and in the third week the tactile fremitus returned to normal. Except for an occasional moist rale that disappeared after coughing, all his symptoms and physical abnormalities had subsided by the end of the fourth week. The patient's improvement was so great that it was difficult to remain in the hospital long enough for the collection of the last sputum specimen. He was discharged five weeks after admission, entirely well except for an occasional expectoration of light gray sputum. A year later, when last reexamined, the same condition persisted.

The amounts, color and character of the sputum were recorded daily. It was collected in the usual paper cups at first, but the large quantities made this method impracticable. A 500 cc. wide mouth glass bottle was found more satisfactory. From 175 to 250 cc was expectorated daily, and these fluctuations could be accounted for by the careless disposal of mouth rinsings. As the first samples studied contained many black flecks, the possibility of a soot contamination was considered. To obviate these objections the following procedure for the collection of sputum was instituted. The patient gargled and rinsed his mouth with physiologic solution of sodium chloride at frequent intervals. Usually he was able to rinse his mouth just before a paroxysm of coughing. The rinsings and other materials were put in a separate container and destroyed. He was instructed to expectorate only such sputum as he believed came from 'deep down in his lungs' in the special glass jar.

A jet-black color and limp consistency of the sputum were constantly observed. When it was allowed to stand in a tall glass cylinder it would stratify into three layers: a yellowish black lower, a viscid jet-black middle, and a foamy white upper layer. The middle stratum occupied more than three fifths of the volume, the remainder was equally divided between the other two. Very little of the black material would settle on standing. In fact, some of the weekly specimens stood for six weeks without any appreciable precipitation. Microscopic examination showed that the lower layer consisted of numerous degenerated leukocytes, bacteria debris and carbon particles. The middle stratum contained from 3 to 15 polymorphonuclear leukocytes per high power field with numerous (4 to 20) black masses. These particles were irregularly shaped fragments of different dimensions up to 10 microns. None of them were contained in the leukocytes. Their black shiny appearance offered a striking contrast to the pale leukocyte when stained with aniline dyes.

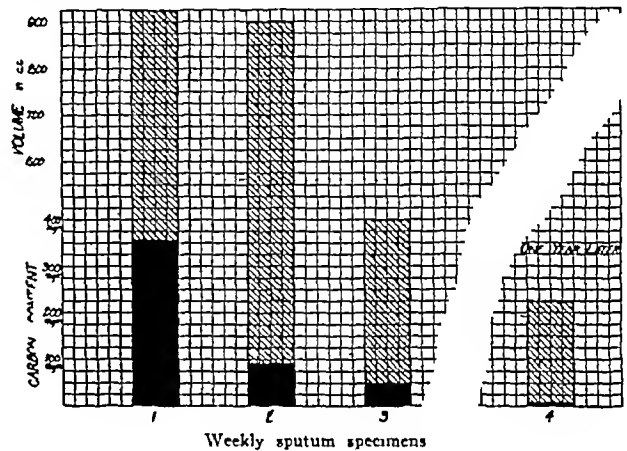
Chemical examination of the black particles of the sputum was performed as follows. Filtration through coarse filter paper was unsuccessful. The thick viscid sputum would pass through several thicknesses of gauze fairly well, leaving a small black residue. This was suspended in water and tested further. It was insoluble in distilled water, acetic or hydrochloric acids or dilute alkalis, either hot or cold, also in ethyl alcohol, acetone, sulfuric ether or benzene. It was readily combustible and was burned completely over a free flame. From these tests the black material was concluded to be carbon.

Weekly samples of sputum were collected for quantitative determinations. The same procedure was used, except that a half gallon jar was needed. Only three weekly specimens were obtained during the patient's hospital stay. The last weekly specimen was collected a year later by the patient at home.

A survey of the literature failed to reveal any method for the estimation of carbon in sputum, but there were a number of methods for the determination of carbon in the lungs. Hirsch¹ suggested a colorimetric method. Known quantities of finely divided toluene soot were suspended in liquid petrolatum and compared with suspensions of dried lung tissue after antiformin digestion. Since the size, density, degree of blackness and purity of the carbon particle determines its colorimetric index, we favored a gravimetric estimation of carbon.

1. Hirsch E F. A Method for Graphic Demonstration of Foreign Inorganic Matter and Carbon in the Lungs. J A M A 66:950-51 (March 25) 1916.

Following the method of Klotz,² the material was digested three times with 75 per cent antiformin, then alcohol was added and the mixture was centrifugated. The material was again digested with 10 per cent hydrochloric acid and centrifugated. Subsequent washings with acid alcohol and ether were tried without success for the following reason. Digestion with antiformin at 40 C for several weeks did not destroy an appreciable amount of the organic matter other than carbon, and only a small percentage of the black material present could be separated by repeated and lengthy centrifugating, the bulk of the carbon remained in colloidal form in the greenish black supernatant liquid. At this point attempts to filter out this carbon by gravity and suction with the finest grades of filter paper were unsuccessful, indicating further that the black material was in a colloidal state. In view of this fact the procedure was modified. The solutions were acidified with concentrated hydrochloric acid and stirred vigorously, thus breaking up the colloid. The mixture was not heated at this point because free chlorine from the antiformin in the presence of hydrochloric acid and heat would have oxidized some of the carbon. This material was washed into 250 cc. centrifuge bottles and centrifugated. The mass in the bottom of the bottles, which consisted mainly of coagulated protein, carbon particles, a small amount of inorganic salts and some fat, was washed repeatedly with distilled water, alcohol and ether respectively, with subsequent centrifugating. After washing the material into a 400 cc. pyrex beaker with 10 per cent hydro-



chloric acid it was digested over a free flame until the coagulated protein was dissolved. The black insoluble residue was allowed to settle out and washed several times with hot distilled water by decantation. The residue was then digested over a free flame with 200 cc of a 10 per cent sodium hydroxide solution and filtered through a No 42 Whatman ashless filter paper previously treated with the alkali, washed, dried and weighed. The paper and residue were washed free from alkali, dried and weighed. The difference was recorded as total carbon plus any acid insoluble salts and silica. The filter paper and residue were ignited in a tared platinum crucible and the ash was subtracted from the dry residue originally weighed on the filter paper, the difference in weight being recorded as carbon. In each case the amount of ash was practically negligible, ranging from 2 to 0.9 mg of which hardly any was volatile with hydrofluoric acid. This indicated that the very small amount of silica present was of no toxicologic significance.

Four specimens of sputum each representing as closely as possible the total expectoration from the lungs for a period of one week, were submitted to the laboratory for carbon and silica determinations. The specimen representing the first week was so black that it might easily have been mistaken for ink instead of sputum. The second week it was less black and the third week a grayish black. The fourth sample collected a year later was dull gray.

COMMENT

From the history and clinical examination in this case, the following explanation is suggested. The patient was exposed to coal dust for twenty-five years and in the next four years

2. Klotz O. Pulmonary Anthracosis. A Community Disease. Am J Pub Health 4:887-915 1914.

he was engaged in a nondusty trade. The resulting anthracosis was asymptomatic during that time. A relatively short exposure working with an unprotected sand blast was followed by an acute silicosis. The patient's history led us to suspect both pulmonary parenchymal and bronchial changes. The former has been described by many. Chapman³ reported a fatal case of acute silicosis with large amounts of gelatinous mucopurulent material in the trachea and bronchi, suggesting a fetid bronchitis. In our patient a short rest and a change of occupation were followed by a subsidence of symptoms, except the occasional expectoration of black sputum.

The patient then lost his job. He supported his family by odd jobs that frequently exposed him to wet and cold. In addition his dietary was greatly curtailed, since the family managed to live from his previous savings and irregular income for two years before they sought relief assistance. During this period he had repeated attacks of acute bronchitis and it is difficult to evaluate the factors of exposure and malnutrition. The bronchitis became chronic and increasingly larger quantities of foul sputum were expectorated, so the development of a bronchiectasis was assumed. Clinical examinations made while at the hospital confirmed these suspicions. Adequate postural drainage and a high caloric diet ameliorated these symptoms. The continued betterment for the next year while at home on a liberal diet and the avoidance of exposure (relief assistance) is also significant.

Any irritating dust in the alveoli of the lungs will provoke a catarrhal inflammation. There is considerable controversy concerning the origin and nature of these cells, but they are generally called "dust cells." They have been identified as endothelial cells, alveolar epithelial cells or mononuclear leukocytes.⁴ Some of the "dust cells" are phagocytic and engulf irritating dust particles. The body reacts differently toward coal dust than toward silica dust. Mavrogordato⁵ believes that the "dust cells" which contain carbon are digested or undergo autolysis, leaving the carbon extracellular. Silica, on the contrary, remains intracellular, the dust cells remaining in groups and later stimulating fibrosis. Silica appears to protect the "dust cells" from autolysis and lymphatic digestion. It would appear that the acute silicosis in this case liberated the extracellular carbon. Recurrent attacks of bronchitis probably provoked a similar reaction.

636 Church Street—30 North Michigan Avenue.

A SIMPLE INEXPENSIVE HEAT LAMP

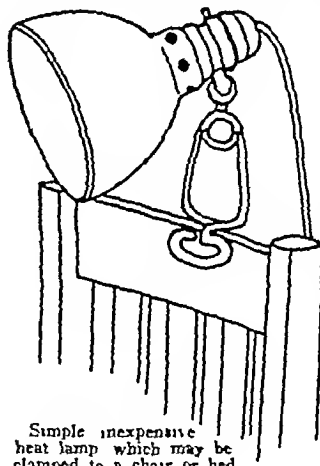
FRANK H. KRUSEN, M.D., ROCHESTER, MINN.

Nearly every physician uses some form of heat lamp as a routine in his office practice. Many practitioners are unfamiliar with the fact that various sources of infra-red, or heat, rays differ in their ability to produce heat penetration. While none of the heat lamps used in medical practice produce very marked penetration of heat, those which contain an "infra-red unit" (heated coil or heated carborundum plate) produce the least penetration. These so-called infra-red units differ not at all in their output of therapeutic heat from the heat elements used in household heaters, which can be obtained for a few cents at any hardware store or even at the five and ten cent store. The only difference between the household heater and the infra-red lamp used in the physician's office is that the former has a wider pan or reflector, which is shaped like a soup plate and which diffuses the heat through the room, while the latter has a cup-shaped reflector which concentrates the heat at a distance of approximately 2 feet (60 cm.) from the lamp. The infra-red units produce a more marked surface heat sensation than do the luminous bulbs, which are also used in the cup-shaped reflectors seen in physicians' offices.

Coblentz¹ in a recent report on the use of light therapy in Europe pointed out that "instead of the fancy expensive lamps sold to the medical profession numerous 500-watt electrical

lamps (in common use for heat lamps and costing only the equivalent of a few cents) are used by individuals. For this purpose the lamps are provided with clamps for attachment to the beds."

The purpose of this note is to suggest to American fellow practitioners that any simple, well polished cup shaped reflector attached to a small clamp, as shown in the illustration, in which reflector is placed either a simple heat unit such as is used for



Simple inexpensive heat lamp which may be clamped to a chair or bed

the ordinary household heater or, interchangeably with this a 250-watt or 500 watt tungsten or carbon filament luminous heat bulb, is an entirely satisfactory source of heat energy for local application of heat to the surface of the body. The luminous lamp produces heat radiation which penetrates to greater depth than does radiation from the infra-red unit, and the heat energy does penetrate to the capillary blood-bearing area of the skin and does produce hyperemia. The luminous lamp will be found of more usefulness than the infra-red heat element for producing hyperemia, whereas the infra-red unit, penetrating

to less depth, will produce more heat sensation on the surface when this is desired. The various parts for an entire unit of this sort, a reflector, a clamp (which can be attached to the bed or to the back of a chair), a connecting cord, a luminous heat bulb and an infra-red heat element can be purchased almost anywhere in this country for approximately \$4.

Special Articles

THE PHARMACOPEIA AND THE PHYSICIAN

AN INTRODUCTION TO A SERIES OF ARTICLES ON
THE USE IN THERAPY OF PHARMACOPEIAL SUBSTANCES

WALTER A. BASTEDO, M.D., ScD
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NEW YORK

This is the first of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—Ed

Fundamentally the physician is a therapist, for he must treat his patients. In his therapeutic armamentarium drug remedies assume a large importance. It follows that any method for the selection of the best drugs and the establishment of standards to ensure their quality, purity and strength must appeal to him. Hence his interest in the Pharmacopeia.

A series of therapeutic articles is being prepared for publication in THE JOURNAL. It is sponsored by the U. S. Pharmacopeial Convention through its Revision Committee, in cooperation with the editor of THE JOURNAL. Each subject is to be dealt with by one or more authorities, and the emphasis throughout will be on methods of treatment. While it is hoped that this means the physician's attention will be directed to the high quality of the drugs and preparations of the Pharmacopeia and their ability to meet his most exacting needs in therapy, other measures of treatment

³ Chapman, E. M. Acute Silicosis. J. A. M. A. 98 1439-1441 (April 23) 1932.

⁴ Pancoast H. K. and Pendergras E. P. Pneumoconiosis (Silicosis). A Roentgenological Study. New York, Paul R. Hoeber Inc. 1926. p. 28.

⁵ Mavrogordato A. Studies in Experimental Silicosis and Other Pneumoconioses. Pub. South African Inst. for Res. No. 15. 1922.

¹ From the Section on Physical Therapy, the Mayo Clinic.

² Coblentz, W. W. Report to the Council on Physical Therapy on Heliotherapy Methods Used in Some European Sanatoriums. J. A. M. A. 100 410 (Feb. 11) 1933.

also be considered. The articles will include advice on methods of administration and the writing of prescriptions for the remedies recommended.

THE PHARMACOPEIA

In 1820 a group of physicians under the leadership of Dr. Lyman Spalding met in convention and compiled the first Pharmacopeia of the United States. Since then a similar group has met every ten years to revise this work. But, because of scientific advances, technical help became necessary and, because of growth in the number of delegates to the convention, the actual work of revision had to be delegated to a limited number. So today the Revision Committee of the United States Pharmacopeia is composed of fifty men who rank high among contributors not only to biology, pharmacology, serology, therapeutics and clinical medicine but also to botany, pharmacognosy, inorganic chemistry, organic chemistry and practical pharmacy. They serve without pay, for only on such a basis could the talents and continued interest of such men be commanded.

Of this Revision Committee a Subcommittee on Scope, which includes eighteen physicians, has had the duty of determining what substances and preparations should be admitted to the new Pharmacopeia. To the list in the previous Revision it has added fifty-eight drugs and preparations, fifty-four of which are therapeutic agents. But as the trend in therapeutics is not for more drugs to be used in a shotgun manner but for fewer and better drugs to be employed with definiteness, it has deleted 119 articles previously official. It has based its selection on therapeutic merit together with the extent of use in prescriptions, and in determining the latter it has profited from several prescription surveys made in various sections of the country.

The physician has a twofold interest in the Pharmacopeia. Its standards for the drugs and preparations that it recognizes become legal under the Food and Drugs Act, and as a consequence the prescribing of its drugs and preparations gives the physician the best assurance that these will have the quality, purity and strength desired. In addition the titles in the book have been selected from among the available nonpatented and nonsecret remedies by a group of able physicians who have given repeated and careful study and discussion to the therapeutic claims for each remedy. Furthermore, before final decision, a primary list of the drugs selected for admission or deletion was published in the medical and pharmaceutical journals of the country, and the resulting suggestions and criticisms were given serious consideration.

The physician who prescribes U. S. P. remedies can rely on their quality and their applicability in therapy. If he prescribes patented articles he may be chagrined by discovering that his patients renew their prescriptions and treat their acquaintances by buying his prescribed articles by name over the druggist's counter.

With regard to the remedies that he has been employing and does not find in the present Pharmacopeia, the physician must realize that these have been omitted as the result of extensive research which the physician himself would be unable to make. Indeed, he may feel grateful to the revisers for discovering for him that there are reasons for not considering these remedies of the highest rank. Some of the former standbys of the profession have dropped largely from use. However, the physician who has become accustomed to their employment and desires to continue them may still be

assured of their legal standardization, for most of them have been transferred to the National Formulary, which, like the Pharmacopeia, is official under the Food and Drugs Act.

The physician may inquire why a number of recently introduced remedies of high merit are not in the Pharmacopeia. The reason is that they are patented. The Pharmacopeia cannot adopt legal standards for a patented article, for the patentee is the sole arbiter for the standards of his patent. The new remedies of this class are given full consideration in the American Medical Association publication *New and Nonofficial Remedies*. If still deemed worthy when their patents expire, these drugs may receive prompt pharmacopeial standardization through the issue of "interim revision supplements" to the Pharmacopeia, instead of awaiting the next complete pharmacopeial revision ten years hence.

While the function of the Revision Committee is to revise, its methods for obtaining accurate information must result in far reaching benefits. It maintains the U. S. P. Vitamin Advisory Board, the U. S. P. Anti-Anemia Products Advisory Board and the U. S. P. Committee on Cardiac Drugs. All the members of these are of the highest rank in their respective fields.

The Vitamin Board has included Drs. Mendel of Yale (recently deceased), Sherman of Columbia and Nelson of the government vitamin laboratory. This board works with the corresponding international group of the Health Organization of the League of Nations, and partly through its efforts the former multiplicity of vitamin standards has been reduced. It sponsors the standardized samples known as Reference Cod Liver Oil, which, with accurately estimated vitamins A and D and packaged under carbon dioxide gas, is for the use of research laboratories and manufacturers. With the cooperation of some twenty-six experts in this country and abroad the board is now working on the problem of vitamin B preparations.

The Anti-Anemia Products Board, composed of Drs. Minot and Castle of Harvard, Edmunds and Isaacs of Ann Arbor, and Palmer of Columbia, will devise and supervise tests for liver and stomach preparations and similar products. The Committee on Cardiac Drugs, under the direction of Dr. Henry A. Christian, will make bio-assays and clinical experiments to determine the selection and best methods for standardization of drugs that act on the heart.

The physician should be familiar with the official drugs and preparations but he does not need to add the Pharmacopeia to his library, for almost all of its text is concerned with tests for identity, quality and strength, and with methods of assay. But he should know that all current tests and assays have been considered, and that they have been accepted or rejected only after they have been checked again and again in various laboratories, for when accepted they must be able to stand in the courts.

By securing the American Medical Association's latest editions of "Useful Drugs" and the "Epitome of the U. S. Pharmacopeia and National Formulary," he can review the titles and scope and be sure that he is presenting the latest official drugs and preparations.

At the convention of 1820, Dr. Spalding said "It is the object of a pharmacopeia to select from among substances which possess medicinal power those the utility of which is most fully established and best understood."

Its value depends upon the fidelity with which

it conforms with the best medical knowledge of the day." These criteria have governed the Eleventh Revision of the Pharmacopeia, which became official on the first of June 1936. It presents a selection by experts from available drugs and preparations and its standards are the ones recognized in law.

33 East Sixty-Eighth Street.

THE ADMINISTRATION OF THE SYPHILIS CONTROL PROGRAM

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WASHINGTON, D. C.

NOTE—The article by Dr. R. A. Vonderlehr and the articles by Dr. Dudley C. Smith and Dr. Joseph Earle Moore which follow, are part of a symposium on the control of syphilis. The remaining articles by Drs. Arthur J. Casselman, John H. Stokes and N. A. Nelson, will appear next week.—Ed.

The provisions of the Social Security Act enable health departments throughout the country to strengthen all phases of public health work. These provisions should at the same time permit of a sound development of measures directed against syphilis. In developing state and local programs, health officers are prone to stress those portions which relate to the control of diseases the prevalence of which is now rapidly declining. Some consider duty to have been done by sponsoring the construction of sanitary privies and carrying on a fairly intensive immunization program against diphtheria and typhoid fever. The successful health officer of the future will be judged not only for his accomplishments in the prevention of the common acute communicable diseases but also for his ultimate attainments in minimizing problems detrimental to the public welfare. Progressive health officers have stressed the prevention of the venereal diseases and heart disease, mental hygiene and industrial hygiene for more than a decade.

Syphilis is at present one of the most prevalent of diseases. Its cause, the means of preventing it, and the economic loss and suffering due to it are well known. As the prevalence of other common communicable diseases decreases, additional funds should be made available and further attention given to this most serious of public health problems.

There are certain general administrative points which must be understood if syphilis control work is to be successful. First of all the disease is an insidious one and from the very beginning of the control program the need for a long-term project must be realized. Although success might be attained in a period of months against more acute communicable diseases, years will be required for the successful prosecution of work against syphilis. This fact and a realization of the uncertainty of the continual provision of funds for public health work in the past has undoubtedly been a deterrent to the development of the syphilis control program.

One of the chief reasons why greater success has not been attained in bringing syphilis under control is its unfortunate association with morality. Health officers

must take the lead in teaching the public to regard syphilis as a disease and not as a form of moral delinquency. The disease, like many others, is a communicable one and should be so considered by the health officer at all times. The fact that it is spread chiefly through sexual intercourse should be given no special prominence in the application of control measures.

In the general administration of syphilis control work, two factors are of importance: (1) the selection of a well qualified venereal disease control officer with a clear-cut understanding of his duties and (2) the relationship of the venereal disease control office to other activities both within and without the jurisdiction of the health department.

THE VENEREAL DISEASE CONTROL OFFICER

As in any activity, great personal interest in the specialty is an essential qualification of the health officer specially selected to undertake the control of syphilis. He should be well trained in the practice of medicine and preferably experienced in general health work. He should spend a period of at least four to six months in a venereal disease clinic in order to become familiar with the routine management of syphilis and gonorrhea.

The duties of a properly qualified venereal disease control officer may be classified as administrative, advisory and cooperative. The administrative activities of such a specialist differ little in principle from those of any health officer. Work in the central office must be conducted efficiently. The administrator should know the capabilities of his personnel and the progress that is being made in the various subdivisions of his office. Because of the interdependence of the venereal disease control officer, local health officers and private physicians within the territory under his supervision, it is essential that as close cooperation as possible be established among these individuals. The degree of interest local health officers and private physicians take in the syphilis control program as well as their ability in this special work should be known. This is essential in order that the venereal disease control officer may encourage the cooperation and assistance of qualified workers in conducting the syphilis control program and either stimulate poorly qualified but interested physicians to greater endeavor or discourage them should their incomplete training, personality or lack of interest make them unfit for this type of work.

The successful administrator of venereal disease control work must have the ability to discriminate between poor and worth while projects. This is necessary because the problem is of such magnitude that many methods of attempting to solve the same problem are frequently offered. Limitation of funds and personnel make it essential that the most direct and efficient method be utilized to accomplish a given end. Astute judgment is required not only in the selection of projects but also in choosing personnel.

The advisory duties of the venereal disease control officer in the syphilis control program are manifold. Advice should be given only when requested but the progressive officer will be able to stimulate an increased demand for advice. The problems requiring consultation, which arise so frequently in venereal disease control work, relate to the diagnosis and clinical management of syphilis, the epidemiology of the disease and the personal behavior of the infected individual. The venereal disease officer should always act impar-

tially and with strict justice. He should deal with personal behavior only when necessary to prevent the spread of syphilis.

The necessity for obtaining the cooperation of the medical profession has already been mentioned. Besides the medical profession, cordial cooperation should be established with health departments in adjacent areas. Persons who are the source of infection, their contacts or defaulting patients may frequently move to an adjacent state, and it is necessary for the general welfare of the people in the entire country that individuals with communicable lesions be given adequate treatment wherever they may reside. Voluntary agencies are often of real assistance in developing a more intensive program and their cooperation should always be sought. Cooperation with other branches of government is desired, particularly the police department, in the management of recalcitrant cases, and the department of education in developing the informative program among citizens.

RELATIONSHIP TO OTHER HEALTH ACTIVITIES

Other Sections of the Health Department—The syphilis program under the venereal disease control officer should be coordinated with the communicable disease control work of the health department. This may be accomplished by organizing an office of venereal disease control, which should be very closely associated with the section of communicable disease control, or the syphilis control work may be developed in a subsection under the direct administration of the communicable disease control officer. In either case the venereal disease control work should be conducted as a separate enterprise and directed by a full-time health officer. The immensity of the problem, the highly specialized character of the work, and the peculiar dependence of the program on the physician in private practice make provision for an autonomous unit imperative.

The syphilis control program is likewise closely related to activities of the health department other than the communicable disease control section. For instance, the section on maternal and child care has frequent need for the assistance and cooperation of a specialist in syphilis control. This is true because the prevention of prenatal syphilis is fundamentally almost as important as the prevention of the transmission of early acquired syphilis.

The investigations of the Committee on Evaluation of Serodiagnostic Tests for Syphilis show an urgent need for close association between the venereal disease control unit and the laboratory of the health department. Laboratory tests have become more and more important in the diagnosis of syphilis during the past two or three decades. Because of their widespread and routine use it is essential that such procedures be as accurate as it is humanly possible to make them. The need for serologic check and clinical cross-check of serodiagnostic tests for syphilis becomes increasingly evident and it requires the careful guidance of an expert in syphilis to determine the reliability of a serologic test by comparison with the clinical observations.

The county or district health department is the basic unit of most state health departments. In many states a section of county health work exists. The unit cost of controlling the common communicable diseases will increase progressively as their prevalence decreases. Ultimately a point will be reached when it will no longer

be economically practicable to continue aggressive campaigns against such diseases. Optimum conventional procedure will be established. As this point is reached, additional funds will be made available for the solution of more difficult health problems. One of the first should be syphilis control work. For the reasons stated, county and district health departments will in the future show an increasing interest in the control of insidious communicable diseases, the prevention of degenerative diseases and problems of nutrition. Even now there is frequent need for cooperative and consultative work between the county or district health officer and a well trained venereal disease control officer, but at present a makeshift arrangement often exists whereby some health officer without special training in the control of syphilis and gonorrhea attempts without success to act in such a capacity.

The City Health Department—Perhaps no form of local health work under the nominal supervision of the state health officer has been more seriously neglected than that which has developed in municipalities, yet approximately 55 per cent of the total population of this country lives in cities. It is commonly assumed that most cities have an unlimited supply of funds for health work and that they are wholly independent of the state and surrounding counties. As a matter of fact neither of these assumptions is true.

A close relationship usually exists between the incidence of communicable disease within a city and in the surrounding territory. With syphilis this is particularly true, since under conditions of modern transportation visitors to the city are frequent and the disease may often be carried from urban to rural areas. The converse also is true. At the present time the tendency is for health organizations in the territory surrounding a city to neglect the syphilis control program. Infected individuals seek treatment in the municipality and are too often told that treatment is available only for residents of that city. If an investigation should be made it is certain that a serious condition would be discovered in and around the large cities of most states.

The duty of state and municipal health departments in the program against syphilis is plain. Instead of shifting responsibility and failing to provide adequately for the care of the infected individual, both state and municipal health departments should adopt a more liberal policy. The time has arrived when state health officers should establish a reciprocal arrangement to extend to rural and urban residents alike the full benefit of modern public health organization. An equitable agreement will require a real interest in proper coordination of the work and an unselfish devotion to the new principle. Municipal and county health officers must be urged to support and adopt this more liberal conception of duty.

The Social Security Act provides for the extension of public health facilities to all residents of the United States. No distinction is made within this law between residents of urban and rural districts. Municipal health officers should receive their share of the allocations for health work and in turn should make more liberal provision for the public health protection of all residents of the state in which they are located.

The Medical Profession and Voluntary Organizations—The interdependence of health officers and the medical profession in the successful prosecution of a

program against syphilis has been so frequently stressed that it is generally recognized. Not only is the cooperation of the individual physician required but the assistance of an aggressive organized profession is necessary. Health officers should respect the rights of physicians in private practice, who in turn should encourage and approve of the action of the health department in providing adequate treatment for all persons who cannot obtain private medical attention.

The aid of voluntary organizations interested in the improvement of social and economic conditions in the area is also of value. Cordial alliance should exist not only with social hygiene agencies but also with related social organizations and various economic and business groups.

A most helpful step is the adoption of the policy of appointing an advisory committee on the control of the venereal diseases. This committee should include at least the venereal disease control officer, a member of the local medical society, and a member from the voluntary organizations which take an active part in the welfare of the community. Progress will be made only by recognizing that united action is necessary.

FINANCING THE PROGRAM

Sufficient funds should be provided for the prosecution of syphilis control work. Provisions by the health department should be sufficiently liberal to permit the organization of an efficient program. Such a program may be defined as one which secures for the public adequate protection against the spread of this disease by infected individuals. The program should also include provision for adequate treatment of the individual patient by skilled personnel under maximum conditions of privacy.

No arbitrary system for the allocation of funds is known. The relative frequency with which syphilis occurs as compared to other communicable diseases is an important factor in the allocation of funds but it is not the only factor. It should be used as a measure of the adequacy of financial provision until a comprehensive control program has been developed. At the present time complete programs and adequate financial provision for carrying them out are very rare indeed.

CONCLUSIONS

1 The syphilis control program should be conducted by a special full-time venereal disease control officer as part of a separate section or subsection of the health department.

2 Great personal interest in the problem and special training in health work and the clinical management of syphilis and gonorrhea should be considered as the most important qualification of the physician who acts as venereal disease control officer.

3 The section or subsection for venereal disease control should coordinate and integrate its activities with other proper sections of the health department.

4 The state health officer should make a special attempt to unify syphilis control programs in adjoining cities and counties.

5 The cooperation of the medical profession and of voluntary organizations is of great importance in the development of syphilis control work.

6 Due regard for the importance of the syphilis problem must be given in financing the program.

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PRACTICAL EPIDEMIOLOGY OF SYPHILIS

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The epidemiology of a disease includes a study, first, of all the factors having to do with its transmission and, secondly, of all the means available for preventing its being conveyed to others. No attempt is made in this paper to present a complete discussion of the epidemiology of syphilis. Some medical measures practical in their application are outlined.

Syphilis is a rapidly spreading and widely prevalent disease. The United States Public Health Service estimates that there were 518,000 new cases of syphilis in this country in 1934. Syphilis is then rapidly spreading. These new cases added to the older ones certainly make it a widely prevalent disease. History shows, though, that at one time syphilis spread in a more wholesale fashion, affecting seriously by marked exter-

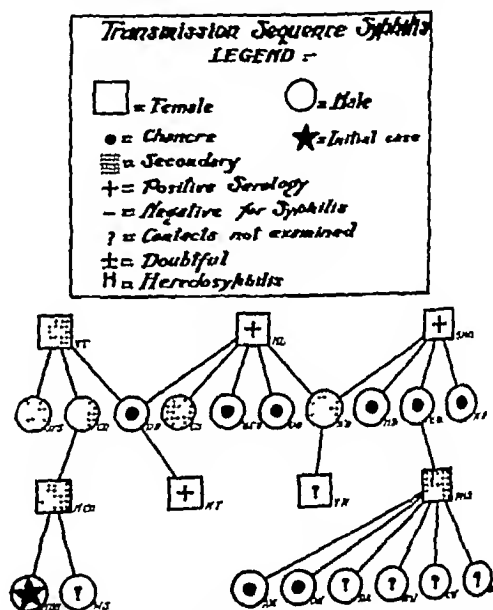


Chart 1—Result of tracing source cases and contacts beginning with a private male patient with a chancere. Twenty-five names were obtained; nineteen persons were examined and found to have syphilis; six have not been examined by us.

nal and clinical manifestations large populations. Now it spreads more insidiously but nevertheless surely. There is evidence that it still advances mainly by small epidemics rather than on an even front. This insidious attack along with the infection's association with sex and morals has hindered the application of known medical measures. Stokes¹ has said that syphilis in the human body is like an iceberg, nine tenths below the surface, and this is just as true when the disease is considered from the point of view of general distribution. However, it is possible by using the one tenth above the surface as signals to detect that which is submerged.

From the University of Virginia Department of Medicine, University of Virginia Department of Medicine, Charlottesville, Va. It was presented at the annual conference of the American Dermatological Association, Swampscott, Mass., June 25, 1936. Read in part before the Annual Conference of State and Territorial Health Officers with the Surgeon General of the U. S. Public Health Service, Washington, D. C., April 13, 1936, and at the annual meeting of the American Dermatological Association, Swampscott, Mass., June 25, 1936. ¹ Stokes, J. H. *Modern Clinical Syphilology*. Philadelphia: W. B. Saunders Company, 1934.

The specific cause of this infection is known, many of the properties of the etiologic agent have been determined, its modes of transmission are common knowledge, usable measures for an early diagnosis have been found, and therapeutic agents for quickly making an infected patient noncontagious are available. It would appear to be a simple matter to apply this knowledge, but this has not been done extensively. It is the responsibility of the medical profession to detect those persons with syphilis and administer the sterilizing and curative remedies. The general population has progressed in its sensibleness and desires to a standard which makes it possible to undertake a widespread campaign against syphilis. When the prevention of syphilis is approached objectively, positively and unrelentingly, the incidence of the disease will begin to decrease and finally will be eradicated. This is a worthy and desirable undertaking, probably the major health problem of the present day possible of accomplishment. It is true that a recent popular medical writer² sarcastically questioned the desirability of freeing the human race from syphilis, but few will agree with him.

SEROLOGIC SURVEYS OF POPULATION GROUPS

If the entire population through one generation should be repeatedly examined clinically and serologically for syphilis and every infected person

Present popular attitude toward routine serologic tests "You needn't test my blood. I know it is all right."

Desirable attitude "Everybody should have the blood tested at least every other year."

Groups in Whom Routine Serologic Tests for Syphilis Should and Can Be Performed

Hospital, clinic, office and home patients, physicians and nurses, dentists, servants, food handlers, soft drink dispensers, hotel employees, applicants for marriage certificates, applicants for automobile driving permits, applicants for insurance, students, public carrier employees, industrial employees, criminals, prostitutes, and others

Eventually the Whole Population

Slogans for popularizing routine serologic tests

promptly given the minimum standard of modern therapy, the malady could be eradicated. No such action is possible. The approach must necessarily be slower, but the present-day pace should and can be accelerated. Certain groups are now receiving routine examinations and many unsuspected cases are being discovered. This method of detection should become more widespread until eventually the entire population is covered.

Along with this mass examination, facilities for mass treatment must of course be made available. A few years ago the U. S. Public Health Service attempted to capitalize in a wholesale way the fact that anti-syphilitic treatment will render patients noninfectious. In selected areas it attempted mass sterilization of the Negro population based on extensive serologic surveys. The results and experiences were such that this method

of attack can be recommended. The example set by obstetricians, both in the success of teaching propaganda and in reducing the incidence of congenital syphilis, is another recommendation for the method of group serologic surveys.

TRACING SOURCE CASES AND CONTACTS

Another way of attacking this transmissible infection is by tracing source cases and the follow up of contacts of syphilitic patients. This is a direct epidemiologic

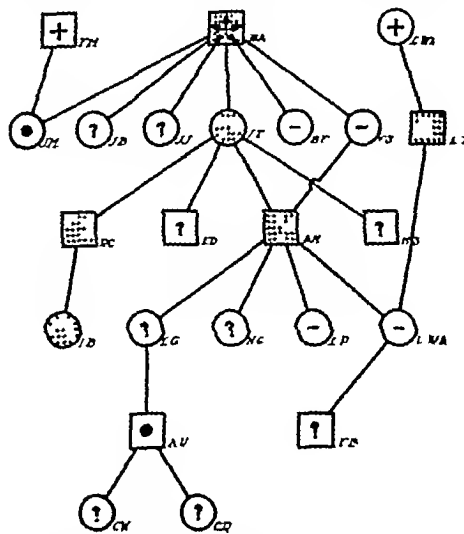


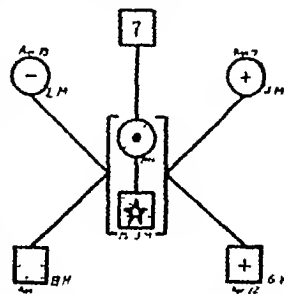
Chart 2—Result of case finding in a group of Negroes starting with a female patient with secondary syphilis

procedure and if pursued intensively and tactfully is effective. The principle of this approach is identical with that used in the control of other infectious diseases. The main difference is that sexual contacts are to be determined. Because of the tendency to secrecy the problem is somewhat difficult, but on the other hand the number of possible sources and contacts are limited, which simplifies the investigation.

It has been the policy at the University of Virginia Hospital³ for several years to investigate epidemiologically all early and familial cases of syphilis and any other cases that would seem to warrant scrutiny. This investigation is directed toward ascertaining the identity of the person from whom the patient acquired the disease and the identity of other persons exposed to the same source or to the patient following infection.

During the routine history and physical examination of the patient the fundamental characteristics of the disease are explained. This includes transmission, pathology, complications, standard of treatment, and the probable outcome. Language that the individual patient can comprehend is used. The moral aspects are minimized and the medical phases are emphasized.

Chart 3—In this group the husband infected the wife. Three of the four children were found to have acquired syphilis.



3 Smith, D. C. and Brumfield, W. A. Jr. Tracing the Transmission of Syphilis. J. A. M. A. 101: 1955 (Dec 16) 1933. Brumfield, W. A. Jr. and Smith, D. C. Am. J. Pub. Health 24: 576 (June) 1934. Smith, D. C., Brumfield, W. A. Jr. and Barksdale, E. E. Scientific Exhibit at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J. June 10-14, 1935.

2 Zinsser, Hans. Rats, Lice and History. Boston: Little Brown and Company, 1935.

Every effort is made to impress the patient that all information obtained is confidential. With the proper build up, almost every patient will give the names and addresses of his sex partners and close associates. After obtaining this information the patient is asked to notify those concerned and advise them to be examined. In addition, a letter is sent to the contacts advising them to be examined. It is remarkable that almost all patients attempt to cooperate fully when

Recently it was reported by the Cooperative Clinical Group⁴ that 84 per cent of patients with early syphilis discontinue treatment before they are rendered permanently noninfectious. In our clinic 41.2 per cent of patients with early syphilis, observed during this period (1930-1934 inclusive) of intensive effort directed toward determining source cases and contacts returned for the minimum standard of treatment.⁶ This figure is exclusive of patients referred to other physicians or clinics. This was accomplished without the aid of social service or follow-up workers.

Improvement of this general condition is absolutely necessary if efforts to prevent syphilis are successful. The detection of syphilitic individuals, difficult as it is, is just the first step in the campaign. This 84 per cent of known foci of infection must be handled in some way, and the medical profession should work out an effective program. There are many details to be considered, such as education of the physicians, administrators of government and the general population, availability of diagnostic facilities, cost and availability of treatment, management of delinquent patients, and many others. Vonderlehr and his co-workers⁵ have outlined such a program, which can be recommended.

TABLE 1—Results of Serologic Survey for Syphilis in Negroes in Six Southern Counties*

| Number Examined | Number Positive | Early Cases† | Number Treated |
|-----------------|-----------------|--------------|----------------|
| 33,334 | 6,800 | 200‡ | 5,900 |

* Data obtained through courtesy of the U. S. Public Health Service.

† Period of greatest infectiousness.

‡ This figure would undoubtedly have been larger if it had been possible to determine the infections acquired within two years of the period when contagious relapse is most frequent.

TABLE 2—Follow Up and Follow Back of Early Syphilitic Infections and Contacts

| Infected Cases | | Exposed Contacts | | | | | |
|----------------|------------|----------------------|------------|----------------|------------|--------------------|------------|
| | | Admissions to Clinic | | | | Estimated Infected | |
| | | Total | | Cases Infected | | Total No. | Per Cent |
| Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage |
| 207 | 51.1 | 421 | 2.03 | 171 | 40.6 | 126 | 73.7 |
| | | | | | | 316 | 15.2 |

Nevertheless the first step in the prevention of syphilis is the detection of infected individuals, and the accompanying charts and tables illustrate something of the method of tracing source cases and contacts, the results and some ideas to be emphasized.

SUMMARY

Two practical epidemiologic methods of discovering syphilitic patients are (1) serologic surveys of population groups and (2) tracing source cases and contacts.

The physician with patience, tact and energy can markedly decrease the high percentage of patients with syphilis becoming delinquent before the completion of proper treatment.

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⁴ Stokes J. H., and others. What Treatment in Early Syphilis Accomplishes. *Ann. Dis. Inform.* 17: 341 (Nov.) 1934.
⁵ Heller J. R., and Smith D. C. to be published.
⁶ Vonderlehr R. A. and others. Recommendations for a Syphilis Disease Program in State and Local Health Departments. *Ann. Dis. Inform.* 17: 1 (Jan.) 1935.

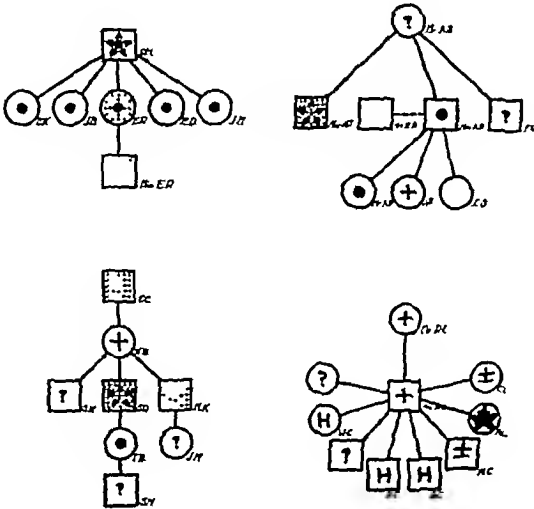


Chart 4—Several groups of small episodes, one group showing heredo syphilis.

properly approached. The patient himself, in most cases, becomes to some extent a sanitary worker. Every case of syphilis diagnosed presents an opportunity for discovering other foci of infection.

This investigation probably cannot be done successfully by nurses or social workers alone. They, of course, can be of great aid in following up information obtained by the physician. The use of legal measures is sometimes necessary. It has been stated that this type of investigation would be less successful in a large city. On the contrary, rapid cheap transportation, more clinic facilities, social service departments and the like would seem to make it easier.

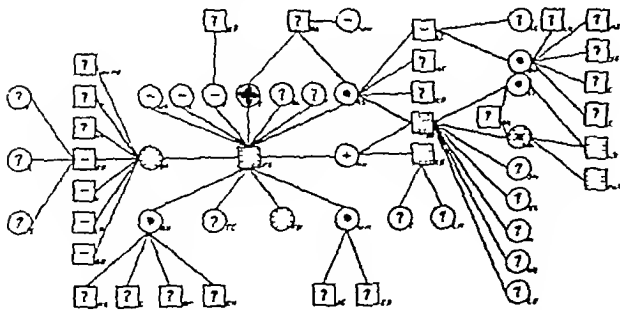


Chart 5—A large group centering about a small industrial plant employing young men and women. The plant was thirty miles from the clinic. The follow up was entirely by messages of patients and correspondence. Fifty even names of exposed persons were obtained; twenty-four per cent were examined in our clinic; nine gave negative examinations and fifteen were found to have acquired syphilis.

Other important results of this intimate relationship of patient and physician are the establishment of the patient's confidence in treatment and his education as to proper treatment. He is then more apt to continue treatment regularly, increasing his chance of cure and decreasing the possibility of an infectious relapse.

DEVELOPMENT OF ADEQUATE TREAT-
MENT FACILITIES FOR CON-
TROL OF SYPHILIS

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In its relation to the public health, syphilis may aptly be regarded as two diseases, one of which, early syphilis, is infectious and, like tuberculosis and other infectious diseases, requires the attention of public health officers to diminish or prevent its spread, the other, late syphilis, is not a major problem because of infectiousness, but, like cancer, demands the attention of public health officers because of the high incidence of incapacitating disease and death which it causes.

The title assigned me tacitly assumes that treatment facilities at present available in the United States are not adequate for the control of syphilitic infection. In the discussion of this topic it is profitable to start with a definition of terms. What is meant, precisely, by the phrases "adequate treatment facilities" and "the control of syphilis"? As to the former, does "adequate" mean adequate to meet the present demand or adequate for the potential demand? As to the latter, it may perhaps be agreed that the control of syphilis means essentially the same thing as the control of smallpox or any other infectious disease, i. e., its virtual eradication.

A further assumption is involved in the title of this paper that if treatment facilities were adequate, the control of syphilis would be aided. This is perhaps more nearly fact than assumption. As to early syphilis, it is agreed that the spread of infection can be best prevented not by reformation of the sex morals of a nation or by the forcible isolation of infectious persons but by the early use of the arsphenamines. A single dose of one of these drugs provides a method of destroying surface organisms in a few hours, of healing infectious lesions in a few days, and of abolishing infectiousness with a rapidity not equaled by any method in any other infectious disease. It is, however, true that one or a few doses will not accomplish the permanent abolition of infectiousness, and that indeed to stop with one or a few doses may actually increase the incidence of infectious relapse over that to be expected if no treatment at all is given. To prevent fresh lesions from appearing, to reduce the incidence of infectious relapse to a minimum of 2 per cent or less, at least twenty injections of an arsphenamine plus an equivalent amount of heavy metal, given by the continuous system, are necessary.¹ From the public health standpoint, it seems obvious that, if it were possible promptly to recognize every individual freshly infected with syphilis and to administer this minimum of forty weeks of treatment, the spread of syphilitic infection would be immediately and enormously reduced.

As to late syphilis it is agreed that most forms of the disease are amenable to symptomatic relief and that progression or relapse may be prevented in the vast majority of cases if the proper form of treatment can be given over a long enough period of time.² It seems further obvious therefore, that if it were possible to

recognize all individuals with late syphilis and to administer the optimum amount of treatment, incapacity and death and the economic loss resulting therefrom could also be immediately and enormously reduced.

Whether early and late syphilis are being recognized to the maximum degree possible and whether, when recognized, they are being treated by proper methods and for the optimum length of time are points closely related to a discussion of treatment facilities adequate to meet the actual or potential demand. It is estimated by the United States Public Health Service³ that annually 1,140,000 persons with syphilis come under treatment for the first time since infection, of whom 518,000 have early and 596,000 late syphilis. This is an incidence rate of 8.4 per thousand of the population. Parenthetically, it may be noted that if the incidence rate of syphilis in this country were the same as in Denmark, we should have only 24,000 new cases annually instead of 1,100,000, or, conversely, if their rate were the same as ours, they would have had 32,000 new cases instead of their actual 700.⁴

Since, from the public health standpoint, we are more interested in early than in late cases, it is pertinent to ask: Do all patients with early syphilis seek medical attention competent to abolish infectiousness? If not, what proportion do seek such competent care and what happens to the remainder?

A definitive answer in exact terms cannot be given to these two questions, but such information as is available indicates that less than half the persons freshly infected with syphilis seek competent medical attention during the early and infectious stages of their illness. Two important reasons for this failure exist. First is the fact that early syphilis is sometimes, perhaps often, symptomless, i. e., the primary and secondary lesions are either completely lacking or so trivial and evanescent as to escape attention. How often this occurs in human beings is unknown and for various reasons is probably impossible of exact determination. There is reason to believe, however, that among syphilitic patients one man in every five and one woman in every three has acquired the disease without knowing it. Obviously, a patient who does not realize that he is ill does not consult a physician. Second, the American Social Hygiene Association has found that "annually more than twice as many individuals sought treatment for venereal disease across drug store counters as came to qualified medical sources in such cities as San Francisco, California, Birmingham, Alabama, Dallas, Texas, and New Orleans, Louisiana."

When casually asked what one should do if infected with a venereal disease, less than one half of the young men so questioned advised going to a clinic or to a medical practitioner for treatment, the remainder suggested some improper type of treatment, either self treatment or that obtainable from the (advertising quack or) "drug store, and in some instances advocated that no treatment be sought, stating that the lesion would heal of its own accord."⁵

It is fair to guess, therefore, that instead of a treatment demand from half a million freshly infected patients annually there should be, if all patients with early syphilis came at once to a recognized medical agency, a demand from at least twice as many, or a million annually.

From the Syphilis Division of the Medical Clinic of the Johns Hopkins Hospital.

Read before the Annual Conference of State and Territorial Health Officers with the Surgeon General of the U. S. Public Health Service, Washington, D. C., April 13, 1936.

¹ Stokes J. H., Cole H. S., Moore J. E., O'Leary P. A., Wile, U. J., Farran Thomas Jr., Vonderlehr R. A., and Ussilton L. J. Standard Treatment Procedure in Early Syphilis. A Resume of Modern Principles. J. A. M. A. 102: 1267 (April 21) 1934.

² Moore J. E. The Modern Treatment of Syphilis. Springfield Ill., Charles C. Thomas Publisher 1933.

³ Ussilton, Lida J. Venereal Diseases in the United States. Ven. Dis. Inform. 16: 147 (May) 1935.

⁴ Lombolt S. Rückgang der Syphilis in Danemark 1919-1933. Dermat. Wehnschr. 100: 173 (Feb. 9) 1935.

⁵ Parenthetical remarks mine.

What of patients with late syphilis? Why do so many patients delay applying for treatment until they have developed late syphilis? Is the annual crop of 600,000 such patients the maximum possible number who could be brought under treatment? The reasons for the delay in applying for treatment are given in the last paragraph—symptomless infection, treatment for early syphilis lacking because the disease was unrecognized, or inadequate because self administered or given by improper medical agencies. The actual demand for treatment of 600,000 new patients annually is far below the potential demand and is probably only a third of the number who might be brought under treatment if there were an organized effort to get them there, as I shall presently show.

The spontaneous demand on present treatment facilities is, according to the Public Health Service data, 1,100,000 new cases annually. The estimated potential demand, which can be readily realized by the application of the relatively simple method of case finding to be presently discussed, is between two and three times as great and for a few years at least could be pushed to 3,000,000 cases annually.

What of the present-day trend of the incidence of syphilitic infection in this country? Is it rising, falling or stationary? Data on this point are available in only a few communities—the state of Massachusetts,⁶ the state of Oregon, up-state New York,⁷ cities with populations of 100,000 or less, Cleveland, and six counties in the four states of Arkansas, Illinois, Kentucky and West Virginia.⁸ In some of these early syphilis is decreasing, in others increasing, over the six year period 1927-1933, resulting in a net decrease for the entire population studied of about 13 per cent. In nearly all these localities, however, the number of patients with late syphilis seeking treatment for the first time has increased, resulting in a net increase, for all stages of syphilitic infection, of 34 per cent. In view of the fact that a high percentage of patients fail to seek treatment until the late stages or remain untreated throughout life, Usilton concludes that the lower early syphilis rate cannot be interpreted as evidence of progress in the control of syphilis.

To the factors enumerated which operate to prevent persons infected with syphilis from seeking early and adequate medical care, i. e., symptomless infection, ignorance, carelessness, viciousness and the easy access to quack or drug store treatment, may be added one other factor, which applies to early and late syphilis alike, namely, the ignorance of many physicians of the elementary methods of recognizing syphilis. Unfamiliarity with the darkfield apparatus, a lack of understanding of the proper use or interpretation of serologic tests, an absence of appreciation of syphilis as an infectious disease—these are the blinders which hamper the medical profession.

When syphilis is recognized and brought under treatment how effective is the profession in keeping it there for the required time? The surveys of the United States Public Health Service⁹ show that at any one time 683,000 persons in this country are under treatment or observation for syphilis. Since 1,100,000 patients annually come under treatment for the first time and since the optimum average duration of treatment for early and late syphilis considered together is about two years, there should be under treatment at

any one time, under the present conditions of spontaneous demand, two and a quarter million persons. It is fair to say, therefore, that for the present case load, available facilities are a little better than 25 per cent efficient, and for the potential case load only about 10 per cent efficient. Reduced to their simplest elements the factors that contribute to this poor showing are (1) the ignorance or carelessness of the treated patient, (2) the ignorance or carelessness of the treating physician, (3) the inconvenience and relative inaccessibility of treatment and (4) the expense of treatment.

The remedies for these several defects in our modern diagnostic and treatment set up seem to me to fall into three main categories: case finding, education and an expansion and alteration of existing treatment facilities.

CASE FINDING

Organized case finding, a procedure familiar for years to public health officials and clinicians interested in tuberculosis, is apparently a relatively new idea in syphilis, or at least one that has received no general application. Yet there is available for the detection of syphilis a simple serologic test which is from 80 to 90 per cent efficient in any stage of the disease and far less expensive than the detailed physical examination, roentgenologic study and tuberculin testing so freely utilized in case finding in tuberculosis. Thirteen years ago I⁸ showed that in my own hospital about 5,000 syphilitic patients passed yearly through its inpatient and outpatient departments with the fact of their infection unrecognized because of failure to employ the serologic test for syphilis in every inpatient or outpatient admission. Only within the last six months has the procedure been adopted as a routine in every department of this one hospital, and, so far as I am aware, it is now one of only two large hospitals in the country with this regulation. Suppose this routine procedure were in force in all hospitals. In 1935 the United States had 6,246 hospitals with more than 7,700,000 total admissions to their beds alone,⁷ not including outpatient departments. If one admits the correctness of the estimate that 10 per cent of the American people are infected with syphilis (an estimate based on sound data) and if each one of these patients admitted to hospitals had had a serologic test for syphilis, some 770,000 syphilitic patients would have been recognized and brought under care.

The uncritical listener will at once reply that since the universal adoption of serologic testing among the occupants of hospital beds would have detected only 770,000 syphilitic patients, and since 1,100,000 were actually detected, we didn't do so badly after all. He loses sight of the fact that very few of the 1,100,000 actually recognized came from hospital beds, 95 per cent of them, if my own clinic is a fair sample, were ambulatory, not bed, patients. If the serologic test were routine in all outpatient as well as inpatient departments, and with the elimination of the possible duplication because some outpatients later become inpatients, at least another million syphilitic patients might have been recognized. Almost two million patients might have been detected in addition to the eleven hundred thousand who were recognized—a total of three million new syphilis patients annually!

To introduce the serologic test for syphilis as a routine in every department of all hospitals is perhaps an unobtainable counsel of perfection, yet it has been

⁶ Nelson, V. A. The Decreasing Prevalence of Syphilis in Massachusetts. J. A. M. A. 106:105 (Jan. 11) 1936.
⁷ Hospital Service in the United States. J. A. M. A. 106:783 (March 7) 1936.

⁸ Keidel, Albert and Moore, J. E. The Wassermann Reaction in the Johns Hopkins Hospital Bull. Johns Hopkins Hosp. 31:15 (Jan.) 1923.

nearly completely accomplished in one field of medicine, i. e., obstetrics, in which Exner⁹ reports that 93 per cent of 268 representative antepartum clinics examine every pregnant woman for syphilis by this method. If it is possible here, with the aim of eradication of congenital syphilis by the treatment of infected women, certainly it should be possible in other branches of medicine with the aim of prevention of infection of the woman.¹

To what extent would the spread of syphilis be reduced if this method of case finding could be employed universally in persons applying to hospitals for aid, to say nothing of those coming to physicians' offices? The cases recognized over and above those diagnosable clinically would be (1) those patients with early syphilis in whom the infection had been symptomless, or in whom the lesions had been unrecognized or misinterpreted by the examiner, (2) the large class of those with latent syphilis, i. e., with no clinical evidence of the disease, and (3) those with late syphilis whose lesions had been overlooked or misinterpreted. In our own syphilis clinic, these three classes make up 44 per cent of all admissions.

If case finding in syphilis by the method of routine serologic testing is to become an adopted procedure, it will become so by virtue of the efforts of the public health officer and by no other means. He is the person who can point out to hospital officials and private physicians the public health need and who can provide the laboratory facilities to make it economically possible.

With another important method of case finding the public health officer is even more directly concerned, namely, the epidemiologic investigation of contacts and families of infected persons. This method of approach, so familiar in other infections, is equally applicable to syphilis. Only by its use can one detect the ignorant, careless or vicious person who, though infected, escapes routine serologic testing because he does not consult any medical agency for advice.

Organized case finding by these two methods offers a solution of many of the difficulties encountered in getting patients under treatment. If they were generally applied, the demand for treatment facilities would be from two to three times greater than at present.

EDUCATION

Other speakers on this program are considering the importance of education in relation to syphilis control. In order to avoid infringement on their prerogatives, I must limit my remarks to the importance of education in bringing the infected patient under treatment and keeping him there as long as may be necessary.

The first requirement of the educational program is to educate ourselves. Case finding by the methods outlined will not entirely compensate for medical mistakes in diagnosis, especially of early syphilis. Physicians must be better trained in the principles and technic of treatment so that patients will not be prematurely dismissed from treatment or driven away by technical ineptitude.

So far as the lay public is concerned, the greatest factor in the control of cancer and tuberculosis has been the publicity these diseases have received. Press, magazines, placards, radio, all have made familiar the early symptoms emphasized the consequences of neglect and the necessity of reputable medical care,

and, as for tuberculosis, laid stress on the public health menace. Any adult who can hear or read has been repeatedly told, in brief but telling slogans, that "any lump in a woman's breast may be cancer", "don't spit, spitting spreads disease", "beware of the chronic cough, it may be tuberculosis", "consult your doctor at once if you have so and so". The people are, to use the advertising man's phrase, cancer and tuberculosis conscious.

The dissemination of similar knowledge concerning syphilis has, however, been left almost entirely in the hands of the advertising quack. His pamphlets, tossed surreptitiously into the parked automobile, mix misinformation about syphilis with encomiums of methods to promote waning sexual desire. Legitimate organized medicine and public health officials have done little or nothing to inform the public of syphilis, its prevalence, what it is, what its symptoms may be, how it infiltrates all levels of society, how it attacks innocent women and children, how and where it may be treated, what may be the consequences of neglect. Most laymen know none of these things. It is of course more difficult, because of the delicacy of the sex aspect of the subject, to popularize knowledge about syphilis than about tuberculosis and cancer. It may be necessary to avoid the slogan "A sore on the penis may be syphilis" and to replace it with the alternative "A sore anywhere on the body which refuses to heal may be syphilis. Consult your doctor." But if polite language can be found to tell elderly women that a bloody vaginal discharge may mean cancer, if advertisements concerning halitosis, body odors, feminine hygiene and sanitary napkins are complacently tolerated, surely words can be devised to inform the public about syphilis.

If the people have this information, more of them when infected will consult their doctors, and, of greater public health importance still, more of them will come early and will stay under treatment. An aroused and organized public opinion will aid in the elimination of the quack charlatan and cultist. Drug store treatment may be at least partially controlled by cooperation between public health officials and the pharmaceutical profession.

THE EXPANSION AND ALTERATION OF EXISTING TREATMENT FACILITIES

Facilities for the treatment of syphilis are provided by physicians in private practice, who care for perhaps 20 per cent of those under treatment, and by privately endowed charitable hospitals, municipalities and states. The latter agencies are responsible for the approximate 50 per cent of patients who can contribute nothing to the cost of their treatment and for the remaining 30 per cent who can pay something but not enough to finance private treatment. Detailed information as to the total number of free and part-pay clinics provided by all agencies, of the number of new patients admitted to them yearly, of the total number of visits, and of their success in keeping patients under treatment, is lacking. Since this is a conference of state and territorial health officers, it is perhaps worth while to refer very briefly to the contribution which these larger political units are making toward syphilis control. Information is available from forty-eight states and the District of Columbia.¹⁰

Reporting of venereal disease (including syphilis) is required by forty-six states. The system used is varied, and it is probable that in no state except Massa-

⁹ Exner M. J. Syphilis in Pregnancy. J. A. M. A. 106:438 (Feb. 8) 1936.

¹⁰ Vonderlehr R. A. Personal communication to the author.

chusetts is reporting even reasonably observed by physicians. The requirement of reporting by name or other identifying information not only interferes with compliance with the rule but is a distinct factor in driving patients away from reputable medical agencies into the hands of the quack, to the drug store or to self treatment. Lack of adequate reporting, and the further lack of adequate publicity to the public of the prevalence figures disclosed by such reports, is one cause of public apathy to syphilis and further hampers public health officials in determining the trend of infection. It is to be hoped that under the leadership of the United States Public Health Service a uniform and workable method of reporting may be developed for the entire country.

Forty-six states furnish free diagnostic laboratory service to physicians, which in most cases includes both darkfield and serologic tests. In few states, however, has there been developed a satisfactory consultation service, badly needed for such a complex diagnostic and treatment problem as syphilis. Arrangements should be made in each state for one or more consultation centers, to which patients might be referred by physicians or clinics for diagnostic opinion and treatment advice. These centers should provide specialists in various fields of medicine and expensive laboratory procedures, such as x-ray, otherwise not available.

Only twenty-two states operate or subsidize a total of 511 state controlled clinics for the treatment of syphilis. It hardly needs to be restated that, since these clinics, together with those provided by municipalities and privately endowed charity, are only 25 per cent efficient with the present case load, they will be even less adequate if and when the case load is doubled or tripled by case finding and informative publicity. More clinics are urgently needed. Whether these are provided by state, county or municipal funds or are established or enlarged in privately endowed institutions, the pressure bringing about expansion properly originates with public health officials. I am perhaps an incurable optimist, but I have the feeling that when the magnitude and importance of the syphilis problem is brought home to the lay public there will be a demand for the provision of adequate treatment facilities which the public health officer could not resist if he would.

Twenty-five states provide clinics and on request some or all practicing physicians with free drugs for the treatment of syphilis. This is of course a policy which should be carried out everywhere.

It is generally agreed that the most important factor contributing to the great decline of syphilis in Denmark, Sweden and Great Britain is the provision of free treatment for every infected person who desires it. This is the essential alteration of treatment facilities necessary in this country. It is unquestionably true that in this country many patients prematurely abandon treatment in so-called free clinics because of the constant demand for small fees at each visit. The specter of free treatment for all is one which need not alarm the medical profession, even in these days of heated discussion concerning socialized medicine. Years of familiarity with both clinic and private practice have taught me that the patient who can afford to pay for private treatment will not endure the inconvenience, loss of time from work, long waits, crowding, and possible publicity which attend clinic treatment. Private practice will lose nothing, but syphilis control will gain much, if the policy of free treatment is generally adopted.

There is an analogy between the attitude of public health officers toward the control of syphilis and other communicable diseases comparable to the attitude of the public toward war and peace, now uppermost in the minds of men. It is easy to arouse interest in war and in the acute infectious diseases. They are both dramatically sudden in their onset, dramatically starting in their manifestations, dramatically swift in their course. The measurable end result is victory or defeat, recovery or death. It is more difficult to arouse interest in syphilis and peace. There is nothing dramatic about a disease which drags on for twenty years or more, or about a state of public quietude that lasts forever. People are bored with both of them. But syphilis can be exciting enough to the person who has it, he wishes as ardently that he had never gotten it or that he were cured as does the nation plunged into war that it had been avoided or that it were safely over.

If there were in this country a million cases a year of smallpox, typhoid fever, poliomyelitis, plague, meningitis, Rocky Mountain spotted fever, or any one of a dozen other infections less serious than syphilis, there would be public health war indeed. The public health official would not require to be forced into action by popular panic. If panic over syphilis does not exist, it is in part because the people do not know the facts and in part because of the long drawn out course of the disease.

The more acute infectious diseases are focused in public consciousness by a series of "drives." What is needed for syphilis control is not a "drive," or a series, but sustained effort over many years. Primarily what is needed is an awakening of public health officials to the fact that 12,000,000 patients with syphilis in the United States constitute a challenge demanding the most intelligent thought and the utmost effort.

101 West Read Street.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary

B-K INHALATOR ACCEPTABLE

Manufacturer Bishinger-Koehler Manufacturing Co., Inc., Pittsburgh

This device consists of a mounting to which may be attached two cylinders each about 18 inches long, containing a mixture of oxygen and carbon dioxide under high pressure. Connected



B-K Inhalator

with the valves is a high pressure gage reading to 150 atmospheres, the purpose of which is to enable the operator to judge how much of the content of a cylinder has been used. The valves are so arranged that one cylinder may be held in reserve while the other is being used, and cylinders may be changed without discontinuance of the operation of the apparatus. From the valve system a small metal tube, capable of withstanding high pressure leads to an automatic valve which feeds the gas

mixture to the patient as it is used. This valve consists of a metallic bellows with sides of balloon fabric or similar material the tube and bottom of the bellows being connected together by a system of levers. The mixture of oxygen and carbon dioxide enters through a minute opening in the end of a tube the outer shape of which is conical. The lever system is so

arranged that pressure of oxygen opens this valve with difficulty from the cylinder side. Pressure of the gaseous mixture on the large area of the bellows closes the valve easily. It thus acts simultaneously as a reducing valve and as an automatic regulator of flow. From this valve a flexible metallic tube carries gas to a mouthpiece of celluloid (perhaps cellulose acetate) with an inflatable rubber edge of conventional type.

A relief valve is provided on the fitting that connects the flexible tubing with the mouthpiece. A valve on the bellows allows access of air in case the supply of oxygen should temporarily cease.

The whole is mounted in a substantial fiber trunk, inside which is a packet of tools and an instruction chart attached to the cover, giving directions for operation. Its combined weight is approximately 56 pounds.

This unit was examined in a clinic acceptable to the Council and was found to be well made mechanically.

The Council on Physical Therapy therefore voted to include the B-K Inhalator in its list of accepted apparatus.

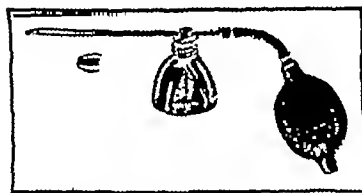
HOLMSPRAY ATOMIZERS ACCEPTABLE

Manufacturer T J Holmes Company, Inc., Chartley, Mass.

The following atomizers were submitted to the Council for consideration.

Prescription Atomizer No 535—A nasal atomizer designed to spray aqueous oily and alcoholic solutions. Vacuum type construction.

Prescription Atomizer No 535—Designed to spray oily solutions. Volume of spray may be adjusted by a slight turn of the acorn shaped spray nozzle. Compression type construction.



Holmspray Throat and Nasal Atomizer,
No 600

Prescription Atomizer No 545—Leak proof designed for oily solutions. Adjustable spray feature. Compression type construction.

Nasal Atomizer No 575—Designed to spray aqueous alcoholic and oily solutions. The liquid tube of this atomizer may be removed for cleaning.

Throat and Nasal Atomizer No 585—Produces a fine fluffy spray suited for epinephrine solution.

Amber colored bottle with bent tube to take up last drop of solution. Volume of spray may be regulated by slight turn of the nozzle.

Throat and Nasal Atomizer No 600—Equipped with adjustable swivel tip. Sprays aqueous oily and alcoholic solutions. Swivel tip easily removed for cleaning purposes. Vacuum type construction.

Throat and Nasal Atomizer No 600 G—Same as Model 600 except that it is equipped with a removable glass liquid tube.

Atomizer No 602—Same as No 600 except that it is supplied with an extra amber colored bottle which makes it possible to distinguish between two solutions and to protect solutions sensitive to light.

Throat and Nasal Atomizer No 602-G—Same as 602, but has removable glass liquid tube.

Nonspil Throat and Nasal Atomizer No 612—Designed to handle all forms of sprays aqueous oily alcoholic, and silver solutions. Equipped with glass liquid tube and an adjustable spray regulator. Air tight clog proof and leak proof features which guard against deterioration and make it possible to carry atomizer without spilling.

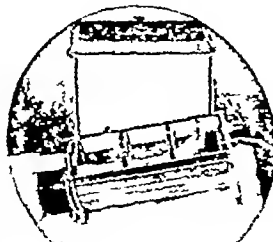
Nonspil Nasal Atomizer No 611—Nasal atomizer having same features as No 612. Air tight clog proof and leak proof.

In view of the satisfactory results obtained with these units, the Council on Physical Therapy voted to include the Holmspray Atomizers in its list of accepted apparatus.

CORRECTION

Burdick Suction-Pressure

Unit—In the report of acceptance for the Burdick Suction-Pressure Unit (THE JOURNAL, August 1, p 354), inadvertently the wrong illustration was published. The accompanying illustration is the proper one. Furthermore the last sentence in paragraph three, reading "Pressures between —80 and —20 mm. of mercury may be obtained," should read "Pressures between +80 and —120 mm. of mercury may be obtained."



Burdick Suction-Pressure Unit

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

ANAEROBIC ANTITOXIN (See New and Nonofficial Remedies, 1936, p 360)

Lederle Laboratories, Inc., Pearl River, N Y

Tetanus Gas-Gangrene Antitoxin Globulin Lederle Modified—A polyvalent antitoxin prepared by the method of refinement against the toxins of *Bacillus tetani* (Cl tet) (Cl perfringens) and *Vibrio septique* (Cl. oxinis are individually prepared in suitable " aerobically after inoculation with anaerobically grown cultures. Some horses are immunized with injections of but one toxin, while others are immunized against several simultaneously. When trial bleeding tests indicate that horses have achieved a suitable antitoxic potency aseptic bleedings of plasma are made. This product differs from tetanus-gas-gangrene antitoxin refined and concentrated Lederle chiefly in the method of refinement. According to the manufacturer, the process of refinement is based essentially on a controlled method of selective digestion of the proteins of the immune horse blood with pepsin. As a result of this process, up to 90 per cent of the coagulable protein may be digested, a small portion is precipitated and the remainder a pseudoglobulin fraction is purified first by ordinary filtration and then by ultrafiltration and dialysis. The resultant solution is sterilized and standardized the same as antitoxin solutions obtained by the usual salting out methods. Tests for the content of tetanus antitoxin perfringens antitoxin and *Vibrio septique* antitoxin are made according to the methods described by the National Institute of Health. The product is marketed in packages of one syringe containing one prophylactic dose and one vial containing one prophylactic dose, stated to represent tetanus antitoxin 1500 units perfringens antitoxin 2000 units and *Vibrio septique* 2000 units.

Dosage—Prophylactic the contents of one syringe or vial within twelve hours of the injury. If there is still further danger of infection this may be repeated in five to seven days.

Gas Gangrene Antitoxin (Polyvalent) without Tetanus Antitoxin Globulin Lederle Modified—A polyvalent antitoxin prepared by immunizing horses against the toxins of *B perfringens* (Cl perfringens) *Vibrio septique* (Cl oedematis maligni) *B oedematis* (Cl oedematis), *B sordelli* (Cl sordelli) and *B histolyticus* (Cl histolyticum). The toxins are individually prepared in suitable broth mediums grown aerobically after inoculation with anaerobically grown cultures. Some horses are immunized with injections of but one toxin while others are immunized against several simultaneously. When a potent antitoxic serum (as indicated by potency tests applied to trial bleedings) is obtained aseptic bleedings of plasma are made. This product differs from gas-gangrene antitoxin (polyvalent) without tetanus antitoxin Lederle chiefly in the method of refinement. The process of refinement is based essentially on a controlled method of selective digestion of the proteins of the immune horse blood with pepsin as a result of this process, up to 90 per cent of the coagulable protein may be digested, a smaller portion is precipitated and the remainder a pseudoglobulin fraction is purified first by ordinary filtration and then by ultrafiltration and dialysis. The resultant solution is sterilized and standardized the same as antitoxin solutions obtained by the usual salting out methods. Tests for the content of perfringens antitoxin and *Vibrio septique* antitoxin are made according to the method prescribed by the National Institute of Health. *B oedematis* (Cl oedematis) antitoxin is tested according to the method prescribed by the Commission of Biological Standardization of the League of Nations in August 1934. The *B histolyticus* (Cl histolyticum) and *B sordelli* (Cl sordelli) antitoxins are tested for potency by injection into mice of serial dilutions of the antitoxin with definite amounts of the respective toxins the M. L. D. of the toxins having previously been determined on mice. The unit of *B histolyticus* (Cl histolyticum) is defined as that amount which will neutralize 100 M. L. D. of *B histolyticus* (Cl histolyticum) toxin for a 20 Gm mouse. The unit of *B sordelli* (Cl sordelli) antitoxin is defined as that amount which will neutralize 1000 M. L. D. of *B sordelli* (Cl sordelli) toxin for a 20 Gm mouse. The product is marketed in packages of one vial containing one therapeutic dose stated to represent perfringens antitoxin 10000 units *Vibrio septique* antitoxin 10000 units *oedematis* (Novyi) antitoxin 200 units and *sordelli* antitoxin 200 units.

Dosage—Therapeutic for tetanus and gas gangrene, an initial intravenous injection of one to four minimum therapeutic doses supplementary injections may be given in from four to six hours or as soon as they are indicated by the symptoms.

ANAEROBIC ANTITOXIN (See New and Nonofficial Remedies 1936, p 360)

Mulford Biological Laboratories, Sharp & Dohme, Inc., Philadelphia and Baltimore

Tetanus Gas Gangrene Antitoxin Mixed Mulford—An antitoxic serum prepared by immunizing horses with gradually increasing doses of the toxins of Cl tetani (B tetani) Cl Welchii (B perfringens) and Cl oedematis-maligni (*Vibrio septique*). After the desired degree of potency is obtained, the horses are bled the plasma is separated and the serum is prepared in a manner similar to that used for other antitoxic serums. Marketed in packages of one ampule vial and one syringe containing 1500 units Clostridium tetani antitoxin 2000 units Clostridium Welchii antitoxin and 2000 units Clostridium oedematis-maligni antitoxin.

Dosage—For prophylaxis the contents of one syringe or ampule injected subcutaneously in a single dose. To maintain the antitoxic titer of the blood the dose is repeated on the third or fifth day.

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SATURDAY, SEPTEMBER 5, 1936

BRINGING SYPHILIS INTO THE LIGHT

For centuries public discussion of syphilis has been submerged largely because of esthetic considerations. Recently this policy of suppression has itself attracted notice because broadcasting companies have preferred to keep the word "syphilis" and the subject "off the air." Great indignation has been expressed in public health circles. Nevertheless newspapers and magazines have been equally reticent to make any mention of syphilis except under the circumlocution of "a social disease." The great majority of men and women who have mentioned the subject at all have spoken of it as "a blood disease" or, among the less cultured, as "a bad disease."

Physicians are accustomed to face disease frankly and to a great extent have divorced the so-called venereal diseases in their thinking from social and moral questions. The real trouble goes beyond the radio and the press, which no doubt reflect the attitude of the average adult. The average man and woman still shrink from the knowledge that syphilis is a leading cause of deaths which are usually attributed to heart disease, diseases of the nervous system and other chronic diseases.

Several metropolitan newspapers, cited by Pinney¹ in a recent contribution, have not only opened their editorial and news columns and even their headlines to the mention of the word syphilis but have definitely enlisted their influence against the disease through series of featured articles. Parran² has said that the conquest of syphilis may be the next great step in progress against endemic pestilence. In this battle the part played by the medical profession is of the utmost importance. The best weapon against syphilis is the prompt, adequate and persistent treatment of the acute case and of the syphilitic pregnant woman. This is the function of the physician. The public health official must do his part by searching out the foci of infection. Syphilis has been shown to be a disease the endemic

character of which is expressed largely through groups of limited epidemics frequently traceable to one or at the most a few infected persons. Between the discovery program of the health officials and treatment by physicians, the conquest of syphilis is an imminent possibility. In this conquest the natural cooperation that ought to exist between the medical profession and public health agencies will be demanded to the fullest extent.

MILK NOT POTENT FOR CEVITAMIC ACID

Recent studies of the vitamin C in cow's milk have suggested that this food may actually be a significant source of the antiscorbutic factor,¹ hence it is interesting to inquire how much milk would have to be ingested to supply the total human needs for cevitamic acid. Göthlin² has estimated that for a 60 Kg man from 19 to 27 mg of crystalline cevitamic acid constitutes the minimum protective dose (from 0.31 to 0.45 mg per kilogram). More recently Everson and Daniels³ have made an exact quantitative study of the vitamin C retentions of three preschool children with intakes up to 7.5 mg per kilogram of body weight, retentions of the antiscorbutic vitamin paralleled ingestions, whereas excess quantities up to 12 mg had no significant influence on the amount retained. The largest quantity, over 4 mg per kilogram, was retained by the youngest child, suggesting that young tissues may need more of this factor than those only slightly older. If maximum retention is an exact criterion of the requirements of an organism for cevitanic acid, a total intake for such children would necessitate between 113 and 143 mg daily. No direct study of the needs of infants is yet available, but by indirect means an approximation can be made. A curative dose of natural or synthetic cevitanic acid of from 30 to 50 mg daily for infants with acute scurvy has been used successfully in many cases and a prophylactic dose of 10 mg has been suggested.⁴ By an examination of the amounts of vitamin C reported in human milk,⁵ the size of a protective dose for infants may be estimated, for breast-fed infants do not develop scurvy even in its latent form.⁶ Neuweiler⁵ has asserted that human milk furnishes an average of from 4 to 7 mg of cevitanic acid per hundred cubic centimeters, five or six times the amount in the cow's milk used for reference, and one-tenth the quantity in lemon

1 Whitnab, C. H. and Riddell, W. H. Milk as a Source of Vitamin C. *Science* 83: 162 (Feb. 14) 1936.

2 Göthlin, G. Human Daily Requirements of Dietary Ascorbic Acid. *Nature* 134: 569 (Oct. 13) 1934.

3 Everson, Gladys J. and Daniels, Amy L. Vitamin C Studies with Children of Preschool Age. *J. Nutrition* 12: 15-26 (July) 1936.

4 Bell, A. D. C. Infantile Scurvy Treated with Synthetic Ascorbic Acid. *Lancet* 1: 547 (March 9) 1935. Svendsgaard, E. Infantile Scurvy Treated with Ascorbic Acid. *ibid.* 1: 22 (Jan. 6) 1934. Wentzler, E. Heilung eines klassischen Falles von Moller-Barre durch Cebion (reine Ascorbinsäure). *Merck, Monatschr.* 1: 14 (Feb. 50): 451, 1934.

5 Neuweiler, W. Leber den Gehalt der Frauenmilch an Vitamin C. *Ztschr. f. Vitaminforsch.* 4: 39 (Jan.) 1935. Selig, L. and Fing, C. G. The Vitamin C Content of Human Milk and Its Variations with Diet. *J. Nutrition* 11: 599 (July) 1936.

6 Wachholder, K. Die Versorgung des Säuglings mit Vitamin C. *Klin. Wchnschr.* 15: 593, 1936.

1 Pinney, Jean B. New Brooms and Old Cobwebs. *J. Social Hygiene* 22: 145 (April) 1936.
2 Parran, Thomas. Health Security. *Am. J. Pub. Health* 26: 529 (April) 1936.

juice, while Selleg and King³ have reported an average of from 5.5 to 8 mg per hundred cubic centimeters during the first few weeks of lactation, thus supplying to the nursing infant from 40 to 50 mg of cevitic acid daily. Either the needs of the infant are less than those of the preschool child, or protection of the infant against scurvy may be assured on quantities less than the amounts needed for maximum retention in the preschool child.

If milk were to serve as the sole source of vitamin C and if, as used by the consumer, it contained as much of this factor as Whitnah and Riddell found (25.9 mg per liter), a 60 Kg man would need to consume for optimal protection considerably more than a liter daily, a preschool child would be obliged to drink over 4 liters daily for maximum retention of cevitic acid, and a nursing infant would need almost 2 liters of cow's milk of the potency described to obtain the same quantity of vitamin C as its mother's milk would have furnished.

Though it has been shown that fresh and even pasteurized milk can now be secured having a content of cevitic acid larger than formerly, such milk cannot be considered a rich source of the antiscorbutic factor. This food does therefore contribute cevitic acid to the diet but, because of a probable reduction in potency under ordinary home and hospital conditions, cow's milk should not be depended on to supply the entire human needs for vitamin C.

BEJEL—NONVENEREAL SYPHILIS

From the clinic of the American Mission at Deir-ez-Zor, Syria, comes a series of contributions by Hudson and his collaborators¹ on a form of syphilis, known as "bejel," found among the Arabs of the middle Euphrates valley. The evidence for believing that bejel is a purely nonvenereal form of syphilitic infection lies along four lines: (1) The Bedouin villagers are prevented from sexual promiscuity by geographic, economic and social barriers, (2) the Bedouins, large numbers of whom have been treated in the clinic, are free from venereal lesions and diseases, (3) the Bedouins say that there is no promiscuity among them and attribute the widespread propagation of bejel in their communities to infection through innocent contact, usually in childhood, and (4) experience with the clinical course of bejel confirms the fact that it is a nonvenereal community disease of the Bedouins acquired during childhood.

The population studied is distributed for the most part along the middle Euphrates River, its tributary the Khabur River, and a semiarid region known as the Syrian desert. The people are insulated from contacts

with the outside world to a remarkable degree. The settled population of the region numbers about 200,000, of which 195,000 are indigenous Moslem Arabs. The Christian population numbers about 5,000 and has little social significance. The Moslems can be divided into townsmen, constituting about 50,000 of the group, and the Bedouins, of whom about 132,000 live in small mud villages along the banks of the Euphrates River and 13,000 live similarly along the Khabur River. The Moslem Arabs have long given syphilis two names, depending on the source of the infection. In the towns the contraction of syphilis through venereal contact is referred to as *franghi* (the disease of the Franks, or foreigners), whereas childhood infection among the townspeople is given the Bedouin name of *bejel*. The Bedouins, however, refer only to *bejel*, which has the connotation of a childhood exanthem and carries with it no sense of venereal exposure.

In reviewing the records of 8,000 consecutive new admissions to the clinic, data for the statistical study of 2,617 patients were obtained. These fathers and mothers were distributed in three social groups, about 500 being Christians, 1,000 townspeople and 1,000 Bedouins. They were married adults of all ages, but most were within the childbearing decades. The average ages of the three groups showed no material variation. Consideration of the positive serologic reactions, darkfield examinations, histories and clinical observations led to the conclusion that the incidence of syphilis in the Bedouins was 90 per cent, in the townspeople 35 per cent, and in the adult Christian population between 10 and 12 per cent. In spite of this there was no marked difference between the three groups in the average number of pregnancies or percentage of living children born. In fact, the incidence of miscarriage was definitely lower among the Bedouins than among the other two groups, which in turn were about equal in this respect. The evidence for the nonvenereal nature of bejel rests also on its apparent epidemiology. Recognizable primary lesions, such as are found in the venereal form, are practically never seen in the Bedouins. However, the Bedouin method of supplying drinking water for the family offers opportunity for the transfer of spirochetes and probably determines the usual site of the earliest lesions. A child with bejel does not usually show much constitutional change, and the children are reputed never to die of bejel. The active lesions on the mucous membrane of the oral cavity swarm with spirochetes having all the characteristics of *Spirochaeta pallida*. Furthermore, the patronage of prostitution and the incidence of gonorrhea lend further corroboration to the acceptance of bejel as a nonvenereal disease. Among the Christians the patronage of prostitution exists to a degree closely comparable to that in the West and exists to some degree among the townspeople. The primitive Bedouin, however, has a highly developed sense of sexual propriety which the closely knit clan life of the community

¹ Hudson E. H. and Crosley Susan S. The Influence of Bejel on the Second Generation. *Brit. J. Dermat.* 48: 288 (June) 1936.
Hudson E. H. Bejel Nonvenereal Syphilis. *Arch. Dermat. & Syph.* 33: 994 (June) 1936.
Hudson E. H. Syphilis in the Euphrates Arab. *Am. J. Syph.* 16: 447 (Oct.) 1932.
Syphilis in the Euphrates Arab. *ibid.* 17: 10 (Jan.) 1933.
Reaction to the Presumptive Kahn Test in Patients with Bejel (Nonvenereal Syphilis). *Arch. Path.* 21: 727 (June) 1936.

still preserves. The statistics for gonorrhea were even more conclusive. Of the ninety-eight patients with gonorrhea seen among the 7,000 new patients admitted to the clinic, fifty-five were Christians, forty-one were townsmen and only two were Bedouins. The records of the clinic do not show any Bedouin women with gonorrhea or with any of the sequelae of gonorrhea.

The question of the congenital transmission of bejel was of course closely studied. It was believed that children are usually born free of the disease for several reasons. The classic picture of congenital syphilis is rarely seen in Bedouin infants. There is a definite contagious element in bejel, babies and young children do not present manifestations of the disease until they have been handled and fondled by older children who have open lesions. Bedouin children lack such important manifestations of the congenital disease as interstitial keratitis, hutchinsonian teeth and eighth nerve deafness. Children who have "not yet" had bejel have a negative Kahn reaction. Finally, it was not infrequently necessary to treat a father or mother who contracted bejel from their children. It seems probable, therefore, that syphilis in this form is rarely transmitted prenatally or congenitally and that when propagated under epidemiologic conditions similar to yaws is no more likely than that disease to affect the second generation.

The extensive studies of venereal and nonvenereal syphilis existing side by side in an exceedingly large percentage of the population indicate graphically the still incomplete knowledge of the syphilis problem. It would be especially interesting to know by what route and in what form syphilis reached this isolated community.

Current Comment

THE PHARMACOPEIA AND THE PHYSICIAN

The new Pharmacopeia, the eleventh revision, became official in June 1936. The preparations included in the Pharmacopeia for use in the diagnosis or treatment of diseases were selected by the Subcommittee on Scope, which included many prominent physicians. In order that doctors may have easily available a reference to the products included in the Pharmacopeia and also to their manner of use, a special series of articles has been prepared suggesting the ways in which these medicines may be prescribed in the treatment of disease. The series of articles, which begins in this issue of THE JOURNAL, has been developed through cooperation by the Committee of Revision and the Board of Trustees of the Pharmacopeia with THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. In order that the suggestions may be as useful as possible, the writers of the articles have not been restricted to the use of official medicines if in their judgment other therapeutic agents seem to be more useful. It is proposed to publish these articles at frequent intervals until the

entire series is completed, at which time the articles will be assembled in book form and be made generally available at as low a price as possible. The purpose of this series is to encourage the use of Pharmacopeial and other well established remedies rather than the use of unestablished and unwarranted proprietary preparations.

OSTEOPATHY IN ENGLAND

Last year, after an extensive investigation of osteopathy with a view to official recognition in Great Britain, those who were seeking official recognition voluntarily withdrew their application. The withdrawal followed an extensive presentation of their case with an equally adequate presentation by those who sought to show the unscientific character of osteopathic manipulation. The hearings were fully reviewed in the columns of THE JOURNAL during their progress. However, osteopathy and the associated cults are not idle in promoting their claims. Almost any citizen who secures the limelight, from applicants for the presidency to those in lesser positions, is said sooner or later to be a regular adherent of osteopathic practice and to submit himself and his family at regular intervals to osteopathic adjustments. In most instances these claims are not justified. A few weeks ago a periodical called *News Week* indicated that the new king of England had also selected an osteopath and that Sir Morton Smart, a well known orthopedic surgeon, had been selected for the position. Quite promptly thereafter Sir Morton Smart received the following letter from Oakley Smith, president and founder of the Chicago School of Naprapathy.

Honorable Sir —

Ever since a blind Osteopath—a graduate of the first class of the British College of Osteopathy—paid us the honor of visiting our classes here in America, I have had a rather unusual interest in the strides of Osteopathy in England.

In this week's issue of "NEWS-WEEK" I have read the following:

"Before leaving for France, the King created two new posts. He made his personal pilot, Lt. Edward (Mouse) Fielden, Captain of the King's Flight.

Sir Morton Smart, osteopath to lesser Britons, became Manipulative Surgeon to His Majesty."

If you feel like it I should be very happy to have a line from you concerning the accuracy of this item and indicating if you still feel like it, something of the duties which will fall upon you because of your high post.

Sincerely,

OAKLEY SMITH, D.N.

The letter disturbed Sir Morton Smart considerably. He calls attention to the following statement, which has been published under his own signature in British newspapers:

I have consistently pointed out ever since osteopaths came to this country from America that the pathology of osteopathy as set out by osteopaths is without any scientific basis and is totally opposed to the pathology of manipulative surgery. If the osteopathic conception were founded on scientific reasoning and supported by scientific evidence it would be necessary in the interests of the community completely to reorganise the medical education in every country in the world.

Incidentally, Oakley Smith is not even an osteopath. The naprapaths would certainly not assert that disease was due primarily to pressure of bones of the spine.

on nerves coming out between the bones. They feel, instead, that disease is caused by the actions of ligaments which pull the bones of the spine on to the nerves. "You pay your money and you take your choice."

Medical Economics

MEDICAL SERVICE FOR COLLEGE STUDENTS

Approximately 1,000,000 persons, aged from 17 to 24, attend the institutions of higher education in the United States for from four to six or more years. During that period a large percentage of these students receive medical care and instruction in hygiene under a specialized form of organization—the student health service. About 90,000 students who go out from the colleges of this country every year will be leaders in society and will be expected to exemplify their health training as well as their mental education. These graduates constitute one of the most influential groups which the medical profession can reach.

In the interest of establishing some fundamental principles that might be accepted and applied in the correct provision of medical care to this section of the population, the Board of Trustees requested that a study be made of student health services in all leading colleges in the United States. The conclusions of the report¹ are as follows:

1. There has been, during the last decade, a steady increase in the number of institutions maintaining student health services. The trend in the student health movement is definitely toward a single department for the administration of the continuously expanding personal medical services and health activities.

2. Conclusions pertaining to the financial advantages or disadvantages of an organization of medical services for students are rendered dubious by the inadequacy and inaccuracy of the financial records for student health services. The reported cost per student is not appreciably less than the cost for similar services in the private purchase of medical and hospital care.

3. There appears to be a surprisingly large amount of capital invested in buildings and equipment devoted to health and medical services for students. A few health services have shown that student medical care plans can be operated effectively and economically without large investments in buildings and equipment by utilizing the medical agencies and facilities of the community.

4. There seems to be a general tendency to develop health and medical services in colleges and universities on an institutional rather than a geographic basis. The extension of student health services into comprehensive medical care plans disrupts the professional practice of medicine into a system of institutional medical enterprises. Under such plans the patient is considered as a member of a restricted cultural group rather than as a human being subject to his entire environment.

5. There is a growing belief that the place of the student health service in the community medical scheme should be that of an agency to supervise the health of students and to teach health standards but in all instances to use the community's health resources in a manner approved by the medical profession.

6. Neither the organization nor the conduct of student health services appears to have followed any generally accepted principles or objectives except to provide students with some sort of health instruction and variable forms and degrees of medical advice and care. The essential pedagogic and medical factors in the health program seem to have suffered because new activities were adopted by student health services without careful investigation of their usefulness and largely to advance athletics.

7. There seems to be evidence to show that the health education of students, which is presumably the primary function of a student health service, has not always been so effective as might be expected of institutions of higher learning. The health education program, which should enable college students to acquire health principles and hygiene practices that will influence public opinion and social custom for the betterment of human health, has been neglected because of unnecessary emphasis on the treatment and management of illness among the students.

8. A universally accepted measure of performance or accomplishment by which the programs and benefits of student health services may be judged has not been evolved. The lack of a proper method of appraisal has permitted a confusion of clinical and health educational activities to the detriment of the more widely beneficial education program. The evaluation of student health services may be made possible by properly prepared health records and health tests.

9. It appears that a large percentage of universities and colleges are actually engaged in the practice of medicine in varying degrees. The successful operation of a few student medical care plans in accordance with the ethical principles of the medical profession indicates that there are no insurmountable obstacles to operating other similar student health services.

10. The segregation of a section of the medical profession by student health services under standards built on a compromise between the ideals of medicine and the interests of educational institutions is proving harmful to the medical profession and to the educational institutions alike. The division within the medical profession reduces its influence in molding the standards and ethics of student medical care plans into a form that will best serve the prevention and cure of disease.

11. The number of instances in which a practical cooperative arrangement has been effected between the college and the county medical society of the college community for the medical care of students seems to be lamentably small. It does not appear likely that the health education objectives of a student health service will be achieved until student health services harmoniously cooperate with the medical profession.

The possibilities of these student medical care-plans for good or for bad in the medical field are far reaching and the course they take will depend on how much leadership the medical profession assumes. To this end it is important that each county medical society in every community where there is an institution of higher education should have an active committee devoted to a study of the problems of student health services. This committee should be in close and continuous contact with the administrators of the educational institution to keep all medical subjects in accordance with professional standards. Furthermore, wherever it is possible to secure the cooperation of school administrators, the county medical society should have complete control of all the strictly medical activities necessary to satisfy the needs of the educational institution and its students. From the entrance physical examination to the major surgical procedure, all medical relationships with each student should be performed in agreement with ethical practices as stipulated by the medical society. The method or form of organization to accomplish this cooperation can be arranged by the local institution and the local medical society.

The Expert and the Pseudo-Expert —Years ago Lawson Brown said that the specialist could be distinguished from the general practitioner by the fact that the specialist when he examined the lungs made the patient cough, the general practitioner did not! For the past quarter-century the graduates of every first-class medical school in the United States have been taught the importance of this maneuver. Today the true expert is distinguished, first by an abiding faith in inspection, palpation, percussion and auscultation and second, by a strong conviction that the roentgenogram is best interpreted in the light of clinical impressions. The pseudo-expert is recognized, on the one hand, by his contempt for the stethoscope, a contempt which varies directly with his ineptitude in its use and, on the other hand, by a childlike faith in his own clinical deductions from the roentgenogram.—Waring, J. J. *The Vicissitudes of Auscultation*, *Am Rev Tuberc* 34:1 (July) 1936.

¹ University and College Student Health Services Bureau of Medical Economics, American Medical Association Chicago American Medical Association 1936

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ALABAMA

Personal—Dr. Hubert R. Owen, Wedowee, has been appointed health officer for Winston County—Dr. Frank M. Hall, formerly of Leeds, has been appointed health officer of Limestone County—Dr. Martie F. Parker, Boaz, has been made health officer of Monroe County, with headquarters in Monroeville.

Society News—The Northwestern division of the Alabama State Medical Association and the Fayette County Medical Society met in Fayette, July 9, with the following speakers, among others: Drs. James M. Mason, Birmingham, "Diverticulitis of the Ileum," Carl A. Grote, Huntsville, "Present Status of Tuberculosis," and Thompson F. Wickliffe, Jasper, on otomycosis.

Prevalence of Infantile Paralysis—From January 1 to August 28, 314 cases of infantile paralysis with twenty-five deaths have been reported to the state department of health. In concentration of cases, Jefferson County led with twenty-three cases reported since the first of August. Lauderdale is second with thirteen during this period and Cullman third with ten cases. Four cases each were reported in Lawrence and Blount counties, while Colbert reported three. Sporadic cases appeared in the following counties: Franklin, Madison, Morgan, Marshall, Tallapoosa, Mobile and Marengo, two cases each, and one each in Marion, Winston, Etowah, Calhoun, Elmore, Montgomery, Pike, Baldwin, Chilton and Limestone.

Deaths from Accidents Increase—Accidental and violent deaths were the fifth leading cause of death in Alabama in 1935 with a rate of 63 per hundred thousand of population. In 1933 this classification was seventh and in 1934 sixth in the list of causes of death. Home accidents caused 613 deaths, industrial 192, motor vehicles 599 and other public accidents 341. Of the home accidents 28.2 per cent were caused by falls, 29 per cent by burns. One hundred and seventy of these were deaths of children under 5 years of age and 184 of persons 65 or over. Among the children under 5, 29.4 per cent of the deaths were from burns, 28.2 from asphyxiation and 13.5 per cent from poisoning. Among the older group, 63 per cent of the deaths were from falls, 20.6 per cent from burns.

ARIZONA

Personal—Dr. Bernice L. Steward, Coolidge, has been appointed physician to the state penitentiary in Florence, succeeding his brother, the late Dr. Hobart B. Steward.

Campaign of Tuberculosis Prevention—The state health department with the cooperation of the U. S. Children's Bureau, the Arizona departments of the Forty and Eight and the American Legion, has begun a statewide campaign of tuberculosis prevention. The work will be entirely diagnostic and will be under the direction of Dr. Willis D. Gilmore, recently of Tombstone, who has joined the state board of health as tuberculosis consultant.

CALIFORNIA

Society News—Dr. Eugene S. Kilgore, San Francisco, addressed the Sonoma County Medical Society, August 13, in Santa Rosa, on heart diseases—Drs. Edwin I. Bartlett and Howard H. Markel, San Francisco, addressed the Humboldt County Medical Society, Eureka, August 6, on bone tumors.

CONNECTICUT

The New State Medical Journal—The first issue of the *Journal of the Connecticut State Medical Society* made its appearance in August. It will be published quarterly for this year according to present plans. Dr. Stanley B. Weld, Hartford, is editor.

Annual Clinical Congress of State Society—The Connecticut State Medical Society will hold its annual clinical congress in New Haven, September 22-24. The speakers will include:

Dr. Frederic W. Bancroft, New York, Our Duty to the Fracture Patient
Dr. Burrill B. Crohn, New York, Etiology, Treatment and End Results of Gastrointestinal Ulcer

Dr. Foster Kennedy, New York, What the General Practitioner Should Know About Neurology
Dr. Thomas M. Rivers, New York, Poliomyelitis
Dr. Louis G. Herrmann, Cincinnati, Recent Advances in the Diagnosis and Treatment of Peripheral Vascular Diseases
Dr. Vilny P. Blair, St. Louis, Injuries of the Bones and Soft Tissues of the Face
Dr. Warren T. Vanghan, Richmond, Recent Advances in the Study of Food Allergy
Dr. Walter T. Dannreuther, New York, Clinical Manifestations of Ectopic Gestation
Dr. Leonard Greenburg, Albany, N. Y., The Practicing Physician and the Diagnosis and Treatment of Occupational Diseases
Dr. Edwin H. Place, Boston, Salient Experiences in Thirty Years with Contagious Diseases

In addition, there will be symposiums on treatment of fractures, peptic ulcer, neurology, poliomyelitis, peripheral vascular disease, injuries to the bones and soft tissues of the face, food allergy, gynecology, industrial diseases, immunity procedures in acute infections, and endocrinology. Bedside clinics at the New Haven Hospital will also form a part of the program.

DISTRICT OF COLUMBIA

The Annual Refresher Courses—Georgetown University School of Medicine will conduct the first of a series of annual refresher courses, September 14-19. Sessions will be held at the medical school and the Georgetown University, Children's, Gallinger Municipal and Episcopal Eye, Ear and Throat hospitals. The course, which will cover the specialties, is given to acquaint graduates of the medical school with the newer developments in medicine and surgery and the allied branches. It will be concluded with a dinner Saturday evening September 19.

GEORGIA

Society News—Dr. Olin S. Cofer, Atlanta, addressed the Fulton County Medical Society, Atlanta, August 20, on "Treatment of Cholecystitis"—Dr. Alton M. Johnson, Valdosta, addressed the Coffee County Medical Society, Douglas, August 25, on "Pylorospasm in Infancy"—Dr. James R. Paulk, Moultrie, addressed a meeting of the South Georgia Medical Society, July 14, at the home of Dr. William W. Turner Jr., Nashville, on the use of the bronchoscope—Speakers at a meeting of the Fourth District Medical Society in Warm Springs, August 10, were Drs. Wilmer Baker, New Orleans, on "Handling of Accidents Occurring During the Administration of Anesthesia", Arthur Neal Owens, New Orleans, "Principles of Plastic Surgery", Launcelot Minor Blackford, Atlanta, "Cardiac Pain," and Frank K. Boland, Atlanta, "Immediate Care of Fractures."

ILLINOIS

Personal—Dr. Charles H. P. G. Benning, district health officer of Royal Oak, Mich., has been named school health director of Peoria.

Deaths from Diabetes Increase—The state health department reports that diabetes is now a hazard twice as great as that of tuberculosis for the population in one half of the cities and in one third of the counties of Illinois. Deaths from diabetes have more than tripled during the last twenty-five years, the report stated, while those from tuberculosis have been cut in half. Last year, diabetes caused nearly twice as many deaths as did tuberculosis in twenty-five principal cities and thirty-four counties of the state. There were 1,978 deaths attributed to diabetes in Illinois last year against 600 in 1910 and 342 in 1902, the health department reported.

Society News—Drs. William B. Serbin and Laurence E. Hines, Chicago, addressed the McHenry County Medical Society, August 26, on "Pathology and Treatment of Proctodentia of the Uterus and Present Knowledge of Endocardial Infections" respectively—Dr. Lee O. Frech, Decatur, addressed the Randolph County Medical Society, August 27, on medical economics—Dr. Ford K. Hick, Chicago, will address the Bureau County Medical Society, September 8, on pneumonia—At a meeting of the Lee County Medical Society, September 7, Dr. Howard L. Beye, Iowa City, will speak on management of acute conditions in the abdomen—Dr. Lowell D. Snorf, Chicago, will present a paper before the Union County Medical Society, September 10, on "Diagnosis Pathology and Advancements in the Treatment of Duodenal and Gastric Ulcers"—The Macoupin County Medical Society was addressed July 28 in Carlinville by Drs. Frederick O. Schwartz and Martin F. Kouri, both of St. Louis, on "Eye Conditions Treated by General Practitioners" and "Medicine in School Organization" respectively.

Chicago

Personal—Dr Maximilian J Hubeny has been appointed chief of the x-ray department of Cook County Hospital, succeeding Dr Chester H Warfield, who has held the position for eight years

INDIANA

Dental Demonstration—The bureau of maternal and child health of the Indiana State Medical Association and the Indiana State Dental Association have begun a joint dental program. A trailer containing full dental equipment has been acquired, and Janesville has been selected as the first town for the service. Greene and Owen counties have been designated the first to receive this service because statistical studies of the number of persons on relief, the average industrial income, agricultural income and the general financial status of the two counties show their need. Dental services will be limited to children between 3 and 10 years of age, and only those referred by local agencies and dentists in the county in which the mobile unit is located, and whose financial status has been determined will be accepted. Robert L. Peden, DDS, will operate the mobile unit under the direction of Mary H. Westfall, DDS, Indianapolis, who will continue to direct the dental educational program of the state for the coming year. The services of the unit will be limited to prophylaxis, cement and amalgam fillings, and extraction.

IOWA

Promotions at State University—Dr Horace M. Korn has been promoted to be professor of the theory and practice of medicine at the State University College of Medicine, it is announced. Other changes on the medical faculty include:

Walter R. Ingram, Ph.D., assistant professor of neuro-anatomy
Dr Placidus J. Liefelder, assistant professor of ophthalmology
Dr Jacob J. Potter, assistant professor of otolaryngology
Wald W. Tuttle, Ph.D., associate professor of physiology

Diphtheria Prevention Program—During June the state department of health instituted a program of diphtheria prevention in seventeen counties in cooperation with local medical societies. Social security funds were used to pay physicians in these counties for giving one dose of diphtheria alum precipitated toxoid to all resident children between the ages of 9 and 24 months. The treatments were administered in the offices of the participating physicians. Each county medical society set the amount to be charged the parents for giving the treatment to children over 24 months of age. An analysis of the records of diphtheria prevention programs conducted prior to June 1 shows that only 28 per cent of all the children treated were in the age group 5 years and under. Under the new plan, 71 per cent of all the children treated were of preschool age. Since more than 60 per cent of the deaths from diphtheria in Iowa occur in this group, the new plan offers greater possibility for reducing mortality, the state journal points out. The participating counties in the recent program were Adams, Appanoose, Dallas, Davis, Decatur, Keokuk, Louisa, Lyon, Madison, Mills, Monona, Monroe, Page, Polk, Poweshiek, Ringgold and Shelby. With federal funds available for the remainder of the fiscal year ending June 30, 1937, the new project will be launched in Audubon, Buchanan, Cass, Crawford, Delaware, Dubuque (exclusive of the city of Dubuque), Harrison, Jackson, Marion, Pottawattamie (exclusive of the city of Council Bluffs), Winnebago and Woodbury (exclusive of Sioux City) counties.

KENTUCKY

Personal—Dr Addie M. Lyon, Frankfort, has been appointed health officer of Lawrence County.—Dr Lee A. Dare Ashland, has been appointed health officer of Anderson County to succeed the late Dr Squire R. Boggess, Lawrenceburg.—Dr James L. Vallandigham Lexington, has been appointed superintendent of the Eastern State Hospital, Lexington.

LOUISIANA

Educational Campaign in Tuberculosis—The Tuberculosis and Public Health Association of New Orleans will carry on a health education campaign in the city schools in the fall under the auspices of the woman's auxiliary of the Orleans Parish Medical Society.

Superintendent of Charity Hospital Resigns—Dr Arthur Vidrine, since 1928 superintendent of Charity Hospital, New Orleans, has resigned to devote full time to his duties as

dean of Louisiana State University Medical Center. He has been succeeded by Dr George S. Bel, New Orleans, chairman of the board of administrators of the hospital, it is reported.

Society News—Dr Morris Fishbein, Chicago, editor of THE JOURNAL, will give an address before the Orleans Parish Medical Society, October 2, on "The New and Changing Social Order in Medicine".—Drs Ralph E. King, Winnsboro, and James B. Vaughan, Monroe, among others, addressed the Franklin Parish Medical Society in Winnsboro recently on "Injection Treatment of Hernia" and "Hemoglobinuria" respectively.—Dr Melville W. Hunter Monroe, addressed the Tri-Parish Medical Society in Tallulah August 4 on "Pain in the Chest, with Special Reference to Heart Conditions".

MARYLAND

Typhoid and Floods—The state department of health reports that for the first six months of 1936 only fifty-three cases of typhoid were recorded in spite of the menace of the disease following the destructive floods of March and April. This total compares with 85 in 1935, 124 in 1934, 113 in 1933 and 143 in 1932. Of the fifty-three cases, seventeen occurred in Baltimore and thirty-six in the counties of the state. Carroll, Cecil, Howard, Prince George's, Queen Anne's and Somerset counties reported no typhoid during the first six months of this year.

New Occupational Disease Bureau—The Baltimore City Department of Health has established a new bureau of occupational diseases. Dr John M. McDonald, Baltimore, has been placed in charge. The newly created department will assist in a survey now being conducted for the Maryland Commission for the Study of Occupational Diseases to determine the probable incidence of industrial disease in the state. Cooperating in the study are the state department of health, the state commissioner of labor and statistics, and the Baltimore department of health.

MICHIGAN

Graduate Courses—The department of postgraduate medicine, University of Michigan, Ann Arbor, and the Michigan State Medical Society are cooperating in a series of graduate courses, beginning the first week in October and continuing eight weeks. The courses will be given in the following centers: Grand Rapids, Battle Creek and Kalamazoo jointly, Lansing and Jackson jointly, Cadillac and Manistee jointly, Flint, Bay City and Traverse City. A composite of the course will be given in October in Marquette, Houghton or Escanaba, according to the state medical journal. Some of the subjects to be considered include allergic diseases, malposition of the uterus, common psychoneuroses in adults and children, recognition and management of acute and chronic diseases of the ear, care of the injured person, including the recognition and emergency care of fractures, and ulcerative lesions of the gastro-intestinal tract.

MISSOURI

Dr McCordock Succeeds Dr Loeb—Dr Howard A. McCordock, associate professor of pathology, Washington University School of Medicine, St. Louis, has been appointed head of the department to succeed Dr Leo Loeb, whose retirement was recently announced. Dr McCordock was born in Brooklyn in 1895 and graduated from the University of Buffalo School of Medicine in 1923. He has been at Washington University since 1929.

MONTANA

State Medical Election—Dr William P. Smith, Columbus, was chosen president-elect of the Medical Association of Montana at the annual meeting in July. Dr John A. Evert, Glendive, was installed as president and Dr Elmer G. Balsam, Billings, was reelected secretary. Next year's meeting will be in Great Falls in July.

NEBRASKA

Clinical Assembly at Omaha—The fourth annual assembly presented by the Omaha Mid-West Clinical Society will be at the Hotel Paxton, October 26-30. Guest speakers will be Drs Joseph C. Beck, Loyal Davis and Morris Fishbein, editor of THE JOURNAL, Chicago, Hugh Cabot and George B. Eusterman, Rochester, Minn., Alan Brown, Toronto, John Shelton Horsley, Richmond, Elliott P. Joslin, Boston, James R. McCord, Atlanta, Bernard P. Widman, Philadelphia, Philip D. Wilson and Fred Wise, New York. Clinics will be held October 30 at St. Joseph's and University of Nebraska hospitals.

NEW JERSEY

Officers of Medical Board—Dr Arcangelo Liva, Rutherford, was elected president of the state board of medical examiners, July 22, Dr James J. McGuire, Trenton, secretary, and R. M. Colborn, D. O., Newark, treasurer.

Typhoid Traced to Spring Water—Thirteen cases of typhoid were reported in Englewood August 24. Ten of the thirteen patients had drunk from a spring in the town, samples from which showed presumptive evidence of contamination.

NEW YORK

Society News—Dr Harvey B. Matthews, Brooklyn, addressed the Suffolk County Medical Society, Bellport, July 22, on "Breech Presentation."—The annual conference of secretaries of county medical societies will be held in Albany, September 15.

University News—Dr Edward W. Koch, dean of the University of Buffalo School of Medicine, has been made dean also of the dental school. Dr Elmer Heath, assistant professor of medicine, has been made assistant dean of the medical school and Russell W. Groh, D.D.S., professor of operative dentistry, assistant dean of the dental school. Dr Koch is a graduate of Rush Medical College, Chicago, and has been on the faculty at Buffalo since 1918, when he was appointed professor of pharmacology. He has been dean of the medical school since 1930.

New York City

Personal—Dr Aaron Arnold Karan Wallum Lake, R. I., has been appointed assistant director of the Jewish Hospital of Brooklyn. The hospital recently established a serum center with Dr Sidney D. Kramer in charge.—Dr Howard Lilienthal recently exhibited three oil paintings and a pastel at the Wayside Arts Gallery on the Albany Post Road, Garrison-on-Hudson.

Dr Elsberg Honored—The medical staff of the New York Neurological Institute honored Dr Charles A. Elsberg, chief of surgical service, at a tea on his sixty-fifth birthday, August 24. A special volume of the *Bulletin* of the institute, containing forty original articles contributed by Dr Elsberg's colleagues and students, was presented to him. Informal addresses were made by Drs J. Bentley Squier, Frederick Tilney, Cassius H. Watson, Leo M. Davidoff and Dudley D. Roberts.

Mental Hygiene Clinic at Kings County Hospital—More than 500 patients were treated at the mental hygiene clinic at the Kings County Hospital in the first four months of its existence, the department of hospitals reported in July. Cases have been referred from the board of education, the department of public welfare, the board of child welfare, the crime prevention bureau and the department of health, from other city hospitals and other medical institutions, from private citizens and from the courts. A similar clinic is needed at Queens General Hospital, the department stated, and an organization committee has been appointed to plan it.

The "Transparent Woman"—The New York Museum of Science and Industry placed on exhibition August 19 the *Camp "Transparent Woman"*. Dr Dean D. Lewis, Baltimore, unveiled the exhibit and Roy Chapman Andrews, director of the Museum of Natural History, was a speaker at the ceremony. The "Transparent Woman" like the "Transparent Man," which was exhibited at the Century of Progress in Chicago in 1933 and is now on permanent exhibit at the Mayo Clinic, Rochester, Minn., was made at the Museum of Hygiene, Dresden. After a period at the museum the exhibit will be sent on a trans-continental tour, which is expected to last more than two years.

City Hospitals Overcrowded—During the first six months of 1936, city hospitals were filled to 97.4 per cent of their capacity and seven were greatly overtaxed, the department of hospitals recently reported. The seven and their ratio of occupancy to normal capacity were: Queensboro, 126.3 per cent, Fordham 115.1, Riverside 114.3, Sea View, 112.9, Bellevue 106.5, Kings County 103.4 and Lincoln, 100.2. The statistics showed that 130,111 ward patients were admitted compared with 125,891 for the corresponding period of 1935; the average hospital stay was 22.4 and dispensary visits totaled 1,296,918. The death rate was 8.3 compared with 8.2 for the preceding year. Dr Sigismund S. Goldwater, commissioner of hospitals, directed attention to the fact that although Manhattan has numerous private hospitals an exceptionally large proportion of the population is found in public hospitals. Manhattan with 23.5 per cent of the population of New York supplies 44.5 per cent of the patients in the city hospitals while Brooklyn with 37.2 per cent of the population supplies less than 20 per cent

of the indigent sick. In a recent hospital census it was found that in Manhattan there was one patient in a municipal institution for each 220 of the borough population, for the Bronx one out of 666, for Brooklyn one out of 526, for Queens one out of 770 and for Richmond one out of 666. Kings County Hospital is now the city's largest single hospital unit, with 2,885 beds. Bellevue has 2,313.

Changes in the Faculty at Columbia—Dr Charles A. Flood has been appointed assistant dean of the College of Physicians and Surgeons of Columbia University to succeed Dr Frederick T. van Beuren Jr., who resigned. Dr Flood graduated from the college in 1928 and joined the staff in 1934 as assistant in medicine and director of the student health service. Promotion of Dr Virginia K. Frantz to be assistant professor of surgery and Dr David Seegal to be assistant professor of medicine was also announced. Appointments in recent months include those of Dr Samuel A. Cosgrove, Jersey City, N. J., as clinical professor of obstetrics and Dr Phillips Thygeson, Iowa City, as assistant professor of ophthalmology. Recent promotions include:

Dr Samuel T. Orton, professor of neurology
Dr James Burns Amberson Jr., professor of clinical medicine
Dr George E. Daniels, professor of clinical psychiatry
Dr Martin H. Dawson, associate professor of medicine
Dr John H. Dunnington, associate professor of ophthalmology
Dr Harold T. Hyman, associate professor of pharmacology
Dr Claus W. Jungblut, professor of bacteriology
Dr Robert L. Levy, professor of clinical medicine
Dr Alvan L. Barach, assistant professor of clinical medicine
Rhoda W. Benham, Ph.D., assistant professor of dermatology
Dr Richard M. Brickner, assistant professor of neurology
Dr Thomas K. Davis, clinical professor of neurology
Dr Paul Gross, assistant professor of dermatology
Dr Halford Hallock, assistant professor of orthopedic surgery
Dr Hubert S. Howe, clinical professor of neurology
Dr George H. Hyslop, assistant clinical professor of neurology
Dr Thomas H. Johnson, assistant professor of ophthalmology
Dr Leonidas Lantoumias, assistant professor of orthopedic surgery
Dr Charles A. McKendree, clinical professor of neurology
Dr Irving H. Pardee, clinical professor of neurology
Dr Lewis B. Robinson, assistant professor of dermatology
Dr Leon A. Salmon, assistant clinical professor of neurology

OHIO

British Physiologist to Address Cleveland Academy—Sir Joseph Barcroft, professor of physiology, Cambridge University, England, will open the fall season of the Cleveland Academy of Medicine with an address September 24 on "The Genesis of Respiration." Sir Joseph was a member of the expedition to the Chilean Andes to study physiology of high altitudes several years ago and has recently engaged in research on the fetal circulation.

Gift to Medical Library—The Cleveland Medical Library Association has received recently a bequest of about \$7,000 through the will of Mrs. Ida Marvel Ford, to be known as the Cozad-Ford Homestead Collection on Malignant Tumors, to commemorate families who owned and occupied the land on which the library is located. The income from this bequest is to be used to establish and maintain a library on malignant tumors, to foster library research or to provide for public lectures on the subject.

Rabies in Columbus—Strict quarantine on dogs has been imposed by the health commissioner of Columbus. Dr Nelson C. Dysart, in an effort to prevent rabies. In less than one month more than 100 persons had been bitten by dogs many were taking antirabic treatment and fifteen dogs heads had been found positive for rabies according to *Ohio Health News*. It is now unlawful for any dog to be at large except in the enclosed yard of its owner and dogs on the street licensed or unlicensed must be on leash accompanied by a responsible person. In the last ten years there have been forty-seven deaths from rabies in Ohio, it was reported.

OREGON

Personal—Dr Ralph A. Fenton, Portland, has been appointed a member of the board of regents of Reed College, Portland.

Society News—The Eastern Oregon Medical Society held its annual meeting in LaGrande in June with the following speakers: Drs. Laurence Selling, Frank E. Butler, Plair Holcomb, Raymond E. Watkins, Adalbert G. Bettman and Thomas M. Joyce, all of Portland; Grover C. Bellingier, Salem; and George W. Swift, Seattle. Dr. Chas. O. Wainwright, Peoria, Ill., was elected president.

PENNSYLVANIA

Society News—Drs Lucian D Johnson and Stuart D Scott addressed the Fayette County Medical Society at Connelville September 3 on "Arrhythmias of the Heart" and "Common Infections of the Nasopharynx" respectively

Philadelphia

University News—The late Dr Charles Harrison Frazier, professor of surgery at the University of Pennsylvania School of Medicine, bequeathed to the university a large part of his medical library

Hospital News—Mount Sinai Hospital has announced a series of health talks for the public to be delivered monthly during the coming winter by members of the hospital staff. The first will be given September 23 on "Common Disorders of the Stomach." Other subjects to be discussed are syphilis, high blood pressure, teeth, hay fever, diabetes and cancer

Pittsburgh

Personal—Dr John P Griffith associate professor of surgery, University of Pittsburgh School of Medicine, has been appointed professor to succeed Dr John J Buchanan, who is now professor emeritus.—Dr Jennings C Litzenberg, Minneapolis, addressed the Pittsburgh Obstetrical and Gynecological Society at its annual meeting recently on "Fallacies of Ectopic Pregnancies"

RHODE ISLAND

New Health Units—The state department of health has established three new district health units in cooperation with the U S Public Health Service, according to the *Rhode Island Medical Journal*. The personnel of each unit will include a physician as director, a sanitary inspector, one or more public health nurses and a clerk technician. Dr James P O'Brien, Woonsocket, will be in charge of the north district. Dr Joseph Castronovo, Providence, the southeast district, and Dr Raymond F McAteer Peacedale, the south district. Until now Providence and Warwick have been the only communities in the state with full time health service

TENNESSEE

New Health Unit—A district health unit including the counties of Fentress, Pickett, Clay, Putnam and Jackson was opened the first week in August with headquarters at Livingston. Dr Harold M Kelso, Gallatin, formerly health officer of Sumner County, is in charge of the new unit

Health at Memphis—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended August 22, indicate that the highest mortality rate (21.6) appeared for Memphis and that the rate for the group of cities was 10.3. The mortality rate for Memphis for the corresponding week of 1935 was 15 and that for the group of cities 9.9. The annual rate for the eighty-six cities for the thirty-four weeks of 1936 was 12.6 as against a rate of 11.7 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area outside the city limits or that it has a large Negro population may tend to increase the death rate

TEXAS

Twenty-Five Years of Teaching—Dr Clarence M Grigsby, professor of clinical medicine, Baylor University College of Medicine, Dallas, was guest of honor at a dinner celebrating his completion of twenty-five years as an instructor in the school. The dinner was given by Dr Walter H Moursund, dean of the college, at the Nurses' Home of Baylor Hospital. The faculty presented to Dr Grigsby a portrait of himself

WASHINGTON

Society News—At a meeting of the Klickitat County Medical Society at White Salmon in June speakers were Drs Arthur C Jones, Portland, Ore., on physical therapy, Robert D Wiswall, Vancouver, industrial medicine and state medical legislation and De Walt Payne, The Dalles, Ore., diseases of the ear, nose and throat

Health Department Furnishes Antisyphilitic Drugs—The Washington State Department of Health is now furnishing to physicians arsenicals to render patients with syphilis non-infectious. When a local health officer receives a report of a case of syphilis he refers it to the state department, which immediately sends three tubes of the drugs to begin treatment. The object of this policy, according to *Northwest Medicine*

is to place syphilitic patients under treatment as quickly as possible and to cultivate in physicians the habit of reporting cases to health officials

Railway Surgeons' Meeting—The annual session of the Great Northern Railway Surgeons' Association will be held at the Olympic Hotel, Seattle, September 25-26. The scientific program will be presented Friday morning, September 25, with the annual golf tournament in the afternoon at the Seattle Club and the banquet in the evening at the Rainer Club. A fracture clinic will be presented Saturday morning, September 26, at the Providence Hospital under the direction of Dr Howard J Knott. In the afternoon members will attend the Minnesota-Washington football game

WISCONSIN

First County Health Unit Established—Marathon County established August 1 the first county health unit in Wisconsin, one of three model units to be set up in the state with the aid of state and federal funds. Dr Harold H Fechtner, Wausau, has been appointed health officer. The federal government appropriated \$5,800, the state \$1,000 and the county \$3,400

Society News—The Central Wisconsin Society of Ophthalmology and Otolaryngology met in Appleton June 7-8. Speakers were Drs Harry Gradle, Chicago, on "Uveitis" and "Modern Surgical Treatment for Detachment of the Retina", William A Kennedy, St Paul, "Allergic Manifestations in the Eye, Nose and Throat," and Fred S Cook, Eau Claire, "Foreign Bodies in the Esophagus and Bronchi"

PUERTO RICO

Society News—At the first scientific meeting of the Puerto Rico chapter of the Pan American Medical Association in San Juan, July 11, speakers were Drs Jose Rodriguez Pastor, San Juan, on "Organization of Health Insurance for the Poor", Rafael Lopez Nussa, Ponce, "Surgical Treatment of Elephantiasis", Ramon M Suarez, "Study of the Bone Marrow in Chronic Schistosomiasis Mansonii", Isaac F González Martínez, Roentgenotherapy in Cancer of the Base of the Tongue, Pharynx and Larynx, and Manuel Díaz-García, "Physiology and Logical Treatment of Hand Infections".—Dr Eric M Matsner, executive secretary of the National Medical Council on Birth Control, New York, addressed the Puerto Rican Medical Association, September 1, in San Juan, on "Medical Aspects of Contraception"

GENERAL

Society News—The annual conference of the National Society for the Prevention of Blindness will be held in Columbus, Ohio, December 3-5.—The fourteenth Congress of French-Speaking Physicians of North America will be held in Montreal, September 7-10

Rural Health Service in the United States—The U S Public Health Service reports that 612 counties in thirty-eight states now have whole time county township or district health service as of Dec 31, 1935, an increase of seventy-one units over 1934. The greatest gains were in New Mexico, in which whole-time service was established in twenty-five counties and in Virginia, where twenty-three counties established the service. According to the report, 28.7 per cent of the rural population of the country now has whole-time health service. Delaware, Maryland and New Mexico lead among the states in this respect, all counties in these states being provided with whole time health service. Of the 612 units 587, or 95.3 per cent were receiving financial assistance from one or more of the following agencies: the state board of health, the U S Public Health Service, the Rockefeller Foundation, the American Red Cross, the American Women's Hospital Fund, the Rosenwald Fund, the Commonwealth Fund and the Milbank Fund

Fraudulent Instrument Repair Man—A Missouri physician reports that a man using the name J C Hartley recently visited him soliciting orders for instruments and for replating old ones. The man said he represented his own firm of Hartley and Company in St Louis. He victimized four physicians in one town and has not been heard from since. Letters sent to the St. Louis address have not been delivered. The man was described as being about 5 feet 8 inches tall, weighing about 140 pounds, slightly stooped, with dark hair, thin in front, dark complexion, smooth shaven and wearing glasses. He is said to have shown an excellent knowledge of instruments, their uses and value. An account of similar impositions on physicians appeared in *THE JOURNAL*, June 6, page 2015

Deaths from Diabetic Coma—In 1935, 18 per cent of the deaths of diabetic policyholders of the Metropolitan Life Insurance Company were attributed to primary diabetic coma, according to the *Statistical Bulletin*. Of the ninety-seven diabetic children in the study, 70 per cent died from coma, which is four times the proportion occurring at the older ages. Coma was responsible for more than 16 per cent of the deaths at ages 20 and over. In this group it was found that only 28 per cent actually were reported to have used insulin. In emphasizing the need for insulin treatment in this class of patients, the bulletin points out that the incidence of coma deaths among regular users of insulin was one-third lower than that in the entire group. Many coma patients in the study were not known to be diabetic until their final illness. The proportion of coma deaths among them was twice that among patients in whom the disease was diagnosed earlier. This, it was stated, points clearly to two important facts: the value of early diagnosis and the necessity for care in distinguishing diabetic coma from coma resulting from other causes.

Bequests and Donations—The following bequests and donations have recently been announced:

Pennsylvania Hospital Philadelphia \$40,000 for study of gastrointestinal diseases from the estate of Justice M. Thompson after the death of his widow.

Lancaster General Hospital Lancaster Pa. \$69,000 by the will of Alfred B. Grubb half to be reserved for a niece during her lifetime. Lawrence and Memorial Associated Hospitals, New London Conn. \$400,000 by the will of Miss Virginia Palmer.

Mount Sinai Hospital New York, as subsidiary legatee, will receive \$92,369 under the will of the late Edward J. King.

Mount Sinai and Montefiore hospitals, New York, \$50,000 and \$25,000 each from the estate of Stella Hædelberg Abrahamson for the Ahmanson Neurological Funds.

R. I., \$80,000 from the will of the late Mrs. N.

Western Reserve University School of Medicine Cleveland, \$1,000 as a gift from Mrs. Ida Zangerle Krause in memory of her late husband Dr. Carl R. Krause to be used for the benefit of needy students.

United Hospital Inc., Port Chester N. Y. \$5,000 under the will of the late Harry De Berkley Parsons.

The Solomon and Betty Loeb Convalescent Home Eastview N. Y. \$500,000 from the will of the late James Loeb.

Columbia University New York \$50,000 to establish the Tucker Fellowship in obstetrics by the will of Mrs. Georgianna Tucker.

St. Luke's Hospital, New York \$8,886 by the will of Jane Noyes Smith.

Beth Israel Hospital Newark, N. J. \$2,000 for two ward beds by the late Dr. Jacob Polcavski, Newark.

Presbyterian Hospital New York, \$5,000 by the will of the late James Wilson.

Beth Israel, Mount Sinai and Montefiore hospitals New York, \$1,000 each in the will of the late Samuel J. Sonderling.

Brooklyn Hospital Brooklyn N. Y. \$10,000 by the will of Sophia D. Doshier.

CANADA

Society News—At the annual meeting of the Ontario Neuro-Psychiatric Association at the Ontario Hospital, Brockville, in June, speakers included Dr. Charles H. McCuaig and Dr. Trevor Owen, Toronto, on "Difficulties in Differentiating Between Hyperthyroidism and Anxiety States," and Dr. Daniel Plouffe, Montreal, Quebec, on "Attitude of the Psychiatrists as Experts in Criminal Courts." Dr. George H. Stevenson, London, was elected president.

Canadian Association Election—Starr Medal Awarded.—Dr. Theodore H. Legget, Ottawa, was named president-elect of the Canadian Medical Association at the annual meeting in Vancouver June 22 and Dr. Herman M. Robertson, Victoria, was installed as president. The Frederick Newton Gisborne Starr Medal was awarded to Sir Frederick Banting and Dr. Charles H. Best of the University of Toronto Faculty of Medicine, Toronto, and Dr. James B. Collip, McGill University Faculty of Medicine, Montreal, for preeminent services to the cause of medicine in Canada. The Starr medal was established in 1935 by the widow of the late Dr. Starr, who was for several years general secretary of the association and president in 1927. He died in April 1934.

Summer School in Vancouver—The fourteenth annual summer school of the Vancouver Medical Association will be held in Vancouver at the Hotel Vancouver, September 8-11. Following are the guest instructors and their subjects:

Dr. Irvine McQuarrie Minneapolis edema, basic minerals, role of fats and fatlike substances in health and disease, convulsive disorders of childhood.

Dr. Everts A. Graham St. Louis thoracic surgery, gallbladder disease, surgery of the pancreas.

Dr. Rollin T. Woodruff Chicago diabetic coma, diabetes with surgical complications, insulin, protamine, treatment of nephritis.

Dr. Gordon B. New Rochester Minn. malignant diseases of the mouth and accessory structures, tumors of the neck and larynx, reconstructive surgery of the face.

Dr. John McF. Berland Baltimore accidental and direct complications, relief of pain, puerperal infections.

Dr. Clarence B. Farrar Toronto evolution of a delusion, psychoneurosis and psychotherapy, differentiation of benign and malignant symptoms in incipient mental disorders.

Dr. Claude E. Dolman Vancouver undulant fever.

FOREIGN

Congresses Postponed—The tenth conference of the International Union Against Tuberculosis, scheduled for September 7-10 in Lisbon, Portugal, has been indefinitely postponed, according to the *New York Sun*, August 18. The fourth International Congress of Pediatrics, which was to have been held this year in Rome, has been postponed to April 1937, according to *Science*.

Personal—Dr. Edward Mellanby, secretary of the Medical Research Council, Sheffield, England, received the Moxon gold medal from the Royal College of Physicians of London, July 30, in recognition of his work on problems of nutrition.—Bernard E. Read, Ph.D., head of the physiologic division of the Henry Lester Institute for Medical Research, Shanghai, China, recently received the King Medal of the Peiping Society of Natural History for his contributions to "further knowledge in the field of natural sciences, especially in this instance for his meritorious work on Chinese drugs."—The Charles Graham Medical Research Fund of the University of London recently awarded a gold medal to Sir Thomas Lewis, London, in recognition of his work on treatment of heart disease.—Dr. Hugh B. Matland, professor of bacteriology and director of the department of bacteriology and preventive medicine, University of Manchester Faculty of Medicine, has been appointed dean of the school to succeed Prof. Henry S. Raper, according to the *Medical Press and Circular*.

Deaths in Other Countries

Julius Tandler, for many years professor of anatomy at the University of Vienna and for ten years minister of health in Austria, died in Moscow in August, aged 62, according to an Associated Press dispatch from Vienna in the *New York Times*, August 27.

Government Services

Changes in Public Health Service

The appointments of the following physicians as assistant surgeons in the regular corps of the U. S. Public Health Service have been announced: Howard D. Fishburn, San Francisco; Theodore L. Perrin, Boston; and James G. Telfer, Miami, Fla. The following transfers in the service have also been reported:

Passed Asst. Surg. Harold D. Lyman relieved at Washington D. C., and assigned to marine hospital San Francisco.

Passed Asst. Surg. Alfred J. Aselmeyer, relieved at Boston and assigned to Washington D. C.

Asst. Surg. Thomas T. Tomlinson Jr. relieved at New Orleans and assigned to National Institute of Health Washington.

Recent promotions in the service include Drs. Warren F. Draper and Lewis R. Thompson to medical director in the regular corps, Drs. John D. Reichard, Vance B. Murray and Thomas H. D. Griffiths, to senior surgeon in the regular corps.

Veterans' Administration to Build More Hospitals

The Veterans' Administration recently announced the approval by President Roosevelt of the acquisition of ground for two new hospitals, the leasing of a third, and the construction of additions to two existing hospitals. Accordingly, the administration will accept a site to be donated by Henry Ford comprising about thirty-seven acres in Dearborn, Mich. A twenty-five bed treatment station to cost not in excess of \$100,000 will be built in Reno, Nev., on a site known as Recreation Park donated by the city of Reno. The institution to be leased is Wisconsin Memorial Hospital in Mendota, which comprises seventeen buildings on 130 acres of land. This hospital will now accommodate about 300 beds and on completion of a small clinical building which will be undertaken by the state authorities the administration will be able to expedite hospitalization of beneficiaries in that area. A new administration building will be constructed at Newington Conn., including such replacements or remodeling as are necessary at a cost not to exceed \$80,000. At the facility at Hot Springs S. D., a new hospital building of fifty-eight beds with a surgical suite will be constructed and existing buildings will be rearranged to provide forty-two additional beds at a cost not to exceed \$170,000.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 18, 1936

The Public Health

In the house of commons the minister of health, Sir Kingsley Wood said that the estimates for his department amounted to \$105,000,000, an increase of \$6,000,000 over those of 1935. The increase arose mainly from increased provision for housing, improvement of rural water supplies and health insurance. No country was making such provision for its social services. During the present year the expenditure on all such services, including the amount raised by local rates, would reach the considerable figure of \$2,100,000,000 and that 30,000,000 men, women and children would benefit from one or more such services. There had recently been great expansion in public works. Last year the total amount of works sanctioned rose from \$130,000,000 to \$180,000,000, a figure that had been exceeded only twice since the war. These works included large sums for hospitals, improved drainage, street lighting, public baths and open spaces and waterworks. Better sanitation and better housing and the efforts for improvement in the prevention, diagnosis and treatment of disease, and especially the diffusion of knowledge in principles of health, had borne fruit.

THE IMPROVEMENT IN THE HEALTH OF THE NATION

The latest figures showed that the death rate for 1935 was 11.7 per thousand of population. The expectation of life at birth had increased by seven years in the last twenty years. The infant mortality was 57, which compared well with so recent a year as 1929, when the rate was 74. At last maternal mortality showed a slight decrease as compared with previous years. The significance of the decline in the death rate could be better appreciated if it was analyzed in terms of persons living in each age group. Of persons living in each quinquennium from 5 to 45 years the numbers who died were less than half what they were fifty years ago. In the first quinquennium of life the number was less than a third of the number fifty years ago. Last year the principal infectious diseases showed no disquieting features. Influenza aroused no anxiety. There was entire freedom from smallpox. Unlike scarlet fever, diphtheria had not shown any progressive loss of virulence, but antitoxin given early had saved many young lives and it was now possible by artificial immunization in the preschool age to reduce considerably the danger of infection in the most susceptible years of life. Typhoid had fallen step by step with improved water supply and better sewerage and disposal of refuse. But infectious diseases were still responsible for over 60 per cent of all deaths in the ages from 1 to 15 years, although there had been a remarkable decline in the mortality. Death rates at ages under 15 per million living had declined for measles from 750 in 1910 to 201 in 1933, for scarlet fever from 200 to 63, for diphtheria from 384 to 261 and for whooping cough from 798 to 237.

THE MALARIA TREATMENT OF DEMENTIA PARALYTICA

The most efficacious treatment of dementia paralytica was inoculation with malaria. With a view to making this treatment generally available, the ministry of health maintained, in cooperation with the London county council a laboratory where mosquitoes were bred and infected with a pure strain of malaria, with the view to making more generally available this form of therapy. During 1935 the laboratory complied with 318 requests for mosquitoes from 188 hospitals in England and Wales and also supplied hospitals in Germany, Austria and Rumania.

TUBERCULOSIS

Nearly 30,000 persons were certified to have died from tuberculosis in 1935, but this was 11,000 fewer than ten years ago. Only a few years ago the word tuberculosis was taboo and people put off consulting physicians after they suspected they had the disease for fear that their suspicions would be confirmed. That attitude was gone and in most cases tuberculosis could be cured if advice was taken in time.

MENTAL DISEASE

In no branch of public health had such a striking change been effected in recent years as in the mental disease service. Not many years ago mental disease was treated almost as a criminal offense. The whole atmosphere and outlook of mental treatment had been transformed. Occupational therapy and recreations were playing an increasingly important part in the treatment. The first five years of the act which enabled voluntary patients to be received in public mental hospitals had produced a striking result. The voluntary admissions had risen from 7.1 per cent of the total admissions to 24 per cent in 1935.

A NATION OF MEDICINE DRINKERS

One aspect of health affairs could not be regarded with satisfaction. Our unquenchable medicinal thirst continued and it was suggested that we were becoming a nation of confirmed medicine drinkers. In Scotland physicians had never adopted the custom of dispensing medicines and their patients had not been induced to consider a bottle of medicine a necessary corollary to a visit to the physician. In England, on the contrary, for generations physicians had with few exceptions dispensed medicines and the patients had come to regard a visit to the physician as synonymous with the receipt of medicine. The cost in England of providing medicine for the insured population exceeded by 50 per cent that in Scotland and there were no facts in the incidence of disease in the two countries to account for the difference. Nor would any one suggest that the standard of treatment of the Scottish physicians was lower. In 1934 fifty-seven million prescriptions were dispensed under the health insurance acts.

Protection Against Poison Gas

Major H. S. Blackmore, medical adviser to the air raids precautions department, assisted by police officers conducted a demonstration at the Metropolitan Police College of mobile gas chambers that are to be used in schemes of anti-gas training. The chambers are motor trucks with specially constructed gas-tight bodies, in which a gas cloud can be created. For training purposes a form of tear gas that causes no serious injuries will be used. It is intended to place forty trucks on the road and send them to every part of the country. Their use will be permitted only by a fully qualified instructor. They are intended for the training of persons in essential services, such as police and firemen. A new civilian gas mask has been manufactured in millions. It is of simple construction and weighs only 20 ounces. If need arises the masks will be distributed free to the population. Meanwhile they can be bought for \$1.50.

At the meeting of the representative body of the British Medical Association, which has begun at Oxford, the following resolution was submitted: "That the representative body is of opinion that any protective measures for the general population against chemical warfare can only be very imperfect and inadequate. Inasmuch as chemical warfare will cause untold suffering and impairment of health physically and mentally, with destruction of life, it should be proclaimed illegal. In the interests of humanity the British Medical Association should take the initiative with a view to securing the cooperation of the medical profession of all countries in order to prohibit the manufacture of poison gas." In the discussion the inadequacy of the protective measures which the government is taking

was disputed. The resolution was defeated and the following amendment was carried "That this meeting condemns unreservedly the use of poison gas in warfare as inhuman in its results and degrading to civilization and relies on the council to do everything in its power with a view to securing the cooperation of the medical profession of all countries in order to prohibit the use of poison gas"

Presentation to Lord Moynihan

A presentation was made at the Royal College of Surgeons to Lord Moynihan by the subscribers to the *British Journal of Surgery*, in appreciation of his services to that journal since its foundation in 1913. Professor Hey Groves, who has been editorial secretary during the entire period, paid a tribute to Lord Moynihan's work for the science and practice of surgery. He mentioned particularly his leadership in three movements—the foundation of the Surgical Club, which now bears his name, the *British Journal of Surgery* and the Association of Surgeons of Great Britain and Ireland. He handed to Lord Moynihan a silver statuette of a young man standing on a crystal globe and holding above his head an open book of gold bearing the words "The British Journal of Surgery, 1913-1935." Sir D'Arcy Power, on behalf of the subscribers, handed to Lord Moynihan a check for \$5,000, who presented it to the president of the college to be expended on surgical research. In his reply Lord Moynihan referred to his efforts to break down barriers that existed between centers of surgery and between individual centers at home and abroad.

Cause of Death in Intestinal Strangulation

Intestinal strangulation had been investigated in the laboratories by Mr. G. C. Knight and D. Slome. They had shown that the cause of death was the formation of a toxin, which was produced in from thirty to forty-five minutes after strangulation. The toxin might pass into the lumen of the intestine and later into the peritoneal fluid. For a period varying from a few hours to twenty-two hours, toxin could be obtained in sufficient quantity to kill a normal animal. Strangulation did not produce death by loss of fluid into the intestine but by production of some poison in the intestinal wall.

PARIS

(From Our Regular Correspondent)

July 25, 1936

Experimental Syphilis in Mice

At the May 12 meeting of the Académie de médecine, Professor Levaditi presented the results of the experiments of two of his associates, Stroesco and Vaisman, which represent a new study of experimental syphilis clinically nonapparent, of mice. This research was based on histologic methods, much more advanced so far as technique is concerned than any employed up to the present time. "Experimental syphilis in mice without the slightest clinical evidence hence termed nonapparent," is shown, as the result of this study, to be a generalized spirochetosis of the entire reticulo-endothelial system. The animal apparently normal is in reality a veritable living culture of spirochetes. The latter invade the connective tissue of the epidermis and dermis, the glands, the periosteum and the peripheral nerves which conduct the spirochetes directly to the spinal ganglia without giving rise to any histologic changes. In mice syphilis is primarily and exclusively not a lymphangitis; the propagation of the spirochetes beginning at the site of inoculation in the epidermis and invading progressively the deeper layer of the skin (including the hair follicles) so rapidly that as early as the thirty-fifth day all the cutaneous structures are full of spirochetes. In the dermis they develop along the connective tissue fibers attaching themselves to the

vessels of the dermis, where they continue to multiply and invade adjacent structures. Not a single cutaneous area is free, including the skin of the tail, trunk, neck and head. The mucous membranes are also invaded and at the base of the dermis areas are to be seen in which the number of spirochetes exceeds that observed at times in the syphilitic chancre of rabbits. The cartilage and periosteum of the mouse are constantly infected. The invasion of the nerves takes place rather late, at about 100 days, either in the perineurilemma or less often in the interior of the dermic nerve ramifications. One can follow the spirochetes into the nerve roots, where they are relatively infrequent, as far as the nerve centers. The absence of any inflammatory reaction even in foci in which thousands of spirochetes are visible, is striking.

Pulmonary Arteriography

The attempt to develop new methods of diagnosis with the aid of arteriography (injection of opaque mediums into the general circulation) is well exemplified by the technique of Moniz, Carvalho and Lima. This consists in the introduction of an opaque ureteral catheter under roentgenoscopic control into a vein at the bend of the elbow as far as the right auricle. From 8 to 10 cc. of a 120 per cent solution of sodium iodide is injected and a roentgenogram is taken immediately. An image of the entire pulmonary arterial circulation is thus obtained which permits a detailed study of the luli, thus avoiding errors in the interpretation of ordinary roentgenograms.

At the May 1 meeting of the Société médicale des hôpitaux, Ameuille and his associates reported their experience in the employment of pulmonary arteriography in diseases of the lung on the one hand and in exploration of the mediastinum and pulmonary circulation on the other. In areas affected by pulmonary tuberculosis the blood vessels are scarcely visible and in advanced cases there seems to be a complete absence of any circulation. This picture is especially frequent in cases of pulmonary abscess. In a number of cases of bronchiectasis the images are indistinct. In a case of cancer of the lung there was a complete absence of vessels, which confirmed the observations following injection of iodized poppy-seed oil into the bronchi, at which it was noticed that none of the opaque medium entered the involved area. In cases of artificial pneumothorax one could easily demonstrate that the circulation was slower and considerably less active. By modifying the original technique the authors were able to identify the pulmonary artery and its ramifications as well as to obtain an excellent picture of the right ventricle and also the infundibulum and trunk of the pulmonary, thus facilitating greatly the interpretation of oblique views of the mediastinum. No serious complications have ever been observed during or after this method of pulmonary arteriography. A severe transitory headache was the only after-effect ever noted.

In the discussion Laubry stated that he had employed the method on the cadaver but hesitated to apply it clinically, especially in patients with cardiovascular disease. Justin Besançon had found it difficult to introduce the ureteral catheter as far as the right auricle through a vein of the left arm. One can easily push the catheter beyond the right auricle into the subhepatic veins in cadavers and also in dogs as a result that might be utilized as an extension of the angiographic method of diagnosis. He had never employed the technique clinically. Etienne Bernard said that the method allowed one to distinguish in the mediastinal shadow the bronchial and pulmonary from that due to the vascular components. Ravina found that in dogs the hilar images were in reality those of the blood vessels in the majority of observations. Ameuille believed that there was little risk of serious complications in using the method. It also shows the marked tolerance to iodine if given by certain routes.

Additional Cases of *B. Funduliformis* Septicemia

Septicemia due to *Bacillus funduliformis* appears to occur more frequently than formerly thought, since the clinical picture becomes better known and the identification of the bacillus more perfected. At the May 8 meeting of the Société médicale des hôpitaux, Donzelet, Meyer and Olivier added two recently observed cases. The first patient was a man, aged 26, who had severe chills and high temperatures about ten days after a pharyngitis. The day after the onset of the chills, an arthritis of the right knee was noted and thought to be of gonorrheal origin. The joint pain disappeared but the chills and fever continued for the next ten days, accompanied by a marked icterus. The latter symptom led the authors to make a blood culture in which *Bacillus funduliformis* was found. Death occurred about two weeks after the onset of the chills and fever. The necropsy revealed numerous pulmonary abscesses varying in size from a lentil to a filbert. The pus showed on culture and stain the same bacillus as found in the blood during life. The pulmonary condition had not presented any physical signs clinically. The liver was greatly enlarged but there were no foci of suppuration. On histologic study the parenchyma showed the typical changes of a degenerative hepatitis.

The second patient was a woman aged 26. The clinical picture at the onset was that of a tonsillitis accompanied by severe pain along the left carotid sheath. Chills and fever (to 104 F) appeared two days later and on admission to the hospital, the third day after the onset, the patient appeared extremely ill. She complained of severe pain in the left side of the neck. The objective signs were a slight bronchitis, a left pleural effusion and an arthritis of the left knee. The blood culture in an anaerobic medium four days after the appearance of the tonsillitis, revealed a very large number of colonies of *Bacillus funduliformis*. The patient died the same day and the necropsy revealed, as in the first case, many foci of suppuration in the lungs and a thrombosis of the left jugular vein of antemortem origin.

In animals, multiple abscess of the liver is frequently observed in *B. funduliformis* septicemia but this has been reported in only two clinical cases, and in only one of these did icterus occur as in the first of Donzelet's patients. The second case illustrates the pulmonary clinical type with subacute evolution so well described by Pham-Huu Chi in his thesis. Death occurred on the third day of the septicemia, the main clinical features being the pleuropulmonary and arthritic changes. According to most authors the venous (jugular) thrombosis seems to be a link between the tonsillitis and the rapidly fatal generalized infection, as in Donzelet's second patient.

Injectations of Histamine for Rheumatism

As a result of the reports of Deutsch, histamine has been used extensively in chronic rheumatism. At the May 1 meeting of the Société médicale des hôpitaux, Weissenbach and Perles stated that, if one injects the histamine solution intradermally instead of into the muscles, the pain of the latter method can be avoided. A solution containing 0.5 mg of histamine hydrochloride per cubic centimeter is used for each sitting, the average dose injected being from 0.25 to 0.5 mg to which a local anesthetic (phenylpropionate of para-aminobenzoilamino-ethanol) in the proportion of 0.5 mg to the same amount of histamine is added.

A special 1 cc. syringe graduated in 0.05 cm and a very fine needle such as one uses for intradermal reactions is essential to inject into the dermis of the region as close as possible to the seat of pain. A series of two to ten injections is given every day or every second day, according to the results obtained. The relief of pain is almost immediate and may be permanent

after the first injection, but it may recur after an interval of from six to eighteen hours. Repetition of the injections appears to have a cumulative effect. The muscular contracture and functional disability disappear in direct proportion to that of the cessation of the pain.

So far, forty-one patients suffering all types of acute but especially of chronic rheumatism have been treated. The treatment has been successful, after the first injection, or at least during the first week, in 85 per cent of the cases. At times, painful contractures of several months' and even years' duration disappeared after two or three treatments, often after a single treatment.

This report was followed by detailed histories of forty-one cases in which the treatment had been used.

BERLIN

(From Our Regular Correspondent)

July 6, 1936

Secretion of Milk an Indication That the Fetus Has Died

Before the Medical Society of Königsberg, K. W. Schultze described an indication by which the death of a fetus may be established. The growth of the mammary glands during pregnancy is regulated hormonically by the anterior lobe of the hypophysis and by the placenta. While the placenta remains connected with the maternal organism, the mammary glands secrete only colostrum. Lactation is first set in motion when through cessation of placental function a shifting takes place in the hormonal equilibrium of the woman. It is therefore immaterial whether the placenta is expelled normally or remains detached within the uterus, in both cases lactation begins after about two days. This is true also in abortions. From his observation of 100 cases, Schultze became convinced that the secretion of milk during pregnancy and in abortions is indicative of a cessation of placental function and therewith the extinction of life in the fetus. When in hemorrhagic miscarriages the cervical canal is closed, it is difficult to distinguish between an abortus imminens and an abortus incompletus. If in such cases milk can be detected which was not secreted during a preceding period of lactation, the death of the fetus has occurred and its removal is then indicated. Should breast milk suddenly appear in a pregnant woman presenting an infection with high fever, it is to be interpreted in the same manner. The appearance of colostrum, on the contrary, merely indicates the survival of hormone producing chorial elements. Colostrum may be secreted too in cases in which the greater part of the placenta has been loosened by hemorrhagic abortion and the fetus has died. If these data are to be taken as valid, a great saving might result, since futile attempts to combat hemorrhage would not be made in cases in which the fetus has died.

Communications on Cancer in Germany

In a paper submitted to the Leipzig Medical Society, Klemm states that cancer in childhood is not so infrequent as it is assumed to be. Klemm described three cases observed by him. Two of these were cases of intestinal carcinoma in which correct diagnosis was made only post mortem in the first case and after a third operation in the second case. The incorrect diagnoses in the foregoing cases were 'intestinal tuberculosis' and 'appendicitis' respectively. The first patient was a girl aged 10, the second a boy, aged 14. In the third case a girl not quite 8 years old presented a melanotic tumor the size of an apple above the right eye together with xeroderma pigmentosum. The child had already undergone repeated facial operations for malignant neoplasms. She had also received roentgen treatment. Metastases were not present. Of Klemm's

three cases, the first and third ended fatally, the second child is still undergoing operative treatment.

The digestive tract is the favorite seat of childhood carcinoma. Symptomatically the disease scarcely differs from its manifestation among adults. Opinion is divided on the degree of malignancy, however, infantile cancer in the digestive tract (exclusive of the rectum) seems to be distinguished by a singularly rapid course.

The greater incidence of cancer in older persons is explained to some extent by Freund and Kammer's observation that the power of the blood serum of the young to destroy the cancer cells is greater. In nurslings this power is twenty-one times greater and in older children from four to sixteen times greater than in adults. To what this more powerful defense mechanism in the blood of children and infants is due, no one knows. The question of heredity cannot be answered with certainty excepting in cases of skin cancer accompanied by xeroderma pigmentosum.

A statistical cancer survey was instituted by the National Anticancer Commission, Oct. 1, 1933, on which date work began in many different sections of Germany. The entire project will require five years. Confidential "cancer case cards" and "cancer death cards" are employed. A preliminary report has just been published at Nuremberg covering the first year of the survey up to Oct. 1, 1934. The uniformity of the census and the evaluation of the material have been to a great extent guaranteed. In Nuremberg, with about 420,000 population, the following data for the specified year were acquired from physicians and institutions for the sick. There were 1,345 cases of malignant growths recorded, 492 of the patients were men and 853, or nearly twice that number, were women. This means a cancer morbidity of 2.6 per thousand male inhabitants and of 3.9 per thousand female inhabitants. In the higher age groups the increase in cancer morbidity ran somewhat parallel for the two sexes. Prominent among the men was stomach (151 cases) and intestinal cancer (127 cases), a total of 62.33 per cent of all cancer cases occurring in males. In twenty-two instances, pulmonary and bronchial cancer was found in males. Among females, 164 cases of stomach cancer and seventy cases of intestinal cancer (a total of 234 cases) were ascertained. The uterus was the most frequent seat of cancer among women (256 cases). Only twelve women presented pulmonary and bronchial cancer. Carcinoma of the mammary gland was found in 149 women but in only three men. Sarcomas and other malignant neoplasms were found in forty-six men and sixty women. Of 492 male cancer patients in the year covered by the report 255 died in the course of the same year, while of 853 female patients with cancer 341 died.

Postmortem statistics shed light on the frequent assertion that the increase in the number of tumor cases is the result of more accurate diagnoses. The data were gathered by Dr. W. Hausladen from the postmortem material of the Pathologic Institute of the University of Munich. From 1912 to 1921 a total of 12.19 per cent false diagnoses with regard to cancer were recorded, against 19.67 per cent in the years 1922 to 1931. The largest number of false diagnoses concerned the gallbladder and the pancreas. From 1922 to 1931 a manifest deterioration took place in the ability to recognize carcinoma of the intestine, breasts, ovaries, liver, urinary bladder and thyroid body. During the same period improvement appeared in the ability to detect carcinoma in the rectum, pancreas, gallbladder, larynx, bronchi and lungs.

Of interest for the question of hereditary taint in persons with tumors is a statistical report made public by the Karlsruhe Life Insurance Bank. These records show that of 636 tumor cases among persons insured by the organization, 13.2 per cent showed a history of malignant growths in parents or in siblings.

Maxillary Actinomycosis

Professor Axhausen stated before the Berlin Medical Society that maxillary actinomycosis presents the clinical picture of a hard-as-a-board infiltration of the soft parts. The disease is not rare but a majority of cases are not diagnosed. It is from observation of the advanced stage that the classic clinical picture has been formed. The early stage presents an extraordinarily varied form. Early diagnosis is indispensable to rational therapy. It is significant that maxillary actinomycosis never is an independent disease entity but always owes its existence to a pyogenic mixed infection. Primary pure actinomycosis is possible only on the palate and the tongue. Primary disease of the jaw, however, is invariably due to pyogenic infection from some tooth or from some pocket in the alveolar process, which in turn may be traced to a submucous abscess or to an acute osteomyelitis. Frequently the pyogenic cocci prepare the way for the actinomycotic granules in the oral cavity, which, after infiltration, may make progress aided by the bacteria. Since all types of dental infection can be accompanied by actinomycotic mixed infection, microscopic examination of the scraped out granulations and not of the pus alone is necessary in all cases. In chronic cases roentgen irradiation of the areas should accompany surgical treatment. Because of the impossibility of the scraping operation in acute cases, intervention is limited to opening of the abscess. In such cases the great number of residual granules leads to numerous new abscesses. Mild roentgen dosages are more effective than the stronger. The procedure yields good cosmetic results and robs actinomycosis of its fearful character. Fatal cases no longer occur.

Prof. Gustav Aschaffenburg 70 Years Old

One of Germany's most prominent psychiatrists, Gustav Aschaffenburg, completed his seventieth year May 23. He served for ten years as assistant to Kraepelin, then director of the Heidelberg psychiatric clinic. Young Aschaffenburg shared the labors of the great research scholar, who at that time was laying the groundwork for the Kraepelin revised classification of mental diseases. Aschaffenburg soon came to be interested in questions involving the relationship between jurisprudence and psychology. As prison physician and later as director of a large clinic at Cologne, he was able to make important contributions to our knowledge of this sphere. Already at an early date his work on "Crime and Its Prevention" enlisted the attention of wider circles and was translated into English. Aschaffenburg was a prominent member of the International Criminological Association. His theories found further expression in the *Monatsschrift für Kriminalpsychologie und Strafrechtsreform*, which he edited for nearly thirty years, till 1935. Among his other numerous publications one has only to mention the well known "Psychiatry and Criminal Law." For nearly thirty years Aschaffenburg carried on as one inspired and as an inspiring teacher, esteemed physician and successful research worker. In 1911 he organized the seventh International Congress of Criminal Anthropology.

Visual Disturbances in Air Service Candidates

As Dr. Hoffmann stated before the Medical Society of Königsberg, the crucial test of the fitness of recruits for the national air forces is the condition of the vision. Candidates in whom there is even a temporary failure of so-called stereoscopic vision are considered unfit for service as aviators. Tests for strabismus have disclosed that less than 10 per cent of all candidates are free from this defect. In shortsightedness and wide interocular spacing the accommodation must be greater and divergent strabismus is thus furthered. The reverse is true in farsightedness. The last named condition plays as yet no part in the air service examinations. In testing for defective convergence it is observed that weakness of divergence is more apparent when the eyes are tested from a near point.

weakness of convergence, on the contrary, is better observed from a distant point. The Americans maintain the most rigorous standards in the selection of fliers; they still differentiate between convergent and divergent strabismus.

The normal adjustment of the eyes in the same direction is designated as "orthophoria." Disproportion due to the development of the muscles, the facies and the blood and fat content leads to "heterophoria." Hoffmann has to date made visual examinations to determine the fitness of 1,822 fliers. From this material he gathered the following data: Orthophoria was present in only 171 men (9.4 per cent), defective convergence in 352 (19.4 per cent), defective divergence in 1,299 (71.2 per cent). In twenty-five men (1.37 per cent) deficient stereoscopic vision was present. Divergence is frequently encountered but is regarded as negligible, since it is seldom linked with other complications.

JAPAN

(From Our Regular Correspondent)

July 20, 1936

Discussion of Taxation of Practitioners and Hospitals

Prof. Masao Kambe of the department of economics of the Kyoto Imperial University, one of the highest authorities on taxation in Japan, said in a recent paper that from the standpoint of taxation, medical practice and the general attitude of physicians toward their patients may well be reconsidered. At present two kinds of taxes are imposed on medical practice. One is the registration fee, the other a business tax. The former is a small sum paid only once when a physician is registered. The latter is imposed on profit-making business but has not yet been imposed on the individual practitioner. The reason is that medical practice deals with life, something mysterious, spiritual and noble, also medical treatment depends more on the individual's mental training than on equipment or apparatus. But of late medical practice has shown a tendency toward profit making. The buildings are more attractive than before, and widespread advertisements are always inviting patients. In administering a medicine, more than necessary, might be prescribed or sold, while too many patients are advised to go to the hospital where they have to pay for room and board besides medical treatment. In such a case it is almost the same as a profit-making business with a big capital. It is therefore natural that such business-like transactions should produce a profit that might be taxed. Indeed, some practice may be said not to differ at present in some respects from the business of boarding houses, hotels and manufacturing. Even religion is coming to be abused as a means of raising profit. Medical institutes or hospitals today, besides administering medicine, injections and treatment, sometimes have several hot springs attached to them thus providing recreation, often electrotherapy and other treatments are available and their management is going more and more into minute and exhaustive details.

The present system of taxation on medicine in Japan is divided into the following kinds. First, on the private practitioner, who must pay an income tax, a capital levy, a land tax and a house tax with its surtax. Second, on the hospital incorporated for making profit. Third, on a hospital incorporated for public welfare, which must pay a land tax with its surtax. Governmental hospitals are not taxed. There is much doubt whether such a discriminative taxation is right, for instance, a corporation hospital for public welfare may easily, consciously or unconsciously, raise profit. In such a hospital at present it is loudly announced that medicines and other services are given at a net price. The charge is 10 sen a day for medicine. When compared with the rule of the Japan Medical Association, it is cheaper by from 15 to 25 sen, but the true cost price is said to be only 3 sen for medicine. The charge for injection also has some profit in it and in some

hospitals the time required in examining patients, according to their reports, averages three minutes and forty seconds per patient, which is not a great deal of labor and time if compared with thirty or forty minutes, which is the usual time for an examination on an ordinary occasion. This fact shows that even a hospital for public welfare may easily make some profit by will or by chance. On the contrary, the hospital operated for profit may limit its profit and keep it to not more than the interest on the bonds, while the surplus may be used to improve the equipment. Judging from these facts, it is difficult to estimate whether a certain hospital is benevolent or operated for profit. There are also two kinds of individual practitioners: one is benevolent, the other is avaricious. When a doctor is an employee or has no hospital or office of his own but merely makes a professional visit to patients, he ought to be free of all taxes. But profit making is the object of most practitioners. A strong objection to imposing taxes on doctors is that it means levying taxes on the lower classes. In fact the poor are obliged, under present circumstances, to take "patent medicines" because they cannot afford to consult physicians. Consequently the taxes will generally be imposed on the middle and upper classes. Others say that this tax will increase the cost of living. This is perhaps a groundless fear. Therefore, besides the income tax, a business tax should be levied on practitioners as well.

The Number of Poisonings During 1935

According to the figures of the Home Office, the number of persons poisoned during 1935 was 14,942, of which 8,515 were cases of intentional poisoning (56.98 per cent), 6,392 were cases of accidental poisoning (42.78 per cent). Phosphorus poisonings numbered 2,023, resulting in 1,170 deaths, the highest death rate. There were 1,041 poisonings from various "patent medicines," with 190 deaths. Mercury killed 118 of 221 persons who took it. Of 113 persons who took cyanic acid ninety-six died.

A New Department of Health and Sanitation

Recently at a cabinet meeting the ministers of the army and of the navy suddenly proposed the establishment of a department of health and sanitation. It is strange that this proposal was not made by the minister of home affairs under whose management has come almost all the important health measures. This is because the military medical bureau has for years been desirous of an independent department to exercise general control over all medical matters, which are now handled by many sections and branches in several departments. What prompted the army and navy most was the physical examinations for conscription in recent years, which showed a decline in the physical condition of young men. In the five years from 1922 to 1926 about 250 per thousand of those examined failed to pass the physical examination for conscription. In the five years from 1927 to 1932, about 350 failed, while in 1935 about 400 per thousand young men failed to pass the examination. In the examinations it was found that the height of the young men was much improved compared to former days, but that their weight has not improved correspondingly. There are now found about fifteen times as many cases of tuberculosis as there were thirty years ago. The increase in near-sightedness among school boys is surprising. The authorities believe that the cause of such a decline in health can be justly attributed not to the want of physical education, to shortage of nutrition or medicine or to overwork, but chiefly to the poor health of the mother. From the standpoint of national defense, the army and the navy urgently desire to establish a new independent department devoted to the reconstruction of the national physique. The Japan Medical Association held a special meeting concerning this problem in Tokyo to help the army and navy in this movement, and it seems to be only a matter of time till the new plan will be realized.

Marriages

JAMES ADAMS HAYNE JR Congaree, S C, to Miss Lorraine Evelyn Stahl of White Plains, N Y, in New York, June 30

MORTON MORRIS PINCKNEY, Richmond, Va, to Miss Louise Lippitt Sinnickson of Bryn Mawr, Pa, May 16

WILLIAM ROLLAN HILL Charlottesville, Va, to Miss Sherard Pierson Parrish of Richmond, May 16

CHARLES DONALD LORD, Montclair, N J, to Miss Ruth Eleanor Henderson of Bloomfield, June 13

BENNETT WATSON ROBERTS Durham, N C, to Miss Elizabeth Walton Parker in Norfolk, Va, May 28

EUGENE BEVERLY FERRIS JR, Cincinnati, to Miss Charlotte Gordon Hopkins of Dover, Mass, June 6

CHARLES JACK FISHER, Moulton, Ala, to Miss Margaret Zeigler of Birmingham, May 29

BENJAMIN D PARISH JR, North Hills, Pa, to Miss Hanna A Yost of Norristown, May 28

JEFFERSON BISHOP KISER to Miss Margaret Mahood Johnston, both of Emporia, Va, June 1

HAROLD B TURNER, Bloomfield, Ind, to Miss Essie Katherine Rarden of Lyons, May 28

CHESTER L RILEY, Richmond, Va, to Miss Verna Parker of Powhatan, June 8

Deaths

James Meschter Anders ☉ emeritus professor of medicine at the University of Pennsylvania Graduate School of Medicine, Philadelphia, died, August 29, at his summer home in Blue Hill Falls, Maine, aged 82. Dr Anders was born in Fairview Village, Pa, July 22, 1854. He received a medical degree from the University of Pennsylvania Department of Medicine, Philadelphia, in 1877, in which year he also received the degree of doctor of philosophy. For many years he was professor of theory and practice of medicine and clinical medicine at the Medico-Chirurgical College of Philadelphia, which became the Graduate School of Medicine of the University of Pennsylvania where he was for many years professor of medicine and clinical medicine and later emeritus professor. He was chairman of the Section on Practice of Medicine of the American Medical Association from 1900 to 1901, a life member of the Academy of Natural Sciences, a member of the American Clinical and Climatological Association, the Association of American Physicians, and many other scientific and civic societies. past president of the American College of Physicians, the College of Physicians of Philadelphia and the Pennsylvania Tuberculosis Society. At various times Dr Anders was a visiting physician to the Protestant Episcopal Hospital, physician to the Medico-Chirurgical Hospital, consulting physician to the Jewish Hospital, Philadelphia and the Widener Home for Crippled Children, and Asylum for Insane, Norristown, and for many years member of the visiting staff and later member of the advisory board of the Philadelphia Hospital. He was president and formerly vice president of the board of trustees of the Perkins School, Pennsburg, president of the board of trustees of Ursinus College, and member of the board of managers of the City Parks Association and the board of health of Philadelphia. Dr Anders was the author of a textbook known as the "Principles and Practice of Medicine" which passed through fourteen editions, and co-author of "Textbook of Medical Diagnosis." In 1923 he was made a Chevalier of the Legion of Honor of France. In 1928 he was awarded the degree of doctor of science by the University of Pennsylvania and in 1929 the honorary degree of doctor of laws by the Pennsylvania Military College. various other honors were conferred on Dr Anders during his long and distinguished career.

William Henry Mayer ☉ Pittsburgh University of Pennsylvania School of Medicine Philadelphia 1912 member of the House of Delegates of the American Medical Association in 1920 and from 1922 to 1935 past president of the Medical Society of the State of Pennsylvania past president and secretary of the Allegheny County Medical Society fellow of the American College of Physicians member of the American Psychiatric Association and the Association for Research in Nervous and Mental Disease associate professor of neurology University of Pittsburgh School of Medicine aged 49 attend-

ing neurologist to the Passavant and Allegheny General hospitals and Pittsburgh Diagnostic Clinic, psychiatrist to St. Francis Hospital, where he died, August 23

Clyde Yeager Beard ☉ Cheyenne, Wyo, University of Louisville (Ky) Medical Department, 1905, president of the Wyoming State Board of Medical Examiners past president and secretary of the Wyoming State Board of Health, formerly councilor of the Wyoming State Medical Society, served during the World War, local examiner for the U S Veterans' Bureau from 1919 to 1923 fellow of the American College of Surgeons, formerly county coroner, aged 55, on the staff of the Burns (Wyo) Hospital and the Memorial Hospital of Laramie County, where he died, July 2, of peritonitis following an operation to remove the stump of the appendix.

Alva Porter Stoner ☉ Des Moines, Iowa, St. Louis College of Physicians and Surgeons, 1891, past president of the Iowa State Medical Society, formerly professor and head of the department of obstetrics, and assistant professor of surgery and clinical surgery in the Drake University College of Medicine, at one time professor of oral surgery and professor and head of the department of physiology in the Drake University Dental Department, served during the World War, fellow of the American College of Surgeons, surgeon to the Iowa Lutheran and Broadlawn General hospitals, aged 68, died, May 31, of aneurysm.

Martin John Synnott ☉ Montclair, N J, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894, served during the World War colonel in the Medical Officers Reserve Corps of the U S Army, fellow of the American College of Physicians, formerly a member of the city board of health and a member of the county milk commission, visiting physician to St. Vincent's Hospital, consulting gastro enterologist and director of the proctologic department Midtown Hospital, aged 67, died, July 15, of cerebral hemorrhage.

Francis Ingersoll Proctor ☉ Santa Fe, N M, Harvard University Medical School, Boston, 1892, member of the Massachusetts Medical Society, consultant in trachoma to the Indian Service formerly on the staffs of the Massachusetts Eye and Ear Infirmary, the Boston City Hospital and Carney Hospital Boston, and the Perkins Institution and Massachusetts School for the Blind, Watertown, Mass, aged 71, died, July 8 in the Albert Merritt Billings Hospital, Chicago, of infected subdural hematoma and leptomeningitis.

Michael Francis Fallon ☉ Worcester, Mass Harvard University Medical School, Boston, 1887 past president of the Worcester District Medical Society and formerly vice president of the Massachusetts Medical Society, member of the New England Surgical Society, fellow of the American College of Surgeons, at one time member of the Massachusetts State Board of Registration in Medicine surgeon in chief to St. Vincent Hospital, aged 72, died, June 24, of arteriosclerosis and myocarditis.

Rufus Benjamin Weaver, Philadelphia Eclectic Medical College of Philadelphia, 1863, Penn Medical University, Philadelphia 1865, demonstrator of anatomy in 1869, lecturer on regional anatomy from 1876 to 1896 and later professor of anatomy and professor emeritus at the Hahnemann Medical College and Hospital of Philadelphia, in 1888 dissected and mounted the entire cerebrospinal nervous system, aged 95, died July 15, of arteriosclerosis.

Walter Games Bogart, Chattanooga Tenn University of Tennessee Medical Department, Nashville, 1883, member of the Tennessee State Medical Association past president of the Chattanooga and Hamilton County Medical Society at one time professor of diseases of women and obstetrics at the Chattanooga Medical College, aged 78, for many years on the staff of the Erlanger Hospital, where he died, July 9 of hypostatic pneumonia.

Herschel Benoni Cummins, Seward, Neb University of Nebraska College of Medicine Lincoln 1885 member of the state board of health 1897 to 1901 and from 1907 to 1915 formerly member of the state legislature member of the county insanity commission for forty-four years, at one time taught physiology and hygiene at Cotner College Lincoln, aged 77 died June 30 of carcinoma of the rectum.

Othello Clayton Bishop, Port Townsend, Wash University Medical College of Kansas City Mo 1912 member of the Washington State Medical Association served during the World War at one time connected with the U S Marine Health Service formerly on the staff of the U S Marine Hospital number 17 aged 49 died June 8 in the U S Marine Hospital Seattle of cardiac disease.

James Seferen Ennis, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889, formerly professor of laryngology and rhinology, Fordham University School of Medicine, consultant in laryngology and rhinology at the Fordham Hospital, aged 66 died June 1, in the New York Post-Graduate Medical School and Hospital, of chronic nephritis

Anna Dwyer \oplus Chicago, Northwestern University Woman's Medical School, Chicago, 1896, formerly medical examiner of the public schools and physician to the Municipal Courts, at one time president of the staff of the Mary Thompson Hospital and on the staff of the Chicago Municipal Hospital, aged 63, died, June 10, in the Columbus Hospital, of cerebral hemorrhage and hypostatic pneumonia

Harry Albert Singer \oplus Chicago, Rush Medical College, Chicago, 1922, associate professor of medicine University of Illinois College of Medicine, member of the Central Society for Clinical Research, on the staffs of the Cook County Hospital, University Hospital and the Research and Educational Hospital, University of Illinois, aged 40, died, August 21, of hypertension and acute pericarditis

Michael Edward Flaherty, Jersey City N J, Jefferson Medical College of Philadelphia, 1906 member of the Medical Society of New Jersey, during the World War was in charge of the sixth medical inspection district and was connected with the exemption boards of the city, from 1910 to 1917 visiting physician to the City Hospital, aged 58, died, June 12, of lobar pneumonia

Frank P. Dohearty, Appleton, Wis., Northwestern University Medical School Chicago, 1897, member of the State Medical Society of Wisconsin, formerly city health officer county and city physician for many years for many years on the staffs of the Outagamie County Asylum for Chronic Insane and St. Elizabeth Hospital, aged 64, died, June 18, of myocarditis

Erwin William Exley, Minneapolis, University of Minnesota Medical School, Minneapolis, 1925, member of the Minnesota State Medical Association and the American Urological Association, aged 38, died May 28 in the New York Post-Graduate Medical School and Hospital New York, of bronchopneumonia following an operation for acute appendicitis

Eugene Price Gray \oplus Winston-Salem, N C Johns Hopkins University School of Medicine Baltimore, 1906 past president of the Forsyth County Medical Society, on the staffs of the Heath Memorial Infirmary, North Carolina Baptist and City Memorial hospitals, aged 55, died, June 24, of cerebral hemorrhage and coronary thrombosis

William Lafoy Hall \oplus Seattle, Vanderbilt University School of Medicine, Nashville, Tenn 1890, for five years practiced at Shansi, China, under the American Board of Commissioners for Foreign Missions and later again engaged in missionary work in Suming Sze, China, aged 68, died May 29, following an operation for gallstones

Cadwallader Curry Vinton, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885, member of the Medical Society of the State of New York, formerly a medical missionary in Korea at one time managing editor of *Physical Therapeutics* aged 76 died, June 26 in Bellevue Hospital

William Madden Dawson Brentwood N Y University of Maryland School of Medicine, Baltimore 1931 assistant physician on the staff of the Pilgrim State Hospital, aged 31 died June 12, in the Southside Hospital Bay Shore, of injuries received when the automobile in which he was driving was struck by a train

John Francis Luby, New Haven Conn, College of Physicians and Surgeons Medical Department of Columbia College, New York 1878, member of the Connecticut State Medical Society, for many years president of the medical board and on the staff of the Hospital of St. Raphael, aged 78, died, May 31

Irving Deyo Le Roy, Utica N Y Albany (N Y) Medical College, 1883 member of the Medical Society of the State of New York for many years health officer of Pleasant Valley aged 77 died, May 21, in the Masonic Soldiers and Sailors Memorial Hospital of arteriosclerosis

Zebulon J. Spruiell, Jewett, Texas, University of Texas School of Medicine Galveston 1899 past president of the Leon County Medical Society formerly county health officer for many years president of the school board aged 69 died May 22 in a hospital at Dallas

Arthur Taylor Downing \oplus Littleton N H Dartmouth Medical School Hanover, 1903, past president of the Grafton

County Medical Society, fellow of the American College of Surgeons, on the staff of the Littleton Hospital, aged 58, died, June 25, of carcinoma

Willard L. De Wolf, Los Angeles, Jefferson Medical College of Philadelphia, 1879, member of the Medical Society of the State of Pennsylvania, formerly a practitioner in Butler, Pa., aged 80, died, June 19, of arteriosclerosis, mitral regurgitation and nephritis

Howard William Girvin, Marianna, Fla., Syracuse University College of Medicine, 1911, served during the World War, aged 54, formerly on the staff of the Florida State Hospital Chattahoochee, where he died, May 31, of cardiovascular renal disease.

Clarence E. Munn, Marysville Wash Hahnemann Medical College and Hospital, Chicago, 1884, member of the Washington State Medical Association, formerly county coroner, mayor of Marysville and member of the city school board, aged 72, died May 28

Charles Berry Constable, Santa Barbara, Calif University of Maryland School of Medicine, Baltimore, 1883, Hahnemann Medical College of Philadelphia 1884 aged 71 died, June 21, of chronic myocarditis, hypertrophy of the prostate and arteriosclerosis

John Harold Gooding, Boston Tufts College Medical School, Boston, 1915, served during the World War, for many years a medical examiner at the United States Veterans' Bureau, aged 44, died suddenly June 25, of coronary occlusion

Edward Everett, Dushore, Pa Jefferson Medical College of Philadelphia 1868, member of the Medical Society of the State of Pennsylvania, aged 89, died, June 30 in the Robert Packer Hospital, Sayre, of arteriosclerosis and myocarditis

Fred Arad Lampman, Elkhart Ind., Indiana University School of Medicine, Indianapolis, 1917, member of the Indiana State Medical Association, on the staff of the Elkhart General hospital, aged 49, died, May 15, of cerebral hemorrhage

Louis Vincent Clarke, Far Rockaway, N Y Columbia University College of Physicians and Surgeons New York, 1905, on the staff of St Joseph Hospital, aged 57, died, June 5, in Belle Harbor, of carcinoma of the sigmoid

Edmund H. Dorris, Bolivar, Tenn., Memphis Hospital Medical College, 1901 bank president since 1902 county health officer, and since 1914 chairman of the county school board, aged 62, died, June 19, of cerebral hemorrhage

Charles E. Duve, Nordheim, Texas, Memphis (Tenn) Hospital Medical College, 1905 member of the State Medical Association of Texas, health officer of Nordheim, aged 63, died, May 6, in the Allen Hospital, Yorktown

Wray Devere Marr Lloyd, Rio de Janeiro, Brazil, S. A., University of Western Ontario Medical School London Ont., Canada, 1926, connected with the Rockefeller Foundation, aged 33, died June 2, as the result of a fall

Charles McCauley Emmons, Washington, D C, Georgetown University School of Medicine Washington, 1893, member of the Medical Society of the District of Columbia, aged 62, died, May 29, at his home in Suitland, Md

Finis Logan Anderson, Springfield Mo., Kansas City Medical College, 1890, served during the World War, aged 59, died May 13, in the Veterans Administration Facility, Fayetteville, Ark., of chronic myocarditis

Frederick P. Sprague, Wyandotte Mich Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1896, member of the Michigan State Medical Society, aged 68, died, May 30

Edgar Adams Wilson, Meriden Conn University of Pennsylvania Department of Medicine, Philadelphia 1881 aged 82, for many years on the staff of the Meriden Hospital where he died, May 19 of pneumonia

Robert Thomas Dickey, Wynnboro Texas, University of Texas School of Medicine Galveston 1911 member of the State Medical Association of Texas, aged 48, was killed, May 14 in an automobile accident

Russell Felts Hufford, Tip Top W Va Medical College of Virginia, Richmond, 1932 member of the West Virginia State Medical Association, aged 28, died, May 19, in a hospital at Welch, of pneumonia.

Clemens Max Richter \oplus San Francisco, Medizinische Fakultät der Universität Leipzig Saxony Germany 1872, aged 87 died May 19 of cerebral hemorrhage, hemiplegia and arteriosclerosis

Ralph Kilpatrick, Alexandria, La., Tulane University of Louisiana Medical Department, New Orleans, 1885, member of the Louisiana State Medical Society, aged 74, died, May 14, of endocarditis

Otto Henry Gerdes ♂ Eureka, S. D., Rush Medical College, Chicago, 1892, formerly on the staff of the Eureka Community Hospital, aged 68, died, June 29, of cerebral sclerosis and thrombosis

William Louis Hanson ♂ Dallas, Texas, Baylor University College of Medicine, Dallas, 1921, aged 37, on the staff of St Paul's Hospital, where he died, May 21, of a cerebral hemorrhage.

Eugene Lorin Ketchum, Independence, Ore., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883, aged 80, died, June 21, in Portland, of carcinoma of the liver

Charles Manville Pratt ♂ Towanda, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1882, aged 76, died, May 23, of cerebral hemorrhage and arteriosclerosis

Edmund Burke Brown, Cotton Plant, Ark., Louisville (Ky.) Medical College, 1903, member of the Arkansas Medical Society, served during the World War, aged 55, died, May 6

John Robert Smith, Louisville, Ky., Louisville National Medical College, Medical Department State University, 1910, aged 57, died, May 28, of coronary thrombosis and influenza

Joseph Thomas Johnson, Indianapolis, Meharry Medical College, Nashville, Tenn., 1913, aged 44, died, May 24, of mitral insufficiency, pharyngitis and hypostatic pneumonia

William Walker Gatliff ♂ Butte City, Calif., St. Louis College of Physicians and Surgeons, 1884, past president of the Glenn County Medical Society, aged 79, died, May 12

Mary L. B. Wooster, Washington, D. C., Howard University College of Medicine, Washington, 1883, aged 79, died, May 12, of cerebral hemorrhage and arteriosclerosis

William Miles Wallis, Atlantic, Iowa, University of Buffalo, School of Medicine, 1870, formerly a practitioner in Maryville, Mo., aged 88, died, May 11, of cerebral sclerosis

Jacob Louis Krupp, Brooklyn, Long Island College Hospital, Brooklyn, 1906, aged 54, on the staff of the Beth-El Hospital, where he died, May 5, of Hodgkin's disease.

John J. Parker, Merom, Ind., Kentucky University Medical Department, Louisville, 1900, member of the Indiana State Medical Association, aged 63, died suddenly, May 17

Harry William Sampson ♂ Bangor, Maine, Medical School of Maine, Portland, 1906, served during the World War, aged 54, died, May 27, of lobar pneumonia

Walter James Axford, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1904, aged 56, died, May 17, in the Hahnemann Hospital, of lobar pneumonia

Frank Philip Brendel ♂ Sacramento, Calif., University of California Medical School, San Francisco, 1917, served during the World War, aged 48, was drowned, May 24

Frank Warren Johnson ♂ Fullerton, Neb., Omaha Medical College 1894 formerly secretary of the Nance County Medical Society, aged 68, died, May 11, of angina pectoris

Arthur Lemuel Davis, Wyaconda, Mo., College of Physicians and Surgeons Keokuk, Iowa, 1897, aged 62, died, May 20, of diabetes mellitus and heart disease.

Mary Anne Harriss, San Francisco, Cooper Medical College, San Francisco, 1899, aged 71, died May 13, of coronary thrombosis, arteriosclerosis and hypertension

Paul W. Wadsworth, Milan, Ill., College of Physicians and Surgeons, Keokuk, Iowa, 1883, formerly mayor of Milan, aged 76, died May 27, of carcinoma of the face.

Newton E. McDannald, News Ferry, Va., University College of Medicine Richmond, 1900, member of the Medical Society of Virginia, aged 74, died in May

Edward William Vietor, Orford, N. H., Regents of University of State of New York 1875, aged 84, died, May 16, of coronary embolism and angina pectoris

George Norman Stockwell, Ventura, Calif., University of the City of New York Medical Department 1891, aged 66, died May 20, of hypernephroma of the kidney

Michael Joseph Hart, Boston, Harvard University Medical School Boston, 1896, aged 64, died May 23, in the Boston City Hospital of cardiac decompensation

Louis Gilbert Altman, Salem, Ore., Hahnemann Medical College and Hospital Chicago 1882, aged 83, died May 19, of coronary occlusion and myocarditis

William Maxey Joy, Kansas City, Mo., Eclectic Medical University, Kansas City, 1907, aged 63, died, May 29, in a local hospital, of cerebral hemorrhage

Katharine W. Ulrich ♂ Chester, Pa., Woman's Medical College of Pennsylvania, Philadelphia, 1899, aged about 66, died, May 18, of arthritis deformans

Vincent B. Beszczynski, Buffalo, University of Buffalo School of Medicine, 1906, aged 63, died, June 4, of chronic myocarditis and arteriosclerosis

Crisoforo Solis, Rio Grande City, Texas, Escuela de Medicina de Nuevo Leon, Monterey, Mexico, 1896, county health officer, aged 67, died in May

John Ross Gilbert, Camden, N. J., University of the South Medical Department, Sevanee, Tenn., 1895, aged 65, died, May 12, of cerebral embolism

Francis Allen Richardson, San Francisco, Baltimore University School of Medicine, 1901, served during the World War, aged 62, died, May 18

James Joshua Herrington, Worley, Idaho, American Medical College, St. Louis, 1893, aged 67, died, May 7, in Coeur d'Alene, of pneumonia

Linn Bardeen Palmeter, Sidney, N. Y., University of Vermont College of Medicine, Burlington, 1891, aged 66, died, May 24, of angina pectoris

Edgar Rufus Boren ♂ Laredo, Texas, Baylor University College of Medicine, Dallas, 1916, aged 45, was killed, May 20, in an automobile accident

Horace Preston Belknap, Prineville, Ore., Bellevue Hospital Medical College, New York, 1886, aged 80, died, May 18, of cerebral hemorrhage

Glenn Arthur Easton ♂ Grand Rapids, Mich., Detroit College of Medicine 1906, aged 58, died, May 22, of pulmonary embolism and phlebitis

Laviro V. Shawver, Corliss, W. Va., University of Louisville (Ky.) Medical Department, 1894, aged 71, died, May 23, of chronic myocarditis

John Sutherland, Britton, S. D., Rush Medical College, Chicago, 1889, county health officer, aged 79, died, May 23, of chronic myocarditis

Elmer Frederic Kinne, San Fernando, Calif., University of Southern California College of Medicine, Los Angeles, 1906, aged 63, died, May 3

Samuel Astley Murray ♂ Holden, Mo., St. Louis University School of Medicine, 1906, aged 52, died, May 12, of coronary thrombosis

George Patrick McCarthy, Buffalo, University of Buffalo School of Medicine, 1909, aged 54, died, May 14, of carcinoma of the esophagus

Robert Carson Butz, Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1907, aged 50, died May 4, of angina pectoris

Walter L. Wylie, St. Petersburg, Fla., Hering Medical College, Chicago, 1897, aged 61, died, May 24, in St. Anthony's Hospital

Curtis A. Wherry, Los Angeles, Kansas City Homeopathic Medical College, 1897, aged 63, died, May 23, of basal skull fracture.

John Bure, Hillsboro, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1885, aged 82, died May 3

Rice Knox, Frost, Texas, Kentucky School of Medicine Louisville, 1883, aged 82, died, in April, of cardiorenal disease

Edgar S. Simpkins, Middleburg, N. Y., Albany (N. Y.) Medical College, 1890, died, May 4, of chronic myocarditis

James Matthew Van Der Ven, Moline, Mich., Long Island College Hospital, Brooklyn, 1891, aged 72, died May 3

William B. Leslie, Holladay, Tenn. (licensed in Tennessee in 1889), aged 83, died May 23, of chronic myocarditis

James S. McGeachy, Chipley, Fla., North Carolina Medical College, Charlotte, 1897, aged 67, died May 11

P. Magenheimer, Chandler, Ind., Medical College of Indiana, Indianapolis 1880, aged 85, died May 28

John B. Norris, Dallas, Texas, St. Louis College of Physicians and Surgeons, 1901, aged 62, died in May

Stacy C. Youngman, North Kansas City, Mo., Omaha Medical College 1884, aged 80, died May 14

S. R. Hickson, Fairfax, S. C., Memphis (Tenn.) Hospital Medical College, 1901, aged 60, died May 12

Arthur L. Murphy, Toronto, Ont., Canada, Trinity Medical College Toronto 1892, died May 13

Correspondence

"GARLIC BREATH ODOR"

To the Editor—In *THE JOURNAL*, August 8, appears an article by Blankenhorn and Richards on garlic breath odor which calls to mind an interesting experience of my own, having direct bearing on their contention that such odors are blood borne. When I was an intern at the Kings County Hospital in June 1933 I delivered a woman who had a very decidedly obnoxious garlic odor to her breath. Shortly after the birth the infant was removed to another room and on bending over it to apply silver nitrate to the eyes I was surprised and rather amused to note that the child also had a strong garlic breath odor.

On occasion I have mentioned this to other men and they usually think that I am attempting to be facetious. However, I think this offers an interesting way of corroborating the authors' theory and I am sure that it must be easier to find a garlic eating mother for experiment than a patient with a tracheal fistula.

WILLIAM CURRY MOLONEY, M.D.,
Jamaica Plains Mass

DOG BITES

To the Editor—On page 433 of *THE JOURNAL* for August 8, Mr. Albert Payson Terhune is quoted as saying that the bite of a healthy dog is only as dangerous as would be a similar wound inflicted by a piece of metal or bone. This is not quite right. I am so fond of Mr. Terhune and his wards that the quotation may be revised. Canines give a vigorous shake to a bite, meaning technically a bruised and lacerated penetrating wound. This would mean debridement in surgical principle plus first aid with chlorine preparations or, better yet, the U S P camphorated oil that saved the lives of patients with compound fracture or opened knee joints in the practical work of our grandfathers in medicine.

ROBERT T MORRIS, M.D., Stamford, Conn.

THE NAMING OF MEDICAMENTS

To the Editor—At the Annual Session of the American Medical Association in Kansas City I discussed briefly the nomenclature of therapeutic substances. The interest I found in the Section on Pharmacology and Therapeutics encourages me to draw your attention and perhaps the attention of some readers of *THE JOURNAL* to this matter. Especially I dealt with the troubles arising from the fact that the same effective substance is called often by different terms. Thus, it happens frequently that the same substance is known in different countries by different names. Furthermore, in the same country different physicians administer the same drug with different names without sufficient information about this fact. Trade-marks through advertising become the common terms for the efficient molecules. The efficient work of your Council on Pharmacy and Chemistry, preventing special names for products except those originated by the discoverer of any preparation, is not effective in foreign countries. Terms proposed by your council are sometimes protected as brands in foreign countries. Experience has shown that as a consequence of this state many papers about the matter of action or the therapeutic value of a new preparation may not be understood in other countries or sometimes even in other parts of the same country, because there another term for the same active principle is better known.

A different matter of nomenclature is the question of therapeutic suggestiveness of a term for a new drug.

It should be possible, I think, to avoid any objection on account of the therapeutic suggestiveness and to find nevertheless a name for the purpose of scientific literature and international understanding for each new substance.

In my opinion it is urgent to have a single distinct name for each distinct substance and to use only this name in all scientific papers of the world. But an agreement with all individuals and communities interested in a special case would not be accomplished without establishment of an international organization or committee. My proposal, therefore, is to establish an international committee studying these problems and elaborating a project of proceeding.

WOLFGANG HEUBNER, M.D., Berlin, Germany
Professor of Pharmacology and Director
of the Pharmacologic Institute of the
Friedrich-Wilhelms University

SALMONELLA

To the Editor—Research work on *Salmonella supestifer* as the cause of a specific enteritis in swine inclines me to a large interest in the relationship of this organism to diseases of man. The interesting case report of Drs. Cohen, Fink and Gray in *THE JOURNAL*, August 1, is greatly appreciated. If I may presume to do so however, I should like to call to the attention of the authors a misstatement of fact so far as veterinary science is concerned. They say that 'until the World War the *Salmonella supestifer* organism was known to be the cause of hog cholera.' The cause of hog cholera has been known for more than thirty years to be a filtrable virus.

It is true that forty years ago *Salmonella supestifer* (Ann. Rep. B A I, 1885-1889 Special Report B A I, Salmon, 1889) was regarded by many as the cause of hog cholera, but the work by Dorset, McBryde and de Schweinitz (U S D A, B A I, circ 41, 1903 Bull 72, 1905) definitely disproved this and showed that a filtrable agent is the cause of hog cholera and that *Salmonella supestifer* is rather a common associate of the virus. My own work (*J A Vet M A* 25 34-89 [Oct] 1927, 27 345-356 [Feb] 1929) proves definitely that *Salmonella supestifer* is the specific agent of an enteric disease of swine, sometimes associated with cholera but oftener not.

CHARLES MURRAY, Ames, Iowa.

Acting Dean, Division of Veterinary
Medicine, Iowa State College

ZIPPER TRAUMA

To the Editor—On a hot Sunday afternoon a man about 28 years of age walked into my office in a topcoat and looking rather embarrassed. The situation became clear when he explained that he neither could raise nor lower his trousers, as his penis was caught in the zipper.

Examination revealed the dorsal portion of the prepuce and part of the glans caught in the zipper. The penis was cleansed thoroughly and the part caught in the zipper was infiltrated with procaine-epinephrine. A catheter was placed in the penis and a triangular wedge was cut out of the glans in order to loosen it. The urethra was not injured. The prepuce was then freed. The edges of the glans were approximated with two silk sutures, the prepuce required five sutures.

The wound healed without eventualities and five days later the stitches were removed.

In this civilized era the automobile has given us some typical fractures of the lower extremities, the airplane the 'pilot's neurosis' and now comes the sartorial danger—the zipper.

MYRON V. SUSSKIND, M.D., Jackson, Mich.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

PROPHYLAXIS FOR SYPHILIS

To the Editor—What prophylaxis would you recommend for intercourse without a condom to prevent syphilis? If a mercury ointment is recommended, what per cent do you suggest? Should only the penis or contiguous areas as well, be covered with the ointment? About what quantity should be used and for how long should it be massaged into these areas? How frequently may the average individual use this method of prophylaxis without local or systemic danger because of the absorption of mercury? Please omit name. MD New York City

ANSWER.—The system of chemical prophylaxis used in the United States Army is adequate for the prevention of syphilis if applied within an hour of exposure. This consists of

(1) A careful washing of the entire genitalia with soap and warm water,

(2) The intra-urethral injection of a 2 per cent solution of strong silver protein or a 10 per cent solution of mild silver protein, retained within the urethra for five minutes (for the prevention of gonorrhea),

(3) The use of 33 $\frac{1}{3}$ per cent calomel ointment in the amount of 4 Gm., rubbed not only on the penis but also contiguous areas as well (i. e., scrotum and pubis) for a period of ten minutes, timed by a watch. Following this, the genitalia are wrapped in toilet paper and the ointment is allowed to remain in situ for several hours.

There would probably be no danger of mercury poisoning either locally or generally if this form of treatment were used daily.

DIAGNOSIS OF SYPHILIS

To the Editor—A man had numerous exposures for many months with a girl who developed secondary syphilis with an eruption and a 4 plus Wassermann reaction before either knew that anything was wrong with her. He developed a small penile sore which he described as a "log cut" which healed in four days without treatment. Then he discovered that the girl was infected and went to his local doctor who gave him one intravenous injection of 0.4 Gm. of neocarsphenamine followed by five weekly intramuscular injections of bismuth salicylate, the last of which was given six weeks ago. The sore developed January 1 and weekly blood tests have all been negative, the last made day before yesterday, six weeks after the last injection of bismuth salicylate. He is very much worried and does not want to take further treatment without knowing whether he was really infected or not. Should I advise active treatment on the assumption that he was infected and leave that uncertainty in his mind or should I take weekly blood tests and wait to see whether the blood becomes positive or not? How long would this small amount of treatment give negative Wassermann reactions? The man is over 50. What treatment would be best fitted for him? Please omit name and address. MD Washington

ANSWER.—This inquiry calls attention to the malicious practice of making a diagnosis of a penile lesion only by inspection. In this case it appears that the original diagnosis of a chancre was made on circumstantial evidence, a procedure that is subject to severe criticism when in this day the facilities for laboratory confirmation are available to almost all physicians. It is true that the earlier a chancre is recognized and the proper treatment is instituted the better are the results from treatment.

This does not mean however, that a diagnosis of acute syphilis should be made on a hunch or the mere fact that a lesion was observed on the penis. The difference in the results from treating a chancre three days old and one a week old are not great enough to hazard such a diagnosis and subject a patient to a course of unnecessary treatment on such slim evidence. Neither is the fact that the consort was known to have early syphilis sufficient reason for instituting treatment in this man, because it is not uncommon for syphilologists to see individuals who have been exposed to persons with acute syphilis and who have had willy-nilly prophylaxis not acquire the infection. It is the practice of some physicians in situations such as this to return the patient to the doctor who made the original diagnosis and have him continue as he sees fit the basis for this procedure is that the second physician while he

is not able to confirm the diagnosis, neither is now able to refute the fact that the patient may have had a chancre.

The evidence presented by the inquirer would indicate that a chancre was not present, because although possible it is not probable that the small amount of treatment given the patient would prevent the Wassermann reaction from becoming positive by this time. One of two procedures may be adopted either continue observing the patient weekly and taking a Wassermann test once a week for the next two months and then once a month for six more months, or continue treating him for acute syphilis by the use of a continuous system of treatment with arsphenamine and a bismuth compound. It would seem that the first course is the one indicated.

THIRD GENERATION SYPHILIS

To the Editor—In a family with syphilis there are cases of congenital syphilis even in the third generation inherited from the mother who also has congenital syphilis. The husbands of two of the girls with congenital syphilis have negative blood tests and no history of ever having had syphilis. I understand that a man cannot contract syphilis from a woman that has congenital syphilis. Is this correct? Syphilis was first acquired by the father with a penile chancre three years before marriage, the history of the sore being obtained from him a few days before he died at the age of 60 from coronary thrombosis and syphilitic aortitis. He never realized that he had syphilis and never had been treated. His wife is now 56 years of age and has hypertension of 250/130 and has had two severe attacks of acute pulmonary edema that required phlebotomy. There is no other evidence of cardiovascular syphilis or involvement of the central nervous system. She and her husband both gave two positive Hinton and Wassermann tests on their blood. The mother's first pregnancy terminated in an apparently normal full term girl now 28 years of age with no signs or symptoms of syphilis except positive blood tests. She also has pulmonary tuberculosis and has two girls aged 9 and 7 years who also have positive blood tests but are apparently normal children except that the 9 year old girl has Hutchinson's teeth. The mother of these two had only two pregnancies. The second pregnancy of the original mother was terminated with an apparently normal full term child now 27 years of age and she has a boy 8 years of age resulting from her first and only pregnancy. The boy is apparently in good health but he and his mother both have positive blood tests. This mother also is in good health. The third, fourth, fifth and sixth children of the original mother all have negative blood tests and none of them show any clinical evidence of syphilis. One of these girls has had an apparently normal full term baby with negative cord blood. The original mother did have an abortion between the third and fourth children and one between the fifth and sixth but never had a miscarriage or stillborn or premature birth and as said before never received any treatment. In fact do one in the entire family know that syphilis existed and consequently none had ever received any treatment. I have not done any spinal punctures yet nor any bone or heart and aorta roentgenograms. None have any signs or symptoms of clinical syphilis except one 9 year old girl as previously mentioned with Hutchinson's teeth and the original mother with acquired syphilis having hypertension and subject to attacks of acute pulmonary edema. The questions I am most interested in are: Whom should I do spinal punctures on and what x-ray examinations are necessary? Should spinal punctures be done on those with negative blood and how many negative blood tests should one get to rule out congenital syphilis? Is it likely that any of the girls with negative blood might later have a child with congenital syphilis? Is it usual or unusual for the first mother to have had no miscarriages but for the first three pregnancies to be full term, the first two with positive blood and the other four children to have negative blood even though the mother was never treated? I expect to do spinal punctures on the first two grown daughters with congenital syphilis and if the fluid is negative should they receive any treatment and if so please outline the treatment remembering that one has pulmonary tuberculosis which is at the present fairly well arrested. I have been told that if a patient with congenital syphilis goes beyond the age of puberty without any signs or symptoms of the disease treatment is not necessary. What treatment should the three young children in the third generation receive? It will be rather difficult to give neocarsphenamine as they will probably not be very cooperative. What is the consensus by well recognized authorities on the use of stovarsol in such cases? Should the original mother with hyper-tension receive any treatment? MD New Hampshire

ANSWER.—Third generation syphilis may occur but is exceedingly difficult to establish with certainty. It is relatively infrequent. Among 171 children born to eighty-eight congenitally syphilitic mothers in one large syphilis clinic of the country, only eight of the infants themselves had syphilis. This is of course far below the expected incidence of infantile infection in children born of mothers with acquired syphilis.

In the family under discussion the fact that the first and second children of the original couple have positive Wassermann reactions and have themselves given birth to congenitally syphilitic infants is not proof of the existence of congenital syphilis in the second of the three generations. In order to establish congenital syphilis in the second generation, signs or congenital infection should be present in addition to the

positive serologic observations. In their absence one cannot rule out the possibility of an acquired infection in the two women of the second generation.

It is true that a man cannot contract syphilis from an adult congenitally syphilitic woman.

Spinal fluid examinations should be done on the two syphilitic mothers of the second generation and on the three syphilitic children of the third generation. In the absence of physical signs suggesting neurosyphilis, it is not necessary to do spinal fluid tests on any of the seronegative members of this family. It is unwise to examine the spinal fluid in the grandmother, whose cardiovascular condition is not due to syphilis and is sufficiently grave as to be the most important element in the picture.

X-ray examinations of the cardiovascular stripe might profitably be done in the grandmother and in the two mothers of the second generation. They are not necessary in the children of the third generation, since the heart and aorta are practically never involved in congenital syphilis.

It is highly improbable that any of the girls of the second generation with negative blood tests will subsequently have syphilitic children unless they themselves acquire syphilis before the babies are born.

It is not unusual for the sequence of pregnancies to have occurred as in the original mother without miscarriages or stillbirths with the early children syphilitic and the later children normal. Kassowitz's law is to the effect that the virulence of syphilis for the child decreases with the duration of infection in the mother and that after the lapse of a sufficient time interval, usually fifteen to twenty years, a syphilitic woman may bear normal children.

It is not true that, if a case of congenital syphilis goes beyond the age of puberty without signs or symptoms, treatment is unnecessary. On the contrary congenital syphilis remains completely latent much less frequently than the acquired infection, and any congenitally syphilitic person should be treated regardless of the age at which his infection is discovered.

The original mother with hypertensive heart disease had probably better not receive any antisyphilitic treatment, in view of the gravity of her nonsyphilitic heart condition.

The older daughter of the second generation with pulmonary tuberculosis should be treated by the methods outlined by Padgett and Moore in the *American Review of Tuberculosis* (33 10 [Jan.] 1936).

The next daughter of the second generation should be treated in accordance with the principles outlined in chapter 17 of Moore's monograph "The Modern Treatment of Syphilis," Springfield, Ill. C. C. Thomas 1933.

The three young children of the third generation should be treated in accordance with the principles outlined in chapter 28 of Moore's monograph. Sulfarsphenamine may be used in place of neosarsphenamine.

The use of acetarsone (stovarsol) by mouth in any form of syphilitic infection, congenital or otherwise, is distinctly in an experimental stage and is not to be advised for general use.

LOCAL ANESTHETICS

To the Editor—I am interested in securing data on local anesthetics of prolonged action. I am interested particularly in securing anesthesia of twenty four hours or longer. What is the duration of anesthesia of anesthetic, and quinine and urea?

M D Massachusetts

ANSWER—Ever since the introduction of procaine hydrochloride for anesthesia by infiltration and nerve block, attempts have been made to prolong its prompt but evanescent action. Epinephrine in 1:1000 solution, 3 drops to the ounce of 1 per cent procaine solution, prolongs the anesthesia of an intradermal wheal from fifteen minutes to over two hours. It has been shown that the higher the concentration of the free base of the local anesthetic, the more rapid and prolonged will be the action as only the procaine base penetrates into the nerves. The recognition of this principle resulted in the preparation of borates, bicarbonates and phosphates of procaine instead of the hydrochloride in order to increase alkalinity and increase hydrolytic dissociation of the procaine. In practice, especially in anesthesia by infiltration no appreciable difference could be noted between the chlorides and the weaker acids but in blocking nerve trunks there seemed to be a small but definite prolongation of anesthesia when using the procaine in a buffered solution.

Quinine and its derivatives, isoamylhydrocupreine (eucupin) and nupercaine have been advocated to prolong the duration of local anesthesia. Quinine and urea hydrochloride in from 0.5 to 1 per cent solution has been especially used for rectal work, and for tonsillectomies to alleviate postoperative pain. A 2

grain (0.13 Gm) tablet may be dissolved in an ounce (30 cc.) of water, making approximately an 0.8 per cent solution. When used by interdermal infiltration the anesthesia may last a week. It produces, however, a definite damage to the tissues, may result in long lasting indurations and, if not used sparingly in sloughing. The same may be said to a lesser degree of isoamylhydrocupreine (eucupin), which was used in 1:1,000 concentration. Both these drugs have been superseded by nupercaine, which if used in dilutions above 1:500 does not seem to irritate the tissues. Its toxicity, however, is greater than that of cocaine and its use is gradually diminishing except as a surface anesthetic in certain special fields, as ophthalmology and urology.

Pantocain, a cocaine derivative, produces in 1:1,000 concentration an anesthesia which is approximately of double duration as compared with that of procaine. Its value lies especially in spinal anesthesia, if an anesthesia of over one hour to an hour and a half is required.

There are a number of other local anesthetics appearing on the market. In estimating their value it is safe to say that the prolongation of the anesthesia produced by procaine is justifiable only to ensure a painless operation of longer than the average duration. As tempting as it is to alleviate postoperative pain by local anesthetics any drug that produces a twenty-four hour anesthesia or analgesia must seriously depress protoplasmic activity, interfere with the healing of wounds or produce degeneration in the peripheral nerves or roots. The alleviation of postoperative pain by general sedatives, analgesics and hypnotics seems safer at present than the production of a local analgesia of long duration.

INTERMITTENT TREATMENT OF SYPHILIS IN RURAL AREAS

To the Editor—In isolated sections it is often difficult to give weekly injections of neosarsphenamine. In some cases this would require over 100 miles in travel to come for treatment. In winter time even patients nearer by are often blocked with snow drifts. What kind of results would you expect if only one or two injections of arsenic or the heavy metals were given each month if treatment by mouth was continuous and what drugs by mouth would you advise? Many of these patients will not take the trouble of mercury injections and bath tubs are usually not available. In case Wassermann and Kolmer tests are negative but the Kline test is positive does that account an official diagnosis of syphilis? I have seen the wife give a four plus Wassermann reaction but the husband only a two plus Kline with other tests negative. How would you weigh the balance between intermittent treatment of syphilis and none at all? Some of the people who need treatment must rove about a great deal and are hard to find. I carry sterile syringes around with me and like to give treatment whenever I find them trying to persuade them to take regular treatment by mouth if regular injections are not possible. Will you kindly advise on these problems? About two years or more ago in *Queries and Minor Notes* you rated the possible percentage of syphilis that was negative on all serologic tests as approaching one third as I remember it. How would you sum up our present knowledge of this point now? Please omit name and locality.

M D

ANSWER—Treatment for syphilis is conditioned not alone by the drugs used and by their mode and route of administration but by the stage of the disease, the type of involvement and the reactions of the patient. It is definitely dangerous and disadvantageous in a considerable proportion of cases to give the arsphenamine group of arsenicals in inadequate dosage or at long intervals, especially in early syphilis. A monthly injection of neosarsphenamine intravenously would therefore be as likely to result in trouble for the individual and relapse in infectiousness for the population contacts at large as any procedure that could be followed. In circumstances such as the correspondent describes in which injections of an arsenical can be given once a month it would not be unreasonable or impossible, provided the patients are cooperative, to revive the old method of intramuscular administration of arsphenamine long used by Richard L. Sutton of Kansas City in his practice and described in several of the earlier editions of his *Textbook of Dermatology* and quoted by Stokes (*Modern Clinical Syphilology*, ed. 1, Philadelphia, W. B. Saunders Company 1926 p. 200). While this method is somewhat painful and lays the patient up for perhaps a day, the discomfort is to some extent controllable, and the intramuscular administration of arsphenamine has always had a deserved respect. Such a procedure as this is not advocated for the use of any arsphenamine intravenously or for the more rapidly absorbed and eliminated arsphenamine modifications such as sulfarsphenamine and neosarsphenamine intramuscularly as they do not establish significant absorption deposits.

There can be no substitute for mercurial injections for patients who are frozen in. If the clean injection technique of

Cole and his associates is employed, the use of the bath tub becomes relatively unnecessary and the dosage can be adjusted by a little experience, so that with even an approach to reasonable mouth hygiene, salivation can be prevented even in long inunction courses. Washing the mouth twice daily with 30 cc. of water to which has been added a few drops of a mixture of one part tincture of kino and two parts tincture of myrrh will assist materially in keeping the gums in good condition, and the solution can be painted full strength on the gums when this seems desirable. The essence of the clean inunction consists in a full thirty minutes of rubbing in of the ointment over the chosen sites, followed by cleansing the skin with benzene or naphtha, or even a quick sponging with a good grade of gasoline. A good sweat in blankets can be taken weekly. It has also been shown that it is possible to give an inunction over the entire body once a week and secure adequate mercurialization in this way. A belt or girdle on which ointment is smeared has been used by the U S Public Health Service. From every standpoint, this is one of the safest forms of treatment known. It must be understood, however, that mercury does not control infectiousness and that bismuth compounds are relatively less effective than an arsphenamine. Probably the best combination under difficult circumstances would be rather large doses of potassium bismuth tartrate in oil suspension, alternating with arsphenamine intramuscularly as suggested.

It should be clearly understood that mercury by mouth, whether intermittently or continuously given, is of no value so far as curative effects or control of infectiousness is concerned, in the overwhelming majority of cases of early syphilis. It is likewise relatively ineffective in the later complications of the disease and of no use whatever in syphilis of the nervous system.

The question as to whether a positive Kline test with a negative Kolmer or other form of Wassermann test can establish the diagnosis of syphilis must be considered on the merits of the individual case, taken as a clinical whole. In general, however, it may be said that a properly performed Kahn test has an exceedingly small margin of error and should be taken very seriously. In all cases it is desirable to repeat a positive serologic test by whatever technic, for confirmation purposes.

The intermittent treatment of syphilis, while less effective than continuous treatment, especially in the early phases of the disease and in early latency, cannot be rated as wholly ineffective. There are a number of aspects of the disease in which it is the desirable form of treatment, including late latency and late manifestations of various kinds, including visceral and cardiovascular syphilis and late tabetic neurosyphilis. For the proper interpretation of considerations of this sort, the study of one of the standard textbooks is advised. The correspondent is recommended to the division of venereal diseases of his state board of health, if there is one, for cooperation which can be furnished by traveling therapists, who in highly organized state venereal disease services can do much to make treatment available to relatively isolated persons and communities.

The estimation of one third of all syphilis as negative to all serologic tests is certainly too high for the present highly sensitive and highly specific procedures such as the Kahn, Kline and Kolmer-Wassermann tests. The proportion of positives obtained should range from very close to 100 per cent in florid secondary syphilis and dementia paralytica to perhaps 78 to 85 per cent in some aspects of cardiovascular and late neurosyphilis or neurosyphilis characterized by highly localized lesions.

POOLED HUMAN CONVALESCENT SERUM FOR POLIOMYELITIS

To the Editor—Will you kindly advise me if the serum mentioned in your editorial on Serum Treatment of Acute Poliomyelitis is commercially available and, if so, where? Would you repeat the intraspinal dose if so, how often?

SAM J. HOOPER, M.D. Jackson, Miss.

ANSWER—The serum mentioned is pooled human convalescent serum. This preparation is available only through serum centers established by private donations and through municipal and state health departments. We are not aware of an available source in the South but would suggest that the correspondent direct an inquiry to the state health department. In the state of Illinois such serum is furnished gratis under the auspices of the state department of public health and by the Samuel Deutsch Serum Center at the Michael Reese Hospital. There are other sources available in other state and municipal health departments in the Middle West, in the East and in California.

The dose of pooled convalescent human serum recommended at present is from 10 to 20 cc given intraspinally and 100 cc. intravenously at the time of diagnosis. The former amount is

given at the time of the diagnostic spinal puncture. In the event that further serum is needed, an additional 100 cc. is given intravenously from ten to twenty-four hours later. In instances of acute bulbar poliomyelitis, the dosage recommended is 200 cc intravenously and from 10 to 20 cc intraspinally. The latter type is a fulminating disease carrying a high mortality, said to be from 70 to 90 per cent without treatment. There are indications that the mortality is affected favorably by convalescent human serum, but the results are not as striking or gratifying as in the spinal types of the disease.

In the event that there is no serum at present available in the correspondent's locality, any laboratory approved for the manufacture of serum by the United States Public Health Service would be equipped to prepare such a product.

TREATMENT OF LATENT SYPHILIS

To the Editor—A woman aged 23, has been under treatment eighteen months for latent syphilis. At the age of 16 she had a nervous breakdown. It was discovered that the Wassermann reaction was 4 plus. She was then given treatment for a short while. At the age of 22 the Wassermann reaction was 4 plus and the Kahn reaction 4 plus. Jan. 17 1935 I first saw her and gave her weekly injections of 0.45 Gm. of neoarsphenamine for a period of six weeks. February 28 I gave her weekly injections of bismuth subsalicylate 2 grains (0.13 Gm.) for six weeks. April 16 neoarsphenamine 0.45 Gm. for six weeks weekly. May 18 bismuth subsalicylate 0.13 Gm. weekly for six weeks. June 29 neoarsphenamine 0.45 Gm. weekly for six weeks. August 15 bismuth subsalicylate 0.13 Gm. weekly for six weeks. October 10 neoarsphenamine 0.45 Gm. weekly for six weeks. December 4, bismuth subsalicylate 0.13 Gm. weekly for six weeks. Jan. 16 1936, neoarsphenamine 0.45 Gm. weekly for six weeks. March 6 bismuth subsalicylate 0.13 Gm. weekly for six weeks. April 1 a spinal tap was negative for syphilis. April 21 weekly injections of neoarsphenamine 0.45 Gm. for six weeks. June 8 bismuth subsalicylate 0.13 Gm. weekly for six weeks. I should like to know what your opinion is as to whether this young girl should marry or not. Her plans are to do so but she first consulted me as to my opinion. Also advise as to whether I should continue treatment.

A. A. LICHTBLAU, M.D. Canton, Ohio

ANSWER—It is not easy to answer this query as there is insufficient information. No mention has been made of following Wassermann tests on the blood to note the response of the patient to treatment. Moreover, no mention is made of physical examination and its results. This would have quite a lot of bearing on the case, especially if one was to find an aortitis, which is quite often the sequel of an untreated case of syphilis of this type. If careful physical examination shows no evidence of syphilis in the presence of a negative spinal fluid, there should really be no reason why the patient should not get married.

It probably would be well for her to continue the alternating treatment of six injections of neoarsphenamine and six injections of bismuth subsalicylate that she is now on up to a full two years, provided she stands the treatment satisfactorily and she should be given eight intramuscular injections of a bismuth compound every six months for the following two years.

In case she becomes pregnant, since there is danger of passing a latent infection of this type on to the fetus, even when there is no danger of anybody else contracting the disease, it would be well to give her vigorous treatment throughout the pregnancy, consisting of the continuous form of treatment beginning with a course of arsenicals, followed with a course of bismuth and ending with a course of arsenicals.

Naturally a patient of this type should be kept under observation and have a routine physical examination every year the same as is being advocated for every one, and along with this careful check on the cardiovascular system and a blood Wassermann and precipitation test.

SYPHILIS IN INFANCY

To the Editor—A multipara delivered a baby six months ago. The Wassermann report on her at the time was 4 plus. The report on the baby from blood taken from the heel was 4 plus. A report taken by another doctor now is negative without any treatment since birth. Which report should be believed? Do syphilitic babies ever develop an immunity as indicated by these tests? Please omit name. M.D. Washington.

ANSWER—Wassermann positive blood of a mother may be transmitted through the placenta to the infant so that blood taken from the infant shortly after birth may be Wassermann positive while the infant need not be syphilitic. Such a Wassermann reaction may become negative not because the infant develops a spontaneous immunity but because the antibodies derived from the mother disappear. It would be well though, to recheck the baby's blood by Wassermann and flocculation tests.

HAZARDS OF DYE INDUSTRY

To the Editor—A man, aged 30 recently had mild symptoms of gastro-enteritis. He has been working for the past year in a dyeing plant. The dyes used are serbian black B silk brown A pontamine sky blue F F pontamine green B \ pontamine pink G (manufactured by Dupont) pontamine violet B pontamine yellow W B F scarlet 4 B S W and cyanine C R (manufactured by Sandoz). Would any of these dyes be harmful to health on inhalation? The air in the room is heavily laden with the dyes and no ventilating fans are used. Please omit name.

M D New York

ANSWER—Generally speaking coal tar dyes freed from raw material and intermediates may be said to hold little prospect of injury for the dye worker. A few exceptions are to be recognized, such as skin disease from many dyes, damage to the cornea from certain dyes such as methyl violet, and bladder tumors, from a group of dyes including benzopurpurine and benzidine. It is somewhat unlikely that in a dye house any large quantity of the dye would reach the atmosphere. While coal tar dyes may be regarded as only rarely responsible for systemic diseases, the operation of dyeing may provide many hazards. Apart from specific skin disease, the occupational diseases associated with dyeing largely are from mixed intoxicants. Dusts may arise from the fabric being prepared for dyeing. Various bleaching agents may be in use, including sulfuric acid, alkalis, sodium chloride and chlorinated lime. Various mordants may prove to be more toxic than the dyes themselves. The dye solution may be associated with various alcohols, acids and alkalis. More often than not, steam is present in the dye room, thus introducing the hazard both of high temperatures and of high humidity. In certain types of dyeing, especially dyeing by printing, a variety of glues, caseins and glutens may be utilized. Dyeing is at times imperfect calling for the removal of stains, the stripping of the dye and the cleaning of the fabric. This may lead to the introduction of a variety of toxic agents including carbon tetrachloride, trichloroethylene, naphtha, benzene and hydrofluoric acid. Drying and ironing are irregularly associated with dyeing but when present contribute to high temperatures frequently found in dye houses. Prior to the dyeing of some silk fabrics, lead compounds may be introduced for weighing purposes.

Dye workers are prone to suffer from digestive disturbances, arthritides and respiratory disturbances and if fatigue may be regarded as a disease this disease may stand at the top of the list. By and large high temperatures, high humidities, wetness and nauseating odors furnish a greater number of disorders among workers in the dyeing industry than (with the exception of skin disorders) may be traced to the action of specific dyes. The mention in this query of a dye worker suffering from 'mild symptoms of gastro-enteritis' is not a rarity. To the contrary, in some dye houses most of the exposed workers are from time to time so afflicted.

HAY FEVER

To the Editor—I have a patient who suffers from hay fever (rag weed) every fall. The usual serum treatment has not been very effective. Last fall she was given one injection which as she says made her terribly sick for a day and a half and then all her symptoms were gone. What was the substance used and what is the theory of treatment? Would artificial fever do this? Kindly omit name.

M D Ontario

ANSWER—The relief given in this case may have been due to the fact that the injection was given near the end of the season when the symptoms would normally disappear. Or a foreign protein may have been given in a large enough dose to cause a constitutional reaction. This sometimes produces relief. Artificial fever has not been found useful in the treatment of pollinosis.

BLOOD SUGAR LEVELS

To the Editor—In THE JOURNAL Aug 17 1935 there is an article on page 484 entitled Hyperglycemia. In reading this article one gets the impression that the normal blood sugar should be from 100 to 140 mg per hundred cubic centimeters of blood. Does this mean on a fasting diet? My impression has been that the normal sugar level on a fasting diet should be between 60 and 120 mg. I would appreciate your explanation of this article which is quite confusing. What is the consensus at present with regard to the highest blood sugar that would be considered within normal limits? Please omit name.

M D New York

ANSWER—The blood sugar levels on fasting should be between 100 and 120 mg per hundred cubic centimeters of blood, and after meals no higher than 140 mg. While these are the figures accepted as normal it must be realized that there are many variations from these figures. When the blood sugar is lower than 100 mg it usually indicates that the diet is fairly low in sugar or that there is a tendency at least to a hypo-

glycemia associated with some endocrine disturbance. A blood sugar of 60 mg would certainly be considered in the hypoglycemic range. Higher blood sugars frequently occur in apparently normal individuals, especially persons over 50 years of age.

PAIN IN POLIOMYELITIS

To the Editor—Please describe in THE JOURNAL the types of pain characterizing anterior poliomyelitis. I have seen no adjectives preceding the word pain in any of the references read. If this description is unavailable probably in the near future I shall be able to furnish one from my recent personal attack.

W J OWINGS M D Brent Ala

ANSWER—Pain is not a prominent symptom as a rule, in an early acute attack of poliomyelitis. While headache is common at the onset it is not generally severe as in meningitis. The muscles, however, are hypersensitive. It is for this reason that the average patient resents handling and desires to be left alone. Manipulations of the extremities may cause pain. The 'ventral flexion sign,' which is elicited by bending the head and body forward toward the knees, often results in the patient complaining of sharp pain along the spinal column.

After the acute stage of the disease, contractures of muscles, particularly the flexor groups are the sources of most painful sensations.

In the early stages of poliomyelitis pain not induced artificially is usually described as being dull. Later in the attack, pain attributed to contractures is more lancinating in character.

POLLEN AT MIAMI

To the Editor—I would appreciate it very much if you would let me know what your opinion is with regard to Miami Beach Fla. for hay fever and pollen asthma. For the past few years I have been going north and recently have heard that Miami Beach has a lower pollen count. Do you advise it for pollen asthma? I am a ragweed sufferer beginning August 15. I should like to go to Miami Beach because I take my 10 year old son with me and the sun would do him so much good.

M D

ANSWER—No local pollen record has been published for Miami Beach but atmospheric pollen studies have been made at the weather station in Miami and at a private residence in Coral Gables. A very small amount of ragweed pollen appeared on the slides at Coral Gables but only a trace at Miami. The difference is no doubt due to the fact that the slides at Miami were exposed closer to the shore than those at Coral Gables. Miami Beach is some three miles farther away from the few ragweeds that grow in the truck garden areas.

The total number of pollen grains found at Miami during a whole ragweed season was only eight. The significance of this may be easily appreciated by remembering that in central Indiana the average yearly count is considerably more than 10,000 pollen grains. Nineteen points on the Atlantic and Gulf coast from Eastport, Maine to Tampico, Mexico have been studied by means of atmospheric pollen counts. Of these the Miami station is by far the best.

PHARMACOLOGIC AND THERAPEUTIC PROPERTIES
OF COBRA VENOM

To the Editor—In THE JOURNAL July 11 under Queries and Minor Notes page 153 is printed an Illinois physician's question regarding the use of snake venom in the control of pain as in carcinoma when morphine has lost its control and in controlling hemorrhage as in prostate or bladder hemorrhage.

To me as an experimental investigator devoting a great deal of time and work to the study of the pharmacologic and therapeutic properties of snake venoms the reply seems very inadequate.

The use of snake venom for therapeutic purposes may be sharply divided into three categories. The first is the use of the venom of the moccasin (Ancistrodon) for the control of certain hemorrhagic conditions. Noteworthy work on the subject has been done especially by Dr S M Peck and his collaborators.

In the second category is to be considered the use of crotalin or the venom of the rattlesnake (Crotalus) in the treatment of epilepsy. Both foreign and American writers have published papers on this subject.

Probably the most interesting therapeutic application of snake venom and that concerning which the greatest amount of scientific research has been done is the use of cobra (Naja) venom for the treatment of the severe pains accompanying advanced malignant tumors and some other painful disorders of nonmalignant nature. Most of this work has been done in France at the Pasteur Institute but more recent contributions to the subject are found in German, Spanish and American literature.

D I MACINT M D Baltimore.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA Montgomery June 29 July 1 Sec. Dr. J. N. Baker 519 Dexter Ave. Montgomery
ARIZONA Phoenix, Oct. 6-7 Sec., Dr. J. H. Patterson 826 Security Bldg. Phoenix.

ARKANSAS *Basic Science* Little Rock Nov. 2 Sec., Mr. Louis E. Gebauer 701 Main St. Little Rock. *Medical (Regular)* Little Rock Nov. 10 Sec. Dr. A. S. Buchanan Prescott. *Medical (Eclectic)* Little Rock, Nov. 10 Sec. Dr. Clarence H. Young 207½ Main St. Little Rock.

CALIFORNIA Sacramento Oct. 19-22 Sec. Dr. Charles B. Pinkham 420 State Office Bldg. Sacramento

COLORADO Denver Oct. 6 Sec. Dr. Harvey W. Snyder 422 State Office Bldg. Denver

CONNECTICUT *Basic Science* New Haven Oct. 10 *Prerequisite to license examination* Address State Board of Healing Arts, 1895 Yale Station New Haven. *Medical* Hartford Nov. 10-11 *Endorsement* Hartford Nov. 24 Sec. Dr. Thomas P. Murdock 147 W. Main St. Meriden

DELAWARE Dover July 13-15 Sec. Medical Council of Delaware Dr. Joseph S. McDaniel Dover

DISTRICT OF COLUMBIA Washington Jan. 11-12 Sec. Commission on Licensure Dr. George C. Rubland 203 District Bldg. Washington
FLORIDA Jacksonville Nov. 16-17 Sec. Dr. William M. Rowlett P. O. Box 786 Tampa

GEORGIA Atlanta Oct. 13 Joint Sec. State Examining Boards Mr. R. C. Coleman 111 State Capitol Atlanta.

HAWAII Honolulu Oct. 12-15 Sec. Dr. James A. Morgan 48 Alexander Young Bldg. Honolulu.

IDAHO Boise Oct. 6 Commissioner of Law Enforcement Hon. Emmitt Post 205 State House Boise

ILLINOIS Chicago Oct. 20-22 Superintendent of Registration Department of Registration and Education Mr. Homer J. Byrd Springfield

IOWA *Basic Science* Des Moines Oct. 13 Sec. Prof. Edward A. Benbrook Iowa State College Ames

KENTUCKY Louisville, Dec. 2-4 Sec. State Board of Health Dr. A. T. McCormack 532 W. Main St. Louisville.

LOUISIANA New Orleans December Sec. Dr. Roy B. Harrison 1507 Hibernia Bank Bldg. New Orleans

MAINE Portland Nov. 3-4 Sec. Board of Registration of Medicine Dr. Adam P. Leighton 192 State St. Portland.

MARYLAND *Regular* Baltimore Dec. 8 Sec. Dr. John T. O'Mara 1215 Cathedral St. Baltimore. *Homeopathic* Baltimore Dec. 8-9 Sec. Dr. John A. Evans 612 W. 40th St. Baltimore

MASSACHUSETTS Boston, Nov. 17-19 Sec. Board of Registration in Medicine Dr. Stephen Rushmore 413 F. State House, Boston

MICHIGAN Lansing Oct. 14-16 Sec. Board of Registration in Medicine Dr. J. Earl McIntyre 202 3/4 Hollister Bldg. Lansing

MINNESOTA *Basic Science* Minneapolis Oct. 6-7 Sec. Dr. J. Charnley McKinley 126 Millard Hall University of Minnesota Minneapolis. *Medical* Minneapolis Oct. 20-22 Sec. Dr. Julian F. DuBois 350 St. Peter St. St. Paul

MONTANA Helena Oct. 6 Sec. Dr. S. A. Cooney 7 W. 6th Ave. Helena.

NEBRASKA *Basic Science* Lincoln Oct. 6-7 Dir. Bureau of Examining Boards Mrs. Clark Perkins State House Lincoln

NEW HAMPSHIRE Concord Sept. 10-11 Sec. Board of Registration in Medicine Dr. Charles Duncan State House Concord

NEW JERSEY Trenton Oct. 20-21 Sec. Dr. James J. McGuire 28 W. State St. Trenton

NEW MEXICO Santa Fe Oct. 12-13 Sec. Dr. Le Grand Ward Santa Fe

NEW YORK Albany Buffalo New York and Syracuse Sept. 21-24 Chief Professional Examinations Bureau Mr. Herbert J. Hamilton 315 Education Bldg. Albany

NORTH CAROLINA *Endorsement* Raleigh Nov. 30 Sec. Dr. Ben J. Lawrence 503 Professional Bldg. Raleigh

NORTH DAKOTA Grand Forks Jan. 5-8 Sec. Dr. G. M. Williamson 4½ S. 3rd St. Grand Forks

OKLAHOMA Oklahoma City Dec. 9 Sec. Dr. James D. Osborn Jr. Frederick.

OREGON *Basic Science* Portland Nov. 21 Sec. Mr. Charles D. Byrne, University of Oregon Eugene. *Medical* Portland Jan. 5-7 Sec. Dr. Joseph F. Wood 509 Selling Bldg. Portland

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SOUTH DAKOTA Pierre Jan. 19-20 Dir., Division of Medical Licensure Dr. Paul B. Jenkins Pierre

VERMONT Burlington Feb. 10-12 Sec. Board of Medical Registration, Dr. W. Scott Nav Underhill

VIRGINIA Richmond Dec. 9-13 Sec. Dr. J. W. Preston 28½ Franklin Road Roanoke.

WISCONSIN *Reciprocity* Madison Sept. 8-9 Sec. Dr. Cornelius H. Cremer Cashton. *Basic Science* Madison Sept. 26 Sec. Prof. Robert A. Baner 3414 W. Wisconsin Ave. Milwaukee

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II* Sept. 14-16 Ex. Sec., Mr. Everett S. Elwood 225 S. 15th St. Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Philadelphia, June. Sec., Dr. C. Guy Lane 416 Marlboro St. Boston

AMERICAN BOARD OF INTERNAL MEDICINE. *Written examination* will be held simultaneously in different centers of the United States and Canada in December. *Practical or clinical examination* will be given in St. Louis in April. Chairman Dr. Walter L. Biering 406 Sixth Ave., Des Moines

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY. *Written examination and review of case histories of Group B candidates* will be held in various cities in the United States and Canada, Nov. 7. *Applications must be filed at least sixty days prior to the examination* Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY New York Sept. 26 Sec., Dr. John Green 3720 Washington Blvd. St. Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan. 9 Sec. Dr. Fremont A. Chandler, 180 N. Michigan Ave. Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York Sept. 25-26 Sec. Dr. W. P. Wherry 1500 Medical Arts Bldg. Omaha

AMERICAN BOARD OF PEDIATRICS San Francisco Oct. 22-24 Baltimore and Cincinnati in November Sec. Dr. C. A. Aldrich 723 Elm St., Winnetka Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York, Dec. 29-30. Application must be sent to the Secretary before Oct. 30. Sec., Dr. Walter Freeman 1028 Connecticut Ave. Washington D. C.

AMERICAN BOARD OF RADIOLOGY Cleveland Sept. 25-27 Sec. Dr. Byrl R. Kirkin Mayo Clinic Rochester Minn.

AMERICAN BOARD OF UROLOGY Chicago Dec. 4-6 Sec. Dr. Gilbert J. Thomas 1009 Nicollet Ave. Minneapolis

Kentucky Reciprocity and Endorsement Report

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports 18 physicians licensed by reciprocity and 3 physicians licensed by endorsement from Jan. 16 through July 10, 1936. The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|-------------------------|------------|------------------|
| College of Medical Evangelists | (1925) | California | |
| Howard University College of Medicine | (1925) | Missouri | |
| Tulane University of Louisiana School of Medicine (1935) Tennessee | (1914) | Alabama | |
| Johns Hopkins University School of Medicine | (1923) | Michigan | |
| Eclectic Medical College, Cincinnati | (1935) | Ohio | |
| University of Cincinnati College of Medicine (1933) (1935) 2) (1936) Ohio | (1931) | | |
| University of Pennsylvania School of Medicine | (1933) | Louisiana | |
| Univ. of Tennessee College of Med. (1931) (1932) | (1935) 2) | Tennessee | |
| Vanderbilt University School of Medicine | (1935) | Tennessee | |
| University of Virginia Department of Medicine | (1930) | Virginia | |

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|-------------------------|------------|----------------|
| Yale University School of Medicine | (1934) N | B M Ex | |
| University of Louisville School of Medicine | (1933) N | B M Ex | |
| Duke University School of Medicine | (1932) N | B M Ex | |

Kansas June Report

Dr. C. H. Ewing, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held in Topeka, June 16-17, 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Ninety candidates were examined, all of whom passed. Seventeen physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented

| School | PASSED | Year Grad. | Per Cent |
|---|--------|------------|----------|
| Georgetown University School of Medicine | (1933) | 86.6 | |
| Howard University College of Medicine | (1935) | 84.3 | |
| Northwestern University Medical School (1935) 88.6 21.4 (1936) 86.8 | (1933) | 88.2 | |
| Rush Medical | (1935) | 90.7 | |
| University of Ill. | (1936) | 90.9 | |
| University of Ill. | (1936) | 81.5 | |
| 83.8 84.1 8 | 2 | | |
| 86.5 86.6 86 | 4 | | |
| 87.4 87.7 8 | 1 | | |
| 88.1 88.2 8 | 6 | | |
| 88.7 88.8 8 | 3 | | |
| 89.4 89.5 89.6 89.7 89.9 90 90.1 90.2 90.2 | | | |
| 90.3 90.5 90.7 91.4 91.7 92.1 92.4 92.6 92.7 93 | | | |
| 93.5 | | | |
| Harvard University A School | (1933) | 88 | |
| Washington University | (1936) | 93 | |
| Creighton University | (1936) | 86.6 | |
| 87.1 87.1 87.5 89.4 89.5 90.3 | | | |
| University of Pennsylvania School of Medicine | (1935) | 87.6 | |
| 90.1 (1936) 92 | | | |
| Baylor University College of Medicine | (1936) | 90 | |

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|-------------------------|------------|------------------|
| University of Arkansas School of Medicine | (1932) | Arkansas | |
| Loyola University School of Medicine | (1928) | Illinois | |
| Northwestern University Medical School | (1929) | Illinois | |
| Rush Medical College | (1931) | Michigan | |
| University of Illinois College of Medicine | (1931) | Illinois | |
| State University of Iowa College of Medicine | (1933) | Iowa | |
| St. Louis University School of Medicine | (1933) | Missouri | |
| University Medical College of Kansas City | (1913) | Missouri | |
| Washington University School of Medicine (1933) 2) Missouri | (1924) | Missouri | |
| Creighton University School of Medicine | (1934) | Nebraska | |
| Ohio State University College of Medicine | (1935) | Ohio | |
| Western Reserve Univ. School of Medicine (1932) | (1933) | Ohio | |
| University of Oklahoma School of Medicine | (1934) | Oklahoma | |

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|--|-------------------------|------------|----------------|
| Washington University School of Medicine | (1933) N | B M Ex | |

Book Notices

Neurological Surgery By Loyal Davis M.S. M.D. Ph.D. Professor of Surgery and Chairman of the Division of Surgery Northwestern University Medical School Chicago. Cloth Price \$6. Pp 429 with 174 illustrations Philadelphia Lea & Febiger 1936

This book is addressed to the general practitioner in order to put him abreast of the modern development of neurologic surgery. The first chapter is therefore interesting as a statement of the amount of knowledge, in the opinion of the author, which will enable one "to group the important signs and symptoms and accurately localize a lesion." One may have this knowledge and much more and still be unable to localize many lesions of the nervous system. Nevertheless the information given is in the main accurate, although many statements are too dogmatic and need qualifying, such as that "atrophy of the muscles does not occur when the limbs are stiff and spastic." The statement that lesions of the ninth cranial nerve cause dysphagia, particularly of solid food, and regurgitation of liquids is not correct, there is no defect of swallowing following complete transection of the glossopharyngeal nerve. The discussion of the cerebellum is inadequate. The author's attitude toward craniocerebral injuries is in accord with the judgment of qualified surgeons but there will be vigorous dissenters. One might expect, in a book designed primarily for nonsurgeons, more specific directions in many places, e.g., the physician is instructed to use less depressant drugs than morphine, but no substitute is named. Much of the discussion of intracranial tumors sounds strangely familiar, even to entire sentences but curiously enough, in contrast to the others this is the only chapter that has no reference to any fundamental article or monograph in its field. Figure 23 does not show well the gross appearance of glioblastoma or figure 24 its microscopic structure. Most neurologic surgeons have tired of futile radical operations on glioblastomas. The author's curt dismissal of roentgen therapy for hypophyseal adenomas will find many dissenters. The statement that "these glandular changes (following operations on a pituitary adenoma) will not interfere with his or her return to an economic and social independence" is unfortunately not always true. Figure 65 looks more like the gliosis surrounding a craniopharyngioma than the tumor itself. The calcification associated with the venous angiomas of epileptic patients having facial nevi has been shown to be in the adjacent gyri and not in the abnormal blood vessels. The treatment of brain abscess is still a subject of much discussion, as the author justly remarks, probably few neurologic surgeons would subscribe to the present method of the author as described on page 171 which must injure seriously the very capsule which the brain has been at so much pains to build up. The discussion of the signs of intracranial extension of an infection might well have been amplified, since this is the important moment for the physician in charge and a valuable guide to the further handling of the case. The treatment of osteomyelitis, cysts and tumors of the skull, while not properly neurologic surgery, tends more and more to gravitate into the hands of neurologic surgeons because of the neurologic complications. Trigeminal neuralgia is discussed with the thoroughness it deserves, its treatment being one of the great triumphs of neurologic surgery. Glossopharyngeal neuralgia is for some reason not discussed in the section on lesions of the last four cranial nerves but is briefly mentioned in the differential diagnosis of trigeminal neuralgia. In the treatment of injuries to the spinal cord the author might well have discussed at some length the relatively safe, simple and effective method of treating fracture-dislocation of the cervical vertebrae by means of suspension with tongs. Most neurologists and neurologic surgeons do not share the author's views of the dangers of using iodized oil for the localization of spinal cord tumors whenever it may be necessary. The value of x-ray evidence of the localization of intraspinal tumors is not sufficiently emphasized. The advice given for the handling of injuries of the peripheral nerves is excellent. The author has obviously profited by his long association with Pollock. He has long been interested in the surgical relief of pain, his investigations in this field are well summarized. The discussion of surgery of the autonomic nervous system is very conservative just as on the whole yet the excellent results of autonomic denervation of the lower extremities in Raynaud's disease might have been

emphasized as were those obtained in megacolon. The author has a healthy skepticism also for the surgical treatment of epilepsy. The so-called cerebellar fits are not epileptic manifestations. Cervical rib, syringomyelia and aneurysm are briefly discussed. After rather pessimistic accounts of hydrocephalus and spina bifida the book ends with a discussion of the problem of chronic arachnoiditis. It is written in a clear and understandable style. One notes the strange expression "physical therapy treatments," which with "radium therapy treatments" and "x-ray therapy treatments" seems to be establishing itself in the medical vocabulary. The author has been somewhat careless in recognizing the source of illustrations, figure 48 is obviously from Cushing. There are very few typographical errors, the typesetter has had some trouble with the word "chromophile" though why it should trouble him more than "chromophobe" is not evident. On the whole the book is well printed, well arranged and well adapted to its purposes. It contains a sane and conservative discussion of the field of neurologic surgery, and the physician who follows its advice will not go far astray.

L'Impuissance sexuelle chez l'homme. Etiologie diagnostique traitement Par M. Palazzoli. Préface du Professeur Legueu. Paper Price 45 francs. Pp 284. Paris. Masson & Co 1935

This is a careful and scientific report of a lifetime spent in studying the physiology and pathology of the male sex function from the libido and mechanical points of view. The author discusses thoroughly the innervation of the male sex organs and shows what nerve centers influence the male sexual function. He shows that erection depends on a cerebral or psychogenic stimulus as well as a local or dermovenous stimulus, the correction being made by the pyramidal tracts to a lumbar center, from which a sacral reflex completes the circuit. A nerve lesion involving any of these structures may produce clinical impotence. Excellent diagrams illustrating the nerve pathways are shown. The act of coitus is discussed under the following nine headings: (1) sexual desire, (2) glandular secretions, (3) erection reflex, psycho, sensory, (4) intromission, (5) erection local stimulus, (6) pleasurable, voluptuous sensations, (7) orgasm, (8) ejaculation, (9) depletion. These headings should be in mind when taking a patient's history, and the exact point of failure determined, also how and when did his inability appear, and has this inability remained constant or become worse? Answers to these questions will give the physician a lead as to the exact special examinations that should be ordered. Diagnosis is discussed under four heads: general bodily state, organic examination as to nervous endocrine glands, venereal infections, general or local, psychic examinations, special examinations: vegetative system and urologic examination. There is an excellent description of the etiologic local lesions involving the prostate, posterior urethra and verumontanum. Treatment is considered under three titles: (1) general medical, (2) local treatment: testicle grafts, vas ligation and urethral local, (3) psychic treatment. These are all considered in minute detail. This work may be unreservedly recommended as a sane, scientific discussion of the subject.

Foundations of Biology By Lorande Loss Woodruff. Professor of Protozoology in Yale University. Fifth edition. Cloth Price \$3.50. Pp 583 with 378 illustrations. New York: Macmillan Company 1936

This standard textbook has been extensively revised by the author to include significant work of the last five years, especially in the field of genetics. The illustrative subjects, with the exception of such figures as 103, 104 and 120, which are excessively schematic, are artistically and truthfully executed. They are so well chosen that by extensive reference in the text they become the common link between the various sections of the book. This fact, plus the remarkably lucid introductory and concluding paragraphs of each chapter keeps the enormous number of items considered correlated in an almost perfect unit, and the student is properly oriented at all times. These paragraphs are worthy of the attention of the most seasoned scientists.

The material presented is sufficiently comprehensive to give the general student a background for understanding himself and his place in the great panorama of living organisms. A brief orientation chapter on the scope of biology is followed by the development of the cell concept (plant and animal),

then the multicellular organisms with increasing complex functional systems, considered largely under the headings of plant and animal bodies (structure), nutrition, respiration, circulation, excretion, reproduction and coordination (nervous system). This takes up one third of the text. The topics of origin and continuity of life, embryology, inheritance, adaptation and origin of species occupy almost another third. The chapters dealing with applied and historical biology are nicely tied into the general theme, but it is in the two chapters dealing with a review of the plant and animal kingdoms that the author reaches the climax of his coordinating ability. Here the student seems to be getting a concentrated course in morphology and comparative zoology, but in reality he is presented with additional material and opportunity, coordinated by cross references, for extensive application of the principles previously acquired. The various theories and hypotheses are not presented with a bias but sympathetically and stimulatingly, so that the student should appreciate the fact that the final story has not yet been told. The bibliography given for each chapter is apparently chosen to give the various points of view on the different topics and to stimulate the capable student to go further afield in his special interests. There is a fine glossary and index. The student who masters the material set forth in this textbook should know how to observe, correlate and think, and thus will be well prepared in biology for medical schools.

Le décollement de la rétine et son traitement. Par F. Terrien professeur de clinique ophtalmologique à la Faculté de médecine de Paris. Prosper Veil ophtalmologiste des hôpitaux de Paris et M. A. Dollfus. Paper. Price 40 francs. Pp 163 with 49 illustrations. Paris: Masson & Cie 1936.

Based on five years' experience in the eye clinic of the Hotel-Dieu, these authors are publishing their impressions of surgery of retinal detachment with the hopes that the more hesitant of their confrères will see fit to operate on this condition early. They have observed more than 200 cases and have used all types of modern operations. In consequence they are in a position to evaluate the various types of surgical procedures in relation to the various types of retinal detachment, taking into consideration the multiple factors of time of duration, etiology, refraction and presence of holes. Their end results agree in the main with those of other large clinics, namely, a reattachment can be secured in from 55 to 70 per cent of the cases, depending on the care in selection of cases for operation. The book is divided into ten chapters, the first five of which deal with the clinical study, etiology and anatomy of detachment. Then comes a long chapter devoted to the various types of modern surgical procedures, written in sufficient detail and well illustrated in black and white. The historical aspect of this is particularly well done. Four chapters are devoted to after-care, pathology and medical treatment. The book has four good colored plates, illustrating various types of holes in the retina. There is no bibliography or index and the literary references are few and far between. The work of the American investigators is absolutely ignored, Clifford Walker is not even mentioned. The book making is the typical French paper-covered affair that falls to pieces during the first reading. The volume is of interest but does not mark any milestone in the rapidly advancing road that will lead to the solution of the problem of retinal detachment.

A Study of Mortality in Cincinnati for the Period 1929-1931. Paper. Price \$1. Pp 187 plus charts. Cincinnati: Public Health Federation 1935.

This volume reproduced in mimeograph and planograph is a comprehensive study of mortality in Cincinnati typifying the way in which mortality ought to be studied everywhere. It is only by delving into the details of a death rate that an intelligent conception can be had of what its most important components consist. In Cincinnati, a city which has always been notable in public health circles for the relatively small part played by the city health department and therefore the correspondingly great importance of voluntary agencies the principal causes of high mortality are found to be appendicitis, enteritis, whooping cough, scarlet fever, automobile accidents and tuberculosis while favorable conditions are manifest in death rates due to diphtheria, influenza, cancer, heart disease, pneumonias,

nephritis, suicide and diabetes. The report brings out the close relationship between low income, poor housing and consequent underprivileged status. With respect to recommendations, the most significant are those calling for reorganization and expansion of public health facilities on a county-wide basis "in order that all forces may be most effectively joined." Especial attention is recommended to families of low income and to the Negro population. Of practically equal significance is the recommendation that preventive and curative health work of tax supported agencies "should be under central direction and should function in close cooperation with the academy of medicine, the college of medicine and other health and social agencies." The report is significant for two reasons: first, it is a dispassionate, thorough and scholarly evaluation of the situation as it exists; second, it is symptomatic of the trend toward cooperation between medical and public health agencies. In this trend many observers see the only logical direction in which preventive and curative medicine can march side by side.

Survey and Appraisal of the Health Activities and Needs of Louisville, Kentucky, November 1935. By Carl E. Buck, Dr. P. H. Field, Director, American Public Health Association. Awarded to the City of Louisville in connection with the 1935 City Health Conservation Contest. Paper. Pp 47. Louisville: Health Council 1935.

This report is another community appraisal, of which there have been many in the last ten years. This particular survey was an award incident to the Interchamber Health Conservation Contest sponsored by the American Public Health Association and the United States Chamber of Commerce. It sets forth the status of public health work in the city of Louisville and makes certain recommendations, of which the most significant is "The Louisville City Health Department must be taken out of politics and kept out of politics." An analysis of the points in the scoring schedule show that Louisville's health program is rated at 737 out of a possible 1,000. This is purely a quantitative measurement and must be accepted with all the reservations which that statement implies. Of particular interest to the medical profession in this connection is that of these points only seven, or 0.9 per cent, were credited to the activities of practicing physicians in Louisville. This would indicate an opportunity for the medical profession to become far more active in preventive medicine. Such an opportunity for greater participation in public health work on the part of the medical profession exists not only in Louisville but everywhere. Community surveys of this character, if they lead to better community cooperation, reflect a significant trend.

The Natural History of Disease. By John A. Ryle, M.A., M.D., F.R.C.P., Regius Professor of Physic in the University of Cambridge. Cloth. Price \$5.25. Pp 438. New York & London: Oxford University Press 1936.

This volume is made up of a collection of thirty-four papers, the majority of which, as the author tells us, have appeared previously in medical journals of the past ten years and are based on addresses to medical societies or clinical lectures given at Guy's Hospital. They are concerned more particularly with symptomatology and the portraiture of disease than with pathologic changes or diagnosis by means of laboratory or instrumental aids. The theme of the book is stated on page 22.

There is no disease of which a fuller or additional description does not remain to be written, there is no symptom as yet adequately explored. It will be noted that this is much the same idea that was so strenuously set forth by Mackenzie, that research ought not to be entrusted entirely to the laboratory worker or the full time hospital man, that the active practitioner has a rich field for investigation in the home and in the ward. In fact this is the text of one of Ryle's best papers, in which he discusses research in clinical medicine taking issue with some of the views that were so forcibly advocated by Sir Thomas Lewis in 1930. The author is somewhat given to philosophizing. At the end of a paper on the natural history of duodenal ulcer he says "It is, I believe, a just criticism of Surgery and Medicine in the present era that they have concentrated on parts to the exclusion of the whole and on technique to the exclusion of philosophy. In duodenal ulcer no less than in many other maladies, we have come to rely upon too narrow a pathology. In our therapeutic quest we have been too little observant of physiological principle. We are

all compelled by the magnitude of our subject to be something of specialists, but this should not necessitate an abandonment of that naturalistic outlook which marked the achievement of our old preceptors from Hippocrates to Hunter." A few subjects selected at random may show the scope of the book: the study of symptoms, anorexia, on examining the rectum, the natural history, prognosis and treatment of staphylococcal fever, of streptococcal fever, of infections with *Bacillus coli*, of angina pectoris and allied seizures, thrombophlebitis migrans. While the author does not write in the attractive style of some other occupants of the royal chairs of medicine in Cambridge and Oxford—the memory of Allbutt and Osler is yet green—the essays based on ample experience, careful observation and, in general, sound reasoning are presented in such a form as to make them pleasant and profitable reading for the occasional hour.

L'artériographie des membres et de l'aorte abdominale. Etude critique
Par Henri Reboul. Préface de Ch. Laubry. Paper. Price 40 francs.
Pp 187 with 82 illustrations. Paris: Masson & Cie 1935.

This is a concise but critical review of the development and status of arteriography. After a historical relation of the development of the method in the first chapter the author considers in successive chapters the contrast substances, the mechanical factors involved in intra arterial injection of the contrast medium, the vasomotor reactions, the incidents and accidents occurring in his own work, the results and the author's therapeutic deductions. The rest of the book is made up of case histories and arteriogram films to illustrate various phases of arteriography and its clinical value. An essentially complete bibliography is included. The book is well printed and the illustrations are excellent, but most to be admired are the lucidity of presentation and the sanity with which the subject is discussed. For the first time the dangers of injecting preparations of thorium as a contrast medium has been accurately presented. This book should interest all those who are interested in arteriography and in vascular pathology.

Post Graduate Surgery. Edited by Rodney Maingot, F.R.C.S. Senior Surgeon to the Royal Waterloo Hospital. With an introduction by The Right Hon. Lord Moynihan of Leeds, K.C.M.G., C.B., M.S. Volume I. Leather. Price \$45 per set of 3 volumes. Pp 1742 with 846 illustrations. New York: D. Appleton Century Company, Inc. 1936.

This is the first volume of a system which promises to be a valuable contribution to surgery. Anesthesia is concisely discussed and the importance of some of the newer anesthetic agents emphasized. In the chapter on the treatment of shock, one gets the impression that blood transfusion is not given the emphasis which it receives in this country. Most of the volume deals with the surgery of the abdomen. Diagnostic measures and medical management are well dealt with in special chapters. The operative technique of the various authors is well presented. A criticism might be that too many obsolete operations are reviewed. The chapter on the colon and rectum are particularly to be commended, especially that dealing with carcinoma of the rectum. The book is extensively illustrated and there is an extensive chapter dealing with the technique of radium treatment.

25 Jahre Kaiser Wilhelm Gesellschaft zur Förderung der Wissenschaften. Band II. Die Naturwissenschaften. Redigiert von Max Hartmann. Cloth. Price 28.00 marks. Pp 433. Berlin: Julius Springer 1936.

This is the second of a series of three volumes published by Max Planck, president of the Kaiser Wilhelm Society for the Advancement of Science, on the occasion of its twenty-fifth anniversary. The volume is devoted to the natural sciences. It gives a survey of the progress in scientific research as far as the contributions of the various branches of the Kaiser Wilhelm Society are concerned. Only the second part of the volume is of a strictly medical interest, for it surveys the contributions of the institutes for biology and cellular physiology, for experimental therapy, for biochemistry, for microbiology, for medical research for the physiology of work, for research on the brain, for psychiatry and for physiologic research. The introductory paper on the philosophy of the natural sciences, by Dr. Max Hartmann, is likewise of considerable interest. Under the heading "philosophy of physics" he discusses such problems as space and time (the theory of relativity), causality,

particularly in its relation to the quantum theory of Planck, and the nature of matter. Under the title "philosophy of biology" he discusses first causality and teleology and then vitalism, particularly the neovitalism of Hans Driesch, which emphasizes the autonomism of living organisms in contradistinction to the mechanistic interpretation of organic life which prevailed in the second half of last century.

Infant Nutrition. A Textbook of Infant Feeding for Students and Practitioners of Medicine. By Williams McKim Merriott, B.S., M.D. Professor of Pediatrics, Washington University School of Medicine, St. Louis. Second edition. Cloth. Price \$4.50. Pp 431 with 27 illustrations. St. Louis: C. V. Mosby Company 1935.

The first edition of this book appeared about five years ago and was favorably received by both students and practitioners of medicine. The material presented was of special interest because of the author's reputation as a pediatrician and to a greater extent because of his contributions to this particular branch of pediatrics. This new edition should prove equally satisfactory to those interested in the latest concepts of the much discussed subject of infant nutrition. The chapter on vitamins, which was entirely adequate five years ago, has required extensive revision. The new chapter on allergy is not as well developed as most of the other chapters, but there is careful discussion of the various preparations and procedures for feeding the allergic infant. The author writes tersely without affecting the continuity, and the subject matter is well grouped and meticulously indexed. This edition has been made briefer than the preceding one by avoiding repetition and omitting some of the extraneous material. It should prove useful to the physician confronted with the everyday problems of infant nutrition and serve as a standard for the evaluation of the various newer methods of feeding infants.

La radiographie en ophtalmologie. Atlas clinique. Par Edward Hartmann, ophtalmologiste des hôpitaux de Paris. Rapport présenté à la Société française d'ophtalmologie (le 12 Mai 1936). Cloth. Pp 272 with 391 illustrations. Paris: Masson & Cie 1936.

This is one of the publications sponsored by the French Society of Ophthalmology, of which, so far, eight have appeared. It is a fine piece of work, dedicated to the memory of Victor Morax. The book deals with the application of radiography in ophthalmology and really belongs more in the library of the radiographer than in the library of the ophthalmologist. The various chapters take up in order (1) positions for photography, (2) radiography in disorders of the eyeball, with particular emphasis on localization of intra-ocular foreign bodies, (3) radiography in disorders of the orbit, (4) radiography of the optic canal, (5) radiography of the lacrimal passages, (6) radiography of the nasal accessory sinuses, (7) dental radiography (very skimpy), (8) radiography in disorders of the petrous apex, (9) radiography of intracranial tumors, (10) radiography in different diseases of the bones of the cranium and face, (11) radiography in anatomic and physiologic research, 12 and 13 are two short purely technical chapters. A complete bibliography precedes the final table of contents. Naturally, such a book must be illustrated extensively, particularly with reproductions of roentgenograms, the majority of which are well done. Undoubtedly many have been retouched for the sake of clearness, which is perfectly justifiable in an atlas. Photographs illustrating the various positions for radiography are numerous and well taken as are the illustrations of the different types of apparatus. The book making is good and the whole project is creditable.

Clínica quirúrgica. Por Pablo L. Mirizzi, profesor titular de clínica quirúrgica de la Facultad de medicina de Córdoba. Tomo IV. Paper. Pp 425 with illustrations. Córdoba: Librería "El Alcega" 1934.

With the publication of the fourth volume of "Clinical Surgery," Mirizzi completes the work which he has dedicated to Prof. Pedro Vella, his teacher. The first chapter is devoted to the discussion of shock. In the treatment of traumatic shock, Mirizzi recommends that hemorrhages be stopped and that the patient be kept warm and given repeated small doses of morphine. Adequate preoperative management is helpful in the prevention of surgical shock. The selection of an anesthetic is important. Mirizzi states that the administration of epinephrine and blood transfusion is the preferred treatment for surgical shock. Many pathologic processes of organs in

the peritoneal cavity which require surgical intervention are considered. The ordinary surgical conditions are presented as separate chapters, and each chapter has an appended bibliography. This book, together with the first three volumes, may be used profitably by the surgeon as well as the general practitioner. The paper is of good quality and the illustrations are commendable.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Change in Statute of Limitations Not Retroactive—This case came before the Supreme Judicial Court of Maine on an agreed statement of facts. The defendant, a physician, performed a hemorrhoidectomy on the plaintiff, Nov. 18, 1929, and rendered the necessary postoperative care until the following January. It was agreed that the acts and omissions of alleged malpractice occurred between the dates named. Approximately five and one-half years thereafter the plaintiff sued the defendant for malpractice. The statute of limitations in force when the malpractice was alleged to have occurred barred the maintenance of actions for malpractice if not commenced within six years after the cause of action accrued. On March 20, 1931 however, by amendment to the existing law, the time allowed for the commencement of actions for malpractice was reduced from six to two years. The defendant contended that the two year limitation should apply to the present case.

The legislature has full power and authority, said the Supreme Judicial Court, to regulate and change the form of remedies in actions if no vested rights are impaired or personal liabilities created. There is no constitutional inhibition against the enactment of retroactive legislation which affects remedies only. Statutes of limitation fall within this rule. They are laws of process, and, where they do not extinguish the right itself, are deemed to operate only on the remedy. It does not follow, however, that, because the legislature possessed the power to enact a retroactive statute of limitations, it did so in the passage of the amendment under consideration. The language of that amendment makes no reference to causes of action which had already accrued. Barren of such reference the limitation cannot be deemed to have been intended to be retroactive, under the rule of statutory construction that all statutes will be considered to have a prospective operation only unless the legislative intent to the contrary is clearly expressed or necessarily implied from the language used. The court therefore held that the six year statute of limitations was applicable and remanded the case to the superior court for trial.—*Miller v Fallon (Maine)*, 183 A 416

Malpractice Action Based on Tort, Not Contract—The plaintiff was an employee of the Atchison, Topeka & Santa Fe Railroad Company and for a number of years had been a member of the hospital association operated by the railroad company. By virtue of this membership he was entitled to surgical treatment at the association hospital. The defendant, a physician was a member of the hospital association's staff. The plaintiff, suffering from a hernia was operated on by the defendant at the association hospital Oct 23 1930. Alleging that by reason of the defendant's failure to perform the operation in a manner in accordance with the custom and practice of good and prudent surgery, his health was permanently injured the plaintiff sued the defendant April 28 1933. The defendant demurred to the petition on the ground that the cause of action was barred by the two year statute of limitations. The trial court sustained the demurrer and the plaintiff appealed to the Supreme Court of Kansas contending apparently that the statute of limitations applicable to actions based on contracts should control in the present case.

The petition alleged that the defendant orally agreed to perform the operation in accordance with the practice of good and prudent surgery. It will be observed said the Supreme Court that the plaintiff as a member of the railroad company

hospital association was entitled to treatment at the hospital without any new, express or independent contract with anybody. He was invalided to the hospital and there consulted the defendant, a member of the hospital staff. The petition, observed the court, does not allege that the plaintiff paid or agreed to pay the defendant anything for his services. The dues which he had already paid to the hospital association secured to him the defendant's services as a member of the hospital staff. The contract which the plaintiff says he made with the defendant was a contract to perform an operation according to good surgical practice, a method which the defendant, as a surgeon, was obliged to follow in any event, without any contract. The damages which the plaintiff suffered by reason of the operation the court said, were characteristically such as flow from malpractice and notwithstanding the form given to the petition, the gravamen of the action was malpractice, which is a tort. The action was therefore barred by the two year statute of limitations. The judgment of the district court, sustaining the demurrer to the petition, was affirmed.—*Trans v Bischoff (Kan)*, 54 P (2d) 955

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine Boston Oct 20-22 Dr Franklin P Lowry 313 Washington St. Newton Mass. Secretary
American Academy of Ophthalmology and Otolaryngology New York, Sept. 26-Oct 3 Dr William P Wherry 107 South 17th St. Omaha Executive Secretary
American Association for the Study of Neoplastic Diseases Washington D C. Sept. 17-18 Dr Eugene R Whitmore 2139 Wyoming Ave. N W Washington D C Secretary
American Association of Industrial Physicians and Surgeons Atlantic City N J Oct 5-6 Dr Volney S Cheney Armour and Co Union Stock Yards Chicago Secretary
American Association of Obstetricians Gynecologists and Abdominal Surgeons Bretton Woods, N H Sept 14-16 Dr James R. Bloss 418 Eleventh St. Huntington W Va. Secretary
American Clinical and Climatological Association Richmond Va. Oct. 19-21 Dr Francis M Rackemann 263 Beacon St. Boston Secretary
American College of Surgeons Philadelphia Oct 19-23 Dr George W Crile 40 East Erie St. Chicago Chairman Board of Regents
American Congress of Physical Therapy New York Sept 7-11 Dr Nathan H Palmer 921 Canal Street New Orleans Secretary
American Hospital Association Cleveland Sept. 28 Oct 2 Dr Bert W Caldwell 18 East Division St. Chicago Executive Secretary
American Public Health Association New Orleans Oct. 20-23 Dr Reginald M Atwater 50 West 50th St. New York Executive Secretary
American Roentgen Ray Society Cleveland Sept 29 Oct 2 Dr Eugene P Pendergrass 3400 Spruce St. Philadelphia Secretary
Associated Anesthetists of the United States and Canada Philadelphia Oct 19-23 Dr F H McMechan 318 Hotel Westlake Rocky River Ohio Secretary
Association of American Medical Colleges Atlanta Ga. Oct 26-28. Dr Fred C Zapffe 5 South Wabash Ave. Chicago Secretary
Association of Military Surgeons of the United States Detroit Oct 29-31 Dr H L Gilchrist Army Medical Museum Washington D C Secretary
Central Association of Obstetricians and Gynecologists Detroit Oct 15-17 Dr Ralph A Reis 104 South Michigan Blvd Chicago Secretary
Colorado State Medical Society Glenwood Springs Sept. 9-12 Mr Harvey T Sethman 1612 Tremont Place Denver Executive Secretary
Delaware Medical Society of Rehoboth Oct 12-14 Dr William H Speer 917 Washington St. Wilmington Secretary
Indiana State Medical Association South Bend Oct 6-8 Mr Thomas A Hendricks 23 East Ohio St. Indianapolis Executive Secretary
Inler State Postgraduate Medical Association of North America St. Paul Oct 12-16 Dr W B Peck 27 East Stephenson St., Freeport Ill., Managing Director
Kansas City Southwest Clinical Society Kansas City Mo., Oct 5-8 Dr J V Bell 1103 Grand Ave. Kansas City Mo. Secretary
Kentucky State Medical Association Paducah Oct 5-8 Dr Arthur T McCormack 532 W Main St. Louisville Secretary
Michigan State Medical Society Detroit, Sept 21-24 Dr C T Eklund 35 West Huron St. Pontiac Secretary
Mississippi Valley Medical Society Burlington Iowa Sept. 30 Oct 2 Dr Harold Swanberg 510 Maine St. Quincy Ill. Secretary
Nevada State Medical Association Reno Sept 25-26 Dr Horace J Brown 20 North Virginia St. Reno Secretary
Ohio State Medical Association Cleveland Oct 7-9 Mr C. S. Nelson 79 East State St. Columbus Executive Secretary
Omaha Mid West Clinical Society, Omaha Oct 26-30 Dr J D McCarthy 107 South 17th St. Omaha Secretary
Oregon State Medical Society, The Dalles Oct 8-10 Dr Morris L Bridgeman 1020 S W Taylor St., Portland, Secretary
Pennsylvania Medical Society of the State of Pittsburgh Oct 5-8 Dr Walter F Donaldson 500 Penn Ave. Pittsburgh Secretary
Texas Medical Society of Texas Louisiana and Arkansas Longview Texas Oct 26-27 Dr John M Ellis Mt Pleasant Texas Secretary
Virginia Medical Society of Staunton Oct 13-15 Miss Agnes V Edwards 1200 East Clay St. Richmond, Secretary
Wisconsin State Medical Society of Madison Sept 8-11 Mr J G Crownhart 119 East Washington Avenue Madison Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

5: 405-440 (June) 1936

Appendicitis in Infancy and the Younger Group of Children. E. W. Peterson. New York.—p. 405.

Ocular Tuberculosis. E. C. Ellett. Memphis. Tenn.—p. 410.

*Use of Cardiac Stimulants in Acute Infectious Diseases. G. R. Smith. Ozark.—p. 415.

Enuresis in Children. Its Cause and Treatment. J. W. Bogges Jr. Guntersville.—p. 417.

Cardiac Stimulants in Infectious Diseases.—Smith points out that physiologists claim that the cause of death in infectious processes is a condition, akin to shock, in which there is great capillary dilatation with stagnation of the blood in the dilated vessels. This dilatation is produced by the liberation of certain histamine-like substances in the blood stream by the bacteria themselves. If the pathologic changes found in the majority of these cases do not warrant the assumption of an antemortem diagnosis of myocardial degeneration, cardiac stimulants must have been misused in trying to stimulate a heart that did not require stimulating. Recently the pendulum has been swinging toward smaller doses in acute infectious diseases rather than the rapid digitalization method. Whether this is more beneficial or merely less harmful than the larger doses is an interesting question. If there is no evidence of actual myocardial damage and no preexisting heart disease, digitalis is certainly not indicated and may be decidedly harmful if given. The use of cardiac stimulants, then, should be supplanted by the more logical procedure of how best to restore the venous return to the heart or what measures to adopt to increase the blood volume. It would seem that the intravenous administration of isotonic fluids or of dextrose would be a simple and ideal procedure. But owing to the increased capillary permeability present in these cases, the fluid is soon lost in the tissues. Not quite so simple but far more efficacious to increase the blood volume and prevent transudation of fluid into the tissues is blood transfusion. Epinephrine is very useful in some cases of sudden collapse. It is a powerful capillary constrictor, but the effect is too transient to make it dependable. Pitressin has the same effect, although it acts directly on the heart muscle and has a more prolonged action than epinephrine. Strychnine has the effect of lessening capillary permeability and increasing the blood volume. It should be given in larger doses than generally recommended and is much safer than digitalis in general use. Oxygen is useful to relieve cyanosis and lowers temperature but is of doubtful value otherwise.

American Journal of Ophthalmology, St. Louis

10: 457-548 (June) 1936

The Formation of a Hole in the Macula. Light Burn from Exposure to Electric Welding. H. V. Wurdemann. Seattle.—p. 457.

Tolerance of Light in Exophthalmic Goiter. E. C. Albers and C. Sheard. Rochester, Minn.—p. 460.

Circinate Retinitis. Report of Case and Review of Literature. A. E. Edgerton, San Francisco.—p. 463.

Iridocorneal Deterioration for Glaucoma. C. Berens. New York.—p. 470.

Micro-Anatomy of the Eye with the Slit Lamp Microscope. I. Comparative Anatomy of Angle of Anterior Chamber in Living and Sectioned Eyes of Mammalia. Part II. M. U. Troncoso and R. Castroviejo. New York.—p. 481.

Chronic Postoperative or Posttraumatic Retinitis (Retinitis Serosa). B. Samuels. New York.—p. 493.

High Esophoria Studied by Eye Movement Photography. Case. B. Clark, Los Angeles.—p. 503.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill

35: 721-866 (June) 1936

*The Middle Lobe of the Right Lung. Its Roentgen Appearance in Health and Disease. A. O. Hampton and D. S. King. Boston.—p. 721.

Synovial Membranes in Various Types of Arthritis. Study by Differential Stains. R. K. Ghormley and A. E. Deacon, Rochester, Minn.—p. 740.

*Fasciography. Preliminary Report. J. R. Carty. New York.—p. 747.

Air Injection of Fascial Spaces. New Method of Soft Tissue Roentgenography. Preliminary Report. C. M. Gratz. New York.—p. 750.

Practical Value of Roentgenography of Epiphyses in Diagnosis of Preadult Endocrine Disorders. D. M. Clark. Santa Barbara, Calif.—p. 752.

Phenomena of Shadow Attenuation and Summation in Roentgenography of Lungs. I. Rappaport, New York.—p. 772.

Roentgenography in Obstetric Diagnosis. J. R. Eisaman. Pittsburgh.—p. 777.

Research on Pneumatization of Nasal Accessory Sinuses and of Mastoid Processes and on Shape and Dimensions of Sella Turcica in Twins. I. G. Dillon and I. B. Gourevitch. Moscow. U. S. S. R.—p. 782.

Effect of Roentgen Irradiation on Experimentally Produced Polycythemia in Rats with Especial Reference to Blood and Bone Marrow. E. de Savitsch, Molly Radford, B. H. Blocksom, S. P. Perry and Nathalie Tupikova. Chicago.—p. 786.

Cerebral Roentgenoscopy as an Aid in Pneumoventriculography and Encephalography. A. J. Bendick and B. H. Balser, New York.—p. 790.

Some Discrepancies and Pitfalls That Occur in Clinical Work as Result of Grading of Tumors. F. W. Kouzelmann. Philadelphia.—p. 795.

Erysipelas. Carcinomatous Resembling Radiodermatitis. G. E. Pfahler with notes on histopathology by E. A. Case. Philadelphia.—p. 804.

Hypertension and Diabetes. Their Treatment by Radiotherapy. J. H. Hutton. Chicago.—p. 813.

Improved High Voltage Roentgen Ray Tube. B. Cassen and K. E. Corrigan, Detroit.—p. 818.

The Middle Lobe of the Right Lung.—Hampton and King pay particular attention to the right lateral view of the chest. They hope that their work may aid in the interpretation of certain shadows seen in the lower portion of the right side of the chest which are now commonly and vaguely termed right perihilar thickening, peribronchial fibrosis, right hilar tuberculosis, pleuropericardial disease, thickened interlobar pleura, pleurisy at the anterior costophrenic angle with interlobar extension, increase in lung markings, diminished radiance, mottled dulness, and, most commonly, interlobar effusion. They give a brief anatomic description of the normal lung and of some of the more common shadows cast by disease in the middle lobe, with shadows simulating encapsulated interlobar empyema emphasize some points in differential diagnosis and discuss some of the more unusual shadows cast by a fibrosed or collapsed middle lobe and the effect of pleural adhesions on the shape of these shadows. In the lateral projections of the chest, consolidation of the lateral aspect of the middle lobe casts a triangular shadow, whereas consolidation of the medial portion may cast a rectangular shadow. Consolidation may also produce convexities of the septums of the middle lobe simulating encapsulated fluid under pressure. The fusiform and "overlapping" shadows commonly attributed to interlobar effusion and shadows heretofore interpreted as interlobar effusion are more commonly due to disease within the middle lobe. Interlobar extensions of pleural fluid and thickening of the interlobar septums are not uncommon, but primary encapsulated interlobar empyema in the region of the middle lobe is thought to be rare. Visualization of normal pulmonary septums is common and thickening of the septums is thought to be due to pleural disease. Shadows simulating thickened interlobar pleura are often cast by disease in the middle lobe. That shadows simulating interlobar disease must occupy the normal position of the septums has been observed. The size, shape and position of a contracted middle lobe is markedly influenced not only by surrounding disease but by pleural adhesions. Although certain suppurative diseases of the middle lobe can be diagnosed accurately by roentgen examination alone, the importance of bronchoscopic and iodized oil examinations before surgical procedures is obvious. The secondary and compensatory changes in the thorax resulting from lobar collapse are of extreme importance in roentgen diagnosis.

Fasciography.—Carty's preliminary experience indicates that air injections with resulting fasciagrams have interesting possibilities in the diagnosis of soft tissue tumors and certain types of inflammation of the muscles. They may have a valuable

application in the diagnosis of nerve pain, particularly when there is a question of involvement of the larger nerves. It is an unequaled method for studying soft tissue anatomy, with particular reference to the living anatomy and the study of the intercommunication of fascial planes. There are two dangers that must be studiously avoided: infection and air embolus. Before starting an injection one should exclude diabetes and not attempt the procedure on asthenic individuals. A differential white blood count is made and a relative or absolute polymorphonucleosis is a contraindication. Any suspicion of a pyogenic infection, local or general, is an absolute contraindication. The patient should be specifically told what has been done. Otherwise a false diagnosis of gas gangrene may be made by others. A 50 cc. Luer syringe with a three way stopcock is used. A 3-inch 19 gage needle is attached to the opposite side of the stopcock, leaving the third way free and at right angles. The needle is introduced parallel with the long axis of the part under investigation at a slight angle with the skin. When introducing the needle, firm pressure is used until the superficial fascia is penetrated. This is indicated by a slight "give." While it is possible to do a fasciogram by injecting the air into the subcutaneous space, the procedure is apt to be quite painful and the diffusion of the air is not so complete. When the superficial fascia has been penetrated, the valve is turned so that there is a connection between the needle and the syringe. The plunger is slowly withdrawn until 50 cc. of air is in the syringe, then the valve is turned to connect with the needle and the injection done slowly. The amount of air that can be injected varies according to the part involved. A roentgenogram is made immediately and the position of the air noted. If it is not uniformly diffused or if it is in the wrong locality, there may be a general distribution by massage and further roentgenograms. It is imperative that a soft tissue technic be used, as the average bone technic may obliterate the finer collection of air. The essential principle of such a technic is a high milliampere second and a low kilovolt (peak) ratio. One usually sees immediately after injection in the normal individual a linear collection of air under the superficial fascia in the general neighborhood of the injection. Following massage and manipulation of the part, this localized collection is dissipated and there is a more general distribution. The whole tendency is for the air to assume a linear form without the formation of pockets. In some cases of myositis it has been noted that this linear distribution has been lost, and the air apparently tends to form localized pockets.

Archives of Dermatology and Syphilology, Chicago

34 1194 (July) 1936

- *Dermatophytosis and Dermatophytids with Particular Reference to Differential Diagnosis of Dyshidrotiform Eruptions of Hands and Feet. F. Wise and J. Wolf. New York.—p. 1.
- II Effect of Variation of Ratios of Dextrose to Peptone on Colonies of Certain Pathogenic Fungi. J. W. Williams. Cambridge Mass.—p. 15.
- Histopathogenesis of Psoriasis and Its Aberrant Lesions. G. M. MacKee. New York and P. D. Foster. Los Angeles.—p. 35.
- *Antisiphilic Treatment. Effect of Rest on Results of Treatment and General Benefit Derived from Therapy. M. E. Obermayer and S. W. Becker. Chicago.—p. 57.
- Lymphogranuloma Inguinale. III. Use of Lymphogranulomatous Mouse Brains for Diagnosis. A. W. Grace and Florence H. Suskind. New York.—p. 65.
- Studies in the Genus Microsporum. II. Biometric Studies. N. F. Conant. Durham N. C.—p. 79.
- LXXXIV Sensitization of Animals to Plant Oils. R. L. Kile. St. Louis.—p. 90.
- Arterial Embolism Following Intramuscular Injection of Bismuth Preparation. A. Grossman. New York.—p. 93.
- Pathogenesis of Cutaneous Complications of Varicose Veins. L. M. Zimmerman. Chicago.—p. 97.
- *Fixed Arsenical Eruption. Sensitivity to Tryparsamide at Sites of Pigmentation Following Dermatitis Due to Silver Arspenamine. D. M. Pillsbury. Philadelphia.—p. 103.
- Experimental Arspenamine Dermatitis. Reaction to Arspenamine in Normal Guinea Pigs and in Guinea Pigs Given Staphylococcus Toxin. F. E. Cormia. Montreal.—p. 107.

Dermatophytosis and Dermatophytids—Wise and Wolf declare that in the United States the majority of vesicular eruptions of the hands in adults exclusive of occupational eczema, dermatitis venenata and eczema of unknown cause are accompanied by fungous infections of the feet. Such eruptions on the hands are usually epidermophytids, monilids or

trichophytids. Owing to the fact that a large proportion of the adult population in this country has or has had fungous infection of the feet, positive reactions to the intradermal and patch tests with trichophytin and oidiomycin are of little significance in their direct bearing on the differential diagnosis of a coincident vesicular eruption on the hands. The significance of focal, local and general reactions following the intradermal injection of extracts of fungi cannot at present be properly appraised with respect to vesicular dermatoses of the hands and feet. The mere fact that a patient has a vesicular eruption on the hands and a coincident eruption on the feet does not indicate that the eruption on the hands is necessarily or presumably an "id" due to dissemination of fungi or their products (or possibly both) from the original focus on the feet. The eruption on the hands may be caused by a number of demonstrable agents other than fungi or it may be evoked by a wholly unknown agent. To differentiate these eruptions, a careful history must be obtained from the patient. The diagnosis of "ids" should not be entertained without strongly corroborative evidence, the most important of which is the demonstration of the causative organism, either microscopically or by culture, from the focus of primary infection of the skin or nails.

Antisiphilic Treatment—Obermayer and Becker try to evaluate the various factors that might be responsible for improvement in the majority of their patients and for lack of improvement in the minority. The general beneficial effect of antisiphilic treatment is caused by the specific effect of anti-siphilic drugs, the nonspecific effect of antisiphilic drugs, the effect of nonspecific treatment and the patient's habits and ways of living. The authors' study was carried out by sending questionnaires to 500 patients chosen at random who were of all ages and in all stages of syphilis and who had been treated for at least one year. Answers were received from about half of this number. It was found that the patient who has had a better regulated life has obtained the best symptomatic improvement. The experiences are in line with the observations of Becker that the results of treatment at the Mayo Clinic, where the patients are hospitalized for one day after the administration of arsphenamine and rest during the remainder of the week, are better than the results obtained in urban practice in which the patients are working and cannot be hospitalized. A physician working in a marine hospital stated that the best therapeutic results he had ever seen were in hospitalized syphilic patients. The ratio between the percentage of patients who gained and the percentage who lost weight is favorable in the patients whose rest was increased during treatment and the normally resting patients, while it reverses sharply in the patients who took no rest. Only 38 per cent of the patients took vacations, but the vacation of the majority of the patients was not spent in relaxation. The data show sufficient beneficial effect of regular and restful living to warrant the statement that the physician who treats syphilis should emphasize to every patient under his care the paramount necessity of rest and relaxation for obtaining the most satisfactory results from antisiphilic treatment. Failure to observe regular hours of rest and to take vacations leads to poorer results from therapy. Life in the large cities has led to overactivity and frustration of the human need for emotional and physical relaxation. Reeducation to a more restful way of living should be part of the task of physicians.

Fixed Arsenical Eruption—Pillsbury gives the following significant observations in his case of fixed arsenical eruption: (1) A fixed macular pigmentation persisted after an exfoliative dermatitis due to silver arspenamine. (2) A livid erythematous urticarial reaction developed gradually and became increasingly severe after successive injections of tryparsamide. (3) Eventually the patient complained of general malaise and drowsiness. (4) Universal sensitivity of the entire skin to arspenamines was evidenced by positive reactions to patch and intradermal tests and (5) there was sensitivity to tryparsamide localized at the sites of the fixed eruption. The reaction to arspenamine was of the eczematous type, superficial and sharply limited to the portion of the skin in direct contact with the allergen. It developed rapidly and started to subside as soon as the patch was removed. The reaction to tryparsamide developed more slowly (in forty-eight hours) and persisted unabated for two days after removal of the patch. It was not superficial and

was distinctly not limited to the site of the contact with tryparsamide, and there was no vesicle formation. It seems entirely possible that the reaction developed as a consequence of absorption of the tryparsamide since the site of shock tissue was principally in the upper portion of the cutis, the superficial portion of the epiderm remaining unaffected by the passage of the drug through it. The reaction of the patient to arsphenamine no doubt belongs to the type of eczematous reactions in which the site of the shock tissue is the epiderm. It seems not improbable that in the original sensitivity to arsphenamine both the epiderm, with its exfoliative dermatitis, and portions of the cutis, with their fixed eruption and pigmentation were the sites of shock tissue and that the gradually developing sensitivity to tryparsamide manifested itself in the portions of the cutis that were previously the shock sites for arsphenamine. The fact that no previously unaffected sites became the seat of the tryparsamide eruption may be another example of the Sanarelli phenomenon as applied to the skin, in which previous sensitization to a heterophile substance leads to reaction at the affected site to a large variety of normally nontoxic substances.

California and Western Medicine, San Francisco

44 457 544 (June) 1936

- Address of the President (Sixty Fifth Annual Session of the California Medical Association) R A Peers Colfax—p 464
A Rural Cancer Clinic, W R Dorr Arlington—p 466
Acute Perforation of Peptic Ulcer Evaluation of Diagnostic Symptoms and Signs, H L Thompson Los Angeles—p 469
The Traumatic State E Butler San Francisco—p 474
Role of the General Practitioner in Present Day Medicine, M B Bonta, Los Angeles—p 477
*Nevus Vasculosus Accompanied by Streptococcic Bacteremia Report of Case Complicated by Immediate and Complete Gangrene, M T R Maynard, San Jose—p 479
The Cost of Industrial Medical Care T S Carey Los Angeles—p 481
Ocular Coloboma Report of Cases C A Wilson Santa Barbara—p 484
Dermatologic Pen Points M Scholtz Los Angeles—p 486
Placenta Praevia L J Tiber and J L Goldenberg Los Angeles—p 489
Public Health Significance of the Dietary Habits of People on Relief A E Larsen San Francisco—p 491
Peptic Ulcer The Bearing of Its Symptoms on Indications for Operation, A L Bloomfield San Francisco—p 494
Syphilis and Blindness M N Beigelman Los Angeles—p 497
Congenital Ichthyosis (Collodion Skin) R P Seitz San Francisco—p 500
Agranulocytosis O C Railsback Woodland—p 503
The Importance of Lesions of the Intervertebral Disks in Relation to Trauma W Bailey and R T Taylor Los Angeles—p 509

Nevus Vasculosus Accompanied by Streptococcic Bacteremia—Maynard reports a case of gangrene of vascular nevi concomitant with streptococcic bacteremia in which all the angiomatous tissue, even those portions foreign to and having no definite connection with one another, were also immediately involved in the same process. The patient a baby of 9 weeks, was brought for the treatment of two small ulcers, one on the buttock adjacent to the anal opening, the other in the anogenital fold. There was an extensive nevus vasculosis of rather punctate distribution over the entire right leg the entire right buttock and the lower right quadrant of the abdomen. In addition to this there was a large lesion involving the greater part of the dorsum of the right hand. This lesion was raised and unbroken in character. The left side of the body showed no lesions. The lesions were all bright red. The ulcers were painted with Millian's dye and were dressed with bismuth violet ointment. Three days later the ulcers were clean and appeared to be healing. The baby was seen at 3 30. At about 6 p m of the same day the baby was reported to be in considerable pain and feverish. He was hospitalized at which time the birthmarks appeared somewhat paler. The next morning all the areas were blanched and white. The surrounding skin was normal. The blanched areas also included the large lesion on the right hand. Not one of the previous nevus areas showed any evidence of circulation. Twenty-four hours later vesicles had formed on practically all lesions. The baby's temperature was 104 F and he cried continuously. The picture was typically that of moist gangrene. Dry heat was applied and gentian violet dye was painted over the skin. Blood culture and direct smears from the vesicle showed a large number of streptococci.

On the fourth day of the disease the temperature was still high and an abscess of the left wrist joint developed which, on incision, discharged a thick greenish yellow pus. He was given antistreptococcic vaccine. Within the next few days other abscesses occurred within the right wrist joint, on the dorsum of the left foot and on the right buttock (showing necrotic tissue). The angiomatous tissue continued to a state of dry gangrene and all evidence of local infection of the areas of the skin disappeared. The day after the antistreptococcic vaccine was given erysipelas vaccine was also administered and the baby was given two blood transfusions, the mother being the donor. The baby died on the twelfth day. Necropsy showed very little in the way of abscesses in the internal organs. The apparent extreme pain and the suddenness of the attack indicate that the pain was due to the complete ischemia of the large areas of the skin involved. All areas of the lesion developing an anemic necrosis simultaneously demonstrate that the origin of the vascular changes was undoubtedly hemogenous. The source of the infection was probably from the ulcers near the anus in an area impossible of complete sterilization. The progress of the disease aside from the changes mentioned was plainly that of a streptococcic bacteremia.

Canadian Medical Association Journal, Montreal

35 1116 (July) 1936

- *Congenital Lung Cysts, J D Adamson St. Boniface Manito.—p 1
Carcinoma of Larynx Plea for More Conservative Surgery in Certain Cases Where Laryngectomy Might Be Considered Necessary, A Paterson London England—p 7
Clinical and Anatomical Study of Sciatica J A Nutter, Montreal—p 11
Primary Sarcoma of the Breast Report of Four Cases E B Boldrey Montreal—p 16
Leiomyosarcoma of Ileum, J G McDermott, Hamilton—p 22
Internal Frontal Hyperostosis Syndrome D Eisen Toronto—p 24
Effect of Repeated and Prolonged Stimulation of Vagus Nerve in Dog G H Eitinger G E Hall and F G Banting Toronto—p 27
Estimation of Proteins of Blood Plasma, A T Cameron J S Guthrie and F D White Winnipeg Manito.—p 32
Notes and Observations on Hyperpnea A B Walter St. John, N B—p 38
Mental Disease Following Carbon Monoxide Poisoning T E Dancey and G E Reed Montreal—p 47
The Association of Pregnancy Hypochromic Anemia and Achlorhydria Preliminary Report J R Goodall and R Gotthieb Montreal—p 50
*Presacral Sympathectomy as Treatment of Obstinate Dysmenorrhea N Shaul Toronto—p 53
Some Experiences with Cyclopropane as an Anesthetic, with Especial Reference to Diabetic Patient, W B Neff and J A Stiles Philadelphia—p 56
Embolism in Peripheral Arteries D W G Murray Toronto—p 61
Rectovaginal Fistula and Stricture of Rectum Due to Lymphogranuloma Inguinale Case H W Johnston Toronto—p 66
Gastric Ulcer Cured by Gastrectomy After Forty Five Years of Treatment G Miller Montreal—p 68

Congenital Lung Cysts—Adamson states that the clinical recognition of congenital cystic lung has become possible only since roentgenography and bronchoscopy have come into common use. Antemortem diagnosis has been made only within the last ten years. The condition has ceased to be a mere pathologic curiosity and has become a clinical entity of importance. It must be kept constantly in mind when making a differential diagnosis in chronic pulmonary disease of any sort. Interest is enhanced by the fact that almost any chronic condition of the lung may be simulated. Cases have been mistaken for and reported as chronic pneumothorax, chronic cavitating tuberculosis, chronic pleurisy with effusion, diaphragmatic hernia, chronic empyema, chronic abscess neoplasm and the like. Four new cases are reported and the classification, clinical characteristics and pathogenesis are discussed briefly.

Presacral Sympathectomy as Treatment of Dysmenorrhea—Shaul reviews the anatomy and technic involved in the operation and reports the results of presacral sympathectomy in three cases of obstinate dysmenorrhea and also its effect on pregnancy and labor in one case. Although an unsatisfactory result was obtained in one case, the excellent results in the other two make the author feel that resection of the hypogastric plexus in selected cases is a beneficial operation which will in time find a definite place in the gynecologist's armamentarium. It has no harmful effect on pregnancy and labor. It has no permanent deleterious effects on the bladder or rectum but

rather favorable results in relieving constipation. It should be done only in properly selected cases and after all other treatments are exhausted. It is also used as a relief measure for excruciating pain in malignant conditions of the pelvis.

Canadian Public Health Journal, Toronto

27 313 366 (July) 1936

- A Hospital Epidemic of Paratyphoid A A R Foley and J L Faille
Quebec and K F Brandon, Toronto—p 313
Some Problems in Scarlet Fever R B Jenkins Edmonton Alta
—p 324
Fumigation H E Rothwell Toronto—p 329
The Doctor in Industry G L Bird, Oshawa Ont.—p 333
Travel Habits and Control of Odors J Van Benschoten Toronto
—p 337

Delaware State Medical Journal, Wilmington

8:143 162 (July) 1936

- Fetal Mortality in Relation to Types of Delivery N W Vaux Phila
delphia—p 143
Certain Phases of Acute Otitis Media C P White Wilmington
p 146
The Es of Nursing W E Bird Wilmington—p 151

Journal of Biological Chemistry, Baltimore

114:357 366 (June) 1936 Partial Index

- Further Study of Growth Effect of Residue Remaining After Alcoholic
Extraction of Yeast, Marion Reinhardt Rymer and R C Lewis
Denver—p 361
Protein Content of Human Parotid Saliva R G Bramkamp Banning
Calif—p 369
Ionization Constants of Calcium Proteinate Determined by Solubility
of Calcium Carbonate E G Weir and A B Hastings Chicago—
p 397
Examination of Sullivan Colorimetric Test for Guanidine C E Braun
and F M Rees Burlington Vt—p 415
Spontaneous Decomposition of Cystine Dimethyl Ester R D Coghill
New Haven Conn—p 419
Evidence Concerning Two Types of Plant Diastase G L Teller
Chicago—p 425
Effects of Ingested Cottonseed Meal on Distribution of Constituent Fatty
Acids of Goat Milk, R W Riemenschneider and N R Ellis, Wash
ington D C—p 441
*Metabolism of Glycolic Acid in Progressive Muscular Dystrophy
A T Milhorat and V Toscani New York—p 461
Chemistry of Lipids of Tubercle Bacilli XLVI Phthiocerol a New
Alcohol from Wax of Human Tubercle Bacillus F H Stodola and
R J Anderson New Haven Conn—p 467
Modified Method for Study of Tissue Oxidations, V R Potter and
C A Elvehjem Madison Wis—p 495
Antirachitic Effectiveness of Vitamin D from Various Sources R W
Hamman and H Steenbock Madison Wis—p 505
Some Applications of New Color Reaction for Creatinine, S R Bene-
dict and Jeanette Allen Behre New York—p 515
Reagents for Isolation of Carbonyl Compounds from Unsaponifiable
Material Marjorie Anchel and R Schoenheimer New York—p 539
Potentiometric Adaptation of Shaffer-Hartmann Sugar Method L F
Ney and E S West Portland Ore—p 547

Metabolism of Glycolic Acid in Progressive Muscular Dystrophy—Milhorat and Toscani studied the effect of glycolic acid on the excretion of creatine in patients with progressive muscular dystrophy. The subjects' ability to retain exogenous creatine was considerably impaired. They were kept in a special metabolism ward which permitted the quantitative collection of all specimens. The diet which was creatine-creatinine free, was supervised rigorously and kept constant for each experimental period. The nitrogen intake for the aminoacetic and glycolic periods was kept unchanged. Following an adequate control period the patients were given glycolic acid, neutralized with sodium hydroxide. There was an increase in the output of creatine when glycolic acid was given although the effect was considerably less than that produced by equivalent amounts of aminoacetic acid. When 20 Gm of glycolic acid was given the average increase in the urinary creatine was 0.057 Gm in the following twenty-four hour period. Equivalent amounts of aminoacetic acid increased the creatine output 0.188 Gm. The average rise in the creatine output after 10 Gm. of glycolic acid was 0.052 Gm., whereas the same amount of aminoacetic acid was followed by an average increase of 0.116 Gm in urinary creatine. The output of oxalic acid in the urine was determined in two subjects. During three control periods of from two to four days each, the average daily excretion of oxalic acid was from 0.001 to 0.0015 Gm. No increase in the output of oxalic acid was observed when

20 Gm of glycolic acid was given daily for three periods of four days each. The results suggest the possibility that glycolic acid can be converted into aminoacetic acid in the organism. On the other hand, the synthesis of creatine from glycolic acid without the intermediate formation of aminoacetic acid or a mere stimulatory effect of the glycolic acid on the creatine mechanism must be considered as possible, but perhaps less likely, explanations for the small increases in the creatinuria. Either no oxalic acid was formed by the oxidation of the glycolic acid or the amounts produced were less than those that the body is capable of destroying.

Journal of Bone and Joint Surgery, Boston

18 359-823 (July) 1936 Partial Index

- Fractures of Os Calcis R O Schofield Sacramento Calif—p 566
Old Dislocations of Shoulder G E Bennett Baltimore—p 594
Reconstruction of Digital Tendon Sheath Contribution to Physiologic
Method of Repair of Damaged Finger Tendons L Mayer and N
Ransohoff New York—p 607
*Roentgen Ray Therapy of Bone Tumors H W Meyerding Rochester
Minn—p 617
Difficulties in Diagnosis of Bone Tumors R J Harris, Toronto.
—p 631
Frozen Section Diagnosis of Tuberculous Joints W E Swift New
York—p 641
*Acute Transverse Bone Atrophy W G Stern Cleveland—p 659
Inflammatory Localized Lesions of Juxta Epiphyseal Zone of Neck of
Femur D Logginsco Trieste Italy translated from the Italian
by E Freund Venice Fla—p 671
*Sacralthrogenic Talgia III Study of Alternating Scoliosis H C
Pitkin and H C Pheasant San Francisco—p 706
Study of Fusion of Spine with Particular Reference to Articular Facets
S L Haas San Francisco—p 717
Knee-Flexion Test for Pathology in Lumbosacral and Sacro-Iliac Joints
I W Nachlas Baltimore—p 724
Panastragoid Arthrodesis Study of End Results in Eighty Five Cases
W R Hamsa Iowa City—p 732
Stabilization of Pathologic Dislocation of Hip in Children, J B
L Episcopo Brooklyn—p 737
Therapeutic Active Principle of Maggots Description of Its Clinical
Application in 567 Cases S K Livingston Hines Ill—p 751
Simple Method for Ambulatory Correction of Flexion Contracture of
Knee Use of Continuous Elastic Tension as Corrective Force, S S
Gaynor New York—p 766
Intratarsal Dislocation Report of Case of Anterior Midtarsal Disloca-
tion H H Ritter and W D Ludlum Jr, New York—p 773
Bilateral Recurrent Dislocation of Ulna at Elbow H Mileh New York
—p 777
Method of Immobilizing Chest A M Brown Chicago—p 787
Acute Osteomyelitis of Scapula (Acromion Process) W E Brogden
Canton, Ohio—p 795

Roentgen Therapy of Bone Tumors—Meyerding believes that the usefulness of preoperative application of irradiation is very limited and that its indiscriminate use may be more harmful than beneficial. What is needed is early diagnosis, destruction or removal of the tumor, and prevention of metastasis by whatever means may be available. Postoperative irradiation has been employed following biopsy, excision, curettage and amputation in the hope that remaining cells may be destroyed that metastasis may be prevented or that unrecognizable metastasis may be adequately dealt with. For this reason the common sites of metastasis and the territory occupied by the lymphatic structures that drain the region of the tumor are irradiated, if the malignant cell present is of a radiosensitive type there is some hope that the remaining elements will be destroyed. The beneficial effects from this form of treatment partly result from the action of the rays on the blood vessels and the formation of connective tissue, the malignant cells that remain become enclosed in masses of fibrous tissue, of which the blood supply is impaired and growth is thus inhibited. Late recurrence may be explained in this manner in some cases, but the author has seen malignant cells at the site of previous operation and extensive irradiation when clinical manifestations of tumor were not present. Postoperative irradiation may be one of the reasons why more five year cures are recorded now than formerly but the author thinks an equally important reason is that diagnosis is made earlier than formerly and therefore efficient treatment is carried out. The response to irradiation usually will be determined by what cell is predominant. There is a difference between the radiosensitivity of tissues and cells of normal structures and the radiosensitivity of tumors. Knowledge is accumulating as to the methods of application of radiation to tumors of various situations and various cellular

classifications, at present, repeated courses of protracted fractional irradiation, with cross-firing, appears to be the most satisfactory method

Acute Transverse Bone Atrophy—Stern calls attention to the occurrence of a form of acute bone atrophy seen in fifteen young adults, usually after fixation of a limb for fracture. This phenomenon has also been seen by him in four cases after disuse because of nonpurulent infection in neighboring joints, and in two cases of tumor formation in the limb. This type of atrophy takes the form of a broad translucent band of bone resorption on the diaphyseal side of the epiphyseal line, parallel to the axis of the neighboring joint. Unlike the cases of Sudeck's atrophy, which usually occur in the smaller bones, the author's cases, with but one exception, have been confined to the long bones of the lower extremity—usually to the lower end of the tibia. There have also been three cases of transverse atrophy at the upper end of the tibia and the lower end of the femur, one through the neck of the femur (horizontal) and another vertically through the neck of the scapula. This band occupies the same position as does a similar band of radiolucency in scurvy. This peculiar form of atrophy should not be mistaken for fracture or acute disease.

Study of Alternating Scoliosis—Pitkin and Pheasant found twenty-two cases of alternating scoliosis mentioned in the literature. The apparent rarity of this condition is due to the fact that only the more spectacular cases have been reported. They found sixty-eight cases of alternating scoliosis in their records of 506 examinations for low back disability. Six cases showed the spectacular type of active alternation. The pain of alternating scoliosis is the typical sacroarthrogenic telalgia that is caused by pathologic tension in the extra-articular ligaments of the upper sacral joints. The scoliosis is caused by one or more fixed pathologic positions of one or more of the upper sacral joints. Alternation is due to a change in the fixed pathologic position of one or more of the upper sacral joints. Either sacro iliac joint may become fixed in one of four pathologic positions (sacro-iliac slips), which the authors have classified as flexion, extension, increased angle and decreased angle slips.

Journal of Clinical Investigation, New York

15: 335-474 (July) 1936

- Normal Duration of Electrocardiographic Ventricular Complex. W. Adams. Chicago—p. 335
- Combined Card Degeneration Without Anemia. Case Report with Studies Bearing on Intrinsic Factor of Castle. W. L. Palmer and R. T. Porter. Chicago—p. 343
- Undernutrition in Treatment of Coronary Artery Disease (Particularly Thrombosis). Effect on Basal Metabolism and Circulation. A. M. Master, H. L. Jaffe and S. Dack. New York—p. 353
- *Studies of Ascorbic Acid and Rheumatic Fever. I. Quantitative Index of Ascorbic Acid Utilization in Human Beings and Its Application to Study of Rheumatic Fever. J. Sendroy Jr. and M. P. Schultz. New York—p. 369
- *Id. II. Test of Prophylactic and Therapeutic Action of Ascorbic Acid. M. P. Schultz. New York—p. 385
- Study of External Pancreatic Secretion in Man. B. Kogut, M. J. Matzner and A. E. Sobel. Brooklyn—p. 393
- Simultaneous Plasma Clearances of Creatinine and Certain Organic Compounds of Iodine in Relation to Human Kidney Function. E. M. Landis, K. A. Elsom, P. A. Bott and E. H. Shiels. Philadelphia—p. 397
- *Nitrogen Metabolism in Anemia During Regeneration of Blood. C. W. Heath and F. H. L. Taylor. Boston—p. 411
- Metabolic Studies of Changes in Body Electrolyte and Distribution of Body Water Induced Experimentally by Deficit of Extracellular Electrolyte. D. C. Darrow and H. Yannet. New Haven, Conn.—p. 419
- Passive Transfer Antibodies for Six Saprophytic Fungi in a Patient with Superficial Scaling Dermatitis. E. L. Persons and D. S. Martin. Durham, N. C.—p. 429
- Concerning Specific Response of Guinea Pig's Reticulocytes to Substances Effective in Pernicious Anemia. L. S. Goodman, A. J. Geiger and T. G. Klumpp. New Haven, Conn.—p. 435

Studies of Cevitamic Acid and Rheumatic Fever. I. Quantitative Index of Cevitamic Acid Utilization in Human Beings and Its Application to the Study of Rheumatic Fever—Applied to subjects with rheumatic fever, the excretion tests, relative to the controls, indicated to some degree an apparent cevitamic (ascorbic) acid deficiency in eight of thirteen cases. Of these, Sendroy and Schultz ascribes the result in only two cases solely to poor diet. In the other six cases vomiting occurred or else there was an incomplete

absorption from or destruction of cevitamic acid in the alimentary canal during the test. Apparently, even in control cases, when there was a nutritional disturbance or anorexia during the test the cevitamic acid, regardless of the previous diet, was not well assimilated and was destroyed to a greater extent than usual. Through digestive disturbances patients with rheumatic fever evidently may develop a real hypovitaminosis on an ordinarily adequate diet. One would expect in such patients that the tissues might be depleted not only of cevitamic acid but of other vitamins and essential food constituents of which there may not be large reserves in the body. However, if it is assumed, contrary to the evidence of the experiments, that it is simply cevitamic acid deficiency that is associated with every case of rheumatic fever, it seems much more reasonable to regard the train of events, including digestive disturbances leading to such depletion of the tissues, as caused by an infectious process rather than to think of the cevitamic acid deficiency as initiating the infection. It seems certain that the factor of infection is present in all cases of rheumatic fever, whereas the signs of cevitamic acid subnutrition, if present, are probably incidental. Such signs of deficiency as have been found are only relative and not absolute. The average results set too high a standard of normality so that degrees of cevitamic acid deficiency, relative to the control cases previously on diets of about 100 mg of cevitamic acid a day would be exaggerated in the direction of ratings too low for cevitamic acid nutrition. When all these factors are taken into consideration it is difficult to accept subclinical scurvy as an etiologic agent in rheumatic fever.

Studies of Cevitamic Acid and Rheumatic Fever. II. Test of Prophylactic and Therapeutic Action of Cevitamic Acid—Schultz observed two comparable groups of rheumatic children, one of them receiving daily doses of cevitamic acid at intervals during the later winter and early spring. As indicated by tests of capillary permeability the development of subclinical scurvy was prevented in the treated group but the incidence of active rheumatic fever was not favorably affected by this medication. The clinical manifestations of acute rheumatic fever were not demonstrably affected by the oral or intravenous administration of cevitamic acid over periods of several months. Large doses of orange juice also were ineffective. These data are additional evidence that cevitamic acid deficiency is not a necessary factor in the etiology of rheumatic fever.

Nitrogen Metabolism in Anemia During Regeneration of Blood—Heath and Taylor studied the effect of hemoglobin regeneration on nitrogen retention, on the plasma protein and nonprotein nitrogen and on the tissue nitrogen in nine severely anemic patients. Regeneration of blood occurred during the period of observation in five patients with hypochromic anemia when iron was administered, in two patients with pernicious anemia following administration of material specifically active in this condition, and in one patient with scurvy following the administration of an adequate diet. The other patient suffering from hypochromic anemia did not receive medication during the period of observation and was used as a control. The patients were given diets that were adequate in calories but were usually low in protein. Water and table salt were unrestricted. Urine was collected for three-day periods. In two instances stools were collected for three-day periods. Venous blood was collected usually every other day. Red blood cell counts and cell volume measurements were made on this blood. The hemoglobin was measured by a specially calibrated Sahli instrument. Reticulocytes were counted daily on smears stained supravitaly with brilliant cresyl blue. The blood volume was measured, usually every fourteen days, by means of the vital red technic as described by Rowntree, Brown and Roth. All chemical analyses were made in duplicate. The plasma proteins were determined on oxalated blood plasma by the Kjeldahl method with the macro modification of Howe. The nonprotein nitrogen and the urinary nitrogen were determined by the microchemical methods of Folin. Stools were collected in sulfuric acid, mixed to a homogeneous suspension, weighed, and aliquot samples taken for determination of nitrogen by the usual Kjeldahl method. Analysis of circulating whole blood nitrogen was calculated from the hemoglobin readings and plasma protein values. Determinations of the nitrogen

content of washed red blood cells and of hemolyzed red blood cells, free of plasma and stroma, were compared with the amount of hemoglobin ascertained from the Van Slyke oxygen capacity method. It was found that hemoglobin formation is accompanied by a positive nitrogen balance only when the diet contains somewhat more than 6.2 Gm of nitrogen a day. Hemoglobin formation, however, proceeds at a normal rate even in the face of a negative nitrogen balance. The demand for nitrogen under these circumstances seems to be supplied by tissue and plasma nitrogen. With diets low in protein, extremely low values for daily nitrogen excretion may be observed during blood regeneration, and a reduction of the plasma nonprotein nitrogen is characteristic. The blood plasma seems to take an important part in the storage and transportation of nitrogenous substances. In the treatment of anemia a diet adequate in protein is necessary in order to replace tissue nitrogen that may have become diminished before or during hemoglobin regeneration.

Journal of Experimental Medicine, New York

63 789 960 (June 1) 1936

- Effect of Prolonged Application of Large Doses of Follicular Hormone on Uterus of Rabbits B Zondek Jerusalem Palestine—p 789
 Prothrombin Deficiency Cause of Bleeding in Bile Fistula Dogs W B Hawkins Rochester N Y and K M Brinkhous Iowa City—p 795
 Studies with Human Influenza Virus Cultivated in Artificial Medium T P Magill and T Francis Jr New York—p 803
 On Group Specific A Substances III Substance in Commercial Pepsin K Landsteiner and M W Chase, New York—p 813
 Quantitative Studies on Precipitin Reaction Effect of Salts on Reaction M Heidelberger F E. Kendall and T Teorell New York—p 819
 Experimental Encephalitis (St. Louis Type) in Mice with High Inborn Resistance Chronic Subclinical Infection L. T Webster and Anna D Clow New York—p 827
 Persistence of Lymphocytic Choriomeningitis Virus in Immune Animals and Its Relation to Immunity E. Traub Princeton N J—p 847
 Protective Action of Nasally Instilled Immune Serum Against Infection with Certain Neurotropic Viruses by Way of Nose A B Sabin New York—p 863
 Protective Action of Certain Chemicals Against Infection of Monkeys with Nasally Instilled Poliomyelitis Virus A B Sabin P K Olitsky and H R Cox New York—p 877
 Some Effects of Ovariectomy During Period of Declining Reproductive Powers in Mice W S Murray Bar Harbor Maine—p 893
 Influence of Intra Uterine Factors on Fetal Weight of Rabbits P D Rosahn and H S N Greene New York—p 901
 Mechanism of Immunity in Tuberculosis Host Parasite Relationship Under Conditions of Localized Agar Focus of Infection and Generalization of Disease in Normal and Immunized Rabbits M B Lurie Philadelphia—p 923

Journal of Nutrition, Philadelphia

11 495 620 (June 10) 1936

- Use of Three Day Periods in Human Metabolism Studies Calcium and Phosphorus S. I. Pyle and C E Huff with the assistance of R Davis Yellow Springs Ohio—p 495
 Potential Alkalinity of Honey Its Acid Base Value as Food R E Lothrop Washington D C—p 511
 Improved Synthetic Ration for Vitamin B₁ Studies O L. Kline H R Bird C A Elvehjem and E B Hart Madison Wis—p 515
 Pellagra like Syndrome in Chicks S Ansbacher G C. Supplee and R C Bender Bainbridge N Y—p 529
 Study of Seasonal Variation of Vitamin D in Normal Cow's Milk H E Bechtel and C A Hoppert East Lansing Mich—p 537
 Relation Between Calcium Retention and Store of Calcium in Body with Particular Reference to Determination of Calcium Requirements B W Fairbanks and H H Mitchell Urbana Ill—p 551
 Study of Dietary Factors Concerned in Nutritional Muscular Dystrophy S Morgulis and H C Spencer Omaha—p 573
 Changes in Vaginal Epithelium of Rat on Excessive Vitamin A Diet T C Sherwood M A Brend and E. A. Roper Lexington Ky—p 593
 Vitamin C Content of Human Milk and Its Variation with Diet Iva Selleg and C G King Pittsburgh—p 599
 Lafayette Benedict Mendel An Appreciation W C Rose Urbana Ill—p 607

Dietary Factors in Nutritional Muscular Dystrophy—Morgulis and Spencer could not prevent muscle dystrophy in the rabbit by the addition to the diet originally used by Goettsch and Pappenheimer 1931 (diet 13) of dry alfalfa a vegetable oil lettuce vitamin A (carotene in oil) vitamin E (cold pressed wheat germ oil) or vitamin B (yeast). Neither the omission of the ethereal-ferrie chloride treatment nor the substitution of aqueous-ferrie chloride treatment of the basic diet entirely abolished its dystrophy producing effects. Prevention of muscle dystrophy as well as cure of the dystrophy

already developed was effected by feeding the following supplements along with the dystrophic diet 13 fresh green alfalfa lettuce and vitamin E (wheat germ oil), dry alfalfa and vitamin E (wheat germ oil) or whole wheat germ. The experimental results lead to the conclusion that there must be at least two factors involved in the prevention or in the cure of muscle dystrophy. Both factors are present in fresh green alfalfa or in whole wheat germ. On the other hand, one of these factors is supplied by wheat germ oil (cold pressed), while the other is present in lettuce or in dry alfalfa. At least one of the factors is easily destroyed by ethereal ferrie chloride, by drying or by extraction with water or alcohol.

Journal of Pediatrics, St. Louis

8 657 798 (June) 1936

- The Pediatrician Today and Tomorrow H Dietrich Los Angeles—p 657
 Gastro-Intestinal Portal of Entry in Poliomyelitis J A Toomey Cleveland—p 664
 Reactions from Alum Toxoid A L Shafston Normal Ill—p 676
 Hematology and Pathology of Leukemic Reticulo-Endotheliosis (Monocytic Leukemia) Occurring in an Eighteen Months Old Infant K. Kato Chicago—p 679
 Rubeola Fever Report of Case with Serologic Observations. P V Woolley Jr Boston—p 693
 Anaphylactoid or Allergic Purpura J Diamond St. Louis—p 697
 Treatment of Several Types of Adiposogenital Dystrophy in Boys with Particular Reference to Use of Gonadotropic Hormone from Urine of Pregnant Women for Their Imperfectly Developed Genitals G B Dorff Brooklyn—p 704
 Mesenteric Thrombosis in Case of Chronic Mastoid Suppuration G J Feldstein and J H Goldstein Pittsburgh—p 720
 The Problem of Dental Caries with Relation to Bacteria and Diet. P Jay Ann Arbor Mich—p 725
 Deterioration of Cod Liver Oil and Diet of Children Dorothy V Whipple Philadelphia—p 734
 Abdominal Puncture in Diagnosis of Peritonitis in Childhood B S Denzer New York—p 741
 Indications for Urologic Investigation in Children M F Campbell New York—p 748

Leukemic Reticulo-Endotheliosis—Kato presents his clinical, pathologic and hematologic studies of a case of reticulo-endotheliosis (monocytic leukemia) in a male infant 18 months of age. The disease constitutes a clinical and pathologic entity that may occur at any age period. Clinically the condition is indistinguishable from any other type of acute leukemia the common symptoms being an acute course, anemia and pallor, hemorrhagic tendency and hyperplasia of the hematopoietic organs. The exact nature of the stimulus activating this multiple hyperplasia is extremely difficult to ascertain. The pathologic picture of the organs suggests a similarity to multiple neoplastic or malignant hyperplasia of the histiocytic apparatus. Because the proliferative alterations were so generalized and so extensive, the malady was inevitably fatal. No therapeutic measures are successfully applicable to such a widely and rapidly spreading process. In spite of the extreme hyperplasia of the reticulo-endothelial system the peripheral blood reflects no increase in white blood cells the one feature which stands out in sharp contrast to the conspicuous leukocytosis produced in the other reported instances of monocytic leukemia. The pathologic cells involved are large mononuclear ones, averaging from 25 to 50 microns in dimension. The qualitative blood picture is in complete conformity with that encountered in typical monocytic leukemia with quantitative increase in the total cell count. It therefore reasonably follows that "monocytic leukemia" is a synonym for leukemic reticulo-endotheliosis, the former term being a clinical nomenclature and the latter a pathologic concept. The organs which in this instance showed the greatest degree of histiocytic proliferation were the bone marrow, lymph nodes the entire gastro-intestinal tract and the thymus. The normal histologic architecture was effaced because of pronounced infiltration of these tissues by the pathologic cells. The submucosa of the whole gastro-intestinal tract was the seat of marked monocytic proliferation. Next in order of hyperplasia were the lungs liver kidneys, pancreas subcutaneous tissues the adipose tissues surrounding the heart, the epididymis and the serous membranes. In the skin the infiltration of the histiocytic elements often presented a nodular appearance.

Treatment of Adiposogenital Dystrophy in Boys—Dorff treated nine boys from 3.3 to 14.3 years of age with undescended or hypoplastic testes and with hypoplastic external

genitals (adiposogenital dystrophic type) with a therapy that varied from the gonadotropic hormone of pregnancy urine and dietary restrictions in the adiposogenital dystrophic type—hypogonad patients—to the gonadotropic principle of pregnancy urine, dietary restrictions and the supplementary use of desiccated thyroid in the adiposogenital dystrophic type—hypothyroid patients. The congenital hernia—whether potential or markedly noticeable—that accompanied an undescended testis situated intra-abdominally or at the internal ring could be corrected when the testis becomes resident in the scrotum through the stimulation of the gonadotropic hormone. While the author was not aware as to what initiated the normal descent of the testis, in cases in which there had been delay in descent this descent could be initiated by endocrine stimulation and the whole inguinal region could usually be brought to maturation in the male child through the influence of this same endocrine stimulus. The value of combined therapy was shown in that not only was genital development stimulated and genital maldevelopment corrected but also many of the other accompanying deficiencies of a skeletal, somatic or mental nature usually could be improved and redirected toward the normal.

Journal of Urology, Baltimore

35: 583 696 (June) 1936

- The Future of the Southeastern Branch Society. M. L. Boyd. Atlanta, Ga.—p. 583.
- The Problem of Fused Kidney. W. E. Lower. Cleveland.—p. 588.
- Methods of Diverting Urine Above Level of Bladder with Particular Reference to Problems of Technique. H. Cabot. Rochester. Minn.—p. 596.
- Total Perineal Prostatectomy for Carcinoma. G. G. Smith. Boston.—p. 610.
- Urinary Complications in an Epidemic of Poliomyelitis. B. W. Wright. Los Angeles.—p. 618.
- *Excretory Urography as Test of Renal Function. W. F. Braasch and J. L. Emmett. Rochester. Minn.—p. 630.
- Large Ureterocele with Herniation Through the Urethra. F. C. Herrick. Cleveland.—p. 643.
- Bone Metastases with Primary Carcinoma of Urinary Bladder. E. D. Zeman. Chicago.—p. 646.
- Calculus on Foreign Body Twelve Years After Repair of Vesicovaginal Fistula. M. D. F. Blasucci. New York.—p. 652.
- *Carcinoma of Female Urethra. E. M. Watson. Buffalo.—p. 654.
- Leiomyoma of Prostate. L. H. Baretz. Brooklyn.—p. 664.
- Urogenital Tuberculosis. J. C. Negley. Los Angeles.—p. 668.
- Study of Hydrogen Ion Concentration and Crystallography of Normal Urine. L. A. Maslow. Chicago.—p. 674.
- Treatment of Prostatitis by Local Heat. Elliott Treatment Regulator. L. G. Lewis. Baltimore.—p. 681.

Excretory Urography as Test of Renal Function.—Braasch and Emmett found close agreement in thirty-nine of fifty cases of various diseases of the urinary tract in which both excretory urography and differential tests with indigo carmine were used. Further study of a large series of excretory urograms was then made, grouped according to individual pathologic lesions of the urinary tract. The degree of visualization was compared with the results of other tests of renal function that had been done and with the pathologic changes observed at operation or necropsy. In hydronephrosis, pyelonephritis, polycystic disease and solitary cyst of the kidney the urograms seemed to indicate quite accurately the renal function present. In regard to renal tuberculosis and calculous disease the intensity of visualization in the urogram is often inaccurate in its estimation of renal function. Indigo carmine seems to be slightly better but is also inaccurate. However the additional data furnished by the urogram as to the anatomic deformity present make up for any disparity in this regard and render excretory urography almost indispensable in the diagnosis of these conditions. In the field of malignant renal tumors excretory urography will often suggest the amount of function remaining, but it is not to be relied on as an index to the extent of neoplastic involvement. With urinary obstruction such as is found in hypertrophy of the prostate gland excretory urography gives valuable information as to renal function. In this condition the picture of the anatomic deformity is exceedingly valuable, as dilatation of the upper part of the urinary tract is common and can be produced even in the presence of a normal value for blood urea.

Carcinoma of Female Urethra.—Watson states that as a urologic lesion carcinoma of the female urethra is being encountered and recognized much more frequently than formerly. It

may appear in the third decade of life but usually in the fifth decade. A positive Wassermann reaction may be present and so mask one's best efforts in arriving at an early diagnosis. A single biopsy specimen obtained from a urethral growth may be misleading in the information obtained. In the case of the report "no malignant condition found" the so regarded benign lesion should be carefully watched and, when healing is unduly delayed, further sections obtained. One fourth of the patients in the author's series of seventeen had had "growths" removed from the urethra previously, a predisposing factor to malignant growth. Early recognition and properly instituted treatment gives an appreciable measure of palliation. A four year cure and probably longer may be expected in more than 50 per cent of the cases.

Laryngoscope, St. Louis

48 407 492 (June) 1936

- Roentgenotherapy of Epitheliomas of Upper Air Passages. H. Coutard. Paris. France.—p. 407.
- Malignancies of Nasopharynx. L. Kleinfeld. New York.—p. 415.
- *Furunculosis of External Auditory Canal with Especial Reference to Treatment by Bacteriophage. E. M. Freund. Albany. N. Y.—p. 419.
- Simple Mastoid Operation and Some Functional Results. F. W. Graef. New York.—p. 427.
- Gradenigo's Syndrome Simulating Expanding Intracranial Lesion. W. L. Horn. New York.—p. 437.
- External Radical Frontal Sinus Operation with Retention of Original Osteum Frontale. E. Reeves. Passaic. N. J.—p. 446.
- Is Sinus Trouble Being Overstressed? Critical Survey of the Sinus Problem. E. Krinsky. Brooklyn.—p. 460.
- Severe Nasal Hemorrhage Controlled by Radium Application. Report of Case. J. C. Scal. New York.—p. 473.
- New Instrument. Return Flow Antrum Trocar. L. Blumenfeld. Brooklyn.—p. 475.

Furunculosis of Auditory Canal.—Freund has found bacteriophage a valuable agent in aborting as well as curing furunculosis of the external auditory canal in the early stages. A number of his patients have shown such prompt response to this method that he recommends the procedure before attempting any other form of treatment. Of more than fifty cases, less than 2 per cent required surgical intervention. The others responded satisfactorily to from three to six applications, supplemented in most instances by one or two injections of the bacteriophage. Bacteriophage injections may be given either in a remote part of the body or directly into the infected area. The bacteriophage is obtained in 20 cc. vials and can be used either for topical application or for hypodermic injection. Streptococcus bacteriophage yielded poor results in the few cases tried. In contrast, the staphylococcus bacteriophage was strikingly effective in practically every case. The staphylococcus bacteriophage was helpful even in the instances in which the streptococcus failed. Furunculosis of the external auditory canal is to be differentiated from mastoiditis, aural polyps, perichondritis, exostoses, carious teeth and granulations.

Maine Medical Journal, Portland

27: 107 138 (June) 1936

- Neglected Danger in Treatment of Elbow Fractures. A. L. Gould. Freeport.—p. 116.
- Treatment for Rheumatic Infections of Joints and for Sciatica. D. Weeks. Portland.—p. 118.
- Gas Gangrene Following Trauma. Report of Three Cases. L. M. Schmidt, Farmington.—p. 123.

Medical Annals of District of Columbia, Washington

5 151 188 (June) 1936

- Forty Two Years in Medicine. S. Ruffin. Washington.—p. 151.
- The Centennial of the Army Medical Library Coincident with the Beginning of Fourth Series of Index Catalogue. E. E. Hume. Washington.—p. 159.
- *The Common Cold and Asthma. H. S. Bernton. Washington.—p. 164.
- Excretion Urography as Diagnostic Aid in Urinary Tract Injuries. Report of Two Cases. G. G. Irwin. Charleston, W. Va.—p. 172.
- Gas Bacillus Infections. P. A. Caulfield. Washington.—p. 174.
- Fundamentals of Internal Medicine. Diseases of Nervous System. A. Schneider. Washington.—p. 178.

The Common Cold and Asthma.—In a study of 455 consecutive allergic patients, Bernton encountered seventy-one who claimed that a cold was responsible for their asthmatic seizures. The age of twenty-seven patients was 10 years or less. Fifty-

one patients gave a positive family history for some manifestation of allergy. The patients readily submitted themselves to tests for protein sensitization. The possible alleviation from the recurring distress proved the incentive to an allergic study. The tests were performed by the cutaneous method with epidermal and miscellaneous proteins, including house dusts, pollens, molds and protein extracts of food materials. The results of the tests show that in the group with a positive family history thirty-six patients have shown positive cutaneous reactions, whereas fifteen have shown negative reactions. The high percentage of positive reactors is in accord with the concept that the tendency to hypersensitiveness is inherited. The clinical evidence definitely points to the common cold as the important predisposing factor to asthma in this group of patients. Forty-four patients in the series gave positive reactions to the various allergens employed. A reaction was adjudged positive if it consisted of a wheal with pseudopodia and a zone of redness, and if it produced a sensation of itching. The inhalant group of allergens yielded more positive reactions than the ingestants, and of the inhalants the pollens ranked first. There is general agreement on the fact that infection during the course of a cold is capable of provoking the asthmatic state. The causal relationship of the common cold to asthma may be summarized as follows. According to one school, the micro-organisms isolated from the sputum are the exciting factors. The other possible view is that a filtrable virus is the contributory factor. In either, even the asthmatic paroxysm is the response of an active and sensitive vagus system to a foreign protein. The basis for the sensitive vagus mechanism in the allergic may be dependent on subtle physicochemical changes.

Michigan State M. Society Journal, Lansing

35 359-432 (June) 1936

- Common Fungous Dermatoses Their Diagnosis and Management L. M. Wieder Milwaukee—p 359
- Fractures of the Spine, A. D. La Ferte Detroit—p 366
- *Results of Tonsillectomy in Allergic Patients Follow Up Study of 433 Cases G. L. Waldbott M. S. Ascher and F. W. Giese, Detroit—p 369
- Historical Sightings on Medical Terminology H. C. Mack, Detroit—p 374
- Value of Pavaex Therapy H. C. Saltzstein M. P. Meyers and S. Rosenzweig Detroit—p 385
- Some Lesions of Mouth Due to Streptococcus and Staphylococcus A. R. Woodburne Grand Rapids—p 387
- Cancer Survey of Michigan F. L. Rector New York—p 391

Results of Tonsillectomy in Allergic Patients—Of 1,112 patients with hay fever and asthma, Waldbott and his associates performed tonsillectomy in 228 before the onset of allergic symptoms and in 205 after allergic manifestations had developed. In the 205 allergic individuals, tonsillectomy resulted in definite relief in 19 per cent, temporary relief in 19 per cent and aggravation of the allergic symptoms in 11.6 per cent. In a control group of sixty patients in whom tonsillectomy was performed after they had been under the authors' care, the results were substantially the same. Tonsillectomy, when performed for conditions other than allergy, was successful in 35.2 per cent of the allergic group and in 36.4 per cent of the "preallergic" group as compared with 72 per cent improvement recorded in normal controls (Kaiser). In 228 patients in whom tonsillectomy was performed before the onset of allergic symptoms, 14.4 per cent developed allergic manifestations within three months, 29.3 per cent within six months and 48.6 per cent within two years after operation. This compares with 26 per cent showing frankly allergic symptoms within three months, 47 per cent within six months and 63 per cent within two years in patients whose tonsils were removed for the relief of "nasal colds" and "bronchitis." Most benefit from tonsillectomy was obtained in the earlier age groups. The operation was practically always a failure in patients more than 25 years of age. The efficacy of the technic of removal did not affect the result. The operation was less successful when performed during the pollen season. Although the results of tonsillectomy were disappointing the authors believe that tonsillectomy should be performed in patients having frequent infections. In others with allergic catarrh of the upper part of the respiratory tract

which may or may not involve the tonsils, they believe that tonsillar tissue is a definite asset to the system and should be preserved.

Military Surgeon, Washington, D. C.

79:184 (July) 1936

- Legislation Affecting Medical Department C. R. Reynolds—p 1
- Treatment of War Wounds D. Lewis—p 10
- Management of Thyroid Diseases in the Soldier E. V. Mastin—p 12
- Syphilitic Reinoculation Report of Seven Cases J. A. Millsbaugh—p 25
- The Division Laboratory Section I. Satisfactory Equipment for Preparation of Sterile Convalescent Serum L. D. Hertert—p 33
- Dextrocardia Report of Two Cases H. P. Makel and F. A. Minas—p 40
- Typhoid in the Civilian Conservation Corps G. F. Lull—p 45
- Polymyositis in the Philippine Islands C. C. Hillman—p 48

New England Journal of Medicine, Boston

214 1275-1334 (June 25) 1935

- Thrombo-Angitis Obliterans with Especial Reference to Its Abdominal Manifestations S. S. Cohen and M. E. Barron Boston—p 12/3
- Rural Health Problems the Problems Themselves and Their Control W. Woolner Ayr Ont—p 1305
- Progress in Psychiatry for 1935 J. M. Thomas Boston—p 1309

New York State Journal of Medicine, New York

36 899-958 (June 15) 1936

- Ophthalmoscopy in General Practice C. Berens and J. Zuckerman New York—p 899
- Encephalitis Following German Measles E. A. Baumgartner Newark—p 907
- Acute Infectious Mononucleosis Report of Case with 42,000 Leukocytes K. R. McAlpin New York—p 908

Philippine Journal of Science, Manila

59 1148 (Jan) 1936 Partial Index

- Practical Illustrated Key to Adults of Philippine Anopheles P. F. Russell New York, and F. E. Baisas Manila—p 15
- Philippine Mosquitoes IV. Notes Pupal and Certain Adult Characters of Some Rare Species of Anopheles F. E. Baisas, Manila—p 65
- American Species of Psychoda (Diptera Psychodidae) F. Del Rosario Manila—p 85

Southern Medical Journal, Birmingham, Ala.

29 651-774 (July) 1936 Partial Index

- Preoperative Irradiation of Breast Tumors J. C. Bloodgood and G. A. Stewart, Baltimore—p 651
- *Plastic Repair of Facial Defects Resulting from Radical Extirpation of Cancer N. Owens New Orleans—p 654
- Cutaneous Lymphoblastoma Some Remarks on Its Treatment J. W. Jones and H. S. Alden Atlanta Ga—p 681
- The Gastritis Problem Notes on Histologically Verified Cases G. B. Eusterman Rochester Minn—p 684
- Gastro-Intestinal Symptoms of Kidney Disease W. E. Vest, Huntington W. Va—p 696
- Diet and Surgery in Cure of Gastric and Duodenal Ulcers E. Drennen Birmingham Ala—p 699
- Observations on Treatment of Diabetes with Protamine Insulin in Office and Hospital H. Bowcock, Atlanta, Ga—p 701
- Evaluation of Gonococcus Bouillon Filtrate (Corbus-Ferry) Statistical Report of 10,000 Cases B. C. Corbus Chicago—p 710
- Granuloma Annulare Report of Unusual Case W. F. Spiller and E. H. Klatt Galveston Texas—p 715
- *Clinical Deductions from Cytologic Findings of Nasal Secretions J. R. Hume New Orleans—p 726
- Treatment of Fractures of Tibia and Fibula by Means of Roger Anderson Splint O. B. Bolibang Washington D. C—p 729
- Children's Teeth in Relation to Pediatric Practice J. B. Stone Richmond Va—p 731
- Malaria in Children W. P. Robert Vicksburg Miss—p 738
- Factors Concerned in Malaria Control by Drug Treatment L. L. Williams Jr Washington D. C—p 743
- Treatment of Malaria by Short Course Method J. P. Sanders Caspania, La—p 746

Plastic Repair of Facial Defects Resulting from Radical Extirpation of Cancer—Owens states that facial defects following the radical extirpation of cancer are modified by the resulting loss of tissue and that the method of repair indicated is therefore determined by the extent and location of the deformity. As a result of observation of complications due to certain types of treatment, it is suggested that growths involving skin over cartilage should not be subjected to irradiation because of the high percentage of cartilaginous destruction that follows this procedure. Treatment of cancer by x-rays or radium should always be done by a specialist, competent through long experience to apply radiation in amounts that are adequate.

Patients are too frequently seen who have received inadequate irradiation, and as a result of late manifestations they subsequently seek treatment for lesions that are hopelessly advanced. Microscopic study of all tissue removed by means of the frozen section method should be routine. By means of this technic more involved tissue will frequently be removed which otherwise would have been permitted to remain because of its normal macroscopic appearance. Much can be accomplished in the restoration of defects resulting from the eradication of cancer. Many patients would be less skeptical in subjecting themselves to the eradication of a growth if they could be assured that unsightly deformities would not be a necessary sequel.

Cytology of Nasal Secretions—In connection with their cytologic and clinical studies of rhinosinusitis, Hume concludes that 1 The polymorphonuclear leukocytes present in the nasal secretions indicate an acute inflammatory reaction. 2 The lymphocytes present in the nasal secretions indicate chronic inflammation with round cell infiltration of the subepithelial layers. 3 The eosinophils present in the nasal secretions in numbers greater than 5 per cent suggest a hypersensitivity, and proper tests should be made before surgical procedures are instituted other than ventilation and drainage. The eosinophil is present only when an allergic background is existent. Its origin and function must be better understood before its exact relation to allergy is established in fact. 4 The presence of the large monocytes in the nasal secretions should be considered as a favorable omen, it indicates that a maximal reparative effort is being made cytologically to combat the pathologic processes. 5 Polymorphonuclear leukocytes or lymphocytes present, in conjunction with eosinophils, would at least suggest a bacterial invasion on an allergic background. 6 The study of the nasal smear should be instituted as a routine measure. With a reasonable degree of accuracy and by a simple procedure one can determine whether one is dealing with an acute inflammation, a chronic process or a possible allergy or an allergy complicated by infection. 7 Smears examined during the treatment of a case will afford information as to the progress being made. 8 It does not seem improbable after many thousand nasal smears have been examined and correlated with the physical and pathologic observations that it will assume the importance as a diagnostic measure that the differential white cell count holds in general infections.

Texas State Journal of Medicine, Fort Worth

32 69 198 (June) 1936

- The Evolution of Medicine. J. H. Burleson San Antonio—p. 76
Memorial Address. L. L. Lee San Antonio—p. 80
The Pioneer Doctor's Wife. Mrs. John T. Moore Houston—p. 81

Virginia Medical Monthly, Richmond

63 197 262 (July) 1936

- Diagnosis and Treatment of Cancer of Large Bowel. J. S. Horsley Richmond—p. 197
Necrosis of Urinary Bladder with Exfoliation. Report of Two Cases. H. D. Wolf Jr. Alexandria—p. 205
Arthritis: Its Relationship to Various Foci of Infection. H. H. Wescott Roanoke—p. 209
Some Illustrations of the Relationship of Dental Practice and Medicine. J. B. Williams Richmond—p. 211
Some Recent Advances in Neurosurgery. R. F. Slaughter, Norfolk—p. 216
The Management of Allergic Individual. W. A. McGee, Richmond—p. 219
*Trichomonas Vaginal Infestation. Discussion of the Parasite, the Course of Disease and Treatments. J. B. Salberg and W. M. Brunet Chicago—p. 223
Present Day Management of Cardiospasm. E. T. Catewood Richmond—p. 227
Pulmonary Hemorrhage. J. B. Nicholls Catawba Sanatorium—p. 230
Premature Separation of Placenta. Review of Its Status in the Last Ten Years at the Norfolk Protestant Hospital. R. B. Nicholls Norfolk—p. 234
Meningococcus Septicemia. Unusual Case. J. L. Thompson Washington, D. C.—p. 240
Report of the Proposed Program of Studies for Nursing Schools. Lulu K. Wolf Richmond—p. 243

Trichomonas Vaginal Infestation.—Salberg and Brunet point out that the true role of the trichomonas as the cause of persistent and at times intractable leukorrhea has not been established. The two strains of the parasite recognized are

Trichomonas hominis, which is found rarely in smears and cultures from the mouth and intestinal tract, and *Trichomonas vaginalis*, which is discovered in the vaginal secretion. All the cultures have a characteristic odor and form gas. The strains that have been isolated from the mouth and lower intestinal tract of apparently normal individuals are usually smaller and somewhat less active and are more difficult to culture than those isolated from the vagina. The strain of the parasite from the vaginal secretions produces a peculiarly offensive sourish odor. There undoubtedly is a tissue susceptibility of the vagina—sensitization of an unknown source—in women who are infected. The pathogenicity of the organism is still in doubt and many gynecologists and parasitologists think that other organisms found in the vaginal secretion prepare the soil for the entrance of the trichomonads. Some physicians believe that the primary factor in these infections is a fungus, *Monilia*, and that the trichomonas occurs symbiotically as a nonpathogen. In many studies of the flora of the vaginal tract it has been demonstrated that the organisms commonly found in healthy individuals and in nonspecific symptomless leukorrhea are frequently associated with the trichomonads. The fact that trichomonads are rarely found in acute gonococcal infections and yet are observed in chronic specific cervicitis leads one to surmise that there is an unknown characteristic of cell protoplasm and tissue fluid which under certain conditions exerts a specific influence and causes the trichomonas to become pathogenic. The most frequent complaint that brings the patient to the physician is a vaginal discharge. In a majority of cases there is an increase of the symptoms prior to and following the menses. Many patients will give a history of an acute vaginal discharge, which subsided without medical attention only to recur at the subsequent menstrual epoch. A leukorrhea, usually copious, watery and foaming or frothing, beginning somewhat suddenly with external smarting and a very disagreeable, sourish odor, is the usual subjective observation. The three principles of great importance to be observed in the treatment of this infection are the maintenance of efficient drainage, the use of a weak antiseptic to destroy the parasites which can be reached, and mild stimulation of the tissues to increase their resistance to the trichomonads. Gentle cleansing with cotton sponges of the entire vaginal tract with tincture of green soap and water is important as a preliminary measure in any type of treatment. In the authors' experience 80 per cent of the cases will be controlled by simple methods, but the remaining 20 per cent will be subject to recurrent exacerbations and in these cases powders are the most efficacious. Following a gentle cleansing and thorough drying of the vaginal canal, the vagina is filled with a compound of fullers' earth, kaolin and talc.

West Virginia Medical Journal, Charleston

32 293 344 (July) 1936

- Some Difficult Medical Problems. C. G. Morgan Moundsville—p. 293
Recent Trends in Treatment of Fractures. J. C. Pickett Morgantown—p. 301
Chronic Female Urethritis. T. G. Reed Charleston—p. 306
Eczemas of Internal Origin. R. O. Halloran Charleston—p. 311
Congenital Cystic Malformation of Lung. Report of Two Cases. V. L. Peterson Charleston—p. 313
The Doctor on the Witness Stand. C. W. Meadows Beckley—p. 317
Meningococcal Meningitis. Treatment of Case with Meningococcus Antitoxin (Ferry) with Recovery. G. R. Maxwell and R. S. Spray Morgantown—p. 319
Allergic Headache. R. J. Armbricht Wheeling—p. 321

Wisconsin Medical Journal, Madison

35 501 592 (July) 1936

- Pathology of Carcinoma of Rectum and Rectosigmoid. G. Scullard, Eau Claire—p. 517
Diagnosis of Carcinoma of Rectum and Rectosigmoid. A. G. Schuttie, Milwaukee—p. 521
Cancer Cell Antigens and Their Therapeutic Significance. J. L. Yates, Milwaukee—p. 525
Surgical Treatment of Carcinoma of Rectum. V. C. David Chicago—p. 530
Cancer Reports During 1935. Summary of Reports Received by Wisconsin State Board of Health. G. W. Henika Madison—p. 537
Factors Which Influence the Curability of Mammary Cancer. U. V. Portmann Cleveland—p. 538

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

11 120 (May) 1936

- Physical Therapy in Austria. M Ostermann—p 2
 Physiotherapy in Belgium. L Mayer—p 3
 Recent Advances in X Ray Treatment. J F C Braine—p 4
 The General Principles of Radium Therapy. H S Souttar—p 6
 Massage Manipulation and Movement. Survey of Recent Advances in Treatment. J Mennell—p 8
 Diet and Physiotherapy. Edith J L Pearce—p 11

British Journal of Radiology, London

9 351 414 (June) 1936

- Fungoid Conditions of Lungs. R Fawcitt—p 354
 *Some Direct Measurements of Distribution of Gamma Radiation in Human Tissues by Radium Teletherapy. C W Wilson and G Myers—p 379
 Easily Demountable Unit for Teletherapy. W G Evans and H D Griffith—p 390
 Two Cases of Paraplegia (a) from Multiple Myelomatosis (b) from Hemangioma of a Vertebral Body Treated by Radiotherapy. Gwen Hilton—p 400
 Some Defects in Radium Needles. Their Detection and Some Consequences. H D Griffith—p 404

Measurements of Distribution of Gamma Radiation.—Wilson and Myers aimed (1) to measure directly in human tissue the intensity at various depths due to the radiations from a 2 Gm unit and to compare and contrast the results with those obtained by measurements in a water phantom, (2) to determine whether bone possesses any features which modify the measurements in a manner not obtaining in soft parts, and (3) to collect some data concerning "back-scatter" at the surface of the skin. The results of their study indicate that measurements of the gamma radiation from a telerradium unit made at a point within a water phantom give an accurate measure of the dose received at a corresponding point within the human body, provided it is situated within an extensive amount of tissue that contains no air spaces. The types of tissue that are concerned make no difference to the result. When, however, regions near the boundaries of tissues have to be considered, it appears that readings made within the more extensive water phantom may differ considerably from the true values. Thus, for a true measurement in such regions it is necessary, as Bruzau has pointed out, to use a volume of water (or other phantom material) equivalent to that part of the body undergoing irradiation. The removal of the bone of the skull apparently brings about an increase in the depth dose within the skull of about 12 to 13 per cent, an amount that is not in itself sufficient to justify the removal of the bone as a preliminary to irradiation, though of some value if applied to cases in which a preliminary decompression is performed for therapeutic reasons or as a step in the exploration of the tumor.

British Medical Journal, London

1 1143 1190 (June 6) 1936

- Treatment of Gastric and Duodenal Ulcer. H L Tidy—p 1143
 Inflammation. Hunter's Views and Modern Conceptions. G L Cheate—p 1148
 Urinary Tract Complications in Prolonged Immobilization of Children. L A Key—p 1150
 Possible Reservoir Host of *Trypanosoma Rhodesiense*. W A Lamborn and C H Howat—p 1153
 *Association of *Bacillus Coli* Infection and Rheumatoid Arthritis. G Slot and P M Deville—p 1155
 Histidine Treatment of Peptic Ulcer. A. Wingfield—p 1156

1 1191 1238 (June 13) 1936

- Treatment of Tetanus. L. Cole—p 1191
 Cavernous Sinus Thrombosis. Study of Cases of Recovery. J B Cavenagh—p 1195
 Gastritis in Theory and Practice. S J Hartfall—p 1200
 Observations on Intubation Treatment of Peptic Ulcers. W C D Maile—p 1204
 Third Generation Syphilis. A. Elliott—p 1206

Bacillus Coli Infection and Rheumatoid Arthritis.—Slot and Deville observed that in nine of their twenty-four cases of rheumatoid arthritis there was an unsuspected bacilluria. *Bacillus coli* was the organism isolated in eight cases,

and a streptococcus was present in one. None of these patients, except the one harboring streptococci, complained of any urinary symptoms and the usual routine ward examination of the urine revealed no abnormality. It was only when catheter specimens were taken that the bacilluria was discovered. As the administration of alkalis is generally an early form of therapy, it is possible that the presence of bacilluria is more frequent than is thought. The role of the intestine in rheumatoid arthritis must be reviewed carefully, in view of the possibility that *Bacillus coli* infection may have an intestinal origin. A careful bacteriologic examination of the feces was made in all the authors' cases, but no abnormal flora was discovered. All the patients were females, and the arthritis in all cases was confirmed not only clinically but also by roentgen examination.

Glasgow Medical Journal

7 257 304 (June) 1936

- Observations on Renal Function Tests in Childhood. J H Hutchison—p 257
 Early Stages of Tobacco Amblyopia. W J B Riddell—p 268

Indian Medical Gazette, Calcutta

71 245 308 (May) 1936

- Immunologic Methods in Determination of Infection in Random Sample of Hospital Admissions. Part I. C L Paricha G Panja and S Lal—p 245
 *Tuberculosis in Some Rare Situations. Namely Tonsils and Uterus. K G Krishnaswamy, A N Goyle and A Vasudevan—p 254
 Pneumonia in Tea Garden in Assam. Notes. R. Bhattacharyya—p 259
 Rhinomeningorrhea. Case. N Gupta—p 264
 Malaria on Hill. C Strickland and H P Chaudhuri—p 267
 Velocity Silt and Larval Drift. D Manson—p 270

Tuberculosis of Tonsils and Uterus.—In 2,477 cases in which tonsillectomy was performed, Krishnaswamy and his associates found histologic evidence of tuberculosis in fifteen cases. The disease is definitely much more frequent in females than in males after 15 years of age. The maximal incidence is between the ages of 16 and 20. The youngest patient was 5 years and the oldest 26 years of age. The tuberculous process begins in the form of one or two discrete tubercles beneath the surface epithelium and crypts. These gradually enlarge, become confluent and extend into the substance of the tonsil until a great part of it is replaced by tuberculous tissue. Ulceration does not occur. Proliferation of the reticular cells and fibroblasts was pronounced. The ultimate tendency of the tuberculous lesions in the tonsils is toward recovery. Tuberculous infection may spread to the peritonsillar tissues, causing peritonsillitis, which was clearly seen in one case. Tuberculosis of the uterus is most common in adults, the average age incidence in the authors' eight cases was 28. The most common symptom was leukorrhea, even though some of the patients complained of amenorrhea and others of vaginal bleeding. The duration of the symptoms varied from a period of five months to six years. There was histologic evidence of tuberculous cervicitis in all cases except one. The pre-operative diagnosis in most cases was that of malignant disease, showing that histologic examination of the affected tissue is of particular importance in the correct diagnosis of uterine tuberculosis, since there are no definite clinical signs or symptoms pathognomonic of this disease. In three cases there was no evidence of any other focus of tuberculosis apart from the cervix and the possibility of primary tuberculosis of this tissue is to be considered. The endometrium was not affected at all and the myometrium showed miliary tubercles in close relation to the blood vessels, suggesting a hematogenic spread. Histologically, in early cases the tubercle follicles are situated beneath the surface epithelium in the stroma between the glandular acini. These gradually coalesce, undergo caseation and cause ulceration of the surface epithelium. A rare interstitial type has been described in which there is a diffuse enlargement of the cervix with intact surface epithelium (Frank). There was one case of this type. It has been noted by some authors particularly by von Franque, that in tuberculosis of the cervical mucosa there is stratification of glandular epithelium and obliteration of the lumen of the acini. This has not been observed in the present cases.

Journal of Laryngology and Otology, London

51: 281-352 (May) 1936

- Extirpation of Esophagus for Carcinoma A T Edwards and E S Lee.—p 281
Misplaced Wisdom Teeth and the Otorhinolaryngologist C B Henry.—p 293

51: 353-424 (June) 1936

- Discovery of Caloric Nystagmus A Reyto.—p 353
*Experimental Investigation of Tinnitus W J McNally E A Stuart T F Reid and L H McConnell.—p 363
Some Points in Technique of Fronto-Ethmoidal Operation W Howarth.—p 387

Experimental Investigation of Tinnitus—McNally and his associates carried out experiments in a series of nineteen patients suffering from tinnitus, the ages of the patients varied from 19 to 52 years, the duration of the tinnitus varied from a few months to about thirty years. Some of the youngest patients or ones who have had the tinnitus for a very short time did not show as much improvement from the various procedures as did older patients or the ones who have had the tinnitus longer. Both ephedrine and a preparation containing the alkaloids of belladonna caused improvement in the tinnitus in a greater percentage of cases when given by mouth than when given hypodermically. Since the hypodermic method of administration was the more accurately controlled, its results are probably more reliable. Stimulation of the sympathetic or depression of the parasympathetic nervous system by drugs whether carried out separately or simultaneously, had a slightly more beneficial effect on the tinnitus than did depression of the sympathetic or stimulation of the parasympathetic nervous system. Yet the operation of stellate ganglionectomy (depression or elimination of the sympathetic) caused an improvement in the tinnitus in three of four cases. The procedures carried out, with the exception of the sodium-free diet, were directed toward alteration of the cerebral circulation or cerebral pressure. It is most likely that the cerebral circulation was affected because the drugs used produced their full physiologic effect and most of these drugs have been shown by other experimenters to have a definite effect on the cerebral vascular mechanism. In spite of an undoubted alteration of cerebral circulation, the tinnitus in the majority of the cases was unaffected by the procedures employed.

Journal of Pathology and Bacteriology, Edinburgh

42: 541-716 (May) 1936

- Leuko-Erythroblastic Anemia Janet M Vaughan.—p 541
Study of Pathology of Nephritis in Infancy and Childhood Katharine J Guthrie.—p 565
Further Studies on Streptobacillus Moniliformis and Its Symbiont, Emory Klieneberger.—p 587
Association of Chromaffin Tumors with Neurofibromatosis D B Rosenthal and R A Willis.—p 599
*Bacillus Coli in Drinking Water of Ships Effect of Storage H M R. Jones.—p 605
Monocytic Leukemia with Myeloid Hyperplasia and Localized Tumor Formation A C P Campbell J L Henderson and J H Croom.—p 617
Different Forms of Corynebacterium Diphtheriae and Their Significance. W Muir.—p 635
Cerebellar Hemangioblastoma Case J Gough.—p 647
Angioblastoma of Spleen with Metastases in Liver S De Navasquez.—p 651
Multiple Arteriosclerotic Aneurysms of Circle of Willis F T Thorpe and J L Clegg.—p 657
Chronic Renal Destruction and Parathyroid Hyperplasia H A Magaous and R B Scott.—p 665
*Actinomycosis of Ovary Report of Four Cases F H Coté and G R Tudhope.—p 673
Growing Pneumococcus with View to Production of Cultures of Standard Maximal Density Virulence and Polysaccharide Content R A O O'Meara and Annie M Brown.—p 679
Differential Cell Counts of Pituitary Gland in Hypertension and Endocrine Disturbances F Hawking.—p 689

Effect of Storage on Drinking Water of Ships—Jones investigated the changes in the *Bacillus coli* content of fresh water which occur during storage in ships tanks under normal conditions at sea. Four experiments were performed over a period of fifteen months, the same tank being used for each and from these the following conclusions are drawn. 1 *Bacillus coli* dies out during storage, and no evidence of any increase,

either temporary or permanent, was found. 2 If *Bacillus coli* is found in samples of water taken from ships' tanks, it can be assumed (provided the tank itself is not contaminated) that these germs have not grown there and that the water contained a higher number of *Bacillus coli* when it was taken into the tank. 3 The rate at which water becomes free from *Bacillus coli* depends on the temperature to which the tank is subjected, being rapid in the tropics and much slower on voyages through cooler seas. 4 Whether or not the storage tank has been recently cleaned and "cement-washed" inside does not appear to affect the rate of purification of the water, at any rate up to a period of fifteen months.

Actinomycosis of Ovary—Coté and Tudhope have observed four cases of actinomycosis of the ovary within the last twelve years. The ages of the patients ranged from 27 to 45 years. The total duration of the illness in cases 2, 4 and 1 was five, nine and twelve months, respectively. In case 3 it was four years and three months, but this includes a preliminary period of three years of rather vague attacks of abdominal pain at infrequent intervals. In cases 2 and 4 there had been an operation for "appendicitis" three months prior to their coming under observation for pelvic trouble, and in case 1 the appendix was embedded in a mass of dense adhesions anchoring the cecum to the floor of the pouch of Douglas. It is also highly significant that in all four cases it was the right ovary, with or without the corresponding fallopian tube, which was first affected. In cases 2 and 4 only the right ovary was removed. In case 3 the right tube and supposed ovary were first excised but were not examined microscopically, nine months later a "cyst" of the right broad ligament was removed and proved to be an actinomycotic ovary. In case 1 a right "tubo-ovarian abscess" was excised at the first operation but was not examined microscopically. Three months later the left tube and ovary were removed and the actinomycotic nature of the lesion was demonstrated microscopically. It is reasonable to assume that in these cases the right tube and ovary were affected by direct extension from the appendix. All four patients died of the disease in spite of the surgical measure adopted, and in cases 2 and 3 there was extension finally to the lungs and pleurae. Actinomycosis of the ovary reproduces with great fidelity the characteristic honeycombed appearance of the lesion as ordinarily encountered in the liver and kidney. Typical colonies of the ray fungus were present in the suppurating centers of the granulomatous nodules, and in one case an anaerobic streptothrix was recovered in cultures from the empyema that developed subsequently.

Journal of Physiology, London

86: 337-452 (May 4) 1936

- *Lipotropic Effect of Dietary Protein C H Best Rhoda Grant and Jessie H Ridout.—p 337
Effects of Cholesterol and Choline on Liver Fat C H Best and Jessie H Ridout.—p 343
Release of Acetylcholine at Voluntary Motor Nerve Endings H H Dale W Feldberg and M Vogt.—p 353
Constrictor Response of Inferior Vena Cava to Stimulation of Splanchnic Nerve. K J Franklin and A D McLachlin.—p 381
Stream Lines in Abdominal Vena Cava K J Franklin and A D McLachlin.—p 386
*Chlorophyll and Hemoglobin Regeneration After Hemorrhage J H Hughes and A L Latner.—p 388
Observations on Nerves of Supply to Bladder and Urethra of the Cat Study of Their Action Potentials J P Evans.—p 396
Maintenance of Pregnancy in Hypophysectomized Rabbit with Progesterin J M Robson.—p 415
Response to Drugs of Gut Muscle in Asphyxia and in Iodoacetic Acid Poisoning B N Prasad.—p 425
Liberation of Histamine by the Heart Muscle G V Anrep G S Barsoum and M Talaat.—p 431

Chlorophyll and Hemoglobin Regeneration After Hemorrhage—Hughes and Latner found that rabbits are capable of converting chlorophyll to hemoglobin, if the former is given in small doses. The failure of large doses to produce any effect is very remarkable. It seems that chlorophyll in large doses is toxic to the bone marrow. This may be due to increased absorption of magnesium either in combination with chlorophyll or brought about in a manner similar to that in which the absorption of iron is increased on administration of bile pigments. The fact that large doses of the magnesium-

free chlorophyll derivative aid regeneration when administered by mouth seems to bear out this suggestion. It is a distinct possibility that the chlorophyll is acting as a physiologic stimulant of the bone marrow and is not really concerned with the actual chemistry of regeneration of the porphyrin grouping. This possibility is now being investigated. In the case of the crude chlorophyll, large doses exert a favorable effect on hemoglobin regeneration. It seems, therefore, that there is some substance in the crude chlorophyll which counteracts the toxic effect of the chlorophyll itself. The part played by intestinal bacteria might possibly be of some significance. Chlorophyll is known to be broken down by these bacteria, and it is quite likely that it is one of the breakdown products which is used for the subsequent synthesis of hemoglobin. This possibility is borne out by the failure of subcutaneous injections of the chlorophyll-free derivative to produce any effect.

Journal of State Medicine, London

44: 249 310 (May) 1936

- The Health of the Married Woman. A. Goodwin.—p. 249
Women in Industry. Winifred Cullis.—p. 260
Psychologic Influences on the Circulation. J. F. H. Dally.—p. 265
Arthritis in Women. R. F. Fox.—p. 275

44: 311 372 (June) 1936

- What Are Foes of Industrial Hygiene and How Can They Be Met? T. Oliver.—p. 323
Sociological and Medical Aspects of Induction of Abortion. Lonise McIlroy.—p. 332
Infectivity of Tuberculosis. L. S. T. Burrell.—p. 345
Rheumatism and Allied Diseases. Introductory Review. F. J. Poynton.—p. 349
Some Effects of Emancipation on the Health of Women. G. W. Theobald.—p. 359

Journal of Tropical Medicine and Hygiene, London

39: 113 124 (May 15) 1936

- Some Cases Which Illustrate Favorable Influence of Tropics on Course and Treatment of Subacute Bacterial Endocarditis. H. O. Gunewardene.—p. 113
Studies of Suprarenal Glands of Dogs. II. Study of Influence of Parasites on Weights of Suprarenal Glands of Dogs. D. D. Baker and E. H. Hinman.—p. 117

Lancet, London

1: 1223 1278 (May 30) 1936

- Late Results in Operative Treatment of Intracranial Tumors. H. Cairns.—p. 1223
*Diagnosis of Carcinoma of Cervix in Very Early Stage. W. Schiller.—p. 1228
Observations on Castle's Intrinsic Factor in Pernicious Anemia. C. C. Ungley and technical assistant R. Moffett.—p. 1232
Modern Technic in Bronchography. G. S. Erwin.—p. 1236

Early Diagnosis of Carcinoma of Cervix.—Schiller warns that the aqueous iodine test is not specific for carcinoma but marks off only the areas that do not contain glycogen. Glycogen is always absent in cancer, but not only in cancer. It is absent also in carcinomatous transformation of epithelium, hyperkeratosis of the squamous epithelium of the cervix, keratinization developing in prolapse, which may also cause the glycogen to disappear, and when the superficial layers of glycogen containing epithelium have been rubbed off by inflammation, maceration or the examining finger or speculum. Thus there are different possibilities which cause the epithelium of the surface to remain white. The method of iodine painting is easily carried out in an outpatient department, requiring no special training for the doctor and causing the patient no pain. A further field of application for iodine painting is in the revelation of cancerous marginal zones of progressed carcinomas. The method can be applied without difficulty, but it has its full value only when carried out on as many patients as possible. The author has seen patients 25 or 26 years of age with smooth, homogeneous shining white portions that seemed altogether above suspicion to the eye of the clinician but when painted with iodine showed a small white speck which proved to be a carcinoma when scraped off. The gynecologist who paints only the suggestive cases is sure to miss the most important stage—the smallest clinically latent cancer. The more general the examination by iodine painting the smaller will be the proportion of positive cases. In the author's last series, about twenty of every

hundred women examined in the outpatient department showed suspicious areas, and of these twenty only one or two proved to be cancers at histologic examination of the scrapings. But even if only 1 per cent of the examined women give a positive diagnosis, the result is still exceedingly satisfactory, for carcinoma when detected and treated at that early stage gives nearly 100 per cent security for definite permanent healing. If it were possible by this procedure to examine systematically at intervals of a few months as large a number of women as possible, a predominant proportion of cervical cancers might be obtained for treatment at such stages as would fully guarantee permanent healing. Thus it would be possible to lower greatly the mortality of this disease.

Medical Journal of Australia, Sydney

1: 697 732 (May 23) 1936

- Approach to Interpretation and to Treatment of Psychoneuroses and Psychoses. C. I. McLaren.—p. 697
Sterilization of the Unfit. P. G. Dane.—p. 707
Further Contribution to Study of Heredity of Blood Groups in Australian Families. Eva A. Shipton.—p. 712

1: 733 770 (May 30) 1936

- *Critical Survey of Some References to Syphilis and Yaws Among Australian Aborigines. C. J. Hackett.—p. 733
The Problem of Child Guidance. Adaptability and Delinquency. D. M. Emberton.—p. 745

Syphilis and Yaws Among Australian Aborigines.—Hackett gives a critical survey of some references to venereal disease and syphilis in Australian aborigines and suggests that, if granuloma pudendi is excluded, in most cases the disease referred to is yaws. Among the aborigines of the Northern Territory of Australia today syphilis is unknown, while yaws is frequent. In museums in Australia there are aboriginal bones from the southern and eastern areas which show yaws lesions. It is probably correct to conclude that, when Australia was discovered by Europeans, yaws was present in all native communities and that, as long as they were leading lives not completely divorced from their bush fashion, they still suffered from yaws and not from syphilis. This confirms the suggestion that the descriptions of venereal disease and syphilis were of yaws. That the disease known to the Aranda tribe as *irkinja* is yaws indicates that that disease has been endemic in central Australia for a long time.

Medical Press and Circular, London

192: 539 560 (June 17) 1936

- Synthesis of New Radioactive Elements. Madame Joliot Curie.—p. 542
Acromegaly. F. R. B. Atkinson.—p. 543
*What Is a Cold? H. Merrill.—p. 550
Catering at a Spa from the Practical Man's Point of View. M. Chance.—p. 554

What Is a Cold?—Merrill declares that a cold is the visible manifestation of conflict between microbes and lymphocytes of more vigorous degree. Every microbe which obtains a foothold in the throat or nose stimulates the defenses into more vigorous action and will produce the catarrh, swelling of the mucous membranes and increased irritability, with sneezing and coughing, for these are the actual consequences of the increased production of lymphocytes and mucus. The exanthems are all of them attended by catarrh, the main feature of a cold. The condition which brings about this degree of reaction is the lessened bodily resistance to microbic attacks that is occasioned by a loss of bodily heat. A cold is the manifestation of the conflict between microbes and lymphocytes, which is a normal condition of life, exaggerated in severity when the invading microbes have overcome the first line of defense through the weakening of these outposts, which supervenes on a sudden loss of heat. The actual cause of this cooling of the body is evaporation. The usual way in which a cold is caught is by sitting in wet garments, particularly wet shoes and stockings. Evaporation is greatly expedited in a draft. The air cannot be too cold to breathe as long as we are protected from loss of body heat. In the course of passage from the open air to the nasopharynx, the inhaled air is raised to blood heat. While it is both healthy and safe to sleep in a draft when in bed it is highly dangerous to sit in a draft unless one is protected by an overcoat such as would be worn when sitting or riding in an open vehicle in the open air.

South African Medical Journal, Cape Town

10 315-346 (May 9) 1936

The Medicosocial Aspects of Population Density P W Lairdler—p 317
Preventive Medicine and Public Welfare. J H Rauch—p 327

10 347-390 (May 23) 1936

Hospital Problems J Barrett—p 349
Medical Influences of Hospitals on East Coast of Africa. C F v d Merwe.—p 357
Recent Views on Endoscopic Diagnosis and Treatment of Pulmonary Diseases C E. Jones-Phillipson—p 360

Tubercle, London

17 385-432 (June) 1936

*Risk of Silicosis in Sandblasters. E R A Merewether—p 385
Concentration and Culture Methods in Examination of Sputum for Bacillus Tuberculosis. P Edwards, A Lynn and L J Cutbill—p 391
Cineradiography of Chest. R J Reynolds—p 396
Technic and Interpretation of Chest Radiogram K Dunham—p 406

Risk of Silicosis in Sandblasters—In the case of chambers using sand as the abrasive, Merewether gives the following as the main sources of risk (1) the atmosphere inside the chamber is invariably dangerous during blasting and for a period afterward, (2) the atmosphere inside the helmet, breathed by the worker, is invariably dangerous during blasting in the absence of an adequate positive fresh air supply and (3) the air in the workroom in which the sandblasting chamber is situated may also be dangerous, owing to leakages from the chamber and from various parts of the accessory plant and from opening the door before the dust has been removed by the fan While it may be possible with special equipment precautions and constant supervision to make sandblasting safe for the time, a breakdown in one direction or another is more liable to occur than in many of the dangerous trades and the results of such a breakdown, even if only of a temporary nature, are most serious Owners of sandblasting factories have many fresh problems daily, sandblasters are often piece workers and therefore are less careful, the sandblasting equipment has to stand up to very hard usage, and thus, without any real negligence, the general conditions under which sandblasters work become such as to result in a serious health hazard

Chinese Medical Journal, Peiping

50: 201-296 (March) 1936

Decompression of Gastro-Intestinal Tract II Application of Principles of Mechanical Decompression to Treatment of Various Surgical Conditions of Abdomen H C Fang and H H Loucks—p 201
Paroxysmal Hemoglobinuria Report of Case in a Chinese. C. H Huang and R. H P Sia—p 214

Japanese Journal of Experimental Medicine, Tokyo

14 85-196 (April 20) 1936

Demonstration of Paschen Corpuscles in Brain and Testicle by Method of Overstaining K. Kanazawa—p 85
Promoting Action of Antiricin Serum on Hemo-Agglutination Due to Ricin H Moriyama—p 87
Experimental Diphtheria Paralysis Further Report E Ozawa—p 105
Observations on Transmission of Antitoxin to Eggs and Chicks of Chickens Immunized with Purified Diphtheria Anatoxin. E Ozawa—p 115
Immunologic Studies of Snake Venoms K. Akatsuka—p 147
Virus Isolated in 1935 Epidemic of Summer Encephalitis of Japan T Tanguichi M Hosokawa and S Kaga, in cooperation with T Wada T Horimi and S Hashida—p 185

Japanese Journal of Obstetrics & Gynecology, Kyoto

19 175-326 (May) 1936

Study on Effects Caused by Each Organ's Pressed Juice, on Respective Organ, Administered Extra Orally Parts I II III and IV Histologic Changes in Kidney Heart Liver and Spleen Due to Hypodermic Injections of Each Pressed Juice of Kidney Liver Spleen Testes and Heart T W Yno—p 176
Id. Part V Observations on Functional Conditions of Rabbit's Heart and Uterus, with Pressed Juice Injections of Heart and Uterus Discussion on Parts I II III and IV and Summary for All Parts. T W Yno—p 239
Experimental Study of Metastasis of Malignant Tumor S Okamoto—p 273

Annales de l'Institut Pasteur, Paris

58 609-728 (June) 1936 Partial Index

*Antituberculous Immunizing Power of Tubercle Bacilli of Smooth Colonies L Nègre J Valtis and J Bretey—p 609
Bang's Disease in Man in Yugoslavia T V Simitch and M Djourichitch—p 620
Staining of Bacterial Cilia by Simple Method. S Levenson—p 634
Comparative Sulfur and Phosphorus Content of Plants Cultivated on Same Soil G Bertrand and L Silberstein—p 644
Immunization Against Diphtheria by Single Injection of Precipitated Anatoxin. Bronislava Palant Anna Gordine and M. Mitleman—p 648
Attempt at Antipneumococcus Immunization by Inhalation J P Exchaquet—p 668

Immunizing Power of Smooth Colony Tubercle Bacilli—Negre and his collaborators inoculated guinea-pigs and rabbits subcutaneously or intravenously with tubercle bacilli from smooth colonies isolated by the acetone extract method The original organisms were obtained from human pathologic lesions or from guinea-pigs and transferred for several generations The injections produced in these animals a benign infection, the histologic manifestations of which were transitory but seemed to be prolonged by the persistent presence of bacilli in the animals. Following these injections the guinea-pigs and rabbits presented a definite resistance to infection with virulent organisms This resistance was more marked after inoculation with the smooth variety than with the rough avirulent variety from the same strain of bacilli The more marked immunizing action of the smooth strain perhaps depends on its special chemical composition, since its content of lipids is higher than that of the corresponding rough varieties Whatever the origin or character of the strains used and whether they return or not to the virulent rough variety, all the smooth strains studied showed feeble variations but the same immunizing power against tuberculous infection with virulent organisms of either human or bovine type. These properties seem to remain intact after several years of cultivation of the smooth strains on artificial mediums After heating for one hour at 70 C, the bacilli of the smooth colonies, like those of the rough colonies, appear to lose the greater part of their immunizing power

Bruxelles-Médical, Brussels

16: 1273-1303 (June 21) 1936

*Aerophagia in Ptosis H Gachlinger—p 1273
Syringomyelia and Work Accident A Bodart—p 1278
Pregnancy Edema Complicated by Generalized Fetal Edema M Brouha—p 1283
Hepatic Extracts and Gold Therapy De Luna—p 1285

Aerophagia in Ptosis—Gachlinger believes that the theory of Jacquet most nearly explains the presence of air swallowing in ptosis This theory involves the conception that most patients with ptosis are dyspeptic and that this gives rise to gastric malaise, which causes the deglutition of air The facts that the symptom subsides with the patient in the lying position that it is temporarily cured by diet and, finally, that the wearing of a support can cause the disappearance of aerophagia in reducible ptosis lend support to this theory The author carries this theory further and believes that aerophagia in ptosis is the consequence of insufficient pressure exerted by the abdominal muscles on the gastro-intestinal mass It is hence partly due to the result of poor physiologic absorption of the gas, partly to disorder of the hepatic circulation and partly to insufficiency of the interior tonus

Chirurgia degli Organi di Movimento, Bologna

22 184 (May) 1936 Partial Index

Importance of Vessels of Round Ligament in Process of Development of Head of Femur C. Cella—p 1
Congenital Abnormalities of Development of Menisci of Knee Joint. G Filippi—p 13
Technic and Applications of Salaghi's Electric Thermophore M Salaghi—p 34
Congenital Malformations of Vertebral Column Vertebral Synostosis and Kyphosis. C Schapira—p 39
*Isolated Fracture of Greater Trochanter O Betto—p 58.
Synovial Chondromatosis Case. P C. Borsotti—p 63

Isolated Fracture of Greater Trochanter—Betto states that isolated fractures of the greater trochanter are rare. They are the result of direct trauma and violent contraction of the muscles during trauma Osteoporosis is a secondary factor The

diagnosis is difficult. Palpation cannot be performed because of the presence of edema and intense pain. The position of the limb is characteristic. There is adduction of the thigh, internal rotation of the leg in such a manner that the patella touches the internal aspect of the opposite knee, moderate flexion of the leg on the thigh and slight deviation of the pelvis to the normal side. The differential diagnosis is made with articular lesions and with fracture of the neck of the femur. The diagnosis is made by the roentgen examination of the femur, which shows the type of fracture and intensity of displacement of the fractured segment of the process. The prognosis with regard to function of the limb depends on the type of fracture and the intensity of the displacement, which depends in turn on the direction and retractile force of the muscles. The treatment consists in rest with the leg in external rotation and forced abduction for about one month, if the fracture is incomplete and the fractured segment remains in place or is slightly displaced. Surgical treatment is indicated only in cases of grave complete fracture with great displacement in young patients. A case is reported.

Haematologica, Archivio, Pavia

17 393-492 (No 5) 1936

Spleno-megalic Erythremic Myelosis with Myeloid Aplasia. E. Storti —p 393

Hematopoietic Response to Necturus Maculosus to Intraperitoneal Injections of Liver Extract, of Alpha Dinitrophenol and of Liver Extract Together with Alpha Dinitrophenol. J. H. Phillips —p 461

*Influence of Vitamin C on Coagulation of Blood. L. Cotti —p 483

Influence of Vitamin C on Coagulation of Blood—Cotti found in previous work that intravenously administered vitamin C (from 50 to 100 mg daily for from five to eight days) produces variations of the time of coagulation which are related to variations of the coagulation ferments. To ascertain the role of the coagulation ferments, the author made determinations of the time of coagulation and of the amount of thrombin, fibrinogen and antithrombin in the blood of eleven persons, including normal persons and persons suffering from hemorrhagic and nonhemorrhagic diseases, before and after an intravenous injection of from 100 to 200 mg of vitamin C. The time of coagulation was prolonged in the four cases in which the amount of thrombin decreased, it was shortened in the four cases in which the amount of thrombin increased and it did not change in the three cases in which the amount of thrombin did not change. Fibrinogen and antithrombin did not change. The results obtained point out the relations between thrombin and coagulation and the fact that vitamin C promotes the activity of thrombin when it is diminished and inhibits it when it is normal. The last statement is proved by the variations of the coagulation time that follow the intravenous injection of vitamin C in persons with hemorrhagic diatheses, including hemophilia, and in certain normal persons. The coagulation time is shortened after the injection of vitamin C in all cases of hemorrhagic diathesis while it is prolonged in certain normal persons. On the basis of the results of the studies of Kühnau and Morgenstern on coagulation "in vitro" and of his own results of the study of coagulation in living persons, the author states that coagulation takes place through certain phenomena of oxidation-reduction of substances in the blood and that the mechanism of action of vitamin C on coagulation is due to the reducing properties of vitamin C.

Prensa Médica Argentina, Buenos Aires

23 1571-1624 (July 1) 1936

Dosimetry of Roentgen Rays at the Present Time. E. Lanari and F. Vierheller —p 1573

Psychoanalysis: a Task of Licensed Practitioners. J. R. Beltran —p 1580

*Pneumoperitoneum in Treatment of Intestinal and Pulmonary Tuberculosis. A. J. Rey, J. C. Rey and A. Garcia de Loyola —p 1583

Diseases of Humors Cases. J. Moreno —p 1591

Primary Tuberculous Infiltration of Skin in Children. Skin Port of Entry of Tuberculosis. A. A. Magalhães —p 1600

Symphyotomy in Labor with Retained Head. Case. J. Monjo —p 1613

Pneumoperitoneum in Treatment of Intestinal Tuberculosis—Rey and his collaborators report satisfactory results from pneumoperitoneum in fifteen cases of intestinal tuberculosis secondary to pulmonary tuberculosis. The authors conclude that the technic of pneumoperitoneum is easy. It is advisable

to perform the operation early in the development of intestinal tuberculosis, as soon as the complication is suspected. The operation is not contraindicated in patients in whom unilateral or bilateral pneumothorax has been previously performed. Pneumoperitoneum acts as a coadjuvant treatment to phrenicectomy by intensifying and strengthening the effects of phrenicectomy. Pneumoperitoneum results in rapid relief of diarrhea, pain, fever and the symptoms of gastric dyspepsia until complete disappearance. The patients regain a restful sleep and a feeling of euphoria. The satisfactory results of pneumoperitoneum as a symptomatic treatment are obvious. The value of the operation in producing complete recovery of the patients will be evaluated in time, after a more prolonged observation of the patients who, up to the present, can be considered as recently treated.

Revista de Medicina y Cirugía de la Habana, Havana

41 345-416 (June 30) 1936

Medicolegal Identification of Sex (in Living Persons). R. de Castro and Bachiller —p 345

Tuberculous Leprosy. Case. J. Grau Triana, F. León and G. González Pons —p 359

*Rapid Method for Identification of Diphtheria Bacilli. Also New Method for Identification of Carriers. R. Silveira —p 372

Instrument for Performance of Subcutaneous or Intravenous Injections of Serums and Also for Transfusion. R. Cowley Campodónico —p 377

Typhoid General Study. G. González —p 380

Identification of Diphtheria Bacilli—A rapid method for identification of diphtheria bacilli and detection of carriers as described by Brahdý and his collaborators, was published in THE JOURNAL, May 25, 1935, page 1881. The method consists in the use of horse serum instead of Löffler blood serum slant method in the preparation of nose and throat cultures for identification of diphtheria bacilli, and in the intracutaneous test in guinea-pigs after inoculation of a four-hour rapid culture, transplanted to a Löffler slant and incubated for eighteen hours, for detection of carriers. Silveira made a comparison of both the routine Löffler and the Brahdý method. He confirms Brahdý's conclusions with regard to the simplicity of the technic, rapidity of results and value of the method. In Silveira's ten cases positive results in identifying diphtheria bacilli were obtained within two and four hours by Brahdý's method as against a period within sixteen and twenty-four hours, rarely twelve hours, by the routine Löffler method. When the Brahdý method gave negative results, the Löffler method also gave negative results. In detection of carriers positive results can be reported within twenty-four hours by Brahdý's method as against four or five days by the routine Löffler method. Also in this case negative results of one method coincide with negative results of the other.

Deutsches Archiv für klinische Medizin, Berlin

179 113-208 (June 11) 1936 Partial Index

Estimation of Bone Marrow on Basis of Sternal Puncture. N. Markoff —p 113

*Studies on Pathogenesis of Obesity. G. Hetenyi —p 134

Compensating Enlargement of Cardiac Valves. P. Radnai and F. Ascher —p 142

New Observations on Pelger's Familial Nuclear Anomaly. W. Zuödel —p 151

Clinical Estimation of Bone Marrow and Blood. Aspects of Bone Marrow in Agranulocytosis and Related Conditions. R. Stodmeister —p 163

*Some Peculiarities of Urine in Multiple Myeloma. A. Magnus Levy —p 188

Pathogenesis of Obesity—Hetenyi thinks that anomalies in the transport of fat, particularly in its mobilization, play a part in the pathogenesis of obesity. He investigated the mobilization of the fat depots of the organism during insufficient food intake in obese and in normal persons and found that it is impaired. Then he studied the alimentary hyperlipemia in obese and normal persons and observed that the tissues of obese persons have a great avidity for fats that enter the blood stream. The alimentary hyperlipemia was considerably less in patients with obesity than in normal persons. The author studied the relation between fever and fat mobilization from the deposits, the action of dehydration on the blood fat and finally the resorption of the subcutaneously administered fat. He detected that the increase in the blood fat during the artificially produced

fever is slight in obese persons. The resorption of subcutaneously administered fat is much less in obese than in normal persons. The author concludes that all these experiments show that the mobilization from the fat depots is reduced in obese persons, whereas their absorption capacity for the circulating fat is greatly increased, that is, obesity is a disorder of the fat mobilization. He concedes, however, that the problem of the pathogenesis of obesity has not yet been completely solved.

Peculiarities of Urine in Multiple Myeloma—Magnus-Levy points out that it is characteristic for multiple myeloma that casts and epithelia may for a long time be completely absent from the urine, in spite of severe degrees of proteinuria. The kidneys may remain intact for a long time, but later they usually became involved and casts appear in the urine. Some of these casts differ from the usual forms. There were casts with coarse granules and of irregular shape. Another type of cast resembled the well known waxlike ones but were much lighter and more transparent. The author shows that although these casts are of no importance for the diagnosis, they have a theoretical significance in that something can be learned about the nature of their protein, which is not possible in the ordinary types. Globulites, spherical bodies, which often appear in layers and the size of which exceeds that of leukocytes once or several times, were occasionally mentioned in earlier descriptions as constituents of the sediment but have been practically disregarded in recent years. Because of their low solubility they had never been chemically analyzed. It seemed likely that the spherical bodies would contain crystalline material. The author succeeded in proving their presence. In a considerable number of cases of multiple myeloma he observed a peculiar behavior of the Bence Jones protein during the process of heating. In spite of a sufficient acid reaction, a considerable portion of the Bence Jones protein remains undissolved during boiling over a flame. However, it does not precipitate like dust or in flocules, like ordinary protein, but is leathery, tough and sticky. Another portion of the sediment which forms a foam when the boiling process is severe, is likewise sticky. Of the urines with high protein content, every fourth or fifth one shows this behavior. It represents the transition of a solid sediment into a more or less fluid one, a type of "melting." After describing further studies on this type of melting, the author discusses the requirements for the demonstration of Bence Jones protein. He mentions three points: the proper solution of the urine with solution of sodium chloride, the addition of sulfosalicylic acid and the slow heating.

Deutsche medizinische Wochenschrift, Leipzig

92: 997 1036 (June 19) 1936 Partial Index

- *Treatment of Acute and Chronic Osteomyelitis of Tubular Bones by Means of Cod Liver Oil and Plaster Cast. W. Löhr—p. 997
- Sodium and Chloride Metabolism in Skin Diseases. H. Dollken.—p. 1004
- Action of Cod Liver Oil on Bacterial Mixtures. Particularly Soil Bacteria and Spore-Forming Organisms. Von Drigalski.—p. 1005
- Detachment of Retina. L. Heine.—p. 1008
- Deposition and Distribution of Gold After Administration of Inorganic and Organic Gold Preparations. Koppenhöfer.—p. 1011
- Röntgen Treatment of Chronic Tonsillitis. E. Otto.—p. 1012

Cod Liver Oil and Plaster Cast for Osteomyelitis—Löhr describes the technic of the cod liver oil and plaster cast treatment in acute osteomyelitis. The field of operation is rendered bloodless and an incision is made over the painful part of the bone. The periosteum is opened and the pus evacuated. The wound is filled with cod liver oil ointment, care being taken that it enters all corners. The wound is closed loosely, so that pus can escape readily. The filling with the mild ointment takes the place of rubber drains and tampons. The external wound is covered with a thick layer of ointment, and over this a plaster-of-paris cast is applied. As a rule the cast is left in place for two or even three weeks, but in case of excessive secretion from the wound it may be removed earlier. At the removal of the plaster cast the wound is usually more or less healed. Roentgenoscopies that are made during the following period often reveal sequestrums. However, sequestrotomy should not be done too hastily, because particularly in young persons, considerable restoration of the bone takes place. If six or eight weeks after the beginning of the disease, sequestrotomy does become necessary, it should be done in a radical manner. The author discusses the use of cod liver oil and the

plaster cast in cases of chronic osteomyelitis. In these cases the radical removal of the disease focus is of primary importance. The author says that in some cases he did not even hesitate to open the foot or knee joints. This procedure had no untoward effects. In summarizing the advantages of the cod liver oil and plaster cast treatment of osteomyelitis, the author stresses the painlessness, the fact that the frequent changes of dressings is done away with and the fact that the general condition of the patients is favorable. He cites a case which indicates that even desperate cases are amenable to this treatment.

Deutsche Zeitschrift für Chirurgie, Berlin

247: 145 288 (June 22) 1936 Partial Index

- *Question of Operative Treatment of Strawberry Gallbladder. F. Bernhard and E. Fenster.—p. 145
- Effect of Operative Trauma on Pulmonary Respiration. Capillary Gaseous Exchange and Circulating Blood Volume. E. Derra.—p. 187
- Torsion of Omentum. H. Knüpper.—p. 208
- *Hesse-Filatov Method of Treating Hemolytic Shock. L. Eljasevič.—p. 215
- Results of Resection in Gastric Cancer. H. B. Sprung.—p. 220

Question of Operative Treatment of Strawberry Gallbladder—Bernhard and Fenster say that during the period between 1906 and 1935 there were 443 cases of strawberry gallbladder in which operation was performed at the surgical clinic of the University of Gießen. Of these, 380 were in female and sixty-three in male patients. The age incidence was the same as that noted in cholelithiasis. Pain in the right upper quadrant and typical colics were the prominent symptoms in 380. In 100 patients jaundice was either present or existed at some time. In 100 cases, stones were present. Their composition differed from that seen in cholelithiasis. In fourteen instances out of twenty-four, sugar tolerance tests gave abnormally high sugar curves before the operation. Diastase determination in twenty-nine patients before the operation demonstrated an increase in one fourth of the cases. They have observed cases with a normal blood sugar curve but with increased diastase or pancreatic lipase in the blood serum. The quinine-refractory liver lipase was frequently increased. In about half of the cases either the external or the inner pancreatic secretion was found to be disturbed. Tests of pancreatic function are therefore of value in the diagnosis of strawberry gallbladder. Differential diagnosis from cholelithiasis and stasis of biliary tracts is difficult. Of the 443 patients, eleven died following the operation and twenty-seven after leaving the clinic. Seventeen of the latter died of carcinoma. Two hundred and one patients replied to inquiries and 110 were reexamined. In 80 per cent of the follow-up cases, relief of complaints was complete, while in 10 per cent the operation was considered a failure. Subacidity and anacidity following the operation were observed with about the same frequency as after the operation for cholelithiasis. The frequent occurrence of alimentary glycosuria and the abnormal blood sugar curve, as well as the increase of the atoxyl-refractory blood lipase, point to the existence of a chronic pancreatitis, which the authors regard as the cause of postoperative complaints. Operative intervention, though justified, is not as urgent as in cholelithiasis. It is clearly indicated, however, in the presence of pain and colicky attacks. From present knowledge the strawberry gallbladder is to be regarded as an independent disease entity and in many cases as the forerunner of cholelithiasis.

Treatment of Hemolytic Shock—Eljasevič reports three cases of hemolytic shock treated successfully by the Hesse-Filatov method. Symptoms of shock developed in the first case nine minutes after the infusion of 100 cc. of incompatible blood. The biologic test of Oehlecker was negative. In the second case a severe hemolytic shock developed in a person belonging to group A thirty minutes after transfusion of blood from a universal donor. The biologic test was likewise negative. In the third case, transfusion of a patient bleeding into the peritoneal cavity was done partly with her own hemolyzed blood removed from the peritoneal cavity. The symptoms developed forty-eight hours later and manifested themselves principally as those of a severe nephropathy. Transfusion with compatible blood as recommended by Hesse and Filatov, resulted in prompt cure of the three patients.

Klinische Wochenschrift, Berlin

15 921 952 (June 27) 1936 Partial Index

- Pernicious Anemia and Gastric Carcinoma, with Especial Consideration of Its Familial Occurrence W Thiele—p 921
- Technic of Cytologic Examination of Exudates and Secretions. G Wihman—p 926
- Lymphopenia in Uremia H Reichel—p 926
- *Graphic Demonstration of Changes in Density of Cardiac Roentgenogram (Actinocardiogram) in Mitral Defects. K Heckmann—p 928
- *New Method of Treatment in Thrombopenic Purpura R Klima—p 935
- Paroxysmal Cold Hemoglobinuria and Vitamin C H Lotze—p 941
- *Infection of Reticulocytes by Plasmodium Malariae E Jacobsthal—p 942

Actinocardiogram in Mitral Defects—Heckmann records the volume changes of the heart during pulsation by utilizing the changes in density on the roentgen screen for the direction of the current of a photo-electric cell. This current is intensified by a three-step low frequency amplifier and operates a mirror galvanometer, which in turn records a pulsation curve. The author designates this method as the actinocardiogram. In this report he describes curves that he obtained in patients with mitral defects. He found that in these patients the curve is characterized by a systolic increase in volume (inverse type) with subsequent steplike decrease, slight changes in volume, slight or missing diastolic increase in volume and deep auricular depression in the curve. He explains these manifestations by the enlargement of the left auricle, the fact that the systolic filling of the auricle is thus more pronounced (partial compensation for the ventricular reduction in size), the reduced inflow of blood into the left auricle during the diastole in mitral stenosis, the systolic backflow from the left ventricle into the left auricle, and finally the backflow of blood from the left auricle into the pulmonary veins.

Treatment of Thrombopenic Purpura—Klima shows that none of the various treatments of thrombopenia have been entirely successful and that the most effective method, splenectomy, involves considerable danger. For this reason, efforts have been made to improve the internal methods of treatment. In the course of investigations on the action of epinephrine, the author found that the administration of kephrine hydrochloride (methylaminoacetatechol hydrochloride) produced favorable results. He demonstrates the favorable therapeutic effects on the clinical histories of nine patients with thrombopenic purpura. He says that in injecting the substance the formation of hematomas can be avoided by giving the injection deeply on the fascia or, still better, intramuscularly. The substance is not given intravenously. However, it was found that it is also effective when given by mouth. For cases in which the hemorrhages are not severe, the author recommends the oral administration of 5 or 10 cc. of a 5 per cent solution of kephrine hydrochloride from three to six times each day. In cases of severe hemorrhage he gives deep subcutaneous or intramuscular injections of 2 cc. of a 0.5 per cent solution two or three times daily. Oral and injection therapy may be combined if it seems desirable. The hemostyptic action becomes noticeable gradually in the course of twenty-four or forty-eight hours. After the desired result has been obtained, the dose is gradually decreased. In discussing the mechanism of the therapy, the author suggests that kephrine hydrochloride induces reparative processes on the vessels, which in turn effect an increase in the number of thrombocytes.

Infection of Reticulocytes by Plasmodium Malariae—Jacobsthal found that a modification of Hirschfeld's simple method for the staining of reticulocytes (abstracted in THE JOURNAL, Nov. 23, 1935) is also suitable for the demonstration of malarial parasites. He, too, resorts to preliminary staining with Löffler's methylene blue (from two to five minutes). After careful rinsing with water there follows from five to fifteen minutes staining with diluted Giemsa solution, then rinsing with distilled water and air drying. The fixation following the Löffler staining can be done with saturated aqueous solution of mercuric bichloride. In using this method of staining in the examination of malarial blood the author found that in a new malarial infection with Plasmodium vivax or falciparum the reticulocytes are chiefly infected not the mature erythrocytes. This selective infection goes to such an extent that from 90 to 98 per cent of the infected cells are reticulocytes. The fact

that the parasites attack chiefly the young cells has considerable clinical importance. Since some of the infected cells are destroyed, the inadequate supply of young cells produces an anemia. Whereas the reticulum of the noninfected reticulocytes shows a grayish blue with this method of staining the infected reticulocytes show a much looser reticulum that is reddish. The protoplasm of the infected reticulocytes likewise appears of a delicate rose shade, in contradistinction to the complete lack of stain in that of the normocytes. In reticulocytes, which contain gametes or dividing forms, the reticulum appears in a rather compact form at the edge of the cell. The author says that the best results are obtained with fresh specimens. In preparations that have been stored for two or three days, the staining of the reticulocytes is poor.

Monatsschrift f Geburtshilfe u. Gynäkologie, Berlin

102 193 256 (June) 1936

- *Treatment of Eclampsia with Thyroxine. F Bonilla and F Goebel—p 193
- Diagnosis and Therapy of Amenorrhea R A Tschertok—p 202
- Question of Conservative Treatment or Surgery in Chronic Inflammation of Adnexa. Gerda Lindner—p 216
- Question of Advisability of Spinal Anesthesia in Obstetrics O Bittmann—p 223

Treatment of Eclampsia with Thyroxine—Bonilla and Goebel, after citing the reasons why thyroxine was introduced in the treatment of eclampsia, call attention to the contradictory results obtained by the various authors. These contradictions induced the authors to study the antagonism between the thyroid and the posterior lobe of the hypophysis in animals, in the hope of developing a foundation for the treatment of eclampsia with thyroid extract. They succeeded in producing in white mice, by the administration of solution of posterior pituitary, an intoxication which is characterized by collapse, convulsions and Cheyne-Stokes respiration. This intoxication could not be counteracted by thyroxine. Animals in which hyperthyroidism had been induced were extremely sensitive to solution of posterior pituitary. They died a short time after administration of 15 Voegtlin units, whereas normal animals remained uninfluenced by this dose. The authors believe that this hypersensitivity explains the failure of thyroxine in the treatment of those pregnancy toxicoses in which the increase in blood pressure predominates. The efficacy of the thyroxine in the other cases is explained by the diuretic action of thyroxine and concerns chiefly those cases of eclampsia in which the nephropathy predominates. The increased resistance to thyroxine that exists during pregnancy has not been fully explained as yet.

Münchener medizinische Wochenschrift, Munich

83:957 996 (June 12) 1936 Partial Index

- Treatment of Circulation with Orgao Extracts M Hochrein—p 961
- Early Treatment of Congenital Luxation of Hip Joint. G Haberler—p 967
- Psychotherapy of Morphine Addicts F M Meyer—p 968
- Treatment of Surgically Exposed Rectal Carcinomas with Short Distance Roentgen Irradiation H Chaoul—p 972
- *New Type of Protective Plastics for Cornea. Shell Membrane of Bird's Egg as Protective Bandage for Eye I Brecher—p 976

Protective Plastic for Cornea—Brecher shows that in a group of disorders of the cornea, such as keratitis from lagophthalmos, dysesthesias of the cornea, the nasociliary syndrome of Charlin and neurotrophic ulcerations, it often becomes necessary for the practitioner to provide a protection for the injured corneal epithelium. In cases in which the simple occlusive bandage is inadequate, blepharorrhaphy or a conjunctival flap covering is generally resorted to. However, these surgical interventions are somewhat difficult particularly for the practitioner. The author found that the shell membrane of the bird's egg constitutes an ideal material for a protective membrane for the corneal tissue. Owing to its animal origin and its other characteristics it combines in itself all the osmotic and mitosis promoting effects of the conjunctival flap covering and thus represents an entirely satisfactory substitute for it. The technic is bloodless and simple. A properly shaped piece of the shell membrane is placed for fifteen minutes in a disinfectant solution (chloramine) and is then placed on the slightly anesthetized cornea and fastened. The membrane remains in place for six or eight days or longer and after that can be easily removed.

Wiener klinische Wochenschrift, Vienna

49: 801-832 (June 26) 1936 Partial Index

- Human Heredity and Anthropology J Weninger—p 801
- *What Can Be Learned from Mode of Life of Nonagenarians? E. Freund—p 809
- Variability of Intestinal Bacteria and Its Etiologic Significance for Enteric Disturbances in Nurlings and Children A Reuss and K. Hassmann.—p 811
- Development and Treatment of Prunus H Konigstein—p. 815
- Oral Camphor Poisoning Case Grete Lorenz—p 816
- Treatment of Syphilis and Gonorrhea with Artificially Produced Fever W M Simpson—p 817

Mode of Life of Nonagenarians—Freund states that for a number of years he made inquiries regarding the mode of life between 75 and 100. He obtained detailed information from about 100 such persons from all walks of life. A regularity in factors, often regarded as important for longevity, is missing in this material. For instance, only two persons report that they belong to a long-lived family, whereas a large number report that they lost their parents early. The assumption of an especially healthy constitution likewise is not proved by these data, for many of the persons report serious disorders during their earlier life (tuberculosis, articular disorders and so on), others report occasional attacks of biliary disorders, rheumatism, influenza, dysentery and even serious surgical interventions and pneumonia. A care-free life cannot be considered the cause of the longevity for many reported great physical and mental exertion and times and conditions of great stress. All adhered to a mixed diet. Strict vegetarianism as well as the consumption of large amounts of meat was reported by none of these long-lived persons. Preference for a fat diet was rare, and those few who did take such a diet also ate generous amounts of green vegetables and fresh fruits. Many ate meat only two or three times each week. Foods prepared with milk were favored evening meals. Apples, oranges, tea and milk were for some a part of the daily diet. Many stress careful chewing of the foods. Rest or exercise after meals is evaluated variously. An important factor seems to be the temperament, and particularly the manner in which these persons react to unpleasant happenings. Only one of all the long-lived persons admitted a certain irritability, but even this person says that the psychic equilibrium is always quickly reestablished.

40: 833-864 (July 3) 1936 Partial Index

- Fires, Explosions and Corrosions That Have Been Caused by Electricity Their Prevention and Treatment S Jellinek.—p 837
- Is Thrombo Embolism Increasing? A E Sitten.—p 838
- *Roentgen Irradiation of Eyes Blind from Absolute Glaucoma. W Kreibitz.—p. 843
- *Pylorospasm During Childhood K. Eberle—p 845
- Further Experiences with Large Doses of Atropine in Treatment of Parkinsonism S Muntner—p 850
- Treatment of Intestinal Helminthiasis During Childhood O Chiari—p 852

Roentgen Irradiation in Absolute Glaucoma—Following a review of the literature on the use of roentgen rays in glaucoma, Kreibitz says that at the roentgen institute of the Vienna general hospital roentgen treatment is given with repeated small doses. At intervals of two or three days 50 roentgens is administered until a total of 150 roentgens has been reached. After that the treatment is interrupted for one or two weeks and then further series are administered according to need. This method of treatment never caused injurious results. In a considerable number of cases the roentgen therapy proved beneficial in that it reduced the pain. However, there was no essential reduction in the intra-ocular pressure, although other investigators have observed a reduction after roentgen treatment. To be sure, occasionally the author found slight reductions in pressure, but they were not sufficient to explain the efficacy of the roentgen rays. He therefore is inclined to agree with Hensen and Schäfer, who ascribe the efficacy of the roentgen therapy to the fact that the rays render the eye insensible. After giving short histories of a number of glaucoma cases in which roentgen treatment was employed, the author concludes that a trial with roentgen therapy is justified in all painful cases of absolute glaucoma. He admits that the treatment fails in some cases but also emphasizes that patience is necessary, for frequently the improvement does not become noticeable until six or more irradiations have been applied.

Pylorospasm During Childhood—Eberle mentions the theories advanced regarding the etiology of pylorospasm and points out that it is not fully explained as yet. After describing the symptomatology, he shows that the prolonged vomiting produces, in addition to other disturbances, also a severe metabolic disorder. There is exsiccosis with inspissation of the blood and albuminuria, also chloropemia with achloruria and hypochloremia. In discussing the therapy of pylorospasm, the author says that roentgen treatment has been abandoned. Then he mentions the various medicaments that have been tried, such as papaverine and atropine. The favorable reports of other clinics induced his clinic to try a scopolamine preparation. After overcoming the comatose condition by careful treatment with sodium chloride, the treatment was continued with sodium chloride and the scopolamine preparation. Under the influence of this treatment the vomiting ceased rapidly. The author says that the new internal treatment of pylorospasm stresses the following point: Pylorospasm should be treated in a hospital. The food intake should be under strict control. There should be frequent feedings with small, concentrated portions. The child should be under the care of a conscientious nurse. The formerly employed gastric irrigations are inadvisable, because they lead to further depletion of the chloride reserves. The loss of chlorides and water is compensated by the frequent small feedings. In giving his attention to the surgical treatment of pylorospasm, the author says that the new Weber-Ramstedt method is the best. He considers surgery indicated when careful internal treatment fails. Following the operation, feeding must again be carefully supervised, for if this is not done alimentary intoxication may result.

Wiener medizinische Wochenschrift, Vienna

86 649-676 (June 13) 1936 Partial Index

- Fibroma Pendulum. R Besecky—p 650
- *Favorable Influence of Severe Arsphenamine Exanthems on Course of Syphilis. A Buschke, A Joseph and W Konheim—p 651
- *Indications for Borderline Ray Therapy in Dermatology H Fuhs—p 656
- Curative Phases in Pressure Therapy of Varicose Ulcers. R Goldman—p 660
- Experiences with Alopecia Areata. A Jordan—p 662

Influence of Arsphenamine Exanthems on Syphilis—Buschke and his associates point out that, if syphilis is accompanied by severe involvement of the skin, the late processes (on internal organs and nervous system) are much milder than in patients in whom the skin is only slightly involved. A strong reactivity of the skin suggests a vigorous formation of antibodies, for it is known that the majority of infectious diseases which are characterized by severe involvement of the skin (dermatophy), such as scarlet fever, measles, rubella, smallpox and chickenpox, produce the longest lasting immunity. The involvement of the skin in the defense mechanism against syphilis engaged the attention of physicians as far back as the fifteenth century. Then it was believed that syphilis should not be treated too early so as not to drive it into the body. The leading syphilologists of the mercury era likewise advised the postponement of treatment until the exanthem had completely developed but, since the introduction of arsphenamine, early treatment has been recommended. Recently, however, the one-sided chemotherapeutic treatment has again been criticized as resulting in the weakening of the defense powers of the organism and it has been suggested that the biologic therapeutic methods be employed at least as auxiliary measures. That intense and prolonged cutaneous irritation increases the curative action of specific remedies is indicated by observations on treatment by inunction, for mercury inunctions were especially effective when they caused irritation of the skin. Further the authors mention Buschke and Freymann's observations on ten patients with arsphenamine dermatitis, all except one of whom had a negative Wassermann reaction in spite of inadequate treatment. These effects of arsphenamine dermatitis were subsequently corroborated by others but there were also some who made contradictory observations, namely, that severe arsphenamine exanthems reduced rather than increased the defense powers of the organism. However, the latter observations are by far in the minority. In discussing the mode of action of the arsphenamine exanthem on the course of syphilis, the authors suggest that allergic conditions, on the basis of a previous sensitization,

play an important part, for it is known that allergic conditions may result in immunity. They mention analogous observations, such as the cure of a case of migraine after a phenobarbital exanthem, of pemphigus after an arsphenamine exanthem, of lupus or of psoriasis after gold erythrodermia, or of lupus after bismuth dermatitis. These examples prove also that the medicaments which elicit the dermatitis are not important. The severity of the exanthem and its duration, however, seem to be essential, for, whereas in the superficial skin changes (erythemas) there is usually no effect, the cutaneous disorders which involve the "skin parenchyma," that is, the papillary body, including the epithelium and the connective tissue, usually exert an influence. The authors point out that the favorable effect exerted by arsphenamine dermatitis on the course of syphilis corroborates the opinion that ascribes to the skin an important function in the defense of the organism against chronic infection. They state that measures which promote the cutaneous reactivity are a valuable aid in the treatment of syphilis and consider it unfortunate that, for instance, mercury injections have been neglected since the introduction of the injection therapy. They recommend that mercury injections be combined with the arsphenamine therapy and that they be used instead of the mercury and bismuth injections.

Borderline Ray Therapy in Dermatology—Fuhs says that, within the range of the doses of rays which have been found adequate for the majority of dermatoses, the therapeutic use of Bucky's soft rays, the so-called borderline rays, no longer needs to be feared. In order to avoid cosmetic impairments (telangiectasias, atrophies and pigmentation disturbances) a certain maximal dose per field should not be exceeded. Moreover, the intervals between treatments and the number of exposures should likewise be carefully watched. The author generally used the same technic as to half-layer value, voltage, number of milliamperes and focus-skin distance and varied only the quantity of rays (dose). His experiences with the general application of borderline rays were practically negative in that he observed not a single convincing result. However, with the focal or local application of these rays he obtained favorable results in many dermatologic disorders. In acne varioliformis, particularly in refractory and relapsing form, a few applications of borderline rays (250 roentgens per field) are frequently successful. In angioma cavernosum, particularly in the nonulcerated, cutaneous tumors, borderline rays in doses of from 1,000 to 1,200 roentgens are often effective. The author discusses the value of borderline rays in angulus infectiosus, in multiple carcinoids of the skin and in clavus plantaris. Then he takes up dermatitis and eczema, showing that the borderline rays can be used as an auxiliary treatment in some of the subacute and chronic forms of these dermatoses. Since the borderline rays have no epilatory effect, they are especially valuable in case of eczema of the hair-covered part of the head. The author discusses the use of borderline rays in furunculosis, hidrosadenitis axillaris and Darier's disease. About nevus flammeus he says that those nevi which disappear partly or completely in response to glass pressure often yield to treatment with borderline rays (from 900 to 1,200 roentgens at intervals of from five to six weeks). The cosmetic results of the treatment with borderline rays are more favorable than those of any other treatment of nevus flammeus. Other skin disorders in which the author resorted to treatment with borderline rays are pityriasis lichenoides chronica, pruritus of the anus and of the vulva, psoriasis vulgaris, verrucae planae juveniles and finally the various forms of tuberculosis of the skin.

Polska Gazeta Lekarska, Lwów

15 597-612 (July 26) 1936

- *Role of Pituitary Body in Amylaceous Metabolism. Case of Acromegaly Observed at Clinic. E. Salitowna.—p. 597
- Clinical Treatment of Gonorrheal Arthritis. F. Siedlecki.—p. 601
- Remarks on Article of Dr. E. Burzowski. New Methods in Therapy and Their Relation to Social Insurance. E. Piotrowski.—p. 606
- Blood of Persons Suffering from Hypertension as Material for Transfusion of Blood. B. Popielski.—p. 606
- Contents of Hormone of Yellow Bodies in Extracts of Human Placenta. H. Stein.—p. 607

Role of Pituitary in Carbohydrate Metabolism—Salitowna describes the case of a woman aged 42, who suffered from diabetes and symptoms of acromegaly. She did not com-

plain of headache or eye trouble. For two and a half years she came to the clinic often for periods of from three to six weeks for observation for diabetes. Instability, changes in vision and resistance to insulin were observed each time. She was treated with roentgen rays, and some general improvement was noted in that the acromegalic symptoms were reduced. The range of vision became stabilized and her resistance to insulin was decreased. The hyperglycemia was 0.38 per cent, glycosuria was up to 250 Gm., and there were acetone bodies in the twenty-four hour urine. Inquiry determined that the diabetes had developed several years after the acromegalic symptoms appeared. Even though from 30 to 60 units of insulin was administered, the quantity of sugar stayed at the level of from 0.23 to 0.25 per cent, and even with the diet of 200 Gm of carbohydrates, the glycosuria was not less than 150 Gm. A second characteristic to be noted was a tendency to acidosis which did not allow a decrease in the quantity of carbohydrates in the diet below 200 Gm. The same applied to insulin which could not be reduced to less than 60 units during the twenty-four hours. Simultaneously there was a tendency to retain water under the influence of the insulin dosage, so that the body weight increased from 1 to 15 Kg a day. It was noted that under the influence of roentgen rays, resistance to insulin was reduced so that from 60 to 80 units was tolerated with 50 Gm. of carbohydrates in a diet of 130 Gm of carbohydrates, and after four series of roentgen rays of 4,000 roentgens each there was tolerance of from 160 to 200 Gm of carbohydrates in diet containing 305 Gm of carbohydrate, that is, the insulin indicator reached from 0.9-1.5 to 2-2.5. The patient's general condition rapidly improved. She gained 12 Kg., the signs of acromegaly diminished and her general appearance and range of vision after the second series of roentgen rays were better.

Acta Pædiatrica, Stockholm

18 377-511 (June 30) 1936 Partial Index

- Quantitative Investigations of Resorption of Vitamin A in Case of Celiac Disease. C. Friderichsen.—p. 377
- *Experimental Researches into the Influence of Freezing on the Vitamin C Content of Orange Juice and Milk. Kaare Lilleengen.—p. 392
- Electrocardiogram of Premature Births. C. E. Raiha.—p. 440
- *Etiology of Pylorospasm (Hypertrophic Pyloric Stenosis of Type Hirschsprung). T. Halbertsma.—p. 463
- Decrease in Tuberculous Meningitis. A. Wallgren.—p. 474
- Acute Atrophy of Liver and Catarrhal Icterus in Siblings. C. Hirschberger.—p. 482

Influence of Freezing on Vitamin C content of Orange Juice and Milk—In studies on the biologic effects of vitamin C on the teeth and jaw-bones of guinea-pigs, Lilleengen ascertained the effect of freezing on the vitamin C of orange juice and cow's milk. It was found that by freezing and storing fresh orange juice and fresh winter milk at minus 30 C. for about four weeks, the biologic vitamin C effect of the orange juice decreased by slightly less than one third and that of milk by about one third.

Etiology of Pylorospasm—Halbertsma regards pylorospasm as a syndrome of spasm, tumor formation and vomiting which is a sequel of a congenital deformity. The mucous membrane canal is from the beginning too long and narrow. During the first three weeks of life the lumen is still wide enough for the passage of the relatively small quantities of food but when larger quantities are needed the passage becomes impaired. As a reaction to this disordered passage a muscular tumor may develop within a few weeks. The author points out that this theory of the genesis of pylorospasm is supported by the roentgenologic and clinical observations of various authors and by a number of his own observations. In a relapse operation he observed that the pyloric tumor had become greatly enlarged in the course of five weeks. Among the thirty-two cases of pylorospasm that were observed by him he noted that in three families the disorder recurred several times (seven children in all). Two of these families are of especial interest because they are related. The author shows a diagram of their genealogical tree and asserts that it is probable that the disorder had been present also in the preceding generation. In binocular twins, the disorder occurs with the same frequency as in other siblings. In uniovular twins, pylorospasm is present in both. The author concludes that pylorospasm is probably a congenital hereditary deformity.

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CARCINOMA OF THE CERVICAL STUMP

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A study of the incidence of carcinoma in the cervix after supravaginal hysterectomy, widely known as "carcinoma of the cervical stump," naturally includes the consideration of certain associated problems

One of these is to ascertain how often carcinoma is found or develops in the cervical stump. The combined published reports of others may be noted as well as the cases occurring under one's own observation

A second problem is whether the carcinoma of the cervix was overlooked at the time of the hysterectomy or whether it developed sometime afterward, and what treatment has to offer

A third problem, and the one of greatest importance, is How may this unfortunate complication be avoided?

INCIDENCE OF CARCINOMA OF THE CERVICAL STUMP

It is difficult to estimate the incidence of carcinoma of the cervical stump correctly. Unreported cases, diagnostic errors and different conceptions of what constitutes the condition influence statistics. Von Graff¹ in 1934 reported an average incidence of 4.1 per cent, based on a collection from the literature of 176 cases among 4,269 patients with carcinoma of the cervix, in whom the incidence observed by different individuals ranged from 2.5 to 11.3 per cent. Richardson² believes that the incidence does not exceed 3 per cent, all factors considered. Kretschmar and Gardiner³ found eighteen cases among 1,022 patients with cervical carcinoma during a thirty year period, 1.76 per cent.

From Sept 1, 1921, to Sept 1, 1935, there were 5,433 admissions (bed capacity of twenty-seven) in the gynecologic ward service of Dr Brooke M. Anspach at the Jefferson Medical College Hospital. Of these patients 273 had carcinoma of the cervix, an incidence of 5.02 per cent of all gynecologic admissions (table 1).

During the same period ten patients with carcinoma of the cervical stump were observed, an incidence of

3.66 per cent of all patients admitted with cervical carcinoma (table 2). This represents 0.183 per cent of all gynecologic admissions.

The frequency with which carcinoma develops in the cervical stump can be determined with only relative accuracy. A follow-up study of consecutive cases of supravaginal hysterectomy in a hospital service is essential. Obviously such a review is beset with difficulties because many patients escape consistent postoperative observation and cannot be "followed up" indefinitely.

Von Graff¹ reported an incidence of 0.62 per cent in 7,244 cases collected from the literature. Richardson² is authority for the statement that the incidence is a little less than 1 per cent, basing this figure on "approximately 10,000 subtotal hysterectomies reported by a dozen different authors." More recently Fahndrich⁴ reported an incidence of a little less than 0.04 per cent. This figure was arrived at from a compilation of reports from the German literature of 7,029 supravaginal hysterectomies in which twenty-eight stump carcinomas developed (0.039 per cent), together with 11,110 similar operations collected from literature foreign to Germany in which thirty-nine stump carcinomas occurred (0.038 per cent). Pearse⁵ presents statistics from various sources totaling 13,507 cases with a record of fifty-three stump carcinomas, 0.039 per cent.

To ascertain the incidence of carcinoma of the cervical stump occurring after supravaginal hysterectomy in our gynecologic ward service, a study of its frequency has been undertaken, based on a follow-up study of the surgical cases.

From Sept 1, 1921, to Sept 1, 1935, 697 supravaginal hysterectomies were performed. Approximately one third of these patients had uncomplicated fibromyomas, one third exhibited complicating pelvic lesions in addition, generally of an inflammatory nature, while one third suffered from chronic pelvic inflammatory disease or allied adnexal conditions. Excluded from the study are fourteen postoperative deaths occurring within two weeks of operation (an immediate mortality for the series of 2 per cent), one death that occurred in the ward three months after operation (increasing the mortality to 2.29 per cent), one patient with advanced chorionepithelioma, already presenting metastases when operated on, who was discharged from the hospital in due time but returned and died of further metastases three months later. The study therefore includes 681 patients who survived the immediate operative procedure (table 3).

Of the 681 patients, 554 (81.3 per cent) have been observed at some time since the operation, and 127 (18.6 per cent) are regarded as "lost." Of these 554

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1. Von Graff J. E. Cancer of the Cervical Stump Following Subtotal Hysterectomy. *Am. J. Obst. & Gynec.* 28: 18 (July) 1934.

2. Richardson E. H. Total versus Subtotal Hysterectomy in Benign Uterine Disease. *Am. J. Obst. & Gynec.* 30: 237 (Aug.) 1935.

3. Kretschmar A. R. and Gardiner S. A Consideration of the Surgical Menopause After Hysterectomy and the Occurrence of Cancer in the Stump Following Subtotal Hysterectomy. *Am. J. Obst. & Gynec.* 20: 168 (Feb.) 1935.

4. Fahndrich J. Risk of Carcinoma of Cervical Stump Following Supravaginal Amputation. *Ztschr. f. Geburtsh. u. Gynak.* 109: 382 1931.

5. Pearse R. L. Supravaginal Hysterectomy. *Surg. Gynec. & Obst.* 58: 845 (May) 1934.

patients, carcinoma of the cervical stump is known to have developed in five, an incidence of 0.902 per cent (table 4)

The majority have been examined by members of the operating staff in a specially designated "postoperative follow-up clinic." During earlier years postoperative patients were seen by the regular "outpatient" personnel. The condition of others has been reported to us by the family physician. Contact with some has been by letter. The period of observation has ranged

TABLE 1—Incidence of Carcinoma of the Cervix

| | |
|---------------------------------------|-------|
| Gynecologic ward patients 1921-1935 | 5,433 |
| Patients with carcinoma of the cervix | 273 |
| Incidence | 5.02% |

TABLE 2—Incidence of Carcinoma of the Cervical Stump

| | |
|---|-------|
| Patients with carcinoma of the cervix | 273 |
| Patients with carcinoma of the cervical stump | 10 |
| Incidence | 3.65% |

from only three months in some instances to twelve and thirteen years in others. The inadequacy of the follow up in many instances is frankly acknowledged.

EXPERIENCE WITH CARCINOMA OF THE CERVICAL STUMP

The question now arises: What proportion of cervical stump carcinomas were overlooked at the time of operation and what proportion were not apparent until a considerable time afterward? A review should include all the patients observed rather than a selected group of cases, e. g., one based on an arbitrary time limit between the supravaginal hysterectomy and the recognition of the disease. Some consider the lapse of one year as being indicative of the development of an independent neoplasm, others select two or three years as the limit. Such an arbitrary division may prove fallacious for several reasons. Frequently no description of the cervix at the time of the supravaginal hysterectomy is available. Only by biopsy or amputation can the actual presence of carcinoma be proved, and it is only by meticulous inspection that attention will be called to suspicious areas requiring biopsy. This is especially true of a seemingly intact cervix. Furthermore, how can it be proved that carcinoma might not develop within the time limit prescribed by some, not actually having been present at the time of operation, and its further development been so insidious that it was not recognized for several years thereafter? Definite proof of an overlooked carcinoma in the cervical canal (or cervix) is always afforded if the removed uterus or a portion of it shows evidence of a similar type of growth, especially near the site of the supravaginal amputation.

Of the five patients in whom carcinoma of the cervical stump is known to have developed, four were treated in the service and are included among the group of ten patients observed. The fifth patient was observed and treated elsewhere. Considering the group in its entirety, certain distinctive features may be mentioned. All were married, two were nulliparous (20 per cent), four were Negroes. Of the six white patients, one was Jewish. The average age was 46; the oldest was 67 and the youngest 32; four were under 40.

Five patients had the hysterectomy because of fibromyomas, complicated in two instances by pelvic inflammatory disease, two had ovarian cystadenomas, one papillary in type, two had pelvic inflammatory disease. One operation was for the interruption of pregnancy in a tuberculous patient.

In two patients the histologic diagnosis was adenocarcinoma, in eight, squamous cell carcinoma of varying degrees of malignancy.

In three patients carcinoma was probably present and overlooked at operation, in two patients this was possibly true, in five the condition was observed from six to twenty-one years afterward (table 5). The study of the individual patients, characteristically grouped, with brief abstracts of each history and a critical analysis of each case, follows.

Group 1. In three cases it is very probable that carcinoma was present and overlooked at the time of the original operation.

CASE 1.—A Negress, aged 54, a primipara, was admitted March 14, 1922, because of postmenopausal bleeding. A diagnosis of fibromyoma uteri was made, the cervix appearing to be intact. Grossly, preliminary curettage did not suggest a malignant condition, and supravaginal hysterectomy with bilateral salpingo oophorectomy and appendectomy was immediately performed. The pathologic report was "chronic endometritis with a marked hyperplasia of the epithelium, probably becoming carcinomatous." The patient was readmitted eleven months later because of pain and a bloody vaginal discharge, which had begun seven months after operation. The cervix was enlarged, indurated and friable (class 3 Schmitz, class 4, stage C, American College of Surgeons). Biopsy revealed adenocarcinoma. Radium treatment (3,100 mg. hours) was followed by death in six months.

We were to blame in this instance. In the light of present knowledge the original slide of the removed uterus has been reviewed, with this result: "The marked epithelial change should be considered malignant, areas

TABLE 3—Material for Study Supravaginal Hysterectomy

| | |
|---------------------------------------|-------|
| Supravaginal hysterectomies 1921-1935 | 69 |
| Excluded from study | |
| Postoperative deaths | 1 |
| Patient with chorionepithelioma | 1 |
| Patients available for study | 67 |
| Operative mortality | 0.29% |

TABLE 4—Incidence of Carcinoma of the Cervical Stump Following Hysterectomy

| | |
|---|------|
| Patients having supravaginal hysterectomy | 61 |
| Patients followed up | 54 |
| Known carcinoma of the cervical stump | 5 |
| Incidence | 0.9% |

showing a transitional type of cell suggest a cervical lesion, but this is not definite." It is impossible to state definitely whether this lesion was primarily in the endometrium or in the cervical canal. Dependence on the gross appearance of the curettings was inadequate. More careful preliminary study would have resulted in a different plan of treatment. In addition, the follow up was faulty.

CASE 2.—A white woman aged 43, married, a septipara, was admitted June 11, 1928, with vaginal bleeding and discharge following a supravaginal hysterectomy performed elsewhere two months before without preliminary vaginal technique. Examination of the removed uterus was reported as carcinoma of the uterus extending from the cervix. Examination of the

a fixed, indurated and friable cervical stump that bled freely (class 3, Schmitz, class 4, stage C, American College of Surgeons) Biopsy revealed squamous cell carcinoma (intermediate grade) Radium treatment (4,400 mg hours) was followed by roentgen therapy (800 roentgens) two months later The patient is living and well eight years after the treatment

In this case proper preliminary study would have disclosed cancer of the cervix, and the initial plan of treatment would surely not have been supravaginal hysterectomy

CASE 3—A Negress, aged 31, married, a nullipara, was admitted March 23, 1931, because of pelvic pain and menorrhagia. A diagnosis was made of fibromyoma uteri accompanied by chronic adnexal inflammation Chronic endocervicitis was observed Following preliminary dilation and curettage, supravaginal hysteromyomectomy and right salpingo-oophorectomy was performed Examination of the removed organs showed no malignant growth Eight months later the patient was readmitted because of severe abdominal pain and leukorrheal discharge The cervix at this time showed a localized hyperemic and hypertrophied area on the anterior lip, but the lesion was not treated and a biopsy was not taken Intestinal obstruction was diagnosed, confirmed and relieved by operation. A recommendation that the cervix be cauterized was carried out later in the follow-up clinic. This resulted in an unusually persistent slough, accompanied by prolonged bloody discharge A biopsy now revealed squamous cell carcinoma (low grade) Clinically the lesion was comparatively early (class 1, Schmitz, class 4, stage A, American College of Surgeons) Radium treatment (2,100 mg hours) was followed by a severe local reaction with pelvic cellulitis, six months later roentgen therapy (1,512 roentgens) was administered The patient is living and well four years after treatment

It is not clear why the chronic endocervicitis noted at the time of the first operation was not treated or a biopsy was not taken Failure to do so at the time of the second admission may be excused because an acute abdominal condition was present At the time of the cauterization in the follow-up clinic, however, biopsy should have been performed, the delay in applying proper treatment need not have occurred

Group 2 In two cases, while questionable, it is quite possible that carcinoma was overlooked at the time of the original operation

CASE 1—A white woman, aged 33, married, a secundipara was admitted Sept 19, 1925, because of progressive abdominal enlargement and dyspnea A diagnosis of bilateral ovarian tumors with ascites was confirmed at operation, when supravaginal hysterectomy and bilateral salpingo-oophorectomy were performed The cervix was not inspected and preliminary dilation and curettage was not carried out While no areas of malignancy were demonstrated either in the removed papillary ovarian cysts or in the uterus, high voltage roentgen therapy (800 roentgens) was administered postoperatively Six months later "spotting" occurred and continued intermittently for three years when her occasional visits to the outpatient department ceased During this time little attention had been paid to this occasional bloody discharge, in fact one dispensary assistant told her that it was of no consequence. A year later, three and one half years after the primary operation, she was readmitted because of a vaginal hemorrhage. Examination showed the cervix to be replaced by an everting ulcerating mass, with marked peripheral induration (class 3 Schmitz, class 4 stage C, American College of Surgeons) Biopsy revealed squamous cell carcinoma (high grade) Radium was applied on two occasions (3,600 mg hours and 2,400 mg hours respectively) with subsequent roentgen therapy (2,052 roentgens) Death occurred one year and four months after the initial irradiation

While the tendency to tumor formation as evidenced by the development of papillary ovarian cysts in this patient may have been reflected in a cervix exhibiting low resistance to carcinoma, the latter was in all proba-

bility developing while the patient was a postoperative visitor to the outpatient department Because of negligence, valuable time was lost in discovering and treating this woman before the disease had reached an advanced stage

CASE 2—A Negress, aged 32, married a nullipara, was admitted Nov 15, 1926 because of menorrhagia A diagnosis of fibromyoma uteri of huge proportions, with adherent adnexa, was made A nulliparous cervix was noted as being "somewhat increased in size and softened" Preliminary dilation and curettage was performed, but the cervix was not treated in any way and a biopsy was not taken Supravaginal hysteromyomectomy and bilateral salpingo-oophorectomy were performed with some difficulty because of the size of the tumor and the accompanying adhesions. Examination of all removed tissues showed no evidence of a malignant condition The patient was readmitted three years later, saying that vaginal bleeding had begun nine months after the operation but that she did nothing about it for two years, when she went to another institution, where a diagnosis of carcinoma of the cervix was made and roentgen therapy was administered (1,800 roentgens) Examination showed the cervical stump to be enlarged, indurated, friable and partially fixed (class 5, Schmitz, class 4 and 5, American College of Surgeons) Biopsy showed a squamous cell carcinoma (high grade) Treatment with radium (3,600 mg hours) was followed by a rectovaginal fistula within a year, death occurring within a few months of her admission to the institution in which she had previously been treated, where further roentgen treatments (5,700 roentgens) were administered.

TABLE 5—Carcinoma of the Cervical Stump

| | |
|--|----|
| Patients seen | 10 |
| Nulliparas | 2 |
| Jewish | 1 |
| Hysterectomy for fibromyomas | 5 |
| Adenocarcinoma | 2 |
| Probably present at operation | 3 |
| Possibly present at operation | 2 |
| Apparent 6 to 21 years after operation | 6 |

Although the cervix in this instance was nulliparous, the notation that it was "somewhat increased in size and softened" should have called for more minute investigation The size and character of the tumor together with its fixation undoubtedly dominated the situation to such an extent that an inconspicuous cervical lesion may have been overlooked The patient's statement regarding the appearance of vaginal bleeding nine months later is the only evidence available for evaluation, since two years elapsed before she sought medical advice

Group 3 In five cases the condition was not apparent for a considerable time after the original operation

CASE 1—A Jewish woman, aged 38, married, a quintipara was admitted Aug 12 1928 because of vaginal bleeding of one year's duration Supravaginal hysterectomy with a three months fetus in utero had been performed elsewhere six years before, because of active pulmonary tuberculosis The adnexa had been conserved, no notes were available regarding the condition of the cervix Examination showed a proliferative, friable cervical growth bleeding readily (class 3, Schmitz, class 4, stage B, American College of Surgeons) Biopsy revealed squamous cell carcinoma (intermediate grade) Radium treatment (3,375 mg hours) was administered The patient is living and well eight years after treatment

CASE 2—A white woman aged 44, married, a primipara, was admitted May 11 1934, because of vaginal bleeding and a foul discharge Supravaginal hysterectomy and bilateral salpingo-oophorectomy because of an ovarian cystadenoma (nonmalignant) had been performed elsewhere, apparently not preceded by dilation and curettage or cervical treatment With the onset of bleeding seven years later the patient returned to the same operator who took a biopsy of the lesion, which revealed

adenocarcinoma, presumably of the cervical canal. Radium was applied (2,400 mg hours). Examination on admission evidenced a contracted vagina, the cervix was replaced by an ulcerative crater with marked, peripheral induration (class 5, Schmitz, class 4 and 5, American College of Surgeons). Biopsy yielded necrotic degenerated tissue, but a review of the former histologic slide substantiated the diagnosis of adenocarcinoma. Roentgen therapy (1,581 roentgens) was administered, a rectovaginal fistula developing within three months. Death occurred in another institution a month after that.

CASE 3—A Negress, aged 48, married, a tertipara, was admitted May 3, 1925, because of pelvic pain and vaginal bleeding. Supravaginal hysteromyomectomy for myoma uteri had been performed elsewhere nine years before, no notes regarding the condition of the cervix were available. Examination showed an indurated, immobile cervix, not particularly friable (class 3, Schmitz, class 4, stage B, American College of Surgeons). Biopsy revealed a squamous cell carcinoma (not graded, the slide was not available for review). Radium treatment (2,400 mg hours) was followed by roentgen therapy (800 roentgens). The patient was not seen again until six years later, when she presented herself because of vaginal bleeding. An ulcerative, bleeding growth was present at the site of the cervix in the vaginal vault, encroaching on the adjacent tissues and accompanied with widespread induration of the broad ligaments. Roentgen therapy was administered (1,628 roentgens). Death occurred five months later.

CASE 4—A white woman, aged 52, married, a tertipara, was admitted July 4, 1928, because of pelvic pain and bleeding. Supravaginal hysterectomy, bilateral salpingectomy and oophorectomy had been performed elsewhere ten years before. (Dilation and curettage and appendectomy with oophorectomy had been performed at separate times prior to the hysterectomy, but no notes about the condition of the cervix were available). Examination showed a partially obliterated friable cervix, bleeding readily and accompanied with marked peripheral induration and tenderness (class 3, Schmitz, class 4, stage C, American College of Surgeons). Biopsy revealed a squamous cell carcinoma (intermediate grade). Radium treatment (3,000 mg hours) was applied. The patient is living and well eight years after treatment.

CASE 5—A white woman aged 67, widowed a primipara, was admitted Jan. 31, 1934, because of a bloody vaginal discharge. Supravaginal hysteromyomectomy for myoma uteri together with bilateral salpingo-oophorectomy had been performed elsewhere twenty-one years before. Preliminary dilation and curettage had been performed, but no notes of the condition of the cervix were obtainable. Two years prior to admission she had received a cautery treatment in another institution for the present symptoms. Examination showed the cervix to be replaced by a proliferative mass, accompanied by peripheral induration extending into the paracervical tissues (class 3, Schmitz, class 4, stage C, American College of Surgeons). Biopsy revealed squamous cell carcinoma (intermediate grade). Radium treatment (2,400 mg hours) was administered. The patient is living and well two years after treatment.

In this group the stump carcinomas were discovered six, seven, nine, ten and twenty-one years, respectively, after hysterectomy, and it is reasonable to assume that carcinoma was probably absent when operation was performed. All were multiparas and had received no cervical treatment prior to the hysterectomy. One patient was Jewish representing an unexplained racial immunity to carcinoma of the cervix. The operative procedure in one had been for an ovarian cystadenoma supposedly nonmalignant, the biopsied cervical stump revealed adenocarcinoma. Might the original lesion have been an undiscovered glandular type of malignant growth bearing some relation to the subsequent cervical canal lesion? One patient had survived for six years following the initial treatment. Might not an efficient follow up have provided further salvage? Finally, one patient received cautery treatment without biopsy two

years prior to receiving proper treatment, and has remained well for two years in spite of the earlier delay.

An abstract of the history of the patient in whom stump cancer developed and who was treated elsewhere is enlightening.

CASE 1—A white woman, aged 30, married, a quintipara was admitted April 9, 1926, because of pelvic pain and menor rhagia. Diagnosis of relaxed outlet, lacerated cervix with eversion and myomatous uterus was made. Dilation and curettage, trachelorrhaphy, anterior and posterior colporrhaphy and supravaginal hysterectomy with right salpingo-oophorectomy and appendectomy was performed. It was noted on discharge that the cervix was well healed and the cervical stump well suspended. Histologic study of the removed uterus and adnexa showed no evidence of a malignant condition (recent review of slide also), but the removed cervical tissue was either lost or overlooked, for no report regarding it could be found. Follow-up examination one year later was negative but two years after that it was learned that she had been treated elsewhere for adenocarcinoma of the cervical stump. A recurrence has been treated twice. Her present physician reports that she is well at this time, eight years after the primary treatment for carcinoma.

This case is illustrative of negligence, either in the transportation of the removed tissue to the laboratory or in indifference on the part of the laboratory personnel. It is possible that the removed cervical tissue might have revealed a malignant condition, although three years elapsed, as far as we know, before the condition of adenocarcinoma was discovered. The cervix was apparently in good condition a year after operation. In any event it seems inexcusable that the cervical tissue originally removed was never examined microscopically. A case recorded in the carcinoma clinic is similarly illustrative. Tissue from a repaired cervix had shown sufficient hyperplasia of the squamous epithelium to be regarded with suspicion. Instead of being followed up energetically she was lost sight of, only to return four years later with an advanced carcinoma of the cervix, to which she succumbed a relatively short time after receiving radiation therapy.

Contrasted with these patients is the case of an elderly patient on the roster of the carcinoma clinic whose cervix was amputated in conjunction with an application of radium to the uterine cavity for fibrosis uteri. The curettings showed no evidence of a malignant condition, but an early squamous cell carcinoma was found microscopically in the removed cervical tissue. Further radium was promptly applied to the reconstructed cervix, and the patient is alive and well ten years after treatment.

TREATMENT

Healy and Arneson⁶ and others have called attention to the difficulties encountered in treating patients with cervical stump carcinoma stressing the hazards of both surgery and radium and emphasizing the importance of sufficient external irradiation. With meticulous radiation technic, applied in masterly fashion, they have reported a five year salvage of 14 per cent based however on those patients in whom the condition had developed at least three years after the supravaginal hysterectomy—a selected group. Von Graff⁷ reported 93 per cent of five year cures in a collected series of 428 patients. The salvage figure of Meigs⁸ (for four years only) is 76 per cent. Sackett⁹ recently published

6 Healy W. P. and Arneson A. N. A Study of Carcinoma of the Cervical Stump Developing After Subtotal Hysterectomy. *Am. J. Obst. & Gynec.* 29: 3, 4 (March) 1935.

7 Meigs J. V. Carcinoma of the Retained Cervix or Subtotal Total Hysterectomy. *Am. J. Obst. & Gynec.* 31: 359 (Feb.) 1934.

8 Sackett N. B. The Prognosis of Cancer of the Cervix Treated by Irradiation. *New York State J. Med.* 35: 1153 (Nov. 15) 1935.

statistics from George Gray Ward's clinic showing a five year survival rate of 48.4 per cent and a ten year rate of 25 per cent, irrespective of the time elapsing between the original operation and the radiation treatment

The ten cases that I have described were treated with radiation four with radium alone, five with radium and x-rays, one with x-rays alone. Three are alive and well eight years after treatment, representing a five year salvage of 42.8 per cent. (Two of these were treated with radium only, and in one roentgen therapy was added.) One patient is alive and well four years after radium and roentgen treatment one is alive and well two years after radium treatment only. Considering the entire group, this represents a present-day salvage of 50 per cent (table 6). The absolute curability rate in carcinoma of the cervix, recently reported from the gynecologic department,⁹ was 19.2 per cent.

The radium employed was in the form of a 50 mg capsule of radium sulfate, sealed in glass within a silver capsule of 0.3 mm thickness, enclosed in turn by a brass capsule of 1 mm thickness and further screened with black rubber tubing 2 mm in thickness. This was placed in the cervical canal or in the vaginal vault crater. For distribution about the periphery of the growth, or within it, needles, each containing 12.5 mg of radium and screened with 0.3 mm of monel metal, have been employed. Protection of normal tissues has been afforded by the liberal use of gauze packing, thus increasing as far as possible the distance between the implanted radium and the surrounding parts—bladder, rectum, intestine and uninvolved vaginal walls. In addition a self-retaining catheter has been placed in the bladder as a routine procedure.

Since 1927, treatment has been directed through four ports, two anterior and two posterior, the ports varying with the size of the patient. The object is to deliver 100 per cent of the skin erythema dose into the depths of the pelvis in two weeks, by treatment on alternate days, until the saturation level is reached. Treatment is then continued two more weeks, the depth dose being kept at 100 per cent by giving sufficient treatment to overcome any deficiency sustained in the intervals between treatments. The dosage delivered through each port by this method varies from 1,400 to 2,500 roentgens. The roentgen therapy has been administered in the department of roentgenology at Jefferson under the direction of Dr Willis Manges and his associates, Dr John T. Farrell Jr and Dr Manges Smith.

AVOIDANCE OF CARCINOMA OF THE CERVICAL STUMP

The final and most important problem concerns the measures that should be taken to avoid this unfortunate complication. What are the related factors that must be considered and how may they be controlled to best advantage?

The association of fibromyomas with carcinoma of the fundus, and to a lesser extent with carcinoma of the cervix, is an observation of long standing. More recently the thought has been expressed that excessive hormone influence in the presence of fibromyomas may predispose to a malignant condition of the cervix. Most assuredly in adenocarcinoma of the endometrium, alone or accompanying a myoma, may readily extend to the cervical canal. Meigs⁷ has advanced the thought that the association of fibromyomas and sterility is indica-

tive of uterine hypoplasia and that the cervix of such a uterus may thereby be rendered less resistant to the development of cancer. It has long been recognized too that the damaged and diseased cervix, giving rise to annoying symptoms, is a responsible factor in the etiology of carcinoma. With these thoughts in mind what should be one's attitude toward the final phase of the problem?

The best treatment of any disease is prophylaxis. If this is true then one must agree with those who insist that, whenever the removal of the nonmalignant uterus is indicated, total hysterectomy should be the procedure of choice, but prophylaxis in this instance has its limitations, and in practice such a plan cannot possibly be carried out as a routine measure. The immediate safety and recovery of the patient is the primary consideration, not the possible occurrence of a remote lesion. This statement is based on the presumption that the incidence of carcinoma of the cervical stump is comparatively less than the increased mortality and morbidity resulting from complete hysterectomy as compared with the supravaginal operation in the hands of the average operator. While it is true that the majority of stump carcinomas have occurred following subtotal hysterec-

TABLE 6—Treatment

| | Patients Treated | Alive at Present | Died |
|--|------------------|--------------------|----------------|
| Radium only | 4 | 2 (8, 8 and 2 yrs) | 1 (6 mos) |
| Radium and x ray | 5 | 2 (8 and 4 yrs) | 3 (1 to 6 yrs) |
| X ray only | 1 | 0 | 1 (4 mos) |
| 5-year curability (3 patients) Living and well (5 patients) | | | 42.8% 60% |

tomy for fibromyomas, it is likewise true that the majority of uteri have been removed because of them, either alone or accompanied with adnexal lesions.

The consensus contributed to by the testimony of numerous observers studying large series of cases seems to be that in average hands the mortality following complete abdominal hysterectomy is actually greater than that which follows the subtotal operation. The recently published statistics of Siddall and Mack¹⁰ lend much support to this belief. A collected series of 4,559 total hysterectomies reveal a mortality of 3 per cent as opposed to the figure of 2.6 per cent for 7,795 subtotal procedures, to this they add their own results, 6.4 per cent for 235 complete and 2.6 per cent for 1,141 supravaginal operations.

Meigs,⁷ in establishing an incidence of 0.73 per cent for what he terms "real" cervical stump carcinoma states that this is less than half of the incidence of cervical carcinoma as observed at the Massachusetts General Hospital arguing from this fact that carcinoma of the cervical stump is only half as likely to occur in women as is carcinoma of the cervix in general. From this he deduces that "for the advocates of total hysterectomy to maintain their position it would be necessary for them to show not over a 0.73 per cent difference in mortality between subtotal and total hysterectomy."

Richardson² points out that among expert and experienced operators the mortality in either operation does not exceed 1.5 per cent, but he wisely calls attention to the fact that, apart from the question of mortality, postoperative complications and morbidity play a significant part in discouraging the adoption of complete hysterectomy as a routine procedure. While in

⁹ Scheffey L. C. and Thudium W. J. Further End Results in the Treatment of Carcinoma of the Cervix, *Am J Obst & Gynec* 31: 946 (June) 1936

¹⁰ Siddall R. S. and Mack, H. C. Subtotal versus Total Hysterectomy *Surg Gynec & Obst* 60: 102 (Jan) 1935

exceptionally skilled hands the complete operation may be performed with comparative rapidity and safety—even perhaps in the presence of a complicated pathologic condition—it is unquestionably true that it is not the average operator alone who finds it more difficult and time consuming than the supravaginal procedure, even though excellent plans, such as those proposed by Richardson¹¹ and Farrar,¹² are followed.

During the period covered by this review only thirty-seven complete hysterectomies were performed in the ward service. Twenty-two were abdominal with two postoperative deaths, both occurring in patients with fundal carcinoma, a mortality of 9.9 per cent. Fifteen

TABLE 7—Complete Hysterectomy

| Type | Number | Postoperative Deaths | Mortality |
|-----------|--------|----------------------|-----------|
| Abdominal | 22 | 2 | 9.09% |
| Vaginal | 15 | 0 | 0.00 |
| Total | 37 | 2 | 5.4% |

were vaginal with no deaths making the total mortality for the complete operation 5.4 per cent (table 7).

Considering these expressions of opinion, it does not seem rational to advocate complete hysterectomy as a routine procedure, even though endocervicitis or cervical lacerations with eversion and hypertrophy are present.

What is the best procedure that can be followed from the prophylactic standpoint in lieu of routine panhysterectomy? The answer is thorough preliminary inspection of the cervix and cervical canal, possibly utilizing Schiller's test and the colposcope, with biopsy of suspicious areas, or endometrial curettage if indicated. This plan may be criticized as time consuming. Perhaps it is, but of what moment is a matter of a delay of twenty-four or forty-eight hours if the ultimate risk to the patient's life is thereby diminished? Should the presence of a malignant condition be disclosed, the plan of treatment may then be altered accordingly.

If the results are negative, thorough cauterization of the cervical mucosa, cervical canal, everted and eroded areas on the cervical lips at the site of old lacerations, or in some instances cervical surgery, can be carried out before proceeding with abdominal section. If a prolonged or hazardous abdominal procedure is anticipated these cervical procedures may be deferred until later. If diagnostic curettage has not been performed beforehand (as is desirable in exceptionally suspicious cases), it should certainly be done at this time. If the curettings are grossly suggestive of a malignant growth a frozen section can be examined forthwith, or a capsule of radium may be placed in the uterine cavity while a twenty-four hour pathologic report is awaited. If carcinoma of the endometrium is not probable the uterine cavity may be flushed with 70 per cent alcohol injected slowly with a syringe following diagnostic curettage and cervical treatment thus sterilizing the uterine cavity prior to the hysterectomy and providing an aseptic field for the supracervical amputation.

The foregoing procedures ought not be reserved solely for the patient who is a poor surgical risk or for one in whom the pelvic pathologic condition is questionable or undoubtedly complicated. It is recommended likewise for the patient whose general physical con-

dition is good and in whom the pelvic pathologic condition is apparently well defined. The plan outlined should also be carried out even when the cervix appears to be intact. Close scrutiny may reveal an area or areas that would be benefited by cauterization and diagnostic curettage sometimes reveals unsuspected pathologic changes. When fundal carcinoma is definitely suspected a sound plan is to perform diagnostic curettage and apply radium to the uterine cavity pending the establishment of the diagnosis by microscopic study or a rapidly prepared section (not necessarily a frozen one), subsequent high voltage roentgen therapy to the pelvis is then followed by panhysterectomy in from four to six weeks, unless there are definite contraindications to radical surgery, in which event continued radiation therapy may be imperative.

If, on the other hand, with a patient in reasonably good physical condition the cervix is hypertrophied, lacerated and everted, and the examination under anesthesia leads one to believe that operation presents no unsurmountable technical difficulties, complete hysterectomy might well be considered as the procedure of choice.

The desirability of adequate follow up after this plan of treatment should be emphasized. Sometimes the cauterized cervix needs further attention even the cervix that has been treated surgically should be kept under observation at intervals. Numerous authors have called attention to the recurrence or occurrence of a malignant growth in the vaginal vault following total hysterectomy. This fact may be coupled with one that is sometimes forgotten, namely, that an operative fatality may defeat the objective of a radical procedure, designed as it is to eliminate the diseased cervix. This adds further weight to the argument of those opposed to complete hysterectomy as a routine procedure.

The plans outlined have been followed in the ward service for fifteen years. This experience has resulted in modification from time to time of technical details in the operating room. My associates and I have sought more effective cooperation with the pathologic laboratory and have developed a decidedly better follow up

TABLE 8—Preliminary Procedures Supra vaginal Hysterectomy

| Years | Number | No Dilation and Curettage or Cervical Treatment | Dilation and Curettage Only | Dilation and Curettage Cautery | Dilation and Curettage Cervical Surgery |
|-----------|--------|---|-----------------------------|--------------------------------|---|
| 1921-1925 | 293 | 15 | 108 | 0 | 25 |
| 1925-1935 | 358 | 50 | 150 | 10 | 10 |
| Total | 651 | 65 | 258 | 10 | 35 |
| Per cent | | 10.2 | 39.2 | 1.5 | 5.4 |

system. In some instances either because of the inaccessibility of the cervix or for some unexplained reason, curettage was dispensed with. Absence of lesions naturally accounts for a reduction in the number of cervixes treated.

A controversial subject is whether or not cervical cauterization coming out of the cervical mucosa either from below or from above repair or amputation will tend to prevent the development of carcinoma. It has been repeatedly pointed out that 80 per cent of cervical carcinomas develop on the portio vaginalis. Their destruction or removal or the cervical mucosa alone will not suffice. It should not be forgotten however that eversion and erosion of the cervical mucosa extending down to or involving the squamous surface is therefore at the point where carcinoma is believed to originate.

11. Richardson, J. E. H. A. S. "The Technique of the Vaginal Panhysterectomy." *Am. J. Surg.* 45: 245 (Feb.) 1925.
12. Farrar, J. E. "The Vaginal Hysterectomy." *Surg. Clin. N. A.* 60: 525 (Oct.) 1915.

and that thorough treatment of this area, either by the cautery or by surgical removal, is not only a rational prophylactic measure but a curative one as well. Pemberton and Smith¹⁵ presented substantial evidence of this assumption in 1929, when they reported the occurrence of but five known cases of carcinoma following treatment of 5,692 cervixes. Tompkins¹⁶ has recently reported a follow-up study of 611 patients having cervical treatment of all varieties, of whom but two are known to have developed carcinoma.

Preliminary dilation and curettage alone was performed in 267 of the 681 patients (39.2 per cent), 169 (24.8 per cent) had cervical cauterization as well, while thirty-nine (5.7 per cent) had cervical surgery in addition to the curettage. Two hundred and six (30.2 per cent) received no preliminary curettage or cervical treatment of any kind. It is of interest to note that in the first seven years of this review these procedures were omitted 156 times in 293 operations (53.1 per cent), while in the latter seven years they were omitted but fifty times in 388 operations (12.8 per cent). This is a striking illustration of the increased importance attached to these methods. Also of interest is the fact that from 1921 to 1928 the twenty-nine cervixes that were treated were either repaired or amputated and none were cauterized, while from 1928 to 1935 but ten were treated surgically while 169 were cauterized (table 8).

TABLE 9—Incidence of Carcinoma of Cervical Stump, Treated and Untreated Cervices

| | |
|-----------------------------------|------------|
| Patients followed up | 554 |
| Cervices treated | 170 |
| Known carcinoma of cervical stump | 1 (0.508%) |
| Cervices untreated | 384 |
| Known carcinoma of cervical stump | 4 (1.04%) |

Only one of 170 patients out of the 554 who received cervical treatment prior to hysterectomy is known to have developed stump carcinoma, representing an incidence of 0.508 per cent. Of 384 of the 554 patients receiving no cervical treatment, four are known to have developed stump carcinoma, an incidence of 1.04 per cent, or twice that which occurred among those who had received cervical treatment (table 9).

CONCLUSIONS

The incidence of carcinoma of the cervical stump does not justify complete hysterectomy as a routine procedure in every case.

Careful preliminary inspection, biopsy of the cervix, and diagnostic curettage will reduce to a minimum the chance of overlooking carcinoma.

A diseased cervix always requires treatment, but, when cauterization will suffice, its practice as a preliminary to supravaginal hysterectomy makes complete removal unnecessary. In a few instances, trachelectomy or trachelorrhaphy may be better than cauterization. From this review it would seem evident that those patients who did receive preliminary cervical treatment were less prone to develop carcinoma of the cervical stump.

In our experience, treatment has resulted in a curability of 42.8 per cent for five years and longer.

255 South Seventeenth Street

¹⁵ Pemberton F. A. and Smith G. V. The Early Diagnosis and Prevention of Carcinoma of the Cervix. *Am J Obst & Gynec* 17: 163 (Feb.) 1929.

¹⁶ Tompkins, P. The Results of Treatment of Benign Lesions of the Cervix Uteri. *Am J Obst & Gynec* 30: 369 (Sept.) 1935.

ABSTRACT OF DISCUSSION

DR. J. P. PRATT, Detroit. Some difficulty is experienced in arriving at the correct figure for occurrence of carcinoma in the stump of the cervix, following supravaginal hysterectomy. The figures presented from time to time show a considerable number. Correction for the true recurrence is not always easy. If there were no cervical stumps left, there could be no such recurrences. The question at hand seems to be to balance the difficulty and hazard of a complete or total hysterectomy against the hazard of carcinoma occurring in the cervical stump. There seems to be a rather wide variation in opinion concerning the relative risk of a total and a partial hysterectomy. For a number of years my choice of operation was incomplete hysterectomy because it seemed safer. The late Dr. J. F. Baldwin practiced complete removal for years with admirable results. One demonstration by him was convincing that the total removal of the uterus need not exceed the risk of partial removal. He influenced me to accept total hysterectomy as the operation of choice. Having adopted his method, I am able to corroborate his statement that total incurs no greater risk than partial hysterectomy. For several years our operative mortality has been less than 0.5 per cent. There is an irreducible minimum mortality on account of emboli and other uncontrollable conditions not characteristic of a particular operation, but suitable preoperative and postoperative care, together with the proper technique for total hysterectomy, should enable an operator competent to do a partial hysterectomy to do a complete hysterectomy, with a margin of safety far below the frequency of carcinoma in the cervical stump.

DR. HENRY SCHMITZ, Chicago. I congratulate Dr. Scheffey on the excellent and conservative way in which he has presented this subject. The subject of stump carcinoma of the cervix is of interest because one always feels that, when a carcinoma occurs in the cervical stump, primary removal of the cervix would have prevented such a catastrophe. I have assumed the conservative attitude. If the cervix on preoperative examination seems to be normal it is not necessary to remove it during hysterectomy. Unfortunately, I cannot give the percentage of stump carcinomas following hysterectomies as Dr. Scheffey did, which stamps his report as being unusually valuable. A year ago I studied 730 consecutive cases of carcinoma of the cervix observed up to Dec. 31, 1931. There was an incidence of stump carcinoma of 3.84 per cent or twenty-eight cases. Recently I studied a group of cases admitted from May 1, 1933, until June 30, 1934. In these ninety-seven cases I found nine cervix stump carcinomas, or 10 per cent. Of course, this doesn't mean anything so far as the incidence is concerned, but it is interesting to note that in the one large group we had 3.5 per cent stump cancer and in the smaller group of recent origin 10 per cent. The question arises whether these carcinomas could have been prevented by total hysterectomy. The removal of the cervix would have prevented them, but I feel that if the cervix is perfectly normal on examination there is no necessity for the removal. The cases cited were treated with radiation. They were studied carefully to determine the clinical extent of the tumors. The same observation made for primary carcinomas applies to stump cancers. The earlier the patient comes for treatment, the better are the good end results. The absolute five year curability percentage was twenty-five in our group.

DR. R. Q. ROWSE, Sioux City, Iowa. I had two subtotal hysterectomy patients return within a period of five years for carcinoma of the remaining cervix. That induced me to perfect a method of complete hysterectomy in all my cases. I have classified them in this manner: fibroid uterus and dangerous uterus; fibroid uterus in multiparas with lacerations and endocervicitis; complete hysterectomy; fibroid uterus in nulliparas aged 35 or under with normal cervix; subtotal hysterectomy, leaving tubes and ovaries. Dangerous uterus constituted by the troublesome, bleeding, retroverted uterus, usually in multiparas. There is a definite difference between menstruation and bleeding. It is the bleeding uterus that is dangerous. There were forty-two complete hysterectomies for fibroids and forty complete hysterectomies for dangerous uterus. Specimens showed seven cancers in the forty-two fibroids and seven cancers in

the forty dangerous uteri. The whole group numbered eighty-two cases. The total number of cancers found was fourteen. All patients are living. There have been no recurrences.

DR. LEWIS C. SCHEFFEY, Philadelphia. I want to congratulate Dr. Pratt on his remarkable postoperative mortality of 0.5 per cent following total hysterectomy. I did not have time in the presentation of the paper to mention some statistics that also came from Detroit which lent support to the argument that routine complete hysterectomy is inadvisable. They were reported by Siddall and Mack, who, in addition to collecting a series showing 3 per cent mortality following total as against 2.6 per cent following supravaginal hysterectomy, reported their own results, 6.4 per cent mortality following 235 complete operations and 2 per cent following 1,141 supravaginal hysterectomy. Dr. Schmitz has mentioned that the incidence of carcinoma of the cervical stump following supravaginal hysterectomy varies a great deal. I did not have time to quote the recent work of Fahndrich, who collected more than 18,000 cases of supravaginal hysterectomy, with an incidence of stump carcinoma of less than 0.04 per cent. I think that when complete hysterectomy is indicated the operative plan devised by Richardson, and the one later described by Farrar, tend to make the operation a great deal easier.

IDENTIFICATION OF THE CANCER CELL

WILLIAM CARPENTER MacCARTY, MD
ROCHESTER, MINN.

Cancer must be recognized and treated early if the best results are to be obtained. This has been the theme of all professional and popular international, national, state and county campaigns for many years.

The question arises: Are we recognizing cancer early? In 1918 I began a series of observations to determine just what effect cancer campaigns were having on the actual sizes of cancers being removed surgically. As pointed out by Balfour, Harrington and Rankin, only 25 per cent of the cancers of the stomach, 50 per cent of cancers of the breast and 58 per cent of the cancers of the large intestine are operable when seen by surgeons. These figures have not changed appreciably over a period of fourteen years. There has been little or no change in the average size or percentage of those having glandular involvement in this same period.¹

From the Division of Surgical Pathology, the Mayo Clinic.
Read before the Section on Pathology and Physiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

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The Cytologic Diagnosis of Neoplasms. *J. A. M. A.* 81: 519-522 (Aug. 18) 1923.

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The Cancer Cell and Its Nature: Defensive Mechanism. *Surg. Gynec. & Obst.* 41: 783-793 (Dec.) 1925.

There has been certainly some improvement but it has not reached a high point comparable to the therapeutic efficiency of surgeons and radiologists, who have shown remarkable results considering the advanced stages of cancer they have been forced to treat.

So far as the pathologist is concerned, his technical methods of study of tissues have changed little if any since the time of Virchow; he still uses autopsy or other material fixed and embedded in paraffin or celloidin. He also uses predominantly only the low powers of the microscope. Medical students today rarely if ever see unfixed tissues; they get their knowledge from the same type of microscopic sections that were looked at by students forty years ago.

In 1907 I began the study of fresh, unfixed, unembedded, surgically removed tissues with and without stains. It was not very long before I recognized that cancer cells were not irregular in shape and size or even pyknotic as described in textbooks; neither did they contain asymmetrical mitotic figures described by von Hansemann² in 1890. Living and unfixed and unembedded fresh cancer cells were found to be beautifully ovoidal or spheroidal and to contain one or more large nucleoli, which are rarely visible in fixed and embedded postmortem material. It was quite obvious that the nucleoli were much larger in such malignant cells than in reparative regenerative cells with which they might be confused with low powers of the microscope. Drawings and photographs of these were shown as early as 1914 and since then measurements have been made and reported.³

Today I wish to report a recent series made by different and independent workers in our laboratories of surgical pathology. The accompanying tables should be sufficient to substantiate the repeatedly made statements that the nucleoli of cancer cells are much larger than those in any other condition of cells of a given tissue.

If this is true pathologists must study perfectly fresh tissues without embedding if they expect to recognize cancer before it reaches the late stage of

A Key to Diagnosis and Prognosis of Neoplastic Lesions of Bones. *Radiology* 8: 277-281 (April) 1927.
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Haumeder, Eva. and Mendes, Ferreira, A. E. Unpublished data.

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Mendes, Ferreira, A. E. Unpublished data.

Naidu, V. R. The Value of Enlarged Nucleoli in the Diagnosis of Malignancy. *Proc. Staff Meet., Mayo Clin.* 10: 335-337 (June 5) 1935.

Strohl, E. L. Cytologic Study of a Suprarenal Tumor. *Proc. Staff Meet., Mayo Clin.* 10: 333-335 (June 5) 1935.

being recognized with the low powers of the microscope. They will also of necessity have to become cytologists familiar with all conditions of cells of every tissue in the body.

In utilizing the ratio between nucleus and nucleolus for diagnostic and prognostic purposes, comparisons must be made only in cells of a particular tissue because the ratios differ greatly when one tissue is compared

TABLE 1—*Biometric Measurements of Regenerative and Benign Cells*

| Observer | Organ | Area of Nucleus Square Microns | Area of Nucleolus Square Microns | Ratio of Nucleus to Nucleolus |
|---------------------------|-----------------|--------------------------------|----------------------------------|-------------------------------|
| Haumeder | Breast | 38.7 | 2.2 | 17.1 |
| | Stomach | 47.0 | 2.2 | 21.1 |
| | Large Intestine | 42.7 | 2.5 | 17.1 |
| | Ovary | 39.3 | 1.7 | 23.1 |
| | Uterus | 33.0 | 1.1 | 30.1 |
| | Kidney | 46.4 | 2.7 | 17.1 |
| McCormack | Uterus | 31.7 | 1.4 | 30.1 |
| Naidu | Breast | 27.6 | 1.3 | 21.1 |
| | Stomach | 39.0 | 1.4 | 28.1 |
| | Large Intestine | 39.1 | 1.1 | 35.1 |
| | Skin | 49.1 | 3.1 | 14.1 |
| | Uterus (body) | 35.0 | 1.2 | 27.1 |
| | Uterus (cervix) | 47.5 | 1.3 | 36.1 |
| Strohl | Adrenal | 49.7 | 1.0 | 25.1 |
| Kroeze | Breast | 35.8 | 1.5 | 22.1 |
| Fairchild | Bone | 63.1 | 2.2 | 28.1 |
| Mendes Ferreira | Stomach | 28.7 | 1.1 | 26.1 |
| Kaump and Mendes Ferreira | Breast | 28.4 | 1.57 | 105.1 |

with another. Wherever the ratios have been studied the malignant cells have always large nucleoli by which they can be identified as malignant cells. The figures I have presented summarily are merely the averages. Each observer has made thousands of measurements, some of which have been published in detail and the rest of which are now in print.

In this necessarily brief report I can merely state the facts in the hope that other pathologists will take

TABLE 2—*Biometric Measurements of Malignant Cells*

| Observer | Organ | Area of Nucleus Square Microns | Area of Nucleolus Square Microns | Ratio of Nucleus to Nucleolus |
|---------------------------|-----------------------------|--------------------------------|----------------------------------|-------------------------------|
| Haumeder | Breast | 45.5 | 4.2 | 11.1 |
| | Stomach | 66.9 | 7.1 | 9.1 |
| | Large Intestine | 48.7 | 5.0 | 8.1 |
| | Ovary | 63.8 | 1.5 | 6.1 |
| | Uterus | 62.8 | 5.1 | 9.1 |
| | Kidney | 76.6 | 7.9 | 9.1 |
| McCormack | Uterus | 64.9 | 3.9 | 16.1 |
| Naidu | Breast | 59.3 | 3.4 | 17.1 |
| | Stomach | 54.1 | 3.3 | 16.1 |
| | Large Intestine | 51.1 | 3.4 | 15.1 |
| | Skin | 81.8 | 6.4 | 12.1 |
| | Uterus (body) | 52.0 | 2.9 | 17.1 |
| | Uterus (cervix) | 64.2 | 2.4 | 26.1 |
| Strohl | Adrenal | 107.7 | 15.2 | 7.1 |
| Kroeze | Breast | 50.0 | 2.9 | 17.1 |
| Fairchild | Bone | | | |
| | Osteogenic sarcoma | 58.9 | 3.3 | 18.9.1 |
| | Fibrosarcoma | 69.0 | 3.3 | 21.5.1 |
| Mendes Ferreira | Stomach | 42.9 | 3.2 | 14.0.1 |
| Kaump and Mendes Ferreira | Breast malign ant papilloma | 33.0 | 2.62 | 13.5.1 |

the time to look for them under similar technical conditions. Opinions based on failure to confirm these facts in fixed tissues that are not fresh and not embedded are not only of no value but will impede progress in the early recognition of cancer which all agree is so necessary for beneficial therapeutic results.

The cancer cell has identifying characteristics. Histology of the past and present and modern cytology

are two very different sciences with quite different technics requiring a somewhat different training yet to be recognized by general pathologists and taught by them in a routine way to modern medical students.

Until medical students are taught this newer method, we cannot expect cancer to be recognized early.

ABSTRACT OF DISCUSSION

DR WILLIAM C MACCARTY, Rochester Minn. Many cells from Hodgkin's disease, lymphatic leukemia and lymphosarcoma have been studied, measured and drawn. The question was asked with regard to the Sternberg cell which in my opinion has nothing to do with Hodgkin's disease so far as its malignancy is concerned. The main cell which is malignant in Hodgkin's disease is the lymphoblastic cell and that certainly follows all rules of nucleonuclear ratios. The Sternberg cell, an endothelial cell, cannot be compared with the other cells in Hodgkin's disease. The Sternberg cell or Dorothy Reid cell, is not the important element in Hodgkin's disease. The lymphoblastic elements constitute the important one.

FEVER THERAPY IN TABES DORSALIS

RELIEF OF GASTRIC CRISES AND LIGHTNING PAINS
BY THE USE OF THE KETTERING
HYPERTHERM

A. E. BENNETT, M.D.
OMAHA

There have been many therapeutic opinions and no uniformity of agreement among men of much experience in the management of tabes dorsalis. Many authorities state that the disease tends to be progressive in spite of treatment. In the early stages many believe that the disease can be arrested and clinical cures obtained. In the late stages, the burned out seronegative phase, most reports of large series of cases are very discouraging, especially as to relief of intractable symptoms.

CHEMOTHERAPEUTIC RESULTS

The routine treatment of the tabetic patient as used by the majority of practitioners has been courses of arsphenamine, neoarsphenamine, mercury and bismuth salts with iodine therapy. These courses are kept up until the patient gives a persistent blood and spinal fluid seronegative response. Various modifications of this technic have been employed, as combined spinal drainage or added Swift-Ellis technic. In reviewing the literature it is noticeable that as various forms of fever therapy have increased the former popularity of the Swift-Ellis treatment has dwindled. Probably its benefit was solely from the febrile, aseptic meningeal reaction produced. At present it seems to be used only in isolated instances to relieve intractable pain.

Up to 1925 probably the best results obtainable in tabetic treatment by routine chemotherapy and special methods are summarized by Stokes and Shaffer.¹ Their technic consisted of vigorous treatment by arsphenamine, mercury and intravenous iodide therapy followed by Swift-Ellis injections. In 170 cases they report some relief from lightning pains in 73 per cent and excellent results in only 16 per cent, in another series

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Read before the Section on Nervous and Mental Diseases at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Stokes, J. H. and Shaffer, L. W. Clinical Management and Response of the Tabetic Patient. J. A. M. A. 85:1271-1275 (Oct. 24) 1925.

of 124 cases, good results in 47 per cent and poor results in 52 per cent

In the relief of "stomach trouble," excellent results were obtained in 42 per cent, good results in 37 per cent of twenty-four cases. In the relief of gastric crises, 24 per cent obtained a good result, 76 per cent poor results in seventeen cases. A complete response was obtained in only two cases, amelioration in 24 per cent and no relief in 23 per cent. A good result in cord bladder was obtained in 31 per cent, poor in 69 per cent of seventy-three cases. Ataxia was relieved in only 21 per cent of sixty-three cases. Other resistant symptoms, such as paresthesia and cranial nerve palsies, were relieved in from 24 to 73 per cent in smaller groups of patients. They found good results in 48 per cent of 170 patients and summarized² "The tabetic has a 50-50 chance of securing a completely satisfactory result under systematic treatment." They added "Lightning pains may prove intractable and persist long after signs of active meningitis disappear" the notorious persistence of lightning pains after the apparent arrest of degenerative process in some cases is one of the trying features of late tabes."

O'Leary and Nelson³ in the same year found that they had relieved pains in fourteen out of twenty-two cases, gastric crises in six out of fifteen cases, although they had obtained complete negative spinal fluids. They concluded "We have nothing new to offer in the treatment of patients with negative serologic tests who suffer from persistent gastric crises other than chordotomy, which seems to hold out more hope than any form of treatment that has been offered thus far."

Because of favorable results from tryparsamide therapy in dementia paralytica, the drug has received extensive trial in tabes dorsalis. In early tabetic patients some favorable reports are to be found. Paterson-Smyth⁴ and David and Robert Lees⁵ praise tryparsamide in early cases. Most observers, however, have found the results in tabetic patients disappointing. Wile and Wieder⁶ were unable to relieve gastric crises and lightning pains with tryparsamide. Menzies⁷ concluded that the results from tryparsamide therapy in tabetic patients were very disappointing, especially in securing relief from pain. He believes that malarial therapy is far superior. All agree that tryparsamide is dangerous in the face of tabetic optic atrophy.

More recently bismuth arsphenamine sulfonate (bismarsen) has been much used experimentally in the treatment of tabetic symptoms. Hadden and Wilson⁸ improved 41 per cent of seventeen seronegative tabetic patients by forty injections. They found the drug reasonably effective in relieving pain, gastric crises, ataxia and cord bladders and considered it superior to tryparsamide. Tobias⁹ and Fong¹⁰ also reported favorable results in early tabes.

RADICAL TREATMENTS INCLUDING OPERATIVE

Numerous special methods of more radical nature have been advocated for the relief of resistant tabetic symptoms that fail to respond to routine systematic therapy. Hassin¹¹ recommended epidural arsphenamine injections and reported some relief in pain and ataxia but no relief of gastric crises. He had severe complications in three cases. This method in my experience has been dangerous, because caudal neuritis is readily produced. In isolated cases forced spinal fluid drainage, spinal anesthesia, intravenous atropine, and insulin therapy are reported to relieve patients of certain resistant symptoms. The most radical procedure for the relief of tabetic pain and crises is the operative treatment. Resection of the posterior and anterior roots has been advocated since 1900. Of late years this procedure has been replaced largely by chordotomy. Even with this procedure, relapses of pain and crises are frequent and the mortality from the operation is high. It is certainly a procedure of last choice and offers nothing certain as to relief. My own experience has been unsatisfactory.^{11a}

FEVER THERAPY IN TABES DORSALIS

Again the excellent results seen from various forms of fever therapy in dementia paralytica caused it to be employed extensively in the treatment of resistant tabetic symptoms. Isolated reports of benefit obtained by fever-producing agents such as sodoku, foreign proteins and sulfur in oil are to be found. The series of cases are too small to draw definite percentage results. Pyrifer, colon bacillus vaccine, has been popular abroad. Polozker and Altschuler¹² consider their results from its use better than from malarial therapy. They reported distinct improvements in five cases out of eight, and state that all patients obtained relief from pains.

Up to the present the most extensive experimentation in fever therapy for the relief of tabetic symptoms has been the use of malarial fever inoculation. In attempting to evaluate results we again find marked discrepancy of opinion, varying from Roger,¹³ who thinks that malarial results in tabes have not been constant enough to justify its use, to Bering¹⁴ who reports 75 to 80 per cent improvement. The following investigators have treated rather large series of patients: Hoff and Kauders,¹⁵ Dreyfus and Hanau,¹⁶ Driver, Gammel and Karnosh,¹⁷ Ebaugh¹⁸ Wile and Davenport,¹⁹ Yates,²⁰ O'Leary and Welsh,²¹ and David and Robert Lees.⁵ The percentage of improvement reported varies from 34 to 75. One can conclude fairly that

2 Stokes J H and Shaffer L W. Results Secured by Standard Methods of Treatment in Neurosyphilis. J A M A 83: 1826-1831 (Dec. 6) 1924.

3 O'Leary P A. and Nelson M O. Significance of Normal Spinal Fluid in Cases of Neurosyphilis. J A M A 85: 1276-1280 (Oct. 24) 1925.

4 Paterson-Smyth G N. Treatment of Syphilis of Nervous System. Canad. M A J 31: 727-73 (July) 1934.

5 Lees David and Lees Robert. Diagnosis and Treatment of Neurosyphilis. Edinburgh M J 39: 173 (Nov.) 201 (Dec.) 1932.

6 Wile U J and Wieder L M. Tryparsamide in the Treatment of Neurosyphilis. J A M A 83: 1824-1826 (Dec. 6) 1924.

7 Menzies E C. A Review of the Progress and Results in 41 Cases of Paresis and Tabo-Paresis Treated with Tryparsamide. Canad. M A J 20: 242-246 (March) 1929.

8 Hadden, S B., and Wilson George. Bismuth Arsphenamine Sulfonate (Bismarsen) in the Treatment of Tabes Dorsalis. Am J Syph. 15: 316-319 (July) 1931.

9 Tobias. Clinical Results from the Use of Bismarsen in Tabes Dorsalis. Am J Syph. 12: 536-541 (Oct.) 1928.

10 Fong C C. The Treatment of Neurosyphilis. M. Ann. District of Columbia 3: 21-22 (Aug.) 1934.

11 Hassin G B. Treatment of Tabes Dorsalis by Epidural Injection of Neoarsphenamine. Preliminary Report. J A M A 90: 605-607 (Feb. 25) 1928.

11a Bennett A E. Atypical Tabes Dorsalis (Forme Fruste). Surgical Errors in with Leading Points in Diagnosis. Am J M Sc 170: 538 (Oct.) 1923.

12 Polozker I L and Altschuler Ira. Pyrifer in the Treatment of Locomotor Ataxia. J Michigan M Soc 30: 148-150 (March) 1931.

13 Roger H. Pyretherapy in Disca c of Nerve Syphilis. J de med de Paris 54: 1022 1934.

14 Bering F. Die Behandlung Tabes mit Malaria. Deutsche med. Wchnschr. 52: 1611-1613 (Sept. 17) 1926.

15 Hoff H and Kauders O. Ueber die Malaria Behandlung d. Tabes Dorsalis. Ztschr. f. d. ges. Neurol. u. Psychiat. 104: 306-317 1926.

16 Dreyfus G L and Hanau R. Malaria Behandlung der Tabes Cerebrospinalis und Tabes Klin. Wchn. hr. 6: 590 (March 26) 1927.

17 Driver J R, Gammel J A and Karnosh I J. Malaria Treatment of Central Nervous System Syphilis. J A M A 87: 1921-1931 (Nov. 27) 1926.

18 Ebaugh F G. Treatment of Tabes and Cerebral Syphilis with Malaria. J A M A 91: 1020-1023 (Oct. 6) 1928.

19 Wile U J and Davenport K M. The Malarial Therapy of Neurosyphilis other than Uncomplicated Dementia Paralytica. J A M A 97: 1579-1585 (Nov. 28) 1931.

20 Yates A G. Treatment of Tabes with Malaria. Lancet 2: 1335-1337 (Dec. 15) 1934.

21 O'Leary P A and Welsh A L. Treatment of Neurosyphilis with Malaria. J A M A 101: 498-501 (Aug. 12) 1933.

about 50 per cent of all types of tabetic patients are benefited by malarial therapy. Most observers agree that the tabetic patient is not able to stand malarial inoculation nearly as well as the parietic patient. Its use is contraindicated in advanced ataxic states or with complicated associated infectious processes such as cord bladder.

The mortality from malarial complications in tabes dorsalis is high. David and Robert Lees⁵ report 10 per cent mortality, Carrière²² 17.62 per cent. Vonderlehr,²³ listing all cases of malarial therapy in parenchymatous neurosyphilis, reported a total from 1923 to 1931 of 8,038 and found that 23.4 per cent of the patients had died. Deaths from malaria and other causes were not separated. In 123 cases, a mortality of 16.3 per cent was specifically caused by malaria. Karnosh and Williams²⁴ found 12.7 per cent mortality from malaria in 580 patients.

Neyman and Koenig²⁵ had a malarial mortality of 18 per cent in fifty parietic patients, 10 per cent from sodoku in fifty, and no mortality from diathermy in fifty. O'Leary and Welsh²¹ found a beneficial effect from malaria in about half of tabetic and taboparetic patients with a positive spinal serologic reaction. The serologic negative patients with resistant symptoms were only slightly benefited. In twelve such cases, although 22 per cent were benefited to some degree, only 1 per cent were entirely relieved.

These observations leave much to be desired in results from the malarial therapy of tabetic patients. While resistant symptoms of tabes are often strikingly relieved by malarial therapy, still the total percentage of improvement by its use is not much if any better than from systematic routine chemotherapy. In addition there is a high mortality from the direct complications of the malarial infection. In the advanced stages of tabes its use is dangerous, since the single tertian strain quickly becomes a double infection and patients are rarely able to stand more than eight paroxysms of fever. In cases in which results are needed, malaria gives the poorest relief. In early stages other less rigorous therapy will give equally good results.

Of recent years an intense research program has been under way in many centers in an effort to estimate the value of artificial fever therapy by physical means. Major evidence favors fever therapy from any source as being the effective agent in neurosyphilis. Sufficient time has not elapsed to determine the effectiveness of various forms of physical heat therapy in large series of cases. However, encouraging results are being reported. Beermin, Hirschfeld, Epstein and Paul²⁶ treated twenty tabetic patients with diathermy. They reported seventeen cases, nine of which were relieved of severe pains and crises, three were generally improved, and three unimproved. They stated "The remarkable influence of treatment upon severe crises and pain cannot be overemphasized." Nelson²⁷ reported

a small series of cases treated with low temperature diathermic treatments with striking relief of pain.

Simpson²⁸ in a recent extensive report on the use of artificial fever therapy by means of the Kettering hypertherm in syphilis found striking relief in ten cases of tabes dorsalis and seven cases of the tabetic form of dementia paralytica. He obtained relief in all cases of gastric crises and lightning pains. Of the fourteen ataxic patients, ten showed improvement in gait. Two with cord bladders were restored to normal function. Mehrtens and Pouppirt²⁹ reported that lightning pains, gastric crises and Charcot joints yielded to hot baths more readily than to any other therapy previously used.

At the University of Nebraska through the courtesy of Charles F. Kettering and Dr. Walter Simpson, we have been permitted to experiment with artificial fever therapy by the use of the Kettering hypertherm in a large variety of infectious diseases. By means of the hypertherm, or air conditioned cabinet, we are able readily and safely to develop and sustain patients' temperatures at any desired level. The technic employed in our clinic has been that advised by Simpson. In neurosyphilis we have given fifty hours of fever from 105 to 106 F. in ten sessions, combined with some form of chemotherapy. By this technic we are able to give our patients about twice as much fever as ordinarily is obtained from twelve malarial paroxysms.

The following report is limited to results obtained up to date in the treatment of tabes dorsalis in twenty-four cases at the University of Nebraska, fourteen of which have completed a prescribed course of treatment. Through the courtesy of Dr. F. G. Ebaugh we have been permitted to report six additional cases from the University of Colorado Fever Therapy Research department. The patients have all received chemotherapy with fever, the majority have received 0.2 Gm. of arsphenamine bismuth sulfonate each week at the same time at which they received five hours of artificial fever of 105 to 106 F. for a total of ten treatments, or fifty hours of fever therapy. Most of these patients had previous intensive therapy but were referred to the department because of chronic resistant symptoms.

REPORT OF CASES

Twenty-four patients with a predominantly spinal cord type of chronic syphilis have been under treatment. Twenty-three cases are tabes dorsalis, with one case of meningomyelitis. Fourteen patients have completed the prescribed course of artificial fever therapy combined with chemotherapy. Four patients discontinued treatments and six are still under treatment at the time of this report.

The ages in the fourteen completed cases varied from 33 to 58 years, the average age being 43 plus years. There were three women and eleven men. The average duration of the infection was 21.5 years. All but three patients had received previous systematic routine chemotherapy. Several patients had received additional special types of therapy directed toward symptomatic relief of intractable pains and crises. One patient had tried high voltage roentgen therapy for relief of pains, and two patients had taken courses of malarial fever therapy without relief. Two patients had received Swift-Ellis intraspinal injections and one had finally been advised to have a chordotomy performed.

22. Carrière (quoted by Paterson Smyth. *Treatment of Syphilis of Nervous System*, p. 74).

23. Vonderlehr, R. A. *Malaria Treatment of Parenchymatous Syphilis of the Central Nervous System*. Supp. 107 to Public Health Records, Washington, 1933.

24. Karnosh, L. J. and Williams, G. H. *Some Unusual Complications in Malarial Therapy*. Ohio State M. J. 31: 193-196 (March) 1935.

25. Neyman, C. A. and Koenig, M. T. *Treatment of Dementia Paralytica. Comparative Therapeutic Results with Malaria, Rat Bite Fever and Diathermy*. J. A. M. A. 96: 1858-1860 (May 30) 1931.

26. Beermin, W., Hirschfeld, M., Epstein, N. and Paul, S. B. *Neurosyphilis—Its Treatment with Hyperpyrexia Produced by Diathermy*. California and West Med. 40: 177-184 (March) 1934. Epstein, N. and Paul, S. B. *The Treatment of Syphilis with Hyperpyrexia Produced by Diathermy*. Am. J. Syph. 17: 72-81 (Jan.) 1933.

27. Nelson, O. L. *Diathermy in the Treatment of Neurosyphilis*. M. Bull. Vet. Admin. 11: 223-228 (Jan.) 1935.

28. Simpson, W. M. *Artificial Fever Therapy of Syphilis*, J. A. M. A. 105: 2132-2140 (Dec. 28) 1935.

29. Mehrtens, H. G. and Pouppirt, P. S. *Hyperpyrexia Produced by Baths*. Arch. Neurol. & Psychiat. 22: 700-708 (Oct.) 1929.

The predominant resistant tabetic manifestations for which treatment was advised were lightning pains and gastric crises, and this preliminary study is directed mainly toward the problem of relieving these symptoms. All but one patient of the completed cases had been having active gastric crises or lightning pains or both symptoms at the time therapy was begun. The duration of the gastric crises and pains varied from one to fourteen years. Seven patients had suffered for periods of five years or longer. Eight of these fourteen cases were considered well advanced types of tabes dorsalis. Five patients were incapacitated at least half the time, two patients had associated morphine addiction. Eight patients had mild to severe grades of ataxia and one patient (meningomyelitis) had a spastic paraplegia. Three patients had associated cord bladders. Other associated tabetic symptoms were trophic ulcers, Charcot joints, paresthesias, optic atrophy, oculomotor palsies, undernutrition, vertigo, trigeminal neuralgia and impotence.

All patients had positive neurologic signs of tabes dorsalis, the usual triad being Argyll Robertson pupils, absent leg tendon reflexes and signs of proprioceptive dysfunction. Four cases were considered "burnt out" or seronegative spinal fluid types. Ten patients had varying degrees of positive serologic response in the blood and spinal fluids.

Eleven patients were given bismuth arsphenamine sulfonate therapy (0.2 Gm.) with each fever treatment. Nine patients received fifty hours or more of artificial fever above 105 F. Five patients received thirty hours or more above 105 F, with treatments discontinued because of complete relief of complaining symptoms. We have usually seen prompt relief in the tabetic pains after the sixth and seventh treatments, that is, from thirty to thirty-five hours of fever therapy. Twelve patients of the fourteen have remained free from gastric crises and pains from three months to one year. One patient was not having active pains at the time treatment was being given but was very ataxic, one patient has had a recurrence of pains to a mild degree, since he had taken only thirty hours of fever therapy, he was advised to return for more treatment. Five of the eight ataxic patients obtained marked improvement in ataxia, three patients showed little if any change in ataxia. The spastic patient felt stronger but there was no objective change in the paraplegia, the root pains, however, were completely relieved. Two patients with cord bladder were markedly improved and one was unimproved. Patients reported other improvement or relief, as increased general strength, gain in weight, relief of headaches or improvement in paresthesias, one each reported relief from trigeminal neuralgia and from persistent vertigo.

The reasons for discontinuing treatments in the four patients were as follows. One patient living out of the city was unable to make the trips. Two patients failed to cooperate and discontinued of their own accord. One patient displayed emotional instability, causing us to advise stopping treatment.

The patients now under treatment have not been followed sufficiently long to warrant expressing an opinion. Two have very severe types of tabes, one with coronary disease able to take only short fever sessions and another with totally disabling gastric crises unrelieved by malarial therapy, obtaining relief after the seventh fever session.

No unusual complications during treatment of our tabetic patients were observed that are not seen in

other neurosyphilitic patients. One has to watch closely for hyperpyrexia and cerebral edema while the patient is in the cabinet. We feel on the whole that the tabetic group have to be managed with greater care than the dementia paralytica group. However, our clinic has had fewer fever therapy complications in the tabetic group than with the meningovascular neurosyphilis group, in the latter, cardiovascular complications seem more frequent.

Dr F. G. Ebaugh in a personal communication has reported to me six tabetic cases that have been under artificial fever therapy at the University of Colorado. Four patients with severe intractable gastric crises and pains completed the prescribed course of fever therapy combined with tryparsamide. These four patients received forty or more hours of fever therapy and all obtained marked relief from gastric crises and pains. One patient with cord bladder was relieved and one markedly ataxic patient was improved in gait. One patient's treatments were incomplete and one had a recurrence of lightning pains.

SUMMARY

A review of the literature indicated that resistant tabetic symptoms such as lightning pains, gastric crises, ataxia and bladder dysfunction can be relieved in only about 50 per cent of patients by means of very vigorous chemotherapeutic procedures.

Likewise a review of so-called infectious fever therapy methods, particularly malarial fever therapy, does not show relief of intractable symptoms in over 50 per cent of tabetic patients. The mortality rate of malarial therapy ranges from 10 to 20 per cent.

A combination of artificial fever therapy by means of the Kettering hypertherm and chemotherapy has uniformly relieved intractable lightning pains and gastric crises in eleven patients. These results were obtained after other active therapeutic measures had failed. Other resistant tabetic symptoms, such as ataxia, cord bladders, paresthesias and head pains, were likewise improved in the majority of fourteen cases. Four of our patients were in the so-called burnt out stages.

I believe that this method of treating tabes dorsalis is the best method yet devised.

ABSTRACT OF DISCUSSION

DR HENRY W. VOLTMAN, Rochester, Minn. The lightning pains and crises of tabes have been particularly obstinate in their refusal to respond to treatment, and any method of therapy that has offered such uniformly successful results deserves consideration. When malarial therapy was introduced some fifteen years ago, hopes were raised even though improvement of these particular symptoms occurred in only about 50 per cent of cases. But the length of time that malaria as a therapeutic agent has been in use must also be stressed for in the years that followed it was found that even 50 per cent was too high a figure. It has also been learned that by paying attention to certain features in its use the mortality rate could be reduced considerably. Now it stands at about 0.4 per cent which is the figure found by O'Leary in the treatment of his last 800 cases. This has been achieved by paying attention to certain features. In the first place patients who are over 60 years of age, those who have a cord bladder with an associated pyleticus, those who have predominantly vascular disorders and those who have progressive optic atrophy do not tolerate malaria well. Furthermore the complications that arise in the course of malarial therapy must be taken in hand promptly. This can be done best by the administration of dextrose and saline solution intravenously. The appearance of jaundice should not be taken too lightly. Marked dehydration and in s

of salt call for replacement. There is a danger point to which Dr O'Leary has called attention. If, in the course of the malarial paroxysms the blood urea rises and the blood pressure drops, and if this course cannot be checked by the immediate administration of dextrose and saline solution the point is soon reached at which the rise in blood urea and the fall in systolic blood pressure crosses. This point is an indication for terminating the malaria. The Kettering hyperthermia in experienced hands, such as those of Dr Bennett, has advantages. The degree of hyperthermia can be controlled, making this safer in patients who are debilitated. Furthermore, if the future course of the cases Dr Bennett has reported indicates a repetition of fever therapy, it can be done with the hyperthermia, whereas this cannot very well be done by trying to reinoculate the patient with malaria. Dr Bennett's efforts deserve our warm commendation. He has again raised our hopes that something may be done for these people and we shall await his further reports with interest.

DR A. E. BENNETT, Omaha. In answer to the question about vasomotor collapse this complication has been observed in about 15 per cent of the cases. It has not been more frequent in the tabetic than in the meningovascular group. Strict attention is paid to this sign and the treatment is stopped when the patient shows such phenomenon. I didn't want to leave the impression that we think these results will hold up. As Dr Woltman has pointed out, we were encouraged over malaria therapy but have become more and more discouraged. I have no doubt that there will be relapses in this group from time to time. I simply offer this as a preliminary study and hope to follow with a larger series over a long period.

A NEW PROCEDURE FOR THE CONTROL OF BENZENE EXPOSURE

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Serious or measurable damage from exposure to benzene or any gas or vapor, obviously, can be prevented if the concentration of the contaminant and duration of exposure are so controlled that the amount absorbed is insufficient to produce damage. Unfortunately the procedures and information necessary for such control are frequently inadequate or completely lacking. As knowledge and understanding of the phenomena that accompany exposure to a gas or vapor increase, the possibility of more perfect control of the industrial disease hazards also increases.

The commonly used procedures for the control of chronic benzene poisoning are examination of the blood, particularly for evidence of anemia and leukopenia, and determination of the amount of benzene in the atmosphere. The Bureau of Mines has recently developed a microcolorimetric method¹ which has many desirable features for industrial hygiene surveys. Owing to the fact that as little as 0.001 mg of benzene

can be detected, the method is also valuable for the determination of the small amounts of benzene present in tissues and fluids in chronic poisoning.

The estimation of the toxic qualities of air from the amount of benzene present and correlation with experience and toxicologic information and data are not only useful from the point of view of control of exposure but are frequently necessary as a confirmation of a clinical diagnosis of poisoning. Chemical determinations of the atmospheric contamination are especially valuable when the persons are exposed to a rather constant concentration of benzene. However, usually the exposure is intermittent to a wide variation of concentrations, both daily and seasonal. These variations make it difficult, if not often practically impossible, to estimate the overall exposure.

In any case it is desirable to examine the exposed persons for manifestations of poisoning. The action of benzene on the hematopoietic system is well known. The occurrence of anemia, leukopenia and other changes in cell counts, such as a relative increase in the percentage of lymphocytes and decrease in polymorphonuclear leukocytes and a decrease in the number of platelets, is also considered in the diagnosis of benzene poisoning. Although none of these criteria or manifestations are specific, they accompany benzene poisoning, and the use of periodic examinations of the blood of persons exposed and observing for trends in the series of results obtained is an established procedure for the detection of benzene poisoning. Owing to the normal variations in hemoglobin content and number of blood cells and the inherent errors in the usual clinical methods of determining these constituents, a single blood examination is never satisfactory. Also, under no conditions do the usual blood examinations reveal either conditions of exposure which may produce serious poisoning if the exposure is continued or oncoming poisoning before it has progressed to the stage of determinable anemia and leukopenia. While practical application of the method has demonstrated its value, the difficulties and limitations were apparent and the importance of a better method was recognized.

In an investigation of chronic benzene poisoning conducted by the Bureau of Mines with the cooperation of the producers of benzene and The Barrett Company, observations were made during all phases of the work for striking and reliable physiologic criteria of potentially harmful exposure or indication of oncoming benzene poisoning which would be easily determined before the organism was damaged and avoid as many as possible of the disadvantages and limitations of the present procedures. The results obtained indicated that the changes in the urine sulfates might serve as an excellent measure of benzene exposure.

URINE SULFATE TEST

A correlation of the results obtained from the study of benzene poisoning revealed that exposure to benzene caused a striking, easily measurable, consistent and rapidly occurring decrease in the percentage of inorganic sulfates of the total sulfates in the urine. The decrease occurred far in advance of anemia, leukopenia or signs of harm and was quantitatively related to the benzene exposure regardless of whether the exposure was for a long period to a low concentration or for a short period to a high concentration.

Normally the percentage of inorganic sulfates of total sulfates is from 85 to 95 per cent, the remaining 5 to 15 per cent being conjugated. On exposure to

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¹ Schrenk, H. H., Pearce, S. J. and Yant, W. P. A Microcolorimetric Method for the Determination of Benzene. U. S. Bureau of Mines Report of Investigations 3287, 1935.

benzene there is a shift in the equilibrium of the system, inorganic \rightleftharpoons conjugated sulfates, to the right. This shift may proceed to the point of complete elimination of the inorganic sulfates.

The extent of benzene absorption is directly related to the decrease in percentage of inorganic sulfates, that is, the greater the decrease the greater the absorption. In practice the total sulfates and inorganic sulfates in the urine are determined and the percentage

hours after the specimen was voided. The tendency for the hydrolysis to occur was decreased by keeping the specimens in a refrigerator.

SCOPE OF WORK

Sulfates were determined in the urine of dogs exposed to accurately controlled concentrations of benzene vapor, which ranged from those which produced no evidence of benzene poisoning to those which produced mild to fatal poisoning. Also, approximately sixty persons engaged in work which entailed some contact with benzene were examined.

RESULTS OF LABORATORY INVESTIGATION

The total and inorganic sulfates were determined in the urine from seventy-nine dogs. As the data obtained are quite voluminous, the results of only a few pertinent experiments, which show the nature of the response, will be presented. It may be stated, however, that the changes exemplified and discussed occurred in every experiment without exception.

Chart 1 shows graphically the weight, amount of hemoglobin, number of erythrocytes and leukocytes and percentage of inorganic of total sulfates in the urine of dog 559. This dog was exposed to 800 parts per million of benzene vapor in air one hour daily for sixteen days, two hours daily for sixteen days, one hour daily for twenty-six days, no exposure for fifteen days, and finally four hours daily for 175 days. The daily duration of exposure was varied in order to study the relation between length of exposure and decrease in percentage of inorganic sulfates when the concentration of benzene in the air was kept constant.

An exposure of one hour daily to 800 parts per million caused a definite and rapid decrease in the percentage of inorganic sulfates of total sulfates in the urine from a preexposure value of above 90 per cent to from 65 to 70 per cent. An increase in the period of exposure to two hours daily caused the proportion of inorganic sulfates to decrease to a range of from

of inorganic of the total sulfates is calculated. A single specimen is satisfactory, and the volume or specific gravity of urine excreted is not necessary.

EXPERIMENTAL PROCEDURES AND APPARATUS

The benzene used in the majority of experiments was of such purity that it may safely be regarded that the effects were due to inhaling vapors of C_6H_6 . Animals were also exposed to vapors of commercial and crude benzene and the response was similar to that with pure benzene, indicating that the impurities in even crude benzene do not inhibit the sulfate response.

The test apparatus has been described² previously and has been used in many similar experiments. The concentrations could be readily controlled within the limits of ± 10 per cent of the desired concentration. A metal tray covered with fine wire screen to prevent contamination of the urine samples with food and feces was placed in the bottom of the cages. The trays were designed to drain rapidly into glass bottles. The suitability of this procedure was confirmed by normal results observed for preexposure specimens and by checking the results of pan-collected specimens with catheterized specimens.

The total and inorganic sulfates were determined by the Folin³ method. Owing to an observed tendency in some specimens for the conjugated sulfates to hydrolyze thereby increasing the percentage of inorganic sulfates when kept at room temperature for from one to several days it was considered advisable to analyze the urine samples for inorganic sulfates as soon after collection as possible, at least within twenty-four hours and preferably within twelve to sixteen

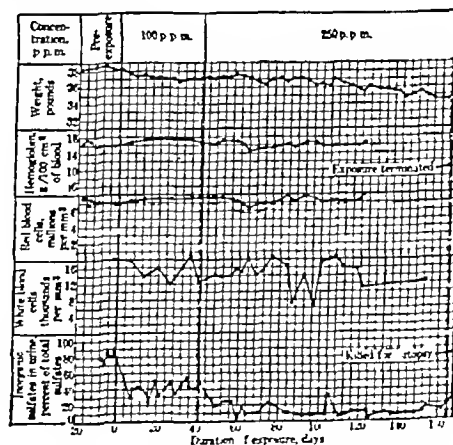


Chart 2—Dog 563 exposed eight hours daily to 100 parts per million and later to 250 parts per million of benzene vapor in air by volume.

40 to 50 per cent. On changing the period of exposure from two hours back to one hour daily, the percentage of inorganic sulfates increased to a range of the same order previously found for a one-hour exposure period. When the exposure to benzene was recessed, the sulfates rapidly returned to preexposure values. Resuming the exposure, the period was changed to four hours daily, and again there was a rapid and marked decrease in the percentage of inorganic sulfates.

2. Yant W. P., Schrenk H. H., and Sayers R. R. Methanol Antifreeze and Methanol Poisoning. *Indust. & Engin. Chem.* 23: 551, 1931.
3. Folin Otto. On Sulfate and Sulfur Determinations. *J. Biol. Chem.* 1: 131, 1905-1906. The procedures are given in various books on physiologic chemistry, such as Hawk, P. B. and Bergheim, Olaf. *Practical Physiological Chemistry*. Philadelphia: P. Blakiston's Son & Co., 1927, pp. 70-71. Matthews A. P. *Physiological Chemistry*. New York, William Wood & Co., 1924, pp. 1105-1106. Peters J. P. and Van Slyke D. D. *Quantitative Clinical Chemistry*. Baltimore: Williams & Wilkins Company, 1932, vol. 2, pp. 892-91.

Neither the blood counts, hemoglobin determinations, weight nor objective signs or symptoms showed definite or positive indications of benzene poisoning.

Chart 2 shows graphically the weight, amount of hemoglobin, number of erythrocytes and leukocytes and percentage of inorganic sulfates of total sulfates in the urine of dog 563. This dog was exposed to 100 parts per million of benzene vapor in air eight hours daily during forty-one days and then to 250 parts per million eight hours daily for a total of 124 days.

The exposure of eight hours daily to 100 parts per million of benzene vapor caused a definite and rapid decrease in percentage of inorganic sulfates, and a further decrease was produced when the concentration was increased to 250 parts per million. The blood counts, hemoglobin determinations, weight and objective signs or symptoms were not of diagnostic significance.

The fluctuation of the sulfates with the severity of the exposure and immediate return to pre-exposure values on recessing the exposure shows not only the sensitivity but also the quantitative relationship between the severity of exposure and decrease in the percentage of inorganic sulfates of total sulfates in the urine. The rapid return to normal indicates that the sulfate change is a chemical measure of exposure and not a measure of damage.

From one to two exposures to as little as 100 parts per million eight hours daily usually produced a definite decrease. The maximum decrease, for a particular exposure, occurred after from five to six exposures. The rate and magnitude of change increased rapidly with increase in concentration above 100 parts per million. With exposures that produced benzene poisoning the decrease occurred days, weeks and even months in advance of any manifestations of anemia or leukopenia or changes in weight. The interval between the decrease in organic sulfates and the blood manifestations of poisoning depended on the exposure and was longer with decreasing severity of exposure.

PLANT INVESTIGATIONS

The laboratory studies indicated the possible use of the results of urine sulfate determinations for the control of benzene exposure. A study was made, therefore, of persons exposed to benzene in industry.

The study was made at five plants where persons were engaged in making and using benzene containing dopes and coatings for artificial leather and oil cloth, benzene containing rubber cement in the manufacture of shoes and rubber goods, and in the production of benzene. In some instances the benzene vapor was accompanied by other vapors such as ethyl alcohol, ethyl acetate, butanol and gasoline. From chemical considerations it is not apparent that the exposure to these compounds, other than benzene, or their products of metabolism, would produce a significant change in the urine sulfates. A total of sixty plant employees (fifty-nine male and one female) who had contact with benzene even though remote for some individuals and thirty-three (male) control persons who had no benzene contact were studied. The control group consisted of approximately 25 per cent shop workers, 25 per cent inside laborers and 50 per cent laboratory workers. The inorganic and total sulfates in the urine, and the hemoglobin, number of red and white blood cells and platelets in the blood were determined. The concentration of benzene in the air was determined at various locations in the plants.

Table 1 shows the percentage of inorganic sulfates of total sulfates in the urine of controls and plant employees. The percentage of inorganic sulfates of total sulfates in the control group ranged from 81 to 100, with 81.8 per cent of the values being 85 or above. Only 36.7 per cent of the plant employees fell within the same range as the controls, 23.3 per cent being in the range of 70 to 80, 20 per cent from 60 to 69, and 20 per cent below 59, the lowest value being 24. These results show definitely that the percentage of inorganic of total sulfates in the urine of the exposed group is generally lower than in the unexposed group. Even though no cases of benzene poisoning were considered to exist among these persons at the time of this study, the results in table 1 indicate benzene absorption in 63.3 per cent of the persons and a significant absorption in at least 20 per cent.

Data were obtained also for hemoglobin, erythrocytes, leukocytes and platelets in the blood of these persons. Some of the values were in the range that might be considered as indicative of a tendency toward a beginning anemia or leukopenia. However, from two to three times the number of persons showed the sulfate response as showed any kind of blood manifestations of response to benzene exposure. Briefly,

TABLE 1—Percentage of Inorganic Sulfates of Total Sulfates in the Urine of Controls and Plant Employees

| Inorganic Sulfates Percentage of Total Sulfates | Percentage of Total Persons Examined | |
|---|--------------------------------------|-----------------------|
| | Controls (33)* | Plant Employees (60)* |
| 85 to 100 | 81.8 | 16.7 |
| 81 to 84 | 18.2 | 20.0 |
| 70 to 80 | 0.0 | 23.3 |
| 60 to 69 | 0.0 | 20.0 |
| 50 to 59 | 0.0 | 8.3 |
| 40 to 49 | 0.0 | 8.3 |
| 30 to 39 | 0.0 | 1.7 |
| 24† to 29 | 0.0 | 1.7 |

* Number of persons in group
† Lowest value found

the data obtained showed the sulfate response to be much more sensitive, consistent and reliable than the response of the hemoglobin, erythrocytes, leukocytes and platelets.

The change in blood cell counts and amount of hemoglobin are due to a response of the hematopoietic system, whereas the sulfate response appears to be a chemical reaction and a measure of the exposure. It is possible that some of the persons exposed to benzene who had a low percentage of inorganic sulfates in the urine and gave no evidence of anemia or leukopenia would eventually show such tendencies if the same exposure was continued. On the other hand, evidence of leukopenia and anemia may be present without a decrease in inorganic sulfates if the exposure which produced the hematopoietic response had ceased and time enough for recovery of the hematopoietic system had not elapsed.

Table 2 shows the relationship between the concentration of benzene in the air, the response of the urine sulfates and the blood manifestations of benzene exposure. In considering the results it must be borne in mind that the concentrations found represent the atmosphere at the particular point and time the sample was taken. Although the samples were taken in breathing zones, where the maximum exposure of workmen would be expected, the values obtained cannot be considered as closely representative of the all day exposure or the everyday composition of the atmosphere, even at the point sampled. There are many obvious factors

which alter the concentration of a contaminating vapor in the air actually breathed. The determinations made, however, quantitatively confirm the presence of benzene and give a general measure of the amount to which the workmen were exposed during a part, at least, of their day's work at the time the investigation was made.

A total of fifteen determinations of benzene in the air were made in the plant study. In table 2 these results are presented in four range groupings for convenience in making a correlation with the percentage of inorganic sulfates in the urine, and hemoglobin, erythrocytes, leukocytes and platelets in the blood of the plant employees.

The average for the urine sulfates in group 1 is in the range of normal values. This is in keeping with the low concentration of benzene from 13 to 23 parts per million found in the air and the observed cleanliness of the working places of these particular employees. The average results for blood examinations are within a normal range.

The average values of the urine sulfates for groups 2 and 3 are similar and show a moderate though distinct decrease, although the values for the air concentrations vary considerably. The reason for the apparent irregu-

TABLE 2—Relationship Between Benzene Concentration in Air, Response of Urine Sulfates and Blood Manifestations of Plant Employees

| Group No. | Number of Men | Concentration of Benzene P P M | Average Value for | | | | Platelets Thou sands |
|-----------|---------------|--------------------------------|--|----------------------------|--------------------------|------------------------------|----------------------|
| | | | Percent age of Inorganic of Total Sulfates | Hemo globin per Cent Sahli | Red Blood Cells Millions | White Blood Cells Thou sands | |
| 1 | 14 | 13-23 | 83 | 91 | 4.9 | 7.5 | 153 |
| 2 | 6 | 19-60 | 70 | 90 | 4.6 | 6.5 | 141 |
| 3 | 22 | 123-132 | 72 | 85 | 4.5 | 6.4 | 131 |
| 4 | 13 | 158-372 | 55 | 85 | 4.0 | 6.8 | 124 |

larity in the relation of sulfate response to benzene exposure is that the employees of group 2 made frequent trips through other parts of the plant where the benzene concentration was greater, whereas group 3 was not exposed continually to the concentration shown. The average results for blood examinations of this group were within a normal range.

Group 4, which represents those employees exposed to the highest concentration of benzene found by analysis and also by an observation of the working conditions, showed a marked decrease in inorganic sulfates. The average results for blood examinations of this group with the possible exception of the number of platelets were within the normal range.

In general, table 2 indicates that the decrease in urine sulfates is a much more sensitive and distinct indication of response to benzene exposure than the blood manifestations.

SUMMARY

The commonly used procedures for controlling benzene poisoning consist of determining the amount of benzene vapor in the air and examining the persons exposed for manifestations of anemia and leukopenia. These methods either alone or in combination are not entirely satisfactory. Owing to daily and seasonal variations in the concentration in the air it is practically impossible to determine the overall or average concentration to which workmen are exposed. Blood manifestations of diagnostic significance do not occur until after sufficient damage has been produced to affect adversely the functioning of the hematopoietic system.

The percentage of inorganic of total sulfates in the urine has been found to decrease on exposure to benzene. The decrease is quantitatively related to the severity of the exposure, that is, increase in severity of exposure, whether due to continued exposure to a low concentration or a short exposure to a high concentration, causes a more marked decrease in the percentage of inorganic of total sulfates. The response is consistent, reliable and occurs in advance of anemia, leukopenia or other manifestations of benzene poisoning. Only a single "grab" specimen of urine is necessary, and the method of analysis is simple and easily carried out.

ABSTRACT OF DISCUSSION

DR HENRY FIELD SMYTH, Philadelphia. I was privileged to see some of this work a year ago and felt that it was a very interesting, suggestive contribution and that it would be of great help in industry in evaluating the exposure of workers. The experiments checking the work with employees in the plant follow out the suggestions of animal experimental work and if it is assumed that approximately 100 parts per million is the safe limit for workers, as suggested by the National Safety Council Survey, this is a method which apparently will indicate when a man is exposed to overdose. In the paper on animal experimentation, reference was made to using carbon tetrachloride, which was not mentioned here. Carbon tetrachloride will have the opposite effect. It produces liver damage and interferes with conjugation of sulfates. Research workers found when they combined carbon tetrachloride with benzene that they blanked this shift in the ratio by the carbon tetrachloride interfering with conjugation. After this fact was brought to my attention, my associates and I tried to see if we could make any use of that method of determination of exposure in our carbon tetrachloride work, but I came to the conclusion that it was much less valuable there, partly because normal inorganic sulfates run too high. We did make a special trip to a nearby plant and got about a dozen samples and examined those according to this technic, and we did find up to 100 per cent in some of them, but the ratios found did not agree with known exposures. In our animal experimental work we ran these tests, and in groups exposed to 200 parts per million of carbon tetrachloride found a definite difference between the normal and the exposed animal. The normal small animal we found had not as high a proportion of inorganic sulfates as is normal to man, so we could show a difference there which, when the groups were considered, had some significance. When the individual animals were considered, however, the difference was not great enough to say that this animal was exposed to carbon tetrachloride and that one was not.

DR PAUL A DAVIS, Akron, Ohio. I should like to ask the authors whether they have been able to hook up the symptom complex with the concentration of sulfates in any way at all so that it would be possible to determine the point of toxicity. I want to know whether through their determinations of inorganic sulfates they are able to arrive at anything definite where one might expect these symptoms to develop.

DR H H SCHRENK, Pittsburgh. We have not attempted to establish a concentration of inorganic sulfates in the urine which may be considered the threshold at which symptoms will eventually appear. The purpose of the test is to prevent benzene poisoning. If the results of urine analyses indicate a definite absorption of benzene, consideration should be given to the improvement of the exposure conditions.

DR R R SAYERS, Washington, D C. It is hoped that a number of those who deal with benzene and industrial solvents will try the method. It would seem that it might be useful as a tool and for directing attention to where the hazard may occur, where the hazard exists and thus one can prevent damage before it occurs. I believe from the data shown that even though the inorganic sulfates fall to almost zero, or even to zero, it doesn't necessarily mean that there has been any damage produced provided the condition is corrected.

PHYSIOLOGIC RELATIONSHIPS BETWEEN
INTRATHORACIC, INTRASPINAL
AND ARTERIAL PRESSURESW F HAMILTON, PH D
R A WOODBURY, MD
AND
H T HARPER JR, MD
AUGUSTA, GA

In 1934 one of us with Brewer and Brotman¹ described an optical manometer which offered certain advantages over those in use at that time. The customary² rubber membrane carrying a flat mirror was discarded for a thin metal disk and a 0.5 diopter planoconvex lens silvered on the plane side. The new mirror design made it possible to lengthen the optical lever and to get photographic tracings of unusual clarity, and this with the simplest of optical arrangements. The disk (coin silver 0.0015 inch thick) increased the volume elasticity coefficient of the system to such a degree that it was possible to increase its effective mass 500 fold or more.

In accordance with the mathematical principles laid down by Otto Frank,³ we were free from the limitations imposed by a small effective mass and could construct a manometer that was much more convenient, flexible and adaptable than its predecessors.

Figure 1 is a diagram of it in its present form. Attention might be called to the convenience of using a long lead tube (up to 4 feet) armed with an ordinary hypodermic needle as a cannula and of thrusting this needle into an arterial or other cavity to record accurately the pressure pulsations within it. This is done with no surgical procedures.

By the simultaneous use of two or more manometers we have recorded the quantitative comparison of the pressures in the several parts of the cardiovascular system and the relationship between pressures in the cerebrospinal or thoracic cavities and those in the arterial or venous system.

One practical question of wide interest is: How accurate is the ordinary auscultatory method of blood pressure measurement? It must be emphasized that its criteria have been established by inference and that direct checks have not been obtained until recently. Such checks have been made by Wolf and von Bondsdorff⁴ and are now being continued in the Georgia school. Our results indicate that the indirect method agrees reasonably well with the direct method. The indirect method seems to be 3 or 4 mm low in evaluating the brachial systolic and about 9 mm high for diastolic (using the fading of the fourth phase). This summarizes the results of some thirty comparisons on random clinic patients. There is evidence already that in different clinical conditions the comparisons will check up in a different manner, but we are not yet in a position to go into greater detail.

We now wish to bring up the question of the relationship of pressures in one artery to those in another

artery. If the pressure pulse inscribes its contour by means of a quantitative manometer, we have the maximal (systolic) pressure recorded as the heart empties blood into the arterial tree and a minimal (diastolic) pressure recorded just before the next heart beat. Now, if we take simultaneous recordings of the pressure within several arteries and replot them to the same pressure scale, it will be seen that, though there are no very significant differences in diastolic pressure, the systolic pressures progressively increase as we go from the axillary, near the heart, to the femoral and then on down to the foot (dorsalis pedis) (fig 2). The femoral exceeds the axillary by 20 mm and the dorsalis pedis exceeds the axillary pressure by 55 mm. Differences similar to these seem to be usual. In all our patients diastolic pressure is nearly equal in all the arteries, but what systolic pressure is depends on the artery.

The physical factors behind this increase in systolic pressure as the pulse wave approaches the periphery are not fully analyzed. They seem to operate in the lower limbs and abdominal aorta to a greater extent

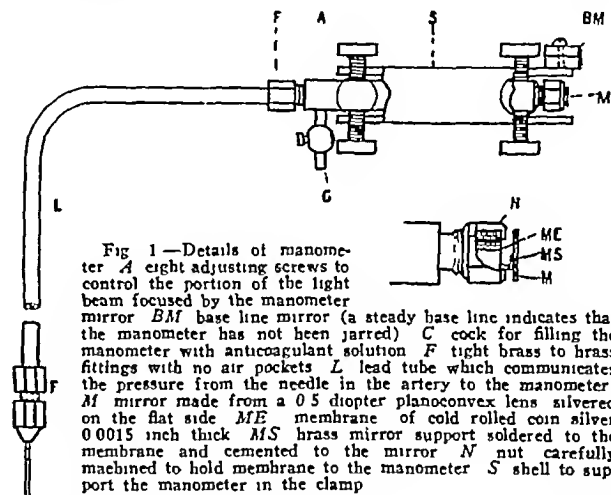


Fig. 1—Details of manometer. *A* eight adjusting screws to control the portion of the light beam focused by the manometer mirror. *BM* base line mirror (a steady base line indicates that the manometer has not been jarred). *C* cock for filling the manometer with anticoagulant solution. *F* tight brass to brass fittings with no air pockets. *L* lead tube which communicates the pressure from the needle in the artery to the manometer. *M* mirror made from a 0.5 diopter planoconvex lens silvered on the flat side. *ME* membrane of cold rolled coin silver 0.0015 inch thick. *MS* brass mirror support soldered to the membrane and cemented to the mirror. *N* nut carefully machined to hold membrane to the manometer. *S* shell to support the manometer in the clamp.

than in the arteries of the arm. It may be possible as a result of careful study to separate the factors that have to do with the volume elasticity characteristic of the arterial tree⁵ with the inertia and momentum of the surging blood column⁶ and with the velocity potentials of Bernoulli. Rapid pressure pulsations are of importance because, when a patient coughs and the pressure is maintained above systolic for a fair part of a second, the difference in pressure between the two arteries disappears. It reappears as the pulsations begin again.

The effect of coughing brings up the next topic, namely, the relation of intrathoracic pressure to arterial pressure and, later, to the pressure in the cerebrospinal fluid. For the intrathoracic pressure studies, the subjects were tuberculous patients with artificial pneumothorax. Straining and coughing seem to give the same blood pressure changes in these patients as in the normal, though in the normal simultaneous records of intrathoracic pressure were not made.

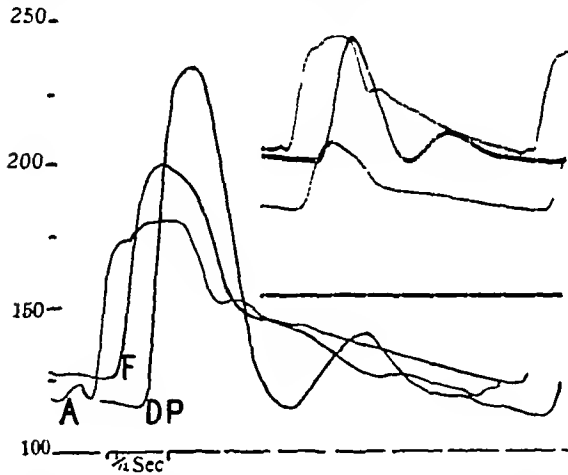
The pneumothorax and brachial artery were entered with 22 gage needles attached to similar manometers. The upper tracing in figure 3 is of the brachial pressure and next below is a tracing of the intrathoracic pressure. When the intrathoracic pressure went up, the

From the Department of Physiology, University of Georgia, and the Department of Medicine, University of Georgia.
Read before the Section on Physiology and Pharmacology, the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.
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2. Frank, Otto. *Ztschr f Biol* 44:445 1903.
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6. Bazett H C. *Am J Physiol* 70:550 (Nov) 1924.

subject strained as in a bowel movement, increasing the intrathoracic pressure to a value of 50 mm of mercury. The effort was maintained ten seconds and then suddenly released.

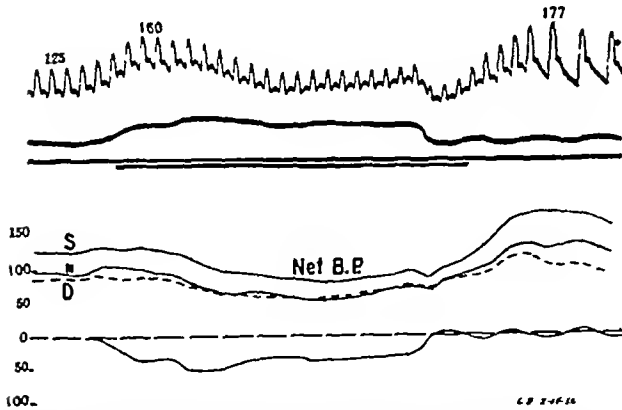
At first glance it seems that the blood pressure is passively supported by the intrathoracic pressure. The two pressures seem to go up together and come down together. We notice, however, that there are distinct changes in the pulse contour and in the heart rate.



T. L. 22836

Fig 2—Human arterial pressure curves from axillary (A) femoral (F) and dorsalis pedis (DP) arteries. The original record (upper right) has been replotted so that the pressures in the arteries are shown on the same scale. Axillary \approx 165 mm of mercury femoral = 200 mm. and dorsalis pedis = 235 mm systolic.

The pulse contours fall into two different types, which we shall call for convenience full pulses and empty pulses. There are of course intergradations. The full pulse is seen during the recovery from the strain at the end of the tracing. It is marked by a wide pulse pressure and a relatively high diastolic pressure. The empty pulse, on the other hand, is produced by the



L. B. 24616

Fig 3—Straining. From above downward are shown brachial arterial pressure, intrathoracic pressure and base line with signal. The net blood pressure is the arterial pressure minus the intrathoracic pressure. The three lines indicate systolic (S), diastolic (D) and dicrotic (N) pressures. The intrathoracic pressure curve has been inverted and plotted to the blood pressure scale (shown in millimeters of mercury at the left). The lower base line is divided into seconds.

discharge of an inadequately filled heart. It resembles that seen in experimental shock in dogs. The pulse pressure is narrow and the diastolic pressure is often as low as the systolic.

If one is to understand the causes of the changes in pulse contour and rate it is convenient to subtract the intrathoracic pressure from the arterial pressure and replot the effective pressure of the blood within the thorax.

This gives the cardiovascular component of the blood pressure as distinguished from the intrathoracic. It is an index as to how the heart itself is working and as to the available pressure to feed the coronaries. We shall refer to this as the net blood pressure. In this chart the lowest curve is the intrathoracic pressure plotted to the blood pressure scale and inverted. The net blood pressures (systolic [S], diastolic [D] and dicrotic notch [N]) are plotted to the same scale, seen on the left.

We shall divide the response to the strain into four phases.

1 The blood pressure rises and the pulse becomes slightly fuller. This rise produces no change in heart rate, though it acts of course on the carotid sinus. The net blood pressure does not rise and soon begins to fall.

2 In the second phase the pulmonary reservoir becomes depleted. Cardiac filling is inadequate and the pulsations become of the empty type. They are mere ripples on the arterial tree and leave the artery as empty at the beginning of diastole as at the end. As this phase continues, some other factor enters (peripheral vasoconstriction perhaps) and the mean (net) blood pressure begins to rise again.

3 In the third phase the strain is let off and the general blood pressure falls precipitously to the level

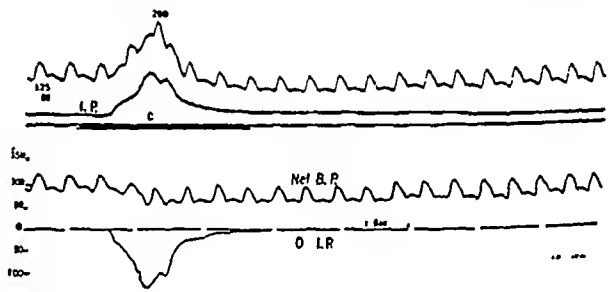


Fig 4—Effect of coughing. Curves arranged as in figure 3. Note that the intrathoracic arteries (coronary and the like) are protected from the elevated arterial pressure produced by the cough.

of the net (intrathoracic) blood pressure. The intrathoracic pressure has ceased to support the blood pressure.

4 Immediately the heart becomes better filled. The pulse pressure widens, systolic and diastolic pressures increase, and the dicrotic notch is higher on the diastolic contour. These changes reach their maximum in four seconds. Blood that has been dammed back in the extrathoracic venous reservoirs makes its way clear through the lesser circulation and produces a maximum effect on the arterial blood pressure in this short time.

The mean blood pressure does not rise in this fourth phase any higher and sometimes not as high as in the first phase, but the heart slows markedly. The depressor receptors of the carotid sinus⁷ are stimulated alone in the first phase but in the fourth the receptors in the aorta are also stimulated because the net (aortic) blood pressure rises while in the first phase the rise is confined to the extrathoracic arteries.

When a patient coughs there is a bizarre increase in the blood pressure curve. Figure 4 is a simple example. The cardiac pulsations are overshadowed by other waves, which often last throughout diastole and may raise the arterial pressure to twice the systolic value. These have been recorded from normal human subjects.

and in patients with pneumothorax it is possible to record the simultaneous changes in intrathoracic pressure

From simultaneous arterial and intrathoracic pressure curves the net blood pressure has been plotted in the same manner as before. In figure 4 the intrathoracic pressure changes are not very sudden and the cardiac pulsations in the net blood pressure are not greatly altered

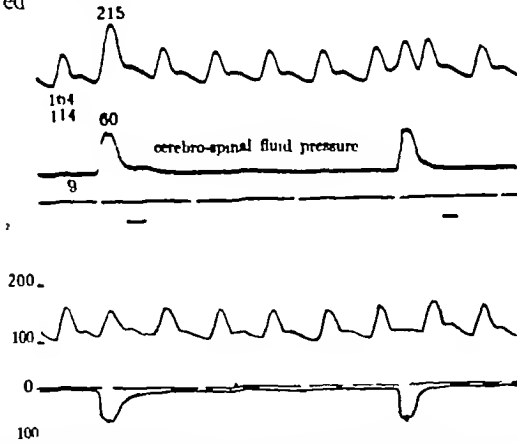


Fig 5—Effect of coughing. From above downward are shown the brachial arterial pressure cerebrospinal fluid pressure base line the net cerebrospinal arterial pressure base line showing seconds and the inverted cerebrospinal fluid pressure curve plotted to the blood pressure scale shown on the left. Note arterial pulsations in the cerebrospinal fluid pressure curve during recovery from a strain.

When the cough is more sudden, the net blood pressure may recede to zero, i.e., there is momentarily no effective coronary pressure. In a severe paroxysm of coughing the systemic blood pressure shows very large and erratic increases, but the net blood pressure still retains the marks of the cardiac rhythm in spite of increases and decreases of thoracic origin. The coughing leaves the heart inadequately filled and the pulses relatively empty.

These very large increases in arterial pressure on coughing and straining put a degree of stress on the arterial tree and give rise no doubt to interstitial hemorrhages. Because of their serious consequences, such hemorrhages have received particular attention when they occur within the craniospinal canal.

Evidence to be presented in detail elsewhere shows conclusively that quick changes in intrathoracic pressure are transmitted directly and immediately to the craniospinal canal. These pressure changes are not propagated to the cerebrospinal fluid by the internal jugular vein, because they are slower and less extensive in that vessel than in the canal itself. They are not propagated over the arterial tree. An ordinary systolic rise in arterial pressure causes a rise of intraspinal pressure of only 1 or 2 mm of mercury. A similar rise in arterial pressure caused by a cough is accompanied by a rise in intraspinal pressure as great as or even a bit greater than the arterial rise itself (fig 6).

This evidence leads us to regard the craniospinal cavity as a sort of functional extension of the thoracic cavity and to think of the cerebrospinal arteries as protected from the sudden stress that results from straining and coughing in the same fashion that the intrathoracic arteries are protected.

Thus in figure 5 the rises in systemic blood pressure that occur as a result of coughing do not appear in the net intraspinal pressure. They are canceled by similar rises in cerebrospinal fluid pressure. In figure 6 the same is seen to be true during a strain. The net

intracranial blood pressure fails to rise as does the systemic blood pressure, but just as in the thorax it does rise after the strain is over. Moreover, the intracranial pressure pulsations are much more extensive after a strain than before or during the effort. It is at this time that the strain puts its greatest stress on the cerebral arteries.

The net intraspinal blood pressure, which is analogous to the net intrathoracic blood pressure, is of course the force that tends to burst the arteries and to produce apoplexy. One cannot fail to be struck by the admirable way in which the vital arteries within the craniospinal canal, within the thorax, and to a great extent within the abdomen are protected against these sudden and enormous physiologic increases in pressure.

Admitting the existence of these pressure relationships and their usefulness, what is there to say about the mechanism that results in the prompt and opportune rise in intracranial pressure? As we have seen, the pressure cannot be propagated from the thoracic to the craniospinal canal by the arteries or the internal jugular veins. How then do these sudden and large pressure changes occur in such a rigid bony box as the craniospinal canal?

The following hypothesis is at present the most attractive. We would suggest that the pressures which arise during coughing and straining in the thoracic and abdominal cavity are transmitted through soft tissues between these cavities and the spinal column to the spinal foramina. Because of the rigidity⁸ of the cerebrospinal canal and because of the temporarily increased vascular pressure, no very large tissue or fluid volume would need to be squeezed into the spinal canal in order to raise the pressure even to the extent it does during the cough. The material entering the spinal canal under this stress may be (1) cerebrospinal fluid from under the evaginations of the dura around the spinal nerves, (2) the spinal nerves themselves and loose areolar tissue surrounding them, and (3) venous blood in the paravertebral plexuses, and in the larger veins at the back of the thorax and abdomen in close communication with these veins.

The pressure increases that are, according to our notion, produced in the spinal canal must naturally be propagated up through the foramen magnum and into



Fig 6—Straining curves arranged as in figure 5. Note that the cerebrospinal arteries are protected from the elevated arterial pressure produced by the coughs.

the cranial cavity. Even though the volume movement up through the base of the skull is small, the pressure thrust is considerable. A similar and opposite thrust occurs as the intraspinal pressure goes down. The fact that these stresses are localized at the base of the brain may have some bearing on the frequency of hemorrhage in this region.

SUMMARY

1. The manometer here described can optically record quick pressure changes in the human body with a high degree of accuracy.

2 Experiments show that the true systolic and diastolic blood pressures are not very different from those recorded by the auscultatory method

3 Simultaneous recordings of arterial pressure in the axillary, femoral and dorsalis pedis arteries show that the latter two exceed the former by such figures as 20 and 55 mm of mercury respectively, systolic. Diastolic pressures are nearly equal

4 Simultaneous records of arterial and intrathoracic pressure show that the intrathoracic and probably the intra-abdominal arteries are protected from the large pressure fluctuations which coughing and straining produce in the systemic blood pressure

5 Similar changes occur in the spinal pressure during straining and coughing which protect the arterial tree within the craniospinal canal from these unusual stresses. Thus a simultaneous sudden rise of arterial and spinal pressure of 100 mm of mercury resulting from severe coughing leaves the net intraspinal arterial pressure unaffected

ABSTRACT OF DISCUSSION

DR RALPH H MAJOR, Kansas City, Mo. My observations, using the apparatus supplied me by Drs Hamilton and Woodbury, have been limited to experimental animals. As clinicians we can derive satisfaction from the observation that, checked by this accurate method, our ordinary methods of taking the blood pressure of patients are quite satisfactory. This method, however, in the study of problems connected with hypertension or with disturbances of circulation, does many things that the ordinary blood pressure equipment does not. One of the most interesting features of this apparatus is the fact that it enables one to get away from the inertia of mercury. I have been astounded to see the terrific elevations of blood pressure that follow the administration of pressor substances. These elevations of blood pressure cannot be taken with a mercury manometer, since the mercury has too much inertia to follow these quick changes in pressure. For instance, I have seen systolic pressures as high as 400 mm and diastolic pressures as high as 300. It is possible to demonstrate these very rapid changes only with such an apparatus. Since seeing some of these tracings in animals and a few that Dr Woodbury has shown me on patients, I feel a little more respect for such substances as epinephrine. The authors didn't have time to bring that out in their paper, but I am sure we would be interested to have him refer to that in his closing discussion. Another interesting feature of his paper has been the demonstration of the effect of coughing on the coronary circulation. I wonder just what happens to the coronary circulation of a patient who has pneumonia and coughs continually. It makes one wonder if perhaps we shouldn't take the heart a little more into account than we seem to be doing at the present time. This new method of estimating the blood pressure opens new fields for exploration. Much of the work that has been done on blood pressure in anesthetized animals must be revised in the light of methods that estimate the pressure of patients and animals without the administration of drugs.

DR R A WOODBURY, Augusta, Ga. We have modified our cannulas so that we have a special type which enabled us to follow blood pressure changes in small animals such as rats and mice. This will allow experimental workers to follow blood pressure changes in these animals, obtaining systolic and diastolic pressures, for a long period without sacrificing the animal. This technic will be described elsewhere. We hope to continue this work in the field of drug studies both in animals and in man. Preliminary work with epinephrine on human beings has shown some very striking blood pressure changes. The first patient receiving epinephrine had asthma. He was given a fairly large injection 0.45 cc. of 1:1000 not any larger than is given every day in outpatient clinics or in the emergency room. The pressure of this individual became elevated to such a height that we were not able to get the record. I know it went over 380 because we could have followed any changes to 380 mm of mercury. We have studied

the effect of smaller doses since that time and observed very definite periods of arrhythmia as a result of epinephrine. We hope to continue our studies on other cardiovascular drugs in animals and human beings. Another field which we expect to study is the strains that occur during parturition. We have noticed that the longer the strain the bigger the rise following the release of the strain. We expect to find some interesting changes following parturition pain and the strain that accompanies it.

UNTREATED SYPHILIS IN THE MALE NEGRO

A COMPARATIVE STUDY OF TREATED AND UNTREATED CASES

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A determination of the effectiveness of treatment in preventing the transmission of syphilis is one of the basic problems in the control of this disease. Second in importance to it is the effect which treatment has in preventing late and crippling manifestations. The administration of adequate treatment in early syphilis is recognized as the most important factor in the prevention both of communicable relapse and of the early complications so detrimental to the health of the individual patient. As the result of surveys of a few years ago in southern rural areas it was learned that a considerable portion of the infected Negro population remained untreated during the entire course of syphilis. Such individuals seemed to offer an unusual opportunity to study the untreated syphilitic patient from the beginning of the disease to the death of the infected person. An opportunity was also offered to compare this process, uninfluenced by modern treatment, with the results attained when treatment has been applied.

The material included in this study consists of 399 syphilitic Negro males who had never received treatment, 201 presumably nonsyphilitic Negro males, and approximately 275 male Negroes who had been given treatment during the first two years of the syphilitic process. All these individuals were more than 25 years of age. The percentage of persons in each age group is comparable. The method of case finding and study has as far as possible been comparable and nonselective. The patients with untreated syphilis and presumably nonsyphilitic individuals were chosen primarily by the use of the Kolmer complement fixation and the Kahn standard flocculation tests for syphilis and subsequently by the presence or absence in the history of the early manifestations of syphilis. A total of 1,782 male Negroes aged 25 years or more were serologically examined in a rural county. Of these, 472 gave at least two positive serologic tests for syphilis. From this group the 399 patients with untreated syphilis were taken for this study. Only individuals giving a history of infec-

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The authors are indebted for cooperation and assistance in conducting this study to the personnel of the John A. Andrew Memorial Hospital, Tuskegee Institute, Ala.; the U. S. Veterans Administration, Fort Tuskegee, Ala.; the Macon County Health Department, Tuskegee, Ala.; and the State Department of Health, Montgomery, Ala.

tion who submitted voluntarily to examination were included among the 399 patients. Of the total 1,782 Negro males, 1,258 were found to be serologically negative for syphilis. Persons in age groups comparable to the untreated syphilis cases were taken from these 1,258 serologically negative individuals, provided a subsequent serologic study gave no evidence of syphilis and a history of infection was absent.

The examinations included a careful history, a detailed physical examination, routine teleroentgenologic study of the heart and great vessels in the anteroposterior position, roentgenologic study of the osseous system if indicated, and a spinal fluid examination in 271 of the 399 patients with untreated syphilis. The routine examinations were performed by physicians trained in clinical syphilology. The assistance of specialists was utilized when manifestations were such as to require unusual examinations.

The case records of patients with syphilis who received varying amounts of treatment during the first two years of their disease were available for this study. These case records were from the syphilis clinics of five universities which have undertaken retrospective clinical studies under the guidance of the Public Health Service. Roentgenologic study of the chest was not routine in this group, although such studies were made when indicated. The spinal fluid was examined in a larger percentage of the untreated syphilitic patients than in the treated syphilitic group.

The present study presents the physical and mental condition of a cross-section of the untreated seropositive syphilitic male Negro population. The problem offered by those individuals who had been infected with syphilis but who had spontaneously become serologically negative will not be discussed here. No data are available that indicate the frequency with which negative serologic tests spontaneously develop in the Negro with latent or late syphilis. Reports from the current medical literature indicate that approximately 75 per cent of patients with active late syphilis have positive serologic tests, regardless of whether or not they received previous treatment. In the recent studies¹ of the Committee on Evaluation of Serodiagnostic Tests for Syphilis, 3,961 specimens from 307 patients with latent and late syphilis were examined by thirteen participating serologists. Most of these patients had received varying amounts of treatment, a few were untreated. Among the 3,961 specimens examined, 2,976, or 75.1 per cent, were positive. The present study, therefore, represents the condition of at least three fourths of the untreated syphilitic Negro population.

MORBIDITY IN UNTREATED SYPHILIS

A comparison of the physical and mental condition of the untreated syphilitic patients with the apparently nonsyphilitic Negroes in the general population permits an estimate of the effect of syphilis in the production of morbid processes involving the various systems of the body. Only 16 per cent of the 399 untreated syphilis patients gave no evidence of morbidity, as compared to 61 per cent of the 201 presumably nonsyphilitic Negroes. The effect of syphilis in producing disability in the early years of adult life is to be noted by comparing the cases with no demonstrable morbidity under 40 years of age. This comparison shows that only

one fourth of the Negroes with untreated syphilis had no manifestations of disease, whereas three fourths of the uninfected population were free.

With an increase in age there is, as one would expect, an increase in the frequency of manifestations of cardiovascular involvement due not only to syphilis but also to arteriosclerosis and hypertension. Modern diagnostic methods have not as yet progressed to such an extent that most signs and symptoms of cardiovascular disease are recognized as pathognomonic on an etiologic basis. This is especially true for the earlier manifestations of disease involving this system of the body. The manifestations of aortitis here recognized were those which have been generally accepted as diagnostic for several decades, as well as those which have more recently been emphasized by Carter and Baker² and Moore, Dangle and Reisinger.³ Roentgenologic manifestations of increased aortic width and the presence of two of the remaining six signs of these investigators were considered to be diagnostic evidence of

TABLE 1—Comparison of Results of Physical Examination of Untreated Syphilitic and Presumably Nonsyphilitic Male Negroes in Similar Age Groups

| Type of Abnormality Found | Age of Patients at Time of Examination | | | | | | |
|--|--|-------------|-------|---------------|-------------|-------|-------|
| | Syphilitic | | | Nonsyphilitic | | | |
| | 25-39 | 40 and Over | Total | 25-39 | 40 and Over | Total | |
| Diseases of circulatory system | | | | | | | |
| Definite cardiovascular disease | 25.3 | 63.1 | 46.6 | 5.7 | 37.7 | 23.9 | |
| x ray evidence alone or incomplete clinical evidence of uncomplicated aortitis | 30.5 | 19.2 | 21.6 | 7.0 | 3.5 | 5.0 | |
| Diseases of | | | | | | | |
| Central nervous system | 23.0 | 28.4 | 26.1 | 1.1 | 3.5 | 2.5 | |
| Skin and adnexa | 12.6 | 22.7 | 18.3 | 2.3 | 7.9 | 5.5 | |
| Bones, joints and bursae | 12.1 | 12.0 | 12.5 | 4.6 | 4.4 | 4.5 | |
| Respiratory system | 1.1 | 2.2 | 1.8 | 2.3 | 6.1 | 4.5 | |
| Genito-urinary system | 4.0 | 2.7 | 3.3 | 2.3 | | 1.0 | |
| Eyes and adnexa | 0.6 | 3.1 | 2.0 | | 1.8 | 1.0 | |
| Ear, nose and throat | 4.6 | 0.0 | 2.5 | | 0.9 | 0.5 | |
| Digestive tract | 0.6 | 0.4 | 0.5 | | 0.9 | 0.5 | |
| Cases with no morbidity | 25.3 | 8.4 | 15.8 | 77.0 | 49.1 | 61.2 | |
| Total cases | Number | 174 | 225 | 399 | 87 | 114 | 201 |
| Per cent | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

aortitis. The roentgenologic readings were based on the interpretation of observations as outlined by Vaquez and Bordet.⁴

Study of the untreated syphilitic and presumably nonsyphilitic individuals under the age of 40 years indicates that syphilis in this period tends greatly to increase the frequency of manifestations of cardiovascular disease. It is to be noted that of 174 syphilitic individuals under 40 years, 25.3 per cent had definite manifestations of cardiovascular disease, as compared with 5.7 per cent of eighty-seven individuals in the same age group who were nonsyphilitic. A difference may still be noted in individuals over the age of 40, although this difference is not so pronounced. Of 225 untreated syphilitic patients over 40 years of age, 63.1 per cent had definite manifestations of cardiovascular disease as compared with 37.7 per cent among 114 nonsyphilitic individuals.

Perhaps the most interesting group of patients in the study, because of their potential amenability to treatment, are those who have presumptive evidence of uncomplicated aortitis. Because of the strictness of present-day criteria, these cases could not be definitely

¹ Cumming, H. S. and others. The Evaluation of Serodiagnostic Tests for Syphilis in the United States. Report of Results. *Ven. Dis. Inf.* 16:189 (June) 1935. J. A. M. A. 104:2083 (June 8) 1935.

² Carter, E. P. and Baker, B. M., Jr. Certain Aspects of Syphilitic Cardiac Disease. *Bull. Johns Hopkins Hosp.* 48:315 (May) 1931.
³ Moore, J. E., Dangle, J. H. and Reisinger, J. C. Treatment of Cardiovascular Syphilis. *Arch. Int. Med.* 48:879-924 (June) 1932.
⁴ Vaquez, H. and Bordet, E. The Heart and the Aorta. New Haven: Conn. Yale University Press, 1920.

diagnosed. Of the untreated syphilitic patients, 23.6 per cent had presumptive evidence of uncomplicated aortitis, while only 5 per cent of the nonsyphilitic patients presented such evidence. In the early years of adult life, especially among untreated syphilitic patients, it is more common to have either roentgenologic or clinical evidence of increased aortic width alone than it is to have a combination of the two. In later years, however, the corroborative evidence more frequently permits a definite diagnosis of uncomplicated aortitis. This fact is so striking that presumptive evidence of aortitis should be regarded as of great importance and patients giving such evidence should be subjected to long periods of observation and treatment. The exact interpretation of these manifestations awaits more definite proof, which it is hoped may be accumulated by following the untreated syphilitic individuals over a period of years, a number being ultimately brought to autopsy. Such an attempt is now being made with the assistance of a philanthropic organization. The purpose is to confirm

TABLE 2—Comparison of Results of Examination of Untreated Syphilitic Male Negroes 25 or More Years of Age, with Those in a Similar Group of Treated Syphilitic Patients Showing Duration of Infection

| Treatment | Type of Manifestation | Duration of Infection in Years | | |
|--|-----------------------|--------------------------------|-------|-------|
| | | Three | Six | Nine |
| None | Cardiovascular | 7.7 | 12.0 | 41.9 |
| | Neurosyphilis | 30.8 | 38.0 | 29.0 |
| | Asymptomatic | 15.4 | 20.0 | 12.9 |
| | Symptomatic | 15.4 | 16.0 | 16.1 |
| | Total cases | 26 | 27 | 31 |
| | Number | 100.0 | 100.0 | 100.0 |
| | Per cent | | | |
| Inadequately treated during first two years of infection | Cardiovascular | 1.2 | 6.1 | 6.9 |
| | Neurosyphilis | 9.3 | 18.4 | 18.8 |
| | Asymptomatic | 2.3 | 6.1 | 3.5 |
| | Symptomatic | 7.0 | 12.3 | 10.3 |
| | Total cases | 80 | 49 | 29 |
| | Number | 100.0 | 100.0 | 100.0 |
| | Per cent | | | |

the presumptive manifestations of cardiovascular disease if possible and to corroborate the accuracy of clinical observations in general.

The incidence and character of syphilis of the central nervous system in the Negro has been a controversial issue for many years. Generally speaking, one group of observers believes that dementia paralytica and tabes dorsalis are not particularly common in the Negro race. A second group is of the opinion that parenchymatous neurosyphilis occurs almost as frequently as in the white race. In this study 26.1 per cent of 399 untreated syphilitic Negro males had either clinical or serologic evidence of central nervous system involvement. Only 2.5 per cent of the 201 nonsyphilitic Negroes, on the other hand, had any disease of the central nervous system.

Analyzing our data further, we find that of the 399 untreated syphilitic patients 7.8 per cent had definite clinical evidence of central nervous system syphilis, while in an additional 18.3 per cent the diagnosis of central nervous system involvement was based on serologic evidence only. The untreated syphilitic patients included 3 per cent of a relatively benign parenchymatous type and 4.8 per cent with all other forms of central nervous system involvement. In the latter group the most serious type was the vascular form.

With regard to the benign parenchymatous type, such patients did not appear to run the usual classic course of dementia paralytica or tabes dorsalis. The manifesta-

tations that were common included positive reactions in the spinal fluid, and changes in the pupillary reactions and tendon reflexes. No typical cases of dementia paralytica or tabes dorsalis were noted but one case of simple dementia was found. In order to be certain that there was no selection of patients through loss to institutions for the insane, it was learned that not a single male Negro over 25 years of age was confined with syphilis of the central nervous system in the Searcy Hospital at Mount Vernon, Ala., where the Negro insane in this state are hospitalized.

In the group of 399 untreated patients with syphilis, forty-six (11.5 per cent) gave evidence of late involvement of the bones, joints and skin. Of these, thirty-six patients (9 per cent) showed periostitis, osteitis or Charcot's joints. Two patients, or less than 1 per cent, presented late syphilis of the skin, and eight (2 per cent) had both a late skin and a bone or joint involvement.

EFFECT OF TREATMENT

All syphilologists recognize the great importance of the provision of treatment during the first two years of the syphilitic process, and all are likewise of the opinion that treatment during this period should be adequate. An accurate evaluation of the modern treatment of syphilis is, however, made difficult by many factors. First of all, adequate treatment has not been freely available to most indigent citizens for a period longer than a decade. Furthermore, not until about twenty years ago was the administration of the arsphenamines started in this country on a large scale. In comparing the results obtained by modern treatment with those in untreated patients, it is important that both groups be observed for a definite period. An observation period of at least twenty or more years is necessary to give a true picture of the value of therapy. The incompleteness of records of patients treated in the past often does not permit such a comparison. Final evaluation of treatment must await the accumulation of well kept records of patients treated and observed over a sufficiently long period.

In connection with the administration of adequate treatment, the tendency of all patients, whether white or colored, is to become dilatory in returning to the attending physician during the observation period. If the individual remains symptom free and the physician has assured him that adequate treatment has been administered, repeated return for observation soon becomes irksome. The consequent lapse tends to distort the results obtained with adequate treatment, since patients who suffer no relapse fail to return, while those presenting intractable manifestations are prone to return for long continued treatment.

In the following discussion more than twenty doses of an arsphenamine with an accompanying heavy metal preparation are arbitrarily classified as minimum adequate treatment. Less than this amount has been called inadequate. Among sixty-eight individuals who were adequately treated during the first two years of their infection, not a single one returned with any of the manifestations of late syphilis. The fact that none of these patients returned up to the fifteenth year of observation with a late syphilitic manifestation indicates that effective treatment has definite preventive value against the crippling manifestations of late syphilis. The degree of protection is even more manifest if a comparison is made with the patients with untreated syphilis during comparable periods.

Table 2 permits a comparison, at intervals of three, six and nine years after the syphilitic infection began, between untreated patients and those receiving inadequate treatment. Among eighty-six inadequately treated male Negroes whose infection was of three years' duration, as compared with twenty-six untreated patients in the same chronological period, 12 per cent of the former had evidence of a cardiovascular involvement as compared to 77 per cent of the latter. Syphilis of the central nervous system was present in 93 per cent of the inadequately treated patients in this period, as compared with 30.8 per cent of the untreated individuals. The preponderance of the late manifestations of syphilis in the untreated patients as compared with the inadequately treated continues throughout the years of observation. Nine years after the onset of the syphilitic infection the inadequately treated patients had 69 per cent cardiovascular involvement and 13.8 per cent central nervous system involvement, as contrasted with 41.9 per cent and 29.0 per cent respectively among the untreated syphilitic Negro males.

CONCLUSIONS

1 The clinical and laboratory observations in 399 adult male Negroes with untreated syphilis and 201 presumably nonsyphilitic adult male Negroes in comparable age groups permit a comparative determination of the extent of morbidity due to untreated late syphilis.

2 The results indicate that the cardiovascular system is the most commonly involved in the late syphilitic process and the aorta is the most commonly involved structure in so-called latent syphilis in the adult male Negro.

3 Morbidity in the male Negroes with untreated syphilis far exceeds that in a comparable presumably nonsyphilitic group.

4 Adequate antisyphilitic treatment prevented all forms of clinical relapse during the first fifteen years of the infection, whereas only one fourth of the Negroes with untreated syphilis were normal.

5 Cardiovascular and central nervous system involvements were from two to three times as common in the untreated syphilis group as in a comparable group receiving even inadequate treatment.

ABSTRACT OF DISCUSSION

DR. CHARLES C. DENNIE, Kansas City, Mo. Dr. Vonderlehr and his co-authors have some ideas concerning the involvement of the central nervous system in Negroes. It is a great deal higher than we have been led to expect. Central nervous system syphilis in the colored races is somewhat lower than it is in the white. It is believed by many authorities that the presence of malaria in countries inhabited by the colored or the Indian race is responsible for the comparative absence of central nervous system involvement. The second school states that it is the comparative resistance of the central nervous system to syphilis in the colored races that is responsible for the smaller number of involvements. It is known from the work of Peterson that the Negro who migrates to the North develops more tabes dorsalis and dementia paralytica, likewise that in the northern countries with a large Negro population, such as in Kansas City, with 50,000 Negroes, that there is a comparatively small number with involvement of the central nervous system. In Kansas City at present and for many years there has been practically no malaria, so that malaria as an influence cannot be considered. From observation in other places it must be concluded that the color of the skin has some effect on the smaller number of central nervous system involvements. I have observed in Brazil, during a short stay, not only the incidence of syphilis but also the incidence of malaria. The hydro-electric plant built for the city of São Paulo, a city

of some 1,200,000, one of the largest municipal hydro-electric plants in the world, was constructed in the midst of a malaria infested district. In an examination of 25,000 applicants for jobs on the construction only 8,000 were free from malaria. This figure may be taken as a fair indication that 75 per cent of the population are suffering from either chronic or acute malaria. It is stated by the Brazilian authorities that the incidence of syphilis in the city of Rio de Janeiro is about 35 per cent. The incidence of dementia paralytica and tabes dorsalis, however, is much lower than it is among the more northern countries. It must therefore be assumed that the comparative freedom of the colored races from central nervous system syphilis is due to two causes: first, a racial influence that modifies the action of the organism of syphilis on the central nervous system, a lessened threshold value for symptoms even where they do have the asymptomatic symptoms of the central nervous system, and, second, the presence of malaria in a comparatively large percentage of the population.

DR. HARRY M. ROBINSON, Baltimore. After all these years, since 1905, when progress in the knowledge of syphilis really started or was awakened, it is surprising to find how ignorant the average medical man is of the treatment of syphilis. Of course in every large clinic these figures which Dr. Vonderlehr and his co-workers have shown are known, they vary somewhat in the various clinics, we see probably a few more patients with dementia paralytica, still more optic atrophies in the Negroes than others have reported, but nevertheless the important thing is that we have noted the fact that syphilis is not merely a chancre and consequent secondary skin lesions, but a ravaging disease which destroys the organs of the body. It is a pity that not more emphasis is laid on this fact, because in visiting smaller towns I am struck with the fact that much ignorance is displayed on syphilotherapy. Many students write us that the competition in their communities is too great for them to insist on our outlined course of treatment. The average physician in their community advises a course of seven to ten injections of arsphenamine or a bismuth compound as a complete treatment for syphilis.

DR. ARTHUR SCHOCH, Dallas, Texas. It is gratifying to get some accurate figures with regard to the incidence of syphilis. It seems that most of these studies must originate in governmental departments rather than private clinics. In Dallas we have recently done a study in an attempt to find out the incidence of syphilis in the outpatient clinic at Baylor Hospital. We purposely selected the year of 1934 to go through 3,300 records, because during that year our clientele at the clinic was recruited from a slightly higher social level than usual. The general incidence of syphilis in the outpatient department was 17 per cent. The incidence in white patients was 9 per cent, in colored patients it was 31 per cent. We then subdivided these patients, trying to ascertain the approximate incidence of syphilis coming from the various departments, such as medicine, surgery, obstetrics and gynecology. Taking the department of medicine as a base line, we found that the incidence of syphilis coming in through the medical department in white patients was 12 per cent. We then compared the incidence of syphilis coming from the various specialties. Obstetrics gave the lowest percentage, 2. Interestingly enough, such narrow specialties as ophthalmology and otolaryngology showed an incidence of 8 per cent, as compared to 12 from internal medicine, only 1 per cent less of the general incidence of syphilis of all white patients who came to the outpatient department for various reasons.

DR. JAMES K. HOWLES, New Orleans. Several years ago a neurologist presented at a meeting in Kansas City a case of dementia paralytica in a Negro. I was surprised to find at New Orleans a clinic that was treating an enormous group of patients. We treat an average of 1,300 to 1,800 syphilitic patients a week in the antisyphilitic clinics of Charity Hospital, which gives an idea of how many colored patients we see. We are trying to systematize the treatment and the investigation so that our records will mean something. But the point I wish to stress is that central nervous system syphilis isn't rare in the colored, in fact, it is almost as prevalent in our clinics as in the white, but of course our white cases are far in the minority as compared with the colored cases. We have investigated why there

are so many complaints of a cardiovascular nature in the colored people. In analyzing some 1,400 cases with an internist, I find that the symptoms they give relative to cardiovascular syphilis vary so much that they have to be greatly discounted in the cases of the colored females. In analyzing some 1,400 cases and examining them thoroughly, with the aid of electrocardiograms and roentgenograms of the chest, we found that most of the complaints in the colored female are groundless, whereas the complaints in the colored males are not stressed enough. I bring up these two points to show that there is a lot to be learned in the classification of syphilis in the colored and I believe that with such studies as the author has presented, in the course of a few years we shall be able to get somewhere.

DR. R. A. VONDERLEHR, Washington, D. C. I wish to assure Dr. Howles that we had considerable difficulty in taking the histories of syphilitic Negro males. The average Negro is a most congenial person and he has a tendency to agree with almost anything that one wishes him to agree with. We spent an hour or more getting each one of these histories. Dr. Dennie brought up the question of the influence of malaria on the incidence of central nervous system syphilis. We inquired from each of these Negroes whether he had ever had malaria or typhoid. I believe around 25 or 30 per cent of the Negroes reported that they had had one or the other of these diseases. We have available this analysis, which we expect to report ultimately in a more detailed paper on syphilis of the central nervous system in the Negro. The incidence of syphilis was not more frequent in the group which had never been infected with either malaria or typhoid. In other words, there was no difference in the two groups after breaking down our figures.

Clinical Notes, Suggestions and New Instruments

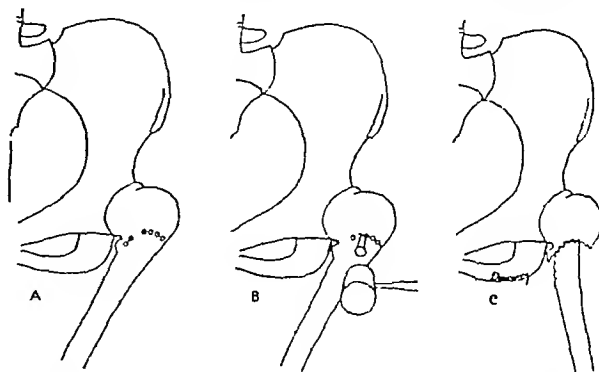
A SUBTROCHANTERIC OSTEOTOMY

F. HAROLD DOWNING, M.D. AND ROBERT H. MORRIS, M.D.
BOSTON

Subtrochanteric osteotomy of the femur for flexion adduction deformity of an ankylosed hip is a common and widely used corrective operative procedure. It has been our experience that most methods commonly in use do not allow accurate control of the distal fragment. It is not uncommon for this fragment to slip following osteotomy during correction of the deformity and override the proximal fragment. This has also been known to occur during closure of the wound and even several days after operation even though a hip spica was used for fixation. Usually the affected leg is already too short and the additional shortening is anything but desirous. It is likewise not unusual to find on removal of the spica that there has been a gradual loss of the correction of abduction. When the extremity is placed in the abducted position it causes considerable tension on the adductors which have become shortened from contracture by adaptation to the adducted position. This constant tension has a tendency to rotate the pelvis within the spica and thus minimize the correction. It is our intention to report a method which, although both simple and easy, completely overcomes these difficulties.

Due credit must be given to Brackett for introducing the curved subtrochanteric osteotomy, which was designed to allow the distal fragment to rotate on the concave proximal end thus allowing the distal fragment to be rotated without danger of slipping. However, in performing a curved osteotomy with an osteotome alone there is always danger of a breaking off of the important medial tip of the proximal fragment which is extremely necessary. It is this portion which prevents the distal fragment from dislocating medially. By outlining the desired curve first with a series of one-fourth inch drill holes one fourth inch apart (A in illustration) and using an osteotome only for cutting the bone left between (B) it is possible to control accurately the exact place, curve and angle of the

osteotomy. When the osteotomy has been completed, one finds that the opposing surfaces resemble those of opposing gears and it is very easy to rotate the distal fragment into any desired position. One is sure of accurate fixation, for the "cogs" fit into each other in the new position (C) and prevent any immediate or future danger of slipping, thus avoiding overriding or rotation of the pelvis with the resultant loss of correction. We have found it best to make the proximal frag-



A the desired curve is first outlined with a series of one fourth inch drill holes one fourth inch apart. B the intervening bone is cut with a half inch osteotome. C the distal fragment is rotated on the concave proximal fragment till the desired correction is obtained.

ment as short as safely possible and plan to have the curve extend from the region of the lesser trochanter upward and outward to just below the greater trochanter. The operation is then performed chiefly in very vascular cancellous bone and union is very rapid. A hip spica is used for fixation, the plaster extending from the toes of the operated leg to the middle of the thorax.

REPORT OF CASE

A woman, aged 46, admitted to Brooks Hospital Oct 7, 1935, with a diagnosis of an old healed tuberculosis of the left hip, left knee and spine, had $4\frac{1}{2}$ inches shortening of the left leg. The left hip was ankylosed in 40 degrees flexion and 40 degrees adduction.

October 9, under general anesthesia, a 6 inch longitudinal incision was made on the anterior lateral aspect of the left thigh just below the region of the greater trochanter. The soft tissues were divided in the same plane and the region of the femur exposed extending from the lesser trochanter to just below the greater trochanter. A series of one-fourth inch drill holes one-fourth inch apart was then made in a curve from the lesser trochanter upward and outward to just below the greater trochanter, the drill being directed posteriorly and slightly upward. The intervening bone was cut with a half inch osteotome, the instrument being directed in the same plane. On completion of the osteotomy, the leg was rotated into 15 degrees abduction and full extension. The wound was then closed in layers and a single hip spica applied. The post-operative convalescence was uneventful. The spica was removed in ten weeks but the patient was allowed to remain in bed for another four weeks before being allowed up on crutches. By the end of six months union was firm and full weight bearing was painless. The correction had not changed.

COMMENT

We have reported and described an operation for flexion adduction deformity of an ankylosed hip which we believe to be much better than those in common use for the following reasons:

- 1 It is simple and easy to perform.
- 2 The location, extent and angle of the bone fracture can be accurately controlled.
- 3 There is no danger of unforeseen fracture.
- 4 One has perfect control of both fragments during the entire operative procedure.
- 5 Fixation is easy with no immediate or future danger of slipping.
- 6 The callus is abundant and union is rapid.
- 7 There is little or no operative shock and the postoperative convalescence should be uneventful.

253 Newbury Street

The use of drill holes for outlining the location for an osteotomy was first learned indirectly by one of the authors through Dr. J. K. Adams but we have recently discovered that a procedure closely resembling the one described has been used at the Massachusetts General Hospital. No published account could be found.

Special Articles

THE CHOICE OF OINTMENT VEHICLES IN DERMATOLOGY

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This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned out developed through the cooperation of the U S Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION—ED

Unless it be in the domain of surgery, there is no other department of therapeutics in which physical influences determine to so great an extent the success or failure of therapy as in dermatology, and it certainly behooves the physician to take special interest in dermatology, for nowhere else in medicine do errors in treatment manifest themselves so promptly as they do in skin disease.

Chief among the physical influences that govern the effect of remedies is solubility. In dermatology it determines whether the application will stick or not and, as with the postage stamp, the first requisite of a skin remedy is that it must stick. If it does not, the surface cannot be properly covered with the application and whatever remedy it is intended to carry cannot influence the affected area as it should. What is still worse, when a dense fatty ointment is applied to a surface from which it is lifted off by accumulating discharge, the latter serves as a culture medium for the ever present micro-organisms, and these, by the poisons they produce, may cause irritation, sometimes erroneously ascribed to "idiosyncrasy" of the patient.

The first division, therefore, of the ointment vehicles must be made on the basis of affinity into "lipotropic" and "hydrotropic" applications. The former, having fat affinity, include ointments and cerates, cling to the fatty surface of the skin, and are indicated as long as the surface is relatively intact and fatty. When the epithelial layer of the skin is lost, as in case of an ulcer or excoriation, or the surface is moist, as in "weeping eczema," a hydrotropic preparation—i. e., one with water affinity—to which the term "paste"¹ might be applied, is likely to be much superior to a lipotropic preparation.

Probably the next most important basis for division in case of the ointment vehicles rests on differences in melting point, and the dividing line must be the temperature of the skin of the covered parts of the body, say, 98 F. Fatty applications of a melting point above that of the surface of the skin are known as cerates, because the increase in melting point was formerly secured largely by the presence of wax (cera). Fatty applications with a melting point at or below the temperature of the skin are known as ointments.

CERATES

Of the three U S P cerates, two are suitable as vehicles for dermatologic applications, the third one, the Cantharides Cerate, being the basis for blistering plasters employed in counterirritation.

From the Laboratory of Pharmacology and Therapeutics University of Illinois College of Medicine

¹ While the use of the word "paste" in this sense is favored by leading pharmacists the National Formulary Committee has not yet had the courage to change the well established name for Lassar's paste (paste of zinc oxide) to a more distinctive ointment title.

Cerate (Ceratum), or Simple Cerate, a mixture of thirty parts of wax and seventy parts of benzoated lard, forms when spread on gauze or linen a bland protective dressing for surfaces the natural protective layer of which, the epidermis, is deficient or defective and that are secreting but little fluid. It has the advantage over a preparation which melts at the temperature of the skin that it does not liquefy and run through a dressing as an ointment would but stays in the place where it is wanted and keeps the dressings from sticking to the raw surface. Medicating such preparations with other than volatile material is largely delusional, because "substances do not act unless they are in solution," and a fatty material that does not melt effectually seals nonvolatile ingredients against access of solvent.

That volatile ingredients become active in spite of such a handicap is illustrated by the Rosin Cerate (Ceratum Resinae), which is somewhat irritative owing to a trace of turpentine that cannot be separated from the Rosin, of which the cerate contains 35 per cent. Rosin, be it remembered, is the residue left after distilling off the volatile oil (Oil of Turpentine) from the concrete oleoresin Turpentine. Such an irritative dressing is superior to a bland protectant when stimulation to healing is desired. As the cell proliferation induced by such irritants is nonspecific, it will favor the growth of connective tissue quite as much—indeed relatively more—than that of epithelium and thus lead to the development of exuberant granulations. Hence, when there is a tendency to the formation of proud flesh, nonspecific irritants of this kind are contraindicated.

OINTMENTS

Because ointments liquefy at the body temperature and are of a fatty nature, they are the most important vehicles for carrying medication to the skin.

Ointment (unguentum), also known as Simple Ointment, is petrolatum with 5 per cent each of Wool Fat and of White Wax, which additions permit the incorporation of a certain small amount of fluid in the otherwise "hydrophobe" petrolatum. This is a salve vehicle employed in most of the official medicated ointments and it is advisable for physicians to use it in their prescriptions instead of Benzoated Lard, which is objectionable on account of its tendency to rancidity.

PRESCRIPTION 1—Ointment Containing Ten per Cent of Pine Tar

| | |
|---------------|---------------|
| R Pine Tar | 30 Gm |
| Ointment | 300 Gm |
| Mix and label | Apply locally |

If, for instance, a physician desires to prescribe an ointment containing 10 per cent of Pine Tar, he might write prescription 1.

The official Pine Tar Ointment contains 50 per cent of Pine Tar, which proportion may be too irritative for a certain case of subacute dermatitis, while in another case the 10 per cent Tar Ointment might be too weak and the 50 per cent Tar Ointment might be required.

Differences in consistency are perhaps the chief reason for choice among the various official ointments that might be considered salve vehicles. These range from the fluffy softness of Rose Water Ointment and the emollescence of the Zinc Oxide Ointment to the relative denseness and great covering qualities of the Paste of Zinc Oxide of the National Formulary. To

bring out clearly the differences in the use of these, a detour into fundamental principles may be desirable.

As a general proposition, ointments are contraindicated in acute inflammatory conditions of the skin, because of their "heating" quality. This is due largely to the fact that, by inhibiting the evaporation of sweat, they check the cooling influence this would exert and, in consequence, induce hyperemia of the skin.

CREAM OINTMENTS

An exception to this general proposition regarding ointments occurs with the cream ointments, in which the "heating" qualities of fat are antagonized by the water

PRESCRIPTION 2—Ointment for Pruritus

| | | |
|-------------------------------------|---------------------|----------|
| R | Menthol | 0.03 Gm |
| | Phenol | 0.60 Gm |
| | Rose Water Ointment | 30.00 Gm |
| Mix and label Apply to itching skin | | |

incorporated in them by means of emulsification. The cooling sensation produced by the evaporation of the water, when such ointments are applied to the skin, has given them the name of "cold cream." These emulsions also have the advantage of making the application more suitable to relatively moist surfaces, as emulsified fat clings to them fairly well.

As the classic type of such cream ointments may be mentioned the official Rose Water Ointment (*Unguentum Aquae Rosae*), a preparation invented by Galen nearly 1,800 years ago. In its various modifications cold cream has become progressively more popular. Galen's method consisted of soaking rose buds in olive oil and, after straining, mixing it with melted wax, which—acting as an emulsifying agent—permitted the incorporating of water, a little at a time, until a white creamy ointment was secured. Today in the official formula the same principle is employed, but a better product is secured by modification of the ingredients. Diluted Rose Water is emulsified in Expressed Oil of Almond (56 per cent) by means of Spermaceti (12.5 per cent) and White Wax (12 per cent). Sodium Borate (5 per cent) is added, as it improves the keeping qualities and favors emulsification, and a tiny quantity (0.02 per cent) of oil of rose is added to strengthen the flavor.

Because of its cooling quality, rose water ointment is a good vehicle for ointments against itching. Thus, against pruritus with intact epidermis, prescription 2 may be prescribed.

PRESCRIPTION 3—Decongestive Application for Weeping Eczema

| | | |
|--|---------------------------------------|-----------|
| R | Solution of epinephrine hydrochloride | 15.00 cc. |
| | Wool Fat | 5.00 Gm |
| | White Petrolatum | 10.00 Gm. |
| Mix and label Apply to the affected skin | | |

Greatly overshadowing its therapeutic use in importance is the employment of cold cream as a cosmetic, and for its different uses, various modifications of its character are required, from "vanishing creams" to "emollient creams."

Vanishing cream is simply an emulsion of stearic acid in water containing soap. Very little of the stearic acid is required to produce the ointment-like consistency.

When "vanishing cream" is applied to the skin, it does not really vanish. After evaporation of the water

there is left a thin, practically invisible, nongreasy layer, which forms a good basis for the application of powder. When used for this purpose it is often spoken of as "foundation cream."

"Cleansing cream," used as a detergent, is nothing more or less than an extremely superfatted soap, possessing maximal cleansing with minimal irritative action. When all that can be said in favor of "vanishing cream" and "cleansing cream," it must be pointed out that they cannot be used for the purpose of soothing, for which the official Rose Water Ointment is largely employed, as they do have an irritative quality, even though a very slight one.

The beauty culturist sharply contrasts these from "emollient creams," which are soothing and chiefly intended for night use. These serve largely as restoratives, to replace the natural lubricant of the skin, which is removed excessively by the so frequent washing of the skin demanded by modern feminine hygiene.

The emollient creams fittingly contain Wool Fat, which in its chemical composition resembles the sebum closely and hence might be considered the ideal restorative for the sacrificed fat of the skin. Wool Fat is, in addition to this, an excellent emulsifying agent for water in fat or even in Petrolatum, which is—as is well known—not a true fat. When one melts together White Petrolatum and Wool Fat (say, equal parts or even three parts of the former and one part of the latter) one can incorporate in this mixture as much as an equal weight and even twice its weight of aqueous

PRESCRIPTION 4—Rose Water Ointment

| | | |
|---|---------------------|---------|
| R | Rose Water Ointment | 60.0 Gm |
| Label Use as a soothing application to the skin | | |

fluid. Thus, in "weeping eczema" the decongestive application given in prescription 3 may be useful, not only to decongest but also to relieve itching of the excoriated, therefore water absorbent, surface.

From what has been said, it is evident that it is inadmissible to employ glycerin instead of the rose water as has been proposed for cold cream, because of better keeping qualities, for glycerin is nonvolatile and, being hygroscopic, irritative by withdrawing water from the skin. It is also obvious that it is poor policy for the physician to tell his patient to get "any good cold cream" and apply it to the affected part, because there is no telling what kind of cold cream the patient would get. It is better to write a prescription for the official preparation.

ZINC OINTMENTS

The official Ointment of Zinc Oxide (*Unguentum Zinci Oxidi*) contains 20 per cent of the Zinc Oxide, which, one may visualize, might increase the soothing effect of the Simple Ointment, which is the vehicle, by the zinc combining with irritative acids produced at the seat of the disease. It is also possible that the opacity of this salve is of value by shutting out the irritative rays of sunshine.

After an ointment has been applied, something generally needs to be done to keep it in place. For soft ointments, some nonabsorbent material, such as oiled silk, rubber tissue or paraffin paper, or a wire gauze screen dressing is required, otherwise the coverings get more ointment than the skin.

With as dense a salve as the "Paste" of Zinc Oxide (Lassar's "Paste"), which contains 25 per cent each of

Zinc Oxide and Starch in White Petrolatum, keeping it in place is less of a problem. It is so firm that, after its application, liberal dusting with Talcum forms a crust which keeps it in place. On exposed surfaces, a "face powder" of suitable skin color may be used, which has the advantage of making the application less conspicuous.

The Paste of Zinc Oxide (Pasta Zinc Oxidi), formerly official in the National Formulary under this title, contained 2 per cent of salicylic acid. Owing to the fact that this addition occasionally produced irritation, it has been deleted from the formula now official under this name, and the preparation made according to the old formula must now be prescribed for under the title Paste of Zinc Oxide with Salicylic Acid (Pasta Zinc Oxidi cum Acido Salicylico). It is very probable that in most instances of subacute dermatitis, for which Lassar's Paste is a very useful and popular application, the presence of the salicylic acid is of value. It would be more rational, however, were the physician to prescribe the exact amount of salicylic acid he desires, which in one case of trichophytosis (ringworm, athlete's foot) may need as low as 1 per cent and in another as high as 10 per cent. The latter strength is needed when curative exfoliation is required, but it is certainly much too great in cases with an acute inflammatory reaction.

It is, indeed, a good general principle that the medicating ingredient should be added by the physician to meet the indications present rather than that a medicated ointment be ordered, for no set formula can take care of the needs of all the various conditions met in practice. By habitually prescribing fixed formulas, the physician never acquires the "sense of proportion" that should enable him to fit the remedy properly to the case. A 10 per cent salicylic acid ointment is simply ordered by writing prescription 5.

PRESCRIPTION 5—Ten per Cent Salicylic Acid Ointment

| | |
|---------------------|-------------------------|
| R Salicylic Acid | 30 cc. |
| Paste of Zinc Oxide | 300 Gm |
| Mix and label | Apply to affected parts |

As to their influence on absorption through the skin, of which so much was made in the past, recent studies point to the conclusion that the vehicle has little if any influence on absorption, excepting a retarding action. A volatile drug, such as methyl salicylate, which is absorbable through the skin will be absorbed regardless of the vehicle. Even with such volatile material, the quantity absorbed, when applied in ointment form to

PRESCRIPTION 6—One per Cent Gentian Violet Paste

| | |
|---|--|
| R Methylrosanilin | 0.5 Gm |
| Tragacanth | 3.5 Gm |
| Physiologic Solution of Sodium Chloride | 50.0 cc. |
| Mix and label | A thick layer of this paste on four or five thicknesses of gauze to be applied as a dressing |

the human skin, is so small as to indicate that the fatty ointment vehicles exert a retarding influence on absorption of drugs through the skin. Nonvolatile substances are practically not absorbed through the skin, unless they are lipotropic, as is, for example, cantharidin.

PASTES

For moist raw surfaces a paste, e. g., one containing tragacanth, is much more likely to meet the indications than an ointment. Thus, for the treatment of an acute burn of limited extent, after a preliminary application

of a compress of 25 per cent magnesium sulfate solution, a 1 per cent gentian violet paste may be ordered, as in prescription 6.

The Tannic Acid dressing, life saving in extensive burns, is not desirable for those of limited extent, as the surface layer of cells must be sacrificed to its coagulant action.

These examples might suffice to demonstrate that it does make a difference what ointment vehicle is chosen. It may make the difference between success and failure.

**EFFICIENT LABORATORY SERVICE IN
THE SYPHILIS CONTROL PROGRAM**

ARTHUR J. CASSELMAN, M.D.

CAMDEN, N. J.

NOTE—The article by Dr. Arthur J. Casselman and the articles by Drs. John H. Stokes and N. A. Nelson, which follow conclude the symposium on the control of syphilis, the other articles in which by Drs. R. A. Vonderlehr, Dudley C. Smith and Joseph Earle Moore, appeared last week.—Ed

The laboratory service to be discussed here is limited to the examination for spirochetes and serologic tests for syphilis. These are the important public health laboratory tests used during the most infectious period. It is beyond the scope of this discussion to include urinary tests for nephritis from treatment by heavy metals, icterus index tests for the extent of arsenical hepatitis, or even colloidal gold tests of the cerebrospinal fluid. Although attempts are being made to break down barriers and make no distinctions between public health laboratory work and the innumerable other laboratory tests useful in the private practice of medicine, present budgets will not permit the addition of these other examinations without the sacrifice of more necessary tests and without lowered efficiency.

The first opportunity to diagnose syphilis and the best time to treat it is in the primary stage. About ten or more days after the infecting contact, when the sore first appears, at which time the diagnosis usually can be made with certainty only with the microscope, is the first and best chance to eliminate a source of infection by means of accurate diagnosis and treatment.

The ordinary darkfield examination should supplant substitute diagnostic methods of less reliability, such as India ink preparations, or staining by silver or by various aniline dyes. The darkfield examination for syphilis is a technical procedure which needs to be done under the best of conditions to make it reliable. The sore should have been free of any local antiseptic for at least twenty-four hours before the examination is made, and no general antisyphilitic treatment should have been given. It is surprising however, to find that in many cases the most radical forms of local treatment have had no influence in causing a disappearance of the spirochetes of syphilis. On the other hand, it is usually a waste of time to look for spirochetes twenty-four hours after an adequate dose of neoarsphenamine.

The two most important factors in the examination are the use of a satisfactory instrument and a careful operator. At one time the market was flooded with poor instruments, such as supstage condensers in the form of a heavy glass slide, and certain types of

substage condensers which when adjusted were continually sliding or dropping out of correct optical position. Then there was the type with a tiny substage electric bulb as an entirely inadequate source of light. The operators were even worse than the instruments. Many persons were using the darkfield apparatus, usually an inadequate type of this instrument, without any training and without a careful study of the manufacturer's directions. The operator rarely was paid for his services, which also were more urgently required elsewhere. For these and other reasons, chiefly economic, syphilis being most common to the "on relief" type of person, the darkfield examination is a much neglected diagnostic procedure. Yet, under proper conditions, the darkfield examination can be made the most accurate and efficient diagnostic procedure for the control of syphilis.

This examination can be made more readily available to persons in distant rural communities by adopting the procedure of having specimens sent by mail to the central state laboratory, as long advocated by Harrison in England. This method of having darkfield examinations done by mail must always be considered as an inefficient substitute for the examination of the patient by an expert diagnostician. There are many errors that are likely to creep into the diagnosis made by mail. In the first place, the serum from the sore is removed by a novice, any one doing sufficient work to be an expert would have his own darkfield apparatus. The novice is not so likely to know or observe the rule that no antiseptic should be used on the sore for at least twenty-four hours before the examination, that no internal antisyphilitic drug, particularly intravenous arsphenamine, should be used before the darkfield examination, that the sore should be cleansed mechanically and the serum should be removed preferably from the edge of the ulcer, and that the specimen should contain not too many red blood cells. It is possible also for the expert to remove fluid from enlarged glands when the examination of the sore is unsatisfactory.

This examination is best made by an expert physician who can afford to give it the necessary time and care. These conditions can best be met by the physician who maintains a private diagnostic laboratory, or by the diagnostician in a syphilis clinic which is not too much rushed with other work. If there is a sufficient volume of work, the microscope should be set up permanently for darkfield examinations only. The cardioid type of substage condenser produces the best illumination, much better than the paraboloid type. Certain arc lamps produce the best light but usually they are expensive and troublesome. There are many satisfactory filament lamps producing as much light as the 100-watt projection bulb. Most of these, to be satisfactory, need a condensing lens. A satisfactory cheap type is the variety that utilizes a flask of water as a condensing lens between the light bulb and the microscope. It is a good plan to have the microscope and light source screwed fast in proper relation to each other on a board, to avoid time-consuming adjustments. Keeping a microscope out of general use in this manner may seem extravagant, but if the apparatus is not always ready for use the examinations are liable to be neglected. This is a costly examination and it will not be done properly unless the costs are met either by private or by public funds.

To encourage the use of this test all possible facilities must be encouraged. When it is apparently impossible for the patient to get transportation to an

expert, the examination of specimens sent by mail in capillary tubes to the state laboratory, as has been done notably in New York State, is the best substitute. I believe it would be better for the patient to travel a hundred miles or even more to get the more efficient examination, but, since few patients can be induced to travel the necessary distance in some rural communities, a substitute is necessary, such as the examination of mailed specimens.

A substitute for the darkfield examination of the primary lesion, which is widely used but is recommended only as a very poor substitute, is a sensitive flocculation or complement fixation blood test. If the serologic test used is very sensitive, many cases will be diagnosed by the third week, and most by the fourth week of the presence of the primary lesion. On account of the fact that at present patients usually delay for about two weeks before coming to a physician for an examination of a primary lesion, the substitution of a sensitive serologic test for an immediate darkfield examination results in a delay in diagnosis and the institution of treatment of only about two weeks. The public needs more education to induce them to have earlier examinations, and better darkfield facilities must be provided.

In New Jersey about ten years ago the state attempted to increase these facilities by supplying darkfield apparatus to those venereal disease clinics which were without any or had very poor equipment, and various other clinics have received similar aid in the past years. One large city laboratory, at the Newark City Hospital, without any state aid, has been providing free darkfield service to the citizens of Newark without any restrictions. This free service is much less used than would be expected in a city of 450,000 inhabitants. During 1935 only thirty-four darkfield examinations for syphilis were made in this laboratory. Some of the reasons for this lack of use are the competition of the large city clinic with its own darkfield service and the competition of many private laboratories. But this competition is an insufficient reason for the small number of examinations made in all these laboratories. The state should attempt to encourage the use of all these laboratory facilities and is doing so. The state medical society should be provided with an accurate list of all public and private facilities, and this list should be corrected annually and printed annually in the state medical journal and be distributed by other suitable means to all the physicians of the state. Technical information should always be available on application to the state venereal disease control officer. Proper standards should be maintained through the cooperation of the state department of health and the state medical society.

The serologic tests become tests of more importance about five weeks after the appearance of the primary lesion. Although the Wassermann test is still perhaps the most widely used test, the various flocculation tests cannot be ignored by any private or public health laboratory.

The Wassermann test has continually been modified in various details ever since it was devised. This test is somewhat complicated and therefore there are many steps, each of which through intensive research has many suggested improvements. The infinite number of possible combinations of these various improvements has brought out numerous named and unnamed modifications. The important improvements are few but so outstanding that about them there is almost unanimous opinion. It is generally believed that there should

be a fairly close titration of the hemolytic system, so that weak fixation is not obscured by the presence of an oversupply of complement, that better fixation is obtained by prolonged fixation at low temperatures (from 2 to 8 C) for from four to eighteen hours than by the old method of fixation at higher temperatures for shorter periods, and that a strong purified antigen such as the alcoholic extract of powdered heart muscle which has been thoroughly extracted with ether and fortified by the addition of cholesterol is preferable to a crude alcoholic extract of syphilitic liver or other whole tissue. These improvements have been devised largely to increase sensitivity. These refinements were necessary to avoid missing so many cases of syphilis, particularly those in the early primary stage and those in which much but still inadequate treatment has been given, and some cases of late syphilis. The test, however, is not qualitatively specific for syphilis, so that the more sensitive the test, the more likely it is to give some degree of reaction in various persons with a marked disturbance of metabolism, such as occurs in some pregnancies and in various febrile and other conditions. Thus, with careful technique sensitivity is largely an index of lack of specificity. For diagnostic purposes, therefore, it is necessary to relate the sensitivity to some more uniform standards than the names of various serologists.

Attempts at standardization have been made by various national and international committees and various individuals. Standardization has not been accomplished, probably because the attempt has been to standardize the constantly changing procedures rather than the results obtained. Various League of Nations conferences have established approximate comparative values to the various modifications of the Wassermann and flocculation tests, and recently a similar evaluation was sponsored by the United States Public Health Service¹ at the request of the American Society of Clinical Pathologists. These comparisons of the various modifications were made by the use of identical liquid samples of blood and spinal fluid by the participating serologists. The results showed which tests were the more sensitive in a general sense but did not establish any biologic standard as in the case of diphtheria antitoxin.

Standardization by dried syphilitic serum was suggested in 1926,² but this plan was complicated by the poor keeping qualities of serum dried by any simple method. In the meantime, the difficulty of preserving dried serum has been overcome by Flosdorf and Mudd,³ by the relatively simple method of freezing the serum and drying it in vacuo while still frozen. Such a method of standardization is being tried out in New Jersey with their cooperation in drying standardized serum. The results of this study will be published elsewhere. It is planned to supply all New Jersey laboratories, public or private, with ampules of this dried serum, so that they can check their tests from time to time. The basic standard used is a serum which is only strong enough in Wassermann-fixing substance to give practically complete fixation with a very sensitive Wassermann test. It is probable that serum in a dried state will be supplied also for checking the Kline and Kahn flocculation tests.

Wassermann tests should be done chiefly in laboratories in which the volume of tests is large, preferably not less than twenty-five per week, because of the much greater expense per test when only a few tests are made. The flocculation tests are better suited to the smaller laboratories, on account of the stability of the reagents and the rapidity with which the tests can be carried out, particularly the Kline slide test. The greater simplicity of the precipitation tests should not, however, lead to the error of having them done by untrained persons. The studies of the Committee for the Evaluation of Serodagnostic Tests for Syphilis in the United States showed that, of the tests used, the better varieties of flocculation tests apparently could replace the Wassermann tests. Most serologists seem reluctant to discard the more complicated and expensive but older and more familiar, Wassermann test.

Whether the Wassermann, Kline, Kahn or other sensitive test is used, the most important reagent in maintaining proper sensitivity is the antigen. The supplying of a reliable antigen by the state department of health to all laboratories would be the cheapest measure to bring all tests up to a satisfactory standard of sensitivity. In New Jersey, small quantities of antigen have been supplied in special cases to a few laboratories. It is hoped that budgetary limitations will not prevent the extension of this service in a systematic manner. It may be necessary, because of the expense, to limit supplies of antigen to small quantities which local laboratories could use merely for checking against their own antigens. But whatever plan develops, this cooperation should extend to all private as well as public health laboratories. If dry standardizing serum and antigens are supplied to local laboratories it may be well to ask them to cooperate and to report to the state all strongly positive serologic reactions. These reports would be used for checking against the reports of syphilis required by state law, as is done with reports from the state and certain other laboratories. Caution must be used in asking such cooperation of laboratories, as they are already overburdened with nonproductive clerical work, such as the making of too many duplicate reports.

There are some who object to state and municipal laboratories providing free diagnostic laboratory work for syphilis, on the ground that it is improper competition with privately operated laboratories. This diagnostic service was at first provided by private initiative and brought up to a high state of perfection. Theoretically it may be argued that if this diagnostic service is furnished by state or county or city laboratories its use should be restricted to the poor. Such restriction is difficult to put into practice. Usually this free competition with private laboratories takes away much of the work from the private laboratories except when it is evident that the tests are poorly done in the government laboratory. The government laboratory may be inefficient because of an attempt to run on an inadequate budget, but the budget is sometimes inadequate also in a private laboratory because of a small volume of work. "The possibility should be borne in mind that under certain circumstances local private laboratories may be subsidized to advantage for the performance of laboratory work."⁴

¹ Cumming H S and Others. Evaluation of Serodiagnostic Tests for Syphilis. Ven. Dis. Inform. 16: 189 (June) 1935.

² Casselman A J. A Standardized Wassermann Report, 421 J. Lab. & Clin. Med. 11: 421 (Feb.) 1926.

³ Flosdorf E. W., and Mudd, Stuart. Procedure and Apparatus for Preservation in "Lyophilic" Form of Serum and Other Biological Substances. J. Immunol. 29: 389-425 (Nov.) 1935.

⁴ Vonderlehr R A, Bundesen, H N, Moore J E, Nelson N A, Peloux P S, Snow W F, Stokes J H, Wile U J, and Upton Lida J. Recommendations for a Venereal Disease Control Program. Summary Report of an Advisory Committee to the U S Public Health Service. J. A. M. A. 106: 115 (Jan. 11) 1936.

Syphilis is a disease of the poor, being present among the poor from two to four times as frequently as among the middle or richer classes. The poor are more commonly unwilling or unable to pay for the necessary diagnostic measures. These diagnostic measures would therefore be almost completely neglected among the largest class of syphilitic patients if they were not provided for by taxation or by private hospitals.

SUMMARY

Darkfield examinations are most efficient when the patient is sent to the laboratory of a diagnostician who has the proper equipment. If there are many localities too far distant from a darkfield expert, the state laboratory should examine specimens sent in capillary tubes.

Wassermann tests are usually best done in a laboratory doing at least twenty-five tests a week. Kline or Kahn tests may be done in a small laboratory immediately and checked by Wassermann tests in a central laboratory later.

The state laboratory should cooperate with local private and public health laboratories by supplying them with weak standardized and dried syphilitic serum, and also by supplying sensitive antigens for both Wassermann and flocculation tests.

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EDUCATION OF THE PHYSICIAN AND THE MOVEMENT FOR VENEREAL DISEASE CONTROL

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The health authority is vitally concerned with problems of education in general and with that of the physician in particular. The ideal health officer should himself be an exemplar of the educated physician—not only learned in his special field but a cultivated gentleman with a perspective on human life as well as human ills. In the ideal relationship between the health authority and the body of practitioners of medicine, he should deal with equals as cooperators rather than with pawns to be moved and governed. In such a relation the vital concern of both sides for each other's intellectual and professional equipment is evident without discussion. But there are special and cogent reasons why in the field of venereal disease control the health officer must give exceptional weight to his educational relations, contacts and obligations to physicians. At a time of planning and adjustment for health responsibility, it is particularly necessary that they be kept in the foreground.

The everyday doctor's cooperation is essential. I would emphasize to health officers from such perspective as I have on the field, first, that they cannot in a country such as ours, from the standpoint of tradition, of geography or of population distribution, dispense with the active and constant cooperation of the everyday doctor both in diagnosis and in treatment. No mechanism of state owned or subsidized clinics, no machine tactics, no pushing aside no effort to fence about and till the venereal disease field as an organizationally controlled public health problem will be wholly effective. The reasons have been discussed elsewhere and cannot

be reviewed here.¹ Few patients will travel a mile to a clinic, except under economic pressure, if they can travel a block to a fair doctor. Close the doctor's eyes, discourage his interest in diagnosis, discourage his activity in treatment, and not only does his concern for diagnosis lapse but the mere mechanics of number, distribution and accessibility of patients silently defeats an infection control program except in the most densely populated centers. Do not, therefore, as one public health enthusiast of my acquaintance did, believe that a fiat establishing of a few hundred or a few thousand clinics by executive manifesto in this country is all that is needed to stamp out syphilis and gonorrhea and their minor associates. The examples of Scandinavia and Great Britain, of which much will be heard, are special cases, comparable in a way to the metropolitan areas of our larger cities or to compact homogeneous and traditionally stable population units like the states of New York and Massachusetts. You who will travel everything from the corduroy trail and the gumbo road to the concrete streamlined boulevard highway and must meet the need of the crossroad and the slum cannot afford to neglect, even less to alienate, the everyday doctor. I proceed with my discussion in the belief that we should set out to enlist his cooperation and to equip him for the needs of the program by every educational device that can be conceived and applied.

SOME GENERAL PRINCIPLES

From general educational experience the lesson may be drawn that, the earlier educative processes are set in motion, the better the finished product and the faster it is turned out. Long range and intensive planning should begin, therefore, with the seedling doctor rather than with the aging oak. The older doctor has, to be sure, one great advantage over the embryo and the young one in the learning process—he realizes keenly what he has missed and yearns for it. In the field which the average doctor must serve in a venereal disease program, however, this is too often a tragically late and ineffective virtue. For alertness, for technical proficiency, for the energy to chase down and to put through, we should concentrate on the young. For the coordinative, the reflective and the experimental, we may then perhaps deal with the mature, but only if previously adequately grounded.

From the field of general education, too, come precious items of technic. Methods of education through eye, ear and hand, testing the relative effectiveness and proper fields of the didactic and the Socratic, individual and group presentations, demonstration versus case study and clerkship, the intelligent use of print, the picture both moving and still, the radio broadcast and short wave have as yet many untouched possibilities for the education of the physician. A health authority can therefore well afford to have an expert on teaching methods and an educational division bursting with ideas and schemes for the testing and utilization of the already known, and the development of the new and original in this field. I mean something immeasurably more serious thought out and purposeful than haphazard bursts of headlines and posterism, which are only the cap, bells, horn and megaphone of education. To meet the requirements of a new era we shall have to go far back into the childhood of the doctor into his common schooling, into his premedical years. We shall have to invade his leisure if such there is in his professionally active period, with new effort at more

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¹ Stokes, J. H. A. Hilltop on the Syphilologic Man. *Am. J. Syph., Gonorr. & Ven. Dis.* 20:231 (May) 1936.

intriguing informative reading We shall, perhaps, have to put journals beside the outhouse seat for studious and not substitute purposes We may even plan to reach under the car dash to install the short wave radio that keeps the first moving doctor constantly alert to the problems and control of disease as the police are informed of crime, giving him short wave broadcasts from medical research and public health centers and from state and national health authorities We shall have to make available not mere lecturers and exhorters but more and better individual consultant service—personal, telephonic spoken written On these, the merest scratching of the surface of education is the best that we can as yet show

THE "INFORMATIVE PROGRAM" AND LAY AGENCIES

There is a disposition these days to oppose as amateurish and presumptuous usurpation the lay organization's tendency to tell us, the medical profession, what to do, or to set about doing it for us Such reaction on our part is, to my mind at least, short sighted We have no monopoly of the brains that are applying themselves to problems of human health and welfare We cannot even reasonably seek a division with laymen along the line of body versus spirit for both are our concern and theirs We cannot claim the medical, demanding that they stick to the economic, for who that has practiced does not know that the two are inextricably and tragically one Let the health authority, then, begin with a cordial acceptance and furtherance of and eager cooperation with organized lay groups concerned with medical and medicosocial problems It extends our arm and weights our hammer, it steadies our plow in the furrow so to do It puts the power of money back of our ideas Of special moment to the venereal disease control officer is the furtherance of cooperation between physicians and groups that can educate for as well as act directly on the problem We should induce the special lay groups to 'take on a flier' in venereal disease education rather than discourage them The antituberculosis societies, the public health nursing, penologic and child hygiene organizations, health councils, social agencies, parent-teachers' and women's clubs are parts, not opponents, of the armament against venereal diseases Tell them frankly what is needed, what is lacking Do your best to induce the medical profession to lay aside its isolationism and join hands with them

Moreover, in three great blocks of business and professional activity the health authority has been much too backward in using its tact, its power and its prestige for an educationally and practically effective policy—the drug and pharmaceutical groups, the large-scale industries, and the life insurance organizations Through these three and the organized or socially employed nurses of this country, the whole face of the venereal disease situation could be changed as from behind a director's desk These groups, educated by us, have power in turn to educate personnel and clientele, and to extend education through patronage, the job, the purse

Education of the laymen who constitute the physician's clientele is an effective and permissible though not a preferred method of educating the physicians We as doctors are not and cannot all be leaders, all constantly and encyclopedically informed and effective all around our horizon How often are even the most alert among us first made sharply aware of an advance

in medical knowledge by a patient, who, in these days of spreading popular information, quotes us a clipping and sets us privately to looking up a journal number from which we have otherwise not yet ripped the wrapper? How many of us today learn from an alert medical reporter in *Time* or a syndicated column in a news sheet of the latest pronouncements and progress if not in our own, then in our next door neighbor's

A Schematization of Teaching Method

| Route of Appeal | Instrument | Estimated Potential Value | |
|------------------------------|---|---------------------------|-------------|
| | | Public | Average M D |
| Auditory Radio | General broadcast | +++ | — |
| | Special local public health broadcast | ++ | + |
| | Short wave | + | + |
| | Exhortative | ++ | ++ |
| | Informative | ++ | ++ |
| | Authoritative (scientific paper) | + | ++ |
| | Professional | — | + |
| Didactic lecture or address | Curricular | — | ++ |
| | Summarizing | — | ++ |
| Visual Print | News | ++++ | + |
| | Syndicated columns | ++++ | + |
| | Questions and answers | + | + |
| | Pamphlets | ++ | +++ (Pharm) |
| | Journals | — | + |
| | Books | + | ++ |
| | Slides (silent or with lecturer) | ++ | + |
| Projectloo | Cinema (automatic machines) | ++ | ? |
| | Billboards | ? | — |
| Poster and advertising | Poster exhibits | +++ | + |
| | News sheet advertisements | ++ | — |
| | Stamps | ? | — |
| | Aphoristic (stickers cancellog mot toes and the like) | ? | — |
| Combined Visual and Auditory | Speaker with slides | ++ | ++ |
| | Fixed locus | +++ | ++ |
| | Voice cinema (talkies) | ++++ | ++ |
| | Conference | +++ | + |
| | Bureau (Institution) | +++ | ++ |
| | Mass or group | +++ | +++ |
| | Personal (detail man and other) | — | +++ |
| Demonstration | Consultative (doctor and patient) | — | +++ |
| | Marriage examination | +++ | ? |
| | Fixed locus | — | + |
| | Peripatetic | — | ++++ |
| Sloganeization | Still material | ++ | + |
| | Life material | + | +++ |
| | Visual or pictorial | ++ | ++ |
| Consultation | Verbal | ++ | ++ |
| | Personal | — | +++ |
| | Telephonic or telegraphic | — | ++ |
| | Correspondence | ++ | +++ |
| Clinic | 'Dry | — | ++ |
| | Wet | — | +++ |
| | Osseal | — | +++ |
| | Curricular | — | +++ |
| | Brush up | — | +++ |
| | Technical | — | +++ |
| Examination | Curricular and quiz | — | +++ |
| | Licensure | — | ++ |

field? The health authority is vitally concerned with the lay group's instruments and mechanism for the education of the doctor—quite as much concerned indeed as with the doctor's education of the lay instrument From the unintentional action of that mechanism we can learn and imitate

A SCHEME OF TEACHING METHOD

As I assembled my ideas for this presentation it occurred to me that a classification and summarization of the items and interrelations of educational mechanism in general might guide us in some applications to the venereal disease field Every agency, lay or professional, uses one or more of these education instruments on both the doctor and the everyday man I

therefore offer this tabulation as a vest-pocket tickler for thought rather than a finished product, and discuss it on the basis of thirty years of teaching experience

THE BASIS OF LEARNING

Human beings tend to be preponderantly either visually or auditorily minded, the former being substantially the more numerous group. Most people therefore learn from what they see better than from what they hear. Thinking is also a muscular and motor as well as a mental process. Association trains are therefore built up and fixed by conversion into action as rapidly as possible—by a laying on of hands, so to speak, familiar to us in the aphorism "We learn to do by doing!" What do these principles mean for educational method as applied to the physician? They mean that he usually learns least of all by listening to the didactic lecture. Aside from the fact that it deprives him of the mental exercise of synthesis, it requires all the devices of histrionic and rhetorical talent to make facts stick. More than half the effect is fogged by emotional content, with such primitive stuff as the appeal of sound to the ear and motion and gesture to the eye, rather than logic and intelligence to the mind. Reading of print outranks spoken teaching as an instrumentality because in making its appeal to the visual mind it acts more directly, with less emotional claptrap. Yet what is it that students, medical graduates and practitioners in their county, national or other societies are demanding today? They cry for and we offer them the lecture, the didactic discourse, the speaker, the "scientific communication" or paper, which, if it is not utterly muffed by being droned into the collar or spread as a musty soporific gas among the rows of weary sitters, must for effect be fired in a rat-a-tat-tat of staccato syllables accompanied by jerkings and jumpings, as wasteful of human effort as the two hundred or more rounds required to strike a significant target from a machine gun pill box compared with the solitary silent lethal bullet of the sniper in the tree crotch. Today's flood of printers' ink we so lament is as nothing to the deluge of wasted spoken words in which our educational effort flounders. I give it to you as an impression derived from many experiments in teaching method and the comments of many of my student cooperators and victims that good teaching is that which catches the eye and holds it, coordinates what is seen with touch and other senses and converts it into some form of muscular action, positive, investigative or consequential. Good teaching does one more thing as a final fillip: it arouses the learner with a prod or a challenge, which like the last turn of the screw press, imprints indelibly the image of the fact and its associations on the tables of the memory.

EXAMPLE AND CHALLENGE VS. PRECEPT

In teaching the doctor then example (visual) should outrank precept (audition). The graphic chart outweighs the words, the patient outweighs the chart, the personal performance of examination or treatment far outweighs in teaching power any mere visual device such as the witnessing of a demonstration. The demonstration outweighs the lecture because the witness sees things being done. If he is too far away to see and merely hears, he gets little or nothing—the explanation of the tedium and failure of the overcrowded society meeting and amphitheater clinic. Why cannot everything be done with the talking moving

picture then? you ask. Or cannot the visibility to accompany the spoken word be supplied by the silent film or the lantern slide? Because useful though their contribution to verisimilitude has been and can be, pictures do not live, and hence they do not give that challenge of which I just spoke. The difference is as between the synthesized protein and the living protein, so to speak—an as yet indefinable but essential something which involves the clash, the spark discharge that only the living draws from the living. Lacking the living challenge, by what other devices do we seek to inject the vital spark into teaching? Socrates, the father of education, laid the foundation of the dynamic technic of education in the Athenian groves by the use of the argumentative question. Across the otherwise dead body of the mere fact I, the teacher, challenge you, the student, to combat. By putting you on your mettle, I invoke a response from your emotional, your adrenal, mechanism—an abortive rage reaction to a challenge which makes the quiz discussion over the case, actual or hypothetical, the most effective teaching instrument in existence. It is effective because it is the method of life, which always questions rarely tells without a struggle.

Speech making and broadcast then is at its best when exhortative rather than informative. The most effective speech challenges rhetorically to action rather than coldly to reason. Great though the worth of exhortation is, all know how short is indeed the life of its message. A pure didacticism is in general, weak. When, therefore, lectures must be performed the chief instrument, let us carefully select the material for its ability to impress by throwing an actual or hypothetical problem at the learner in which he is challenged to performance. When does a student really begin to learn syphilology? Not when he reads a chapter on treatment but when the sweat drops from his perspiring brow onto the shaking hand that holds his first syringe. Until that moment, injection has been an unreality, given outline in his mind largely by the challenge of a feared examination, the caustic comment of his teacher. Even this much point to the spear is inevitably lacking in the didacticism of the average medical address, the society postgraduate course, the film, even the best written textbook. If my thesis has weight, it would be well then that the health authority should throw its influence into the educational scale in behalf of the visual and combined methods of the table over purely auditory teaching, that it encourage and develop clinic and case study and the fixing of knowledge by personal examination of the patient, manipulation, procedure technic, contact with the expert in a consultative capacity over the patient, rather than mere discourse, spoken or written.

RADIO, PICTURES, PRINT

Examined in the light of these considerations, then I would rate the standard radio broadcast as at once the weakest and the most diffuse of informative methods in our field suited to exhortation and arousal rather than instruction. As a didactic method with no eye appeal it demands of those who use it an exceptional command of challenge devices in voice, rhetoric and technic of material arrangement and presentation if their stuff is to stick. The mere ability to speak words would not then make a successful radio teacher. How often the actual demands are

met by the radiators from our field who address their collars or reading desks instead of the "mike" through a rattle of memorandum sheets and a barrage of "ums" and "uhs," you must yourself decide. Doctors, long suffering though they are in their eagerness for crumbs of knowledge, will turn from an attempt to teach them that denies them even the humor-arousing spectacle of the tortured speaker gasping in the dust cloud of his own remarks. Yet radio, I am convinced, can be made a useful instrument of postgraduate medical education, if only it is skilfully employed.

Of pictures, still and moving, I can only say that years of medical barnstorming and experiments performed in my own classes have convinced me that they are beguiling but comparatively ineffective. Audiences like them for the eye appeal and because they spare thought. I rate them today as suitable largely for addresses after dinner, to keep one part at least of the audience conscious, and to allow the other portion to sleep without annoying or too seriously disturbing the ego of the speaker, on which his delivery so largely depends. As teaching devices, slides have a comparatively small return in fact retention and utilization. A thousand dollar collection of my own now stands idle when I have intensive teaching to do. But these strictures apply less forcefully to the good textbook illustration or diagram, which can stand before one until one is forced to absorb its meaning.

In the matter of print, I believe that we should play up to the student and the doctor, inevitably largely dependent on it as they are, much more than we do particularly in the ingenious use of typography and systematized arrangement to set out and drive home the high points of factual matter. Thus I use one-two-three presentation, mnemonic devices, alliteration, sloganization, blocking, line set-offs, adequate face differentiation of title, content and special emphasis in all my teaching work. While emphasis may be overdone, the monotony and drabness of medical textual presentations is conspicuously wasteful of teaching energy. Text can be given some of the snap and emphasis of diction. The results of a lifetime of hard thinking and hot living need not be ironed down to the same dull gray of formless type as a count of the micrometer length of paramecium in a hay culture. There is no resultant benefit to the measurements or their significance, and there is a rape of emphasis and artistry in the former which seriously reduces its teaching value. Just as typography was used by the monks to convey beauty and spirit, so today it can be used to convey logic, system, cogency and power.

It should be accepted as a general teaching maxim that anything that can be merely said should as rapidly as possible be brought to print, for from that point teaching can move forward to the more vital discussion of the printed principle and its applications to real life. It is not for nothing that the unexpected discussor from the country who rises in the row of nonentities at the back of the room to drag back your paper to reality begins with "I had a case." In that remark lies the alpha and omega of medical education for the everyday doctor, for he thinks by the case. Let us then, in the "informative program," take this to heart and lean as heavily as we can toward the case lead or attack on our teaching problem, which means essentially demonstration, conference, consultation, clinic, rather than broadcast, lecture, picture, print.

EXAMINATION AND QUIZ

The examination and the quiz still to my mind stand in a place of their own among the major agents for the impression of knowledge. In this opinion I follow the men who have advanced Europe's venereal disease informative program among physicians well beyond our own. I grant you at once that there are certain persons who can pass certain kinds of examinations without evidencing thereby an atom of integrated knowledge or ability to apply it, and some that cannot pass an examination who none the less are intuitive wizards, exempt from the ordinary rules that govern logic-bound minds. But for the large majority, the questions that first our teachers, then state authority, then life itself puts to us are commanding challenges to the mastery of at least enough to pass. With the machinery of examination, therefore, the public health authority is inevitably deeply concerned. It cannot afford to leave to a sense of duty or self interest the physician's acquiring of a knowledge of the principles and technic of control of an infectious disease. Ipso facto the forward looking health authority, knowing that the practicing physician holds an essential place in his personnel for venereal disease control, will seek a contact first with the medical school, to secure adequate instruction in minimal essentials and adequate undergraduate examination by its faculty, and second with the state licensing authority to be sure that, if one fails to check or to stimulate the incompetent, the second will detect and stop him.

THE CURRICULAR OR FORMAL EDUCATION OF THE PHYSICIAN

The equipment of the physician for comprehension of the venereal disease problem should begin, allow me to insist, in the common schools, indeed, at his mother's knee. The unfitness for the demands that all sex-linked problems make on character and human insight, which one cannot but see in too many medical students and practitioners, can be dealt with only by a process of education in general and sex education in particular, which should begin in the early years of life and through such schooling as pioneers like Beatty of Westchester County, N. Y., have here and there developed against opposition and penurious educational policy. The health officer can be none other than a social hygienist. Inevitably, therefore, in behalf not only of the public but of his physician cooperators, present and to come, he must inquire into and concern himself with this phase of education. I make this statement the more emphatic because you as well as I can recall the day when the social background of syphilis and gonorrhea was considered a mere side issue, the affair of a tender-minded group of hush-hush pussyfooters preaching the unco guid of continence and the marriage vow a safe distance behind the hardy skirmishers and marchers of the public health syringe brigade. Today the mistaken social criteria still applied by physicians to venereal disease problems, the *noli me tangere* attitudes, the noncooperation, the refusal by the physician of the opportunity and duty of personal and public education, the ignorance of sex psychology and hygiene and the tacit acceptance or active advocacy of false public policies like legalization of prostitution, are dyed in the wool miscomprehensions and perversions of outlook remediable only through the general mechanism of education. For their persistence we shall be in part responsible.

PREMEDICAL EDUCATION FOR VENEREAL
DISEASE CONTROL

If it will take sex education as such, through the adequate human bodily hygiene course as well as a general biologic training in the common schools, to make the physician a comprehending human being, it may well take some decided changes of emphasis in his premedical education to make him an adequate counselor, a preventionist, a humanist, a leader, and a cooperative and intelligent student and participant in the program of the state with reference to health and disease. The public health authority can well afford then to study the equipment of the college-degreed medical school entrant, who must as a physician deal with and "inform" the candidate for medical examination before marriage, recognize the moron carrier and spreader of venereal disease, sympathetically grasp the juvenile sex problems of the school and the street, and cooperate and advise in the field of abnormal and normal psychology, sociology and educational method and principles. Is there not perhaps a little excess emphasis on languages, physics, chemistry and mathematics, and neglect of the studies that help to make the humanist? On just such forward looking thought as this with regard to the premedical collegiate years depends the sort of ground you will have to till in the public health campaigns of the 1940's and the furrow-driving capacity of your medical plowman.

MINIMAL ESSENTIAL MEDICAL INSTRUCTION

With the medical student as such begins the problem of the inculcation of minimal essential knowledge and the differentiation of education on the basis of the student physician's special interest in the field. It is time for the health authority to join actively with medical faculties in decisions and plans for a basic required course in venereology. Speaking for the syphilis side of it, in a recent plan for curricular revision the Department of Dermatology and Syphilology of the University of Pennsylvania proposed the division of the undergraduate work in syphilology into required and elective material, with time requirements and field coverage which I believe are fairly representative of the minimal teaching needs of the public health movement against syphilis as I see them. This contemplates two consecutive teaching hours (clinic) once a week for one semester and two two-hour sessions of practical work a week for six weeks, obligatory for each member of the third year class. The work of the fourth year is purely elective. This minimal essential or required course includes about 250 pages of text and from eighty to 100 actual patients, who are presented before the class by 160 student examiners. In the technical teaching sections the student personally witnesses the demonstration of *Spirocheta pallida* by darkfield, the collection of specimens for examination and mailing, the technic of precipitation and complement fixation tests, draws blood seers and mixes or prepares for injection the more common arsenical and heavy metal preparations and practices the technic of intravenous and intramuscular injection on specially devised manikins plus a patient or two for the more proficient. Two hours is devoted to a discussion of contact tracing, follow up and social aspects by the chief social service worker.

Such a program covers

1 The course of the disease. Most practitioners of today are grievously ignorant of its essential features and mechanisms.

2 The use of central facilities for performance, and the principles to be used in interpreting laboratory procedure and results in diagnosis and treatment.

3 The general principles of treatment.

4 The principles of control of infectiousness.

5 Technic, intravenous, intramuscular.

6 Reaction prevention and control.

7 A system for early syphilis and prenatal syphilis.

8 Practitioner's management of latent and late syphilis, with don'ts.

9 Social and state responsibility and control.

For the senior elective work, which in my experience will attract one in each four or five members of our classes, is reserved the actual mastery of darkfield technic, the differential diagnosis and intricacies of syphilis, consultation problems and treatment prescription.

It will be noticed that the average student is not taught the use of the darkfield or the performance of any test. The providing of the facilities for such laboratory procedures is your problem, just as with gonococcus smears and diptheria cultures, and the student is taught that it is your problem, or that of a laboratory specialist, and to demand such service of you. He merely learns to secure the material for examination. He is taught what to expect of you, how to check and control you, how to criticize you and himself, and how to interpret the result you report to him. You will notice, on the other hand, the emphasis on treatment technic and the prevention of trouble. Nothing is more important, for the whole structure of modern syphilis control rests on treatment technic. A schedule can be set down in black and white, but the patient is actually treated by adequate technic and skilful trouble-shooting. The emphasis on them is justifiable, for without them patients do not carry through to infection control and cure. Moreover, the intravenous and intramuscular technics used in syphilis treatment are essential to all medical procedure and the time spent on them is part of general medical education. Nowhere in the medical practice of today is ignorance more woful or the patient more abused than in commonplace procedure. The manikin is important, for the attempt to teach technic on the human subject wholesale in outpatient clinics and hospitals means wholesale default and lapse in treatment among patients who will not tolerate painful and reaction-producing mishandling by students.

Three other items deserve to be added to the field of the minimal essentials instruction in the strict following of advice from a consultant source, a hard thing for the medical individualist to learn, knowledge of where to find facts and how to distinguish fact from buncombe, and knowledge as to how to keep up to date. On all three we teachers would like to refer as sources to a well organized and effective state as well as national health authority and such now well established agencies as the Cooperative Clinical Group and the League of Nations Health Organization their personnel and publications.

Minimal essential knowledge for the student and physician being thus defined, the public health authority should everywhere extend cooperation and make every effort to make the material and teaching of such a course available to every graduate practicing physician who may diagnose or treat syphilis. As an example of what might be done I recall a winter course organized recently by two local medical groups in a large city. It followed an unwelcome but evident

challenging discussion by an outsider under the auspices of a council of social service agencies on the part physicians were not playing in venereal disease control. The course as presented was voluntarily organized by local medical groups and followed surprisingly closely the leads of this outline. It could be reduplicated today by many institutions and medical organizations under public health leadership. It could be offered by clinic and teaching hospital organizations, and it could be adapted to interns, whose conspicuously deficient instruction in syphilology has just been aired by Clarke and Eaner. It requires at most not over fifty-six hours of instruction, which under pressure might be reduced to forty or even less for smaller groups that can be brought closer to the patient and the equipment—two hours a day for less than six weeks, half time for two weeks, full time for one week, and two and a half hours a week from October to February or February to May. Such courses can be ideally given in large cities with medical and teaching centers.

THE CULTIVATION OF SPECIAL INTEREST

Since it is to be understood that there are those both in and out of school who will for lack of interest never master or employ even minimal knowledge in this field regardless of opportunity or pressure, we should reinforce ourselves against their indifference by the cultivation of special interest wherever possible. The specially interested student and doctor are the material of that large informal body of venereologists, from ten to fifteen thousand at least, which treats 60 per cent of the cases of syphilis and gonorrhea. They are, moreover, the recruiting ground of the health authority's own venereal disease personnel. It is time to do away with the uncomfortable undercurrent of opinion that when a man comes back from the war or can get no other job he goes into venereal disease work. Here I am sure the health authority has, then, an opportunity. It should seek to learn the names and intentions of those who, even by applying merely for a student elective in syphilology, show a leaning toward venereal disease problems. Hospital interns and men training themselves specially for venereal disease and associated fields should be objects of personal solicitude to health authorities who appreciate how much a trained and interested personnel contributes to accomplishment. A contact officer or a contact bureau or division in the national service at least, equipped with cards, maps and follow up, should be, as Becker once suggested to me, constantly on a still hunt for eligible men from students and interns to practitioners and clinicians, to be developed into local consultants, interested cooperators, clinic aides and chiefs. When these men enter the hospitals or settle in the towns of your states, give them welcome and substantial official encouragement and support from the start.

SUMMARY

One would wish, did time permit, to give some discussion to the training of the specially interested medical student by electives, the opportunities to be developed for the equipment of the semispecialist in whose hands is more than 60 per cent of the venereal disease treatment of this country, the specialist in venereology as distinguished from syphilology or urology, the worth, possibilities and as yet ill supplied need for authoritative consultant knowledge, available

under all the categories covered by this word in the table. One should critically consider too just what the education of the man now actually out in practice lacks in this field and how those lacks can best be met—whether by exhortations and “informative” addresses, by group meetings of already constituted societies, or of special institutes organized by the public health authority, or rather, as I feel, by the development of peripatetic but none the less adequate field teaching personnel, which, equipped with the stuff and the knowledge, goes to the doctor by auto, train or truck as he faces or bends over his problem and shows him, with the case before him, how and why. I could devote several more pages to special technics for “putting knowledge over,” such as the slogan, the sharp telling phrase that makes facts stick. And I could talk long and seriously about the impending dangerous influx of half-baked, undertrained men, neither adequate venereologists nor competent public health officers, who will besiege you and insinuate themselves into key positions as funds are allocated to venereal disease control by state and national governments. An adequately equipped man for your work can hardly be the product of less than a year of full time in an organized teaching clinic—and top positions carrying consultant responsibilities demand two or three years. I cannot urge you too strongly to be exacting and critical of the equipment and training of men to be taken into your organizations at this most important time. Mere personableness and connections will apply and, if accepted, set your clocks back a decade or two—and more.

But I believe that if I can induce you to look back over the principles I have set forth, and you find them acceptable, you will be able for yourselves to examine and select methods suited to special situations. You will then see that I lay emphasis on training the young rather than the old, on case teaching rather than lectures and slides, on socratic quiz and challenge rather than didactic teaching, whether before classes, in books or over the air, on a field teaching force which meets individuals in consultation over the patient, on the brush-up group working intensively at doing things in a teaching clinic rather than at merely hearing things anywhere else. Is it right or necessary that the “Voice of Experience” in the field of mental health (which by the way, uses the case method) should occupy almost acres of space in a great modern office building answering questions, when beyond an occasional query and answer column and a scattering of overdriven consultants there is no equivalent mechanism for helping the average doctor confronted with the greatest infectious disease problem of today directly out of his quandary over “the case”? What would it mean to you in such a situation, if without a sense of imposing on some one and as a legitimate function of the state's cooperation in your individual practice problems you could wire, ring a number or write, and get something personal and really helpful done within a few minutes or hours about a treatment schedule, a reaction you can't control, an infection being passed along while you stand helpless, a drug that won't do what the book says it will? If you will think thus, I am sure that you will think more clearly and in the end more economically, and more directly to the point, on medical cooperation and education in the problem of venereal disease control.

THE CIVILIAN EDUCATIONAL PROGRAM IN THE CONTROL OF SYPHILIS

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Maimonides, the great Jewish philosopher and physician of the twelfth century, wrote that success is the synthesis of four elements—good material with which to work, a good plan according to which it may be fashioned, good technic in the execution of the plan and, finally, a good objective. Perhaps there may be found in this philosophy a formula for the development of a successful program of civilian education in the control of syphilis.

The objective has been identified. Is it a good one?

Syphilis, like gonorrhea, may have had its origin in antiquity. It is certain, however, that it has enjoyed universal prevalence since early in the sixteenth century. Unfortunately, its recognition as an almost epidemic disease came at a time when public morals were such as to facilitate its rapid spread and to fix attention almost exclusively on its relation to sexual promiscuity. It soon became the badge of loose morals. This acceptance of syphilis as invariably the offspring of iniquity remained unchallenged until a tidal wave of prudery made challenge futile by burying sex itself in the depths of its tabu.

So thorough was the burial and so potent the tabu that until recently few persons outside of medical or social hygiene circles dared say either sex or syphilis. The physician is still by no means rare who declines to treat the disease because of its moral implications. The health officer is unusual who does not resist the intrusion of the control of syphilis into his heretofore "uncontaminated" program. The employer promptly kicks into the street the employee whose "positive" blood makes him doubly undesirable as obviously immoral and disgustingly diseased. The educator is horrified to whom it is suggested that syphilis is worth study as an economic and social and health problem. The editor fatuously insists that he must "protect the newspaper-reading public from the indecent," and the Columbia Broadcasting System, rather than permit the mention of syphilis, puts the commissioner of health of the state of New York off the air.

Fortunately, however, there are always those in whom the urge to know the truth cannot be denied. Such ones distinguished between syphilis and gonorrhea in the nineteenth century. They discovered *Spirochaeta pallida*, developed the Wassermann test and synthesized arsphenamine all within a decade early in the present century. They have learned that among all communicable diseases syphilis is one of the most dangerous, most costly and most prevalent and that the majority of infections occur between the ages of 15 and 30 years. They know that if discovered in time the disease can be cured and its communicability quickly controlled, that the number of innocent infected women and congenitally infected children is legion and that innocent infections are avoidable and congenital syphilis utterly inexcusable. They are sorely burdened with the knowledge that the sum total of misunderstanding and misery and injustice which has arisen out of public

ignorance of syphilis is beyond imagination. They believe that it is high time that people were told the truth about this disease which so vitally concerns them.

The development of a good technic for the fashioning of a program of civilian education in the control of syphilis deserves serious consideration. A logical first step might be the education of ourselves who propose to be the teachers of the public. How well are we prepared to teach?

Have we added so much to our own knowledge of syphilis that our own attitudes toward the infected are any more wholesome or tolerant than the attitude of the public we would educate? Have we, as health officers, learned as much about syphilis, in proportion to the information available, as we have about smallpox, diphtheria, typhoid fever or tuberculosis? Are we so enlightened that we welcome the challenge of syphilis or do we secretly resent the appearance of this "immoral" intruder? Are we willing to fight for appropriations for the control of syphilis with the same vigor and persistence with which we have fought for appropriations for other health department functions?

Are we annoyed by the realization that in order to prevent innocent infections, we shall be obliged to spend time and money for the enlightenment and encouragement and decent treatment of the guilty? Are we inclined to rush to the police for assistance in returning a patient to treatment, thus making disease a crime, although we would resent the suggestion that we needed police assistance in the control of any other communicable disease?

Are we able to appreciate that, although sexual promiscuity is an epidemiologic factor in the spread of syphilis, it must not prejudice our approach to the problem of controlling a disease which is dangerous to the public health? Do we think of syphilis as a "venereal" disease? If we do, how do we propose to convince the public, to which venery is synonymous with lasciviousness, that syphilis is altogether too often not a venereal disease?

Have we pulled ourselves out of the mire of misunderstanding and ignorance and prejudice that we may lead others to more solid ground, in a higher and cleaner atmosphere? How otherwise can we declare, with any sincerity, that we propose to develop a program of civilian education in the control of syphilis? How otherwise can we believe that our technic will be good or that the objective is good?

It should not be necessary to worry much over the plan according to which the material may be fashioned into a program. Experience should have taught us by now, if it ever can, what the channels are for public information and education.

Attractive literature (with emphasis on its attractiveness), in abundance both as to quantity and variety, talks to public audiences whenever the opportunity presents itself, exhibits wherever they may suit the audience and whenever there is time for their study, moving pictures when the price permits and the returns are worth the cost, radio talks, dramatizations, press releases—these are the plan. We know them; we have used them; they are there to be used again. There is no magic or yet to be discovered channel through which the public may be taught to know syphilis.

It is evident of course that certain groups should have special attention in our plan. Syphilis is acquired largely by youth. It is transmitted by uncleaned groins to innocent brides. Congenital syphilis is the product of untreated syphilis in pregnant women. The ravage

of late syphilis are of the greatest economic importance in that part of the population which is over 30 years of age. The employer will not tolerate syphilis in the employee. School teachers labor under the misapprehension that congenital syphilis is forever communicable and invariably disgraceful, to the sorrow of the unfortunate child. Of these groups, therefore, a good plan will be particularly heedful but what program of health education does not need modification to meet the requirements of a specific problem?

It may not be safe to complain too bitterly that the radio and the newspaper are not freely open to discussions of syphilis. It is possible that if every radio station and every newspaper (or even one station and one newspaper) should call our bluff by opening its microphones and offering its pages to us tomorrow, we should be caught with nothing in our hands. Material is essential to a program of health education. The radio and the newspaper will become available with time, with proof that public condemnation does not follow, and with evidence that we have something sound and sensible to say. No educational program ever sprang into full-fledged being over night.

It would seem that, if Maimonides knew what he was talking about, success must be well within our grasp. Our objective is good. A good technic may be developed if we will but avail ourselves of knowledge that is ours for the taking. A good plan is in our hands. But what of material, if I may define material somewhat narrowly as that knowledge which has been put into form suitable for presentation to the public? There's the rub! There is no material!

The Massachusetts Department of Public Health has produced, reprinted or purchased a total of more than 800,000 copies of fifty brochures on gonorrhea and syphilis during the last seven years. Thirty of the fifty are of interest only to the physician or medical student. Fifteen are addressed to the nurse, social worker and health officer. Three are for the information and instruction of the patient. Only two are devoted to public education, and, as I wrote them myself, I can say that they are nothing to be particularly proud of.

Good medical papers are relatively easy to find. It is not too hard for a health officer who believes in his subject to prepare something of interest to other health officers. The idea, rather than the style, is of first importance in a technical paper. But few of us have the happy faculty of being able to write interestingly for the public, and fewer of us know enough about syphilis to write anything at all.

I have yet to discover the story of syphilis (or any part of it) written in such a way that it could be used by the health department and would arouse the interest of the man in the street. There may be such material somewhere, but neither have I been able to find it nor do I know of any agency that might have discovered it for me. I should like to buy some, since I cannot produce it. The average health officer will need all the assistance he can get from some central collection and production agency (such as the National Tuberculosis Association in its field) if he is to acquire material for public education in the control of syphilis.

If any one of us were granted an appropriation tomorrow for the employment of a single sane and unemotional lecturer who knew anything about syphilis, where would one be found? I would like to borrow half a dozen radio talks on syphilis which are not dry and uninteresting tables of statistics, or emotional

eruptions on sex, or too vivid descriptions of the anatomy involved or the too frank discussion of the unpleasant signs of the disease. Who has them to lend? There is neither material nor any one with both interest and ability to produce it.

Finally, some decision must be made as to the part which the health department is to play in the development of the broad social hygiene program. Whatever the decision, it will determine the content of the material to be produced.

The social hygienist would promptly repudiate the allegation that the primary object of the social hygiene program is the control of disease. He would define syphilis and gonorrhea quite simply as the more prevalent and identifiable signs of poor social hygiene. He would point to the unmarried mother, the prostitute, sexual promiscuity, family discord, separation, divorce, perversion, sex crime and a multitude of social ills as other symptoms of the misunderstanding and the misuse of sex. He would use legal measures and education for the control of the prostitute, protect the feeble-minded, lift the unfortunate out of miserable environments, provide ample and wholesome community recreation, prepare youth for marriage, give counsel to the married, and make sex character building as much a part of the education of every child as any other form of character building.

Obviously these objectives are so broadly social as to be far beyond the scope of a health department program. It is also evident that this is a long-range program, while there is much to be accomplished toward the control of syphilis by the immediate application of medical and epidemiologic procedures, which is a function of the health department.

However, preventive medicine is the keystone of the arch of public health. Case finding and treatment have accomplished wonders in the control and prevention of tuberculosis, for instance, but, in the long run, higher standards of living, better housing, good nutrition, more rest and recreation and more wholesome working conditions will not only help in the prevention of tuberculosis but make it easier to hold onto the gains that are made. The health department cannot be responsible for this long-range and broad program for the improvement of standards of living, but it can point to the relation between tuberculosis and poor standards of living, and it can encourage and support those who seek to improve those standards.

So it is with syphilis and the social hygiene program. It has been said that the difference between the European and American plans for the control of syphilis and gonorrhea lies in the fact that Europe puts the greater emphasis on disease control and America on social hygiene. There should be a happy middle ground.

Maimonides has defined the ingredients of success. There is not a good health officer anywhere who has not found them out for himself. To improve and protect the public health is every health officer's good objective. To learn what there is to know about a problem and to approach its solution without prejudice makes for expertness in technic. To use a well known and often tried plan, lacking a better one, is common sense. Good material is the product of knowledge and a desire to put knowledge to work. A program of civilian education in the control of syphilis is nothing more than a program in health education. Success in the control of syphilis will come to those who apply to the control of syphilis the age-old formula for success.

A minister was called on to substitute for another in a rural church. He took his small daughter with him. As they entered the door of the church he dropped a fifty-cent piece into the collection box. At the conclusion of the service, as he was about to leave, a vestryman approached him and said "It is the custom in this church to offer to any visiting pastor, as his remuneration, the day's collection. I regret that it is so small." He handed the minister fifty cents. Several minutes later, as, with his daughter, the pastor walked slowly out of town, the young lady broke the deep and gloomy silence with "Well, daddy, if you had only put more into it, you'd have got that much more out of it."

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
FRANKLIN C. BING, Secretary

THE NUTRITIONAL SIGNIFICANCE OF BRAN

Wheat bran consists of the outer coats of the wheat grain which can be separated from the germ and various grades of flour during the milling process. The commercial product usually contains some of the wheat embryo and a small amount of endosperm because of the difficulty of making a sharp separation. The bran amounts to approximately 12 to 15 per cent of the grain. It has come into prominence since the development of modern methods of milling, which date back to about 1870. At first it was used almost exclusively for feeding farm animals, but subsequently it was introduced as an item of the human dietary. From the standpoint of human nutrition, it should be mentioned that there are two principal varieties of bran on the market. Untreated bran is the mill product widely used for feeding animals and also, after cleaning, to some extent for incorporation into dough mixtures for making certain bakery products such as bran muffins. The prepared type of bran has been subjected to processes designed to improve its palatability, and it is distributed primarily as a so-called breakfast cereal food.

TABLE 1—Comparative Composition of a Crude and a Prepared Bran

| Component | Moisture-Free Basis | |
|--|---|---|
| | Crude Bran (Based on Report by Osborne and Mendel) per Cent | A Prepared Bran (Based on Report in THE JOURNAL, Feb. 9, 1935, p. 474) per Cent |
| Ash | 7.2 | 8.4 |
| Starch | 7.1 | 3.2 |
| Sucrose | 17.0 | 8.3 |
| Crude fiber | 1.6 | 14.3 |
| Carbohydrates other than crude fiber (by difference)* | 9.4 | 9.2 |
| | 69.3 | 7.9 |

* Osborne and Mendel found 27.6 per cent pentosan, 13.4 per cent starch and 4.2 per cent dextrin in crude bran, moisture free.

The processing may vary somewhat. The general procedure consists of washing the crude bran (sometimes with dilute acid, then with water) and mixing with malt syrup, sugar, salt and water. The mixture is cooked and finally dried and packaged. Frequently it is shredded or toasted before being packed in cartons.

The two varieties, crude and prepared bran, differ in their composition because certain soluble substances are lost during the washing of bran and other sub-

stances are added. A number of years ago Osborne and Mendel¹ reported an analysis of a crude bran product. Their figures, in table 1, are reported on the water-free basis. For comparison, published figures for a prepared bran product are also shown. They bring out a number of essential differences between the so-called breakfast food type of bran and the ordinary milled product. It may be noted that the amount of fiber which is present in the two products is somewhat less in the prepared bran than in the original material. Another difference not shown in the table between the commercial bran and the mill product is in the amount of phytin that is present. The washing process, especially if done with dilute acid, may remove considerable phytin from the original material. Phytin exists in bran as the potassium, calcium and magnesium salts of the hexaphosphoric acid ester of inositol. The significance of its loss can be appreciated when it is recalled that early investigators showed that cows fed on washed bran become constipated. However, Cowgill and Anderson² concluded from their work with men that the loss of phytin is of no significance as far as the laxative properties of bran are concerned.

Other differences between crude and prepared bran to which attention should be directed are the concentrations of sodium chloride and of iron. Salt is usually

TABLE 2—The Iron Content of Crude Bran and Prepared Bran

| Product | Moisture per Cent | Fe, Mg per 100 Gm |
|--------------------|----------------------|----------------------|
| Kellogg's All Bran | 6.4 | 15.3 |
| Post's Whole Bran | 8.8 | 16.4 |
| Crude bran | 9.8 | 9.5 |

added in the preparation of the breakfast foods and this accounts for the presence of about 2 to 3 per cent sodium chloride. The amount of iron in the prepared bran products is stated to be from about 17 to 25 mg per hundred grams.³ Crude bran ranks as a food rich in iron; it contains about 8 to 10 mg of iron per hundred grams of dried bran.⁴ Analyses performed in a university laboratory for the Council on Foods are reported in table 2. These figures show that the iron content of certain bran products as purchased on the open market is considerably higher than the amount of iron which is to be found in the mill product. Considering that there are few food products of vegetable origin which even approach the high iron content of crude bran, it is difficult to understand how the iron content of prepared bran can be almost double the iron content of the mill product. This raises the question of whether the iron content of wheat bran is exceedingly variable or whether iron is introduced in some manner during the processing treatment.

NUTRITIVE PROPERTIES OF BRAN

Interest in the dietary value of bran dates back at least to the days of Bunge. He showed that bread made from whole wheat contained about twice as much iron as ordinary white bread. These differences have been verified by subsequent analyses by other investigators and have been shown to be due to the presence of wheat embryo and bran in the whole wheat bread. Further evidence of the differential distribution of food sub-

¹ Osborne, T. B. and Mendel, L. B. *J. Biol. Chem.* 37: 55 (April) 1919.
² Cowgill, G. R. and Anderson, W. E. *Laxative Effects of Wheat Bran and Washed Bran in Healthy Men*. *J. A. M. A.* 94: 1877 (May 28) 1932.
³ *Whole Bran*. *J. A. M. A.* 100: 1238 (April 22) 1933. *Kellogg's All Bran*. *ibid.* 104: 474 (Feb. 9) 1935.
⁴ Petersen, W. H. and Elvehjem, C. A. *J. Biol. Chem.* 78: 215 (June) 1923.

stances in the wheat grain was afforded by the observations of Bell and Mendel⁵. They dissected wheat by hand and concluded from feeding experiments with mice that the vitamin B content of certain portions of the grain was higher than the concentration in the entire kernel. Later work has verified the observations that bran contains a higher concentration of certain food factors than does the entire grain. The discussion to follow will take up the available information regarding the nutritive value of the various components of bran as far as they have been studied.

(a) *Inorganic Salts*—Crude bran contains a relatively high percentage of ash. This ash is rich in phosphorus, which is present in the bran as phosphate esters of inositol and also as phospholipids and other compounds. Little significance has been attached to this fact, however, because phosphates can be obtained from many common articles of the human diet and there appears to be little possibility of a deficiency of this element occurring in the usual American diet. Moreover, washed bran may contain only one-tenth as much phosphorus as crude bran⁶.

The presence of approximately 3 per cent of sodium chloride in the prepared bran products has already been mentioned. This fact would have significance in the formulation of diets in which low salt intake is desired.

From the nutritional standpoint, the most important inorganic constituent of bran is iron. Attention has already been directed to the striking differences in the iron content of prepared bran products as compared with crude bran. Dr. Mary Swartz Rose, with her collaborators, has studied extensively the question of the utilization of the iron of bran as compared with other foods. Using a sample which contained 10 mg. of iron per hundred grams, Rose and Vahlteich⁷ found in assays with rats that the iron of bran was well utilized. Later Rose, Vahlteich and MacLeod⁸ showed that the iron of bran was somewhat more effective in the production of hemoglobin in anemic rats than iron-equivalent quantities of egg yolk and of liver. Good results were also obtained when anemic rats were fed whole wheat as compared with the results observed when a solution of the ash of the same amount of wheat was fed.

Subsequent experiments have shown further that the iron of bran is as well utilized as the iron of ferric chloride. In two subjects, both of whom were young women, Vahlteich, Funnell, MacLeod and Rose⁹ showed that the iron of bran was as well utilized as the iron of egg yolk. The amounts of egg yolk or of bran consumed by these experimental subjects furnished 3 mg. of iron daily. It required 58 Gm. of egg yolk and 15 Gm. of bran to furnish this amount of iron. It is apparent therefore that the bran used in these experiments contained approximately twice as much iron as the bran used in the earlier experiments with the rats.

(b) *Protein*—The protein content of bran averages about 17 per cent, which is about 50 per cent higher than whole wheat. Although the amino acid makeup of these proteins indicates a good nutritional value, Rubner early showed that the proteins of bran are

digested with difficulty. More recently Murphy and Jones¹⁰ studied the nutritive properties of the proteins of wheat bran. They found that young rats grew normally on dietary mixtures in which bran supplied all the protein.

Experiments on man were reported by Holmes¹¹ in 1919. He studied the protein digestibility of wheat bran when as much as 4 or 5 ounces was eaten. The coefficient of protein digestibility was low, being only 37 per cent when fine bran was eaten and 36 per cent when coarse bran was substituted. His experiments have been criticized because of the large amounts of bran consumed and also because the diets contained relatively small amounts of total protein. Funnell, Vahlteich, MacLeod and Rose¹² calculated from their experiments that the protein of bran was utilized by their subjects (young women) to the extent of about 50 per cent. It must be concluded that the proteins of bran are poorly utilized. Moreover, in the amounts that might ordinarily be consumed it is apparent that the proteins of bran can contribute but little to the daily protein requirements of man.

(c) *Vitamins*—The only vitamin known to occur to an appreciable extent in wheat bran is the vitamin B complex, and in particular vitamin B₁. As already described, Bell and Mendel⁵ showed that the vitamin B complex was differentially distributed in the wheat grain. In 1927 Plimmer, Rosedale, Raymond and Lowndes¹³ found that bran was about one fifth as rich in vitamin B as wheat germ. In 1932 Rose and her collaborators¹⁴ reported that a sample of commercial bran contained somewhat less vitamin B than an equal weight of whole wheat. They concluded "One ounce of whole wheat bread will furnish 63 vitamin units and 100 calories, one ounce of bran suitably prepared for human use such as has been used in this investigation will furnish at least 45 vitamin B units, but not more than 30 calories." The vitamin unit referred to was that of Chase and Sherman, in terms of international units of vitamin B₁, 1 ounce of the bran product investigated contains about 23 units. Thus it is apparent that although wheat bran contains vitamin B₁, it is not as good a source of this factor as whole wheat, wheat germ and many other food products.

(d) *Carbohydrates, Including Crude Fiber*—The most publicized components of bran are the carbohydrates, particularly the indigestible carbohydrates referred to as crude fiber. In the dried commercial product reported by Osborne and Mendel, there were approximately 17 per cent starch and dextrins, 27 per cent pentosans and 9 per cent fiber. As pointed out by Rose and her collaborators,¹⁵ true values for the carbohydrates are probably slightly higher than the figures reported.

About one third of the total carbohydrate, comprising the starch and dextrin, is digestible and therefore serves as a source of energy. The rôle of pentosans in nutrition has been reviewed by McCance and Lawrence¹⁶. These carbohydrates, chiefly arabans and

¹⁰ Murphy J. C. and Jones D. B. *J. Biol. Chem.* **69**: 85 (July) 1926.

¹¹ Holmes quoted by Funnell, Vahlteich, Morris, MacLeod and Rose¹².

¹² Funnell, Esther H., Vahlteich, Ella McCollum, Morris, Sadie O., MacLeod, Grace and Rose, Mary Swartz. *J. Nutrition* **11**: 37 (Jan.) 1936.

¹³ Plimmer R. H. A., Rosedale, J. L., Raymond W. H. and Lowndes John. *Biochem. J.* **21**: 1147 (1927).

¹⁴ Rose, Mary Swartz, Vahlteich, Ella McCollum, Funnell, Esther H. and MacLeod, Grace. *J. Am. Dietet. A.* **7**: 369 (March) 1932.

¹⁵ Rose, Mary Swartz, MacLeod, Grace, Vahlteich, Ella McCollum, Funnell, Esther H. and Newton, Catherine L. *J. Am. Dietet. A.* **8**: 133 (July) 1932.

¹⁶ McCance, R. A. and Lawrence, R. D. *The Carbohydrate Content of Foods*. M. Res. Council London 1929.

⁵ Bell M. and Mendel L. B. *Am. J. Physiol.* **62**: 145 (Sept.) 1922.

⁶ Falcon-Lesses M. *J. Nutrition* **2**: 295 (Jan.) 1930.

⁷ Rose, Mary Swartz, and Vahlteich, Ella McCollum. *J. Biol. Chem.* **96**: 593 (June) 1932.

⁸ Rose, Mary Swartz, Vahlteich, Ella McCollum and MacLeod, Grace. *J. Biol. Chem.* **104**: 217 (Feb.) 1934.

⁹ Vahlteich, Ella McCollum, Funnell, Esther H., MacLeod, Grace and Rose, Mary Swartz. *J. Am. Dietet. A.* **11**: 331 (Nov.) 1935.

xylans, are of negligible food value because no enzymes of the alimentary tract are capable of hydrolyzing them. The same is true of cellulose, which makes up a considerable portion of the material called "crude fiber." However, bacterial action, which may convert considerable of the pentosans into volatile fatty acids, has less effect on cellulose. The latter when fed is recoverable to a large extent in the feces. Bran thus contributes bulk to the diet, and it was early recognized as having a laxative effect because of this fact. While the "bulk" is made up chiefly of indigestible carbohydrates, it is well known that substances other than "crude fiber" may contribute to the residues found in the stool.

LAXATIVE EFFECTS OF BRAN

The laxative effects of bran have been studied by several investigators. Only experiments on persons will be considered in this report. Cowgill and Anderson² compared the laxative effects of bran and washed bran in healthy young men. They found no differences in the two products when tested in fiber-equivalent quantities. The authors therefore concluded that the laxative effect of bran can be attributed to its fiber content rather than to substances, such as phytin or salts, which may be leached out in the manufacturing process. They found as a result of their feeding experiments that the ingestion of bran leads to an increase in the weight of the stools. When the diet was selected so as to be low in crude fiber content, the addition of bran resulted in an increased number of bowel movements daily. These authors describe as a condition of marked constipation one in which an average of about six bowel movements a week was produced. According to the review by Alvarez,¹ this statement might be questioned.

Cowgill and Anderson analyzed representative items of the control diets ingested by their subjects and compared the results of the fiber intake with the fiber content of the stools produced. It was shown that approximately 60 to 65 per cent of the crude fiber of mixed diets may disappear on passage through the alimentary tract. When bran was added, the weight of fiber that disappeared amounted to only 44 to 51 per cent. It is thus evident that the fiber of bran is more resistant to decomposition by bacteria in the intestinal tract than is the crude fiber of ordinary foods. It was concluded that normal men exhibit "satisfactory laxation" when their diet contains about 90 mg of fiber per kilogram of body weight daily. This amounts to a little over 6 Gm of fiber a day for an average sized man.

Later Cowgill and Sullivan¹⁸ reported further investigations on the use of wheat bran as a laxative in six men who were troubled with constipation. It was shown that in all but one of these cases the addition of bran was efficacious in overcoming the complaint. Fruits and vegetables as sources of bulk were found satisfactory in two subjects. Another subject, however, apparently presented the picture of "irritable colon." He was unable to tolerate coarse vegetables or bran but was successfully treated with agar. The authors pointed out that diets of common foods containing sufficient fiber to permit satisfactory movements in healthy persons may not do so in subjects troubled with constipation. They attributed this to the greater loss of fiber in traversing the alimentary tract of constipated subjects as compared to normal persons.

Experiments on men are not entirely conclusive as far as constipation studies are concerned. It is well known that women are more prone to become constipated than are men. It is interesting, therefore, to note that Rose and her co-workers⁹ have studied the influence of bran on the alimentary tract of healthy women. As a result of these studies it was shown that the addition of bran to a controlled diet produced marked increases in the total weight and dry weight of the stools.

In a recent paper by Parsons¹⁹ it is pointed out that the problem of fecal elimination is largely an individual one which is affected by many factors in addition to the amount of fiber in the diet. It is difficult to evaluate the results of her experiments as compared with other reports in the literature. The divergence of results indicates, however, the importance which subjective impressions may play in such experiments with persons.

It seems reasonable to conclude from the evidence available that the weight of the fecal material and the number of bowel movements daily are dependent largely on the bulk in the diet, and that in normal men and women and in some constipated subjects, both may be increased by the ingestion of suitable amounts of bran. It also appears to be demonstrated that the fiber of bran is more resistant to decomposition in the alimentary tract than the fiber of many ordinary foods. The number of daily bowel movements that can be considered normal, however, is still open for further investigation. There is evidence also that some foods, such as prunes and fruit juices, may exert an effect which cannot be attributed to fiber or bulk. It may also be pointed out that other components of the usual diet, such as carbohydrates and fats, may exert an effect on what Cowgill and Anderson have called "laxation." Finally it may be noted that there are no reports in the literature of controlled dietary studies showing the relation of bulk to constipation in children.

THE INFLUENCE OF BULK ON PROTEIN UTILIZATION AND MINERAL RETENTION

Indigestible carbohydrates in bran must be considered in relation to their effect on the digestibility of other proteins and on the retention of minerals. Mendel and Fine, for example, showed with dogs that the addition to the diet of indigestible material such as agar or bone ash resulted in an increase in the fecal nitrogen. This effect has been shown by others to occur in persons also. In explanation it has been suggested that the presence of bulk may retard proteolytic digestion, a greater amount of metabolic nitrogen from digestion juices, and so on, which escape reabsorption, is produced, the intestinal contents are propelled more rapidly and hence not as completely absorbed. Whatever the reason, it appears that the effect produced by moderate amounts of fiber on protein digestion, while definite, is slight.¹² With abnormally high amounts of roughage, such as might be found in certain Chinese diets, Adolph and Wu²⁰ observed a definite lowering of protein digestibility.

Whitacre, Willard and Blunt²¹ found that the addition of fiber in the form of vegetables had no effect on the utilization of dietary fat. Morgan²² studied the

¹⁹ Parsons, Lucy W. *J. Am. Dietet. A.* 12: 11 (May) 1931.
²⁰ Adolph W. H. and Wu Mao-Yi. *J. Nutrition* 7: 381 (April 19) 1934.

²¹ Whitacre J. Willard A., and Blunt H. *J. Nutrition* 2: 12 (Nov.) 1929.

²² Morgan, Harriet. *The Laxative Effect of a Regenerated Cellulose in the Diet. Its Influence on Mineral Retention.* *J. A. M. A.* 102: 155 (March 31) 1934.

¹ Alvarez W. C. *Physiol. Rev.* 4: 352 (July) 1924.
¹⁸ Cowgill G. R., and Sullivan A. J. *Further Studies on the Use of Wheat Bran as a Laxative.* *J. A. M. A.* 100: 795 (March 18) 1933.

effect of the ingestion of moderate amounts of a cellulose preparation on young women. She found a slightly increased excretion of fecal nitrogen and a definite increase in the excretion of phosphorus, calcium and fecal ash. She questions the wisdom of giving a high roughage diet to children or to older persons under conditions of a marginal intake of calcium.

DISADVANTAGES FROM THE USE OF BRAN

In addition to the effect of bran on calcium excretion, there are other possible disadvantages to its use which demand thoughtful consideration. To many individuals bran is irritating to the mucous lining of the intestinal tract. It is self evident that bran or other rough foods may do serious injury if included in the diet of patients who recently have undergone operation of the stomach or intestine or who suffer with ulcer, carcinoma or other organic disorders of the gastro-intestinal tract. Patients with such conditions occasionally develop constipation. Also at times patients with ulcerative colitis of amebic or bacterial origin develop constipation. If under any of these circumstances bran is resorted to as a means of relieving the constipation, the previously diseased tissue will be irritated with results that may be disastrous.

It generally is less well appreciated that the constipation of many otherwise healthy individuals results from spasticity of the colon and under these circumstances that bland diets are more effective in controlling the constipation than is any rough, mechanically irritating food like bran. In such cases bran may so intensify the spasticity that obstruction necessitating mechanical or even surgical removal may result from its use.²³

It is the experience of many physicians that otherwise normal persons who suffer from constipation due solely to inadequate bulkiness of their diets will develop irritable colons if bran is taken in excessive doses for a short time or in ordinary doses continuously for longer times.²⁴ Vague abdominal pains occur, associated with bloating, belching and excessive flatus, these symptoms promptly disappear when the ingestion of bran is discontinued.

Danger from the use of bran is greatest when constipated individuals eat bran, and, not obtaining relief with small portions, take larger quantities of this rough, mechanically irritating food. The indiscriminate use of bran without the supervision of physicians therefore is undesirable. While many constipated persons without any digestive disorders may be benefited by the addition to their diets of bran in doses that are not excessive, alternating the use of bran with agar and other allied products or the provision of diets containing an adequate amount of residue less coarse than bran is considered to be a more desirable therapeutic procedure.

GENERAL DECISION ON ALLOWABLE CLAIMS FOR WHEAT BRAN

On the basis of the evidence reviewed in the foregoing report, the Council on Foods has considered the place of wheat bran in the human diet and has adopted the following general decision:

1 Bran may be useful as a source of bulk in the diet. The position of the Council in regard to "Constipation Statements in Lay Advertising for Roughage Foods and Bran" (THE JOURNAL, Nov 5, 1932, p 1605) is reaffirmed. Any reference in labels or advertising directed to the public regarding the content of bulk or crude fiber cannot be permitted unless there is repro-

duced the complete statement in the Committee Decision referred to, regarding a permissible claim for a roughage food. This statement is reproduced as follows:

Constipation due to insufficient roughage in the diet should yield to eaten regularly. A competent physician should be consulted for cases not corrected in this simple manner.

It is not permissible to advertise the use of bran in the treatment of constipation "due to insufficient bulk." This statement by itself encourages self treatment, which may cause harm in those persons for whom bran is contraindicated.

2 The iron content of untreated bran is high. Special claims for bran as a source of iron in the diet cannot be recognized, however, until definite evidence is obtained and accepted by the Council to show that the iron of untreated bran is available to the human body and, in the amounts which might ordinarily be ingested, contributes an appreciable portion of the daily requirements.

If iron salts should be added in the preparation of bran for human consumption, the presence of added iron should be declared on the label, in accordance with present regulations of the Council requiring a complete list of ingredients and quantities thereof entering into the product in the case of food mixtures or compounds.

3 The amount of vitamin B₁ in bran is insufficient to permit any special claims therefor.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C BING Secretary

ADVERTISING LEAFLET "MILK FOR ALL"

Sponsor—Evaporated Milk Association, Chicago

A leaflet prepared for distribution by welfare agencies. It is proposed to print part of the run of pamphlets in Italian. The leaflet contains a statement of the nutritive value of evaporated milk, suggested food selections in planning low cost meals, and evaporated milk recipes.

DR. PHILLIPS PURE FLORIDA GRAPEFRUIT AND ORANGE JUICE

(WITH ADDED CANE SUGAR)

Manufacturer—Dr P Phillips Company, Doctor Phillips, Fla

Description—Canned Florida grapefruit juice (60 per cent) and canned orange juice (40 per cent) sweetened with sucrose and retaining in large measure the original natural vitamin content. The same as Dr P Phillips Pure Florida Orange Juice (With Added Cane Sugar) (THE JOURNAL Dec 3, 1932, p 1948) and Dr P Phillips Pure Florida Grapefruit Juice (With Added Cane Sugar) (THE JOURNAL, Jan 7, 1933, p 43).

GOLD-PAK BRAND GRAPEFRUIT JUICE (SUGAR ADDED)

Manufacturer—Ariz-Sweet Grapefruit Growers, Ltd., Peoria, Ariz

Description—Canned Arizona grapefruit juice, with added sucrose, retaining in high degree the original vitamin C content. Same as Ariz-Sweet Brand Grapefruit Juice (Sugar Added) (THE JOURNAL, July 25, 1936, p 283).

Claims of Manufacturer—Intended for all dietary and table uses of grapefruit juices. Practically equivalent to fresh juice in vitamin C.

²³ Davis M B. Intestinal Obstruction from Eating Bran. J A M A. 97 24 (July 4) 1931.

²⁴ Alvarez W C. Minnesota Med 14 296 (April) 1931.

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SATURDAY, SEPTEMBER 12, 1936

"SUBENON" FOR ARTHRITIS AND THE AMERICAN CHEMICAL SOCIETY

For several years the annual sessions of the American Chemical Society have been accompanied by extraordinary publicity in the lay press concerning new chemical discoveries applicable in the field of medicine and particularly for the treatment of disease. Each year has seen several disappointments associated with the subsequent fate of the widely heralded remedies. Occasionally, of course, some of the preparations thus announced have found a certain field of usefulness. The medical profession has thus far refrained from criticizing this interference in its field. This year, however, even before the opening of the annual session of the American Chemical Society, newspapers throughout the United States carried a story, emanating apparently from the publicity department of the American Chemical Society, indicating that a new specific had been developed for the treatment of rheumatism and arthritis. Some press associations which have been consulting the headquarters of the American Medical Association relative to press items in the field of medicine immediately made contact with authorities in the headquarters office to determine whether or not these stories were well founded. The item submitted to the press stated that "a compound which curbs arthritis, economically the most devastating of all chronic diseases, was reported by Dr. Herman Seydel (President Seydel Chemical Co., Jersey City, N. J.)." It was said that "the new compound, involving the medicinal application of benzoates, has proved effective in clinical tests covering two years at the Jersey City Medical Centre." Furthermore, Herman Seydel, Ph.D., reported that "in this calcium double salt of benzyl succinic and benzoic acids we offer the solution of an age-old problem. It remains for the medical profession to adopt it and employ it properly." Thus the speaker to appear before the American Chemical Society put the medical profession of this country squarely "on the spot" with a demand that it use his proprietary remedy. The item was of course much more extensive, proceeding finally to the

rather humorous point at which "Dr." Seydel pointed out that his remedy worked "by treatment designed to better the body humors." He explained "humors" by pointing out that "some modernists in medical science substitute for the 'humors' the 'bacterial flora of the intestines'." If this is science, Heaven help the scientists!

The real explanation of the usefulness of his product seemed to be, according to "Dr." Seydel, "the role played by benzoic compounds in the detoxication processes of the body" since it successfully removes waste matters from the body humors and is itself eliminated as either hippuric acid or a hippuric acid derivative. Hence benzoic compounds should have a decided advantage over other compounds in the treatment of conditions that arise from, or are controlled by, the gastro-intestinal tract. The secret behind this is, of course, the fact that the Seydel Chemical Company is a manufacturing organization which specializes in the manufacture of "benzoic compounds."

Naturally this extraordinary announcement in the press stimulated a flood of inquiries addressed to the American Medical Association, the American Chemical Society and "Dr." Seydel personally as to where this new specific might be secured. At least one inquirer was told over the telephone that the product could be secured by calling for it under its proprietary name—Subenon¹—at any of the establishments of a widely known chain of drug stores.

In his statements "Dr." Seydel mentioned a favorable experience with the treatment at the New York Postgraduate Hospital. The superintendent of that institution, W. B. Talbot, telegraphs:

We protest reference to New York Postgraduate Hospital in newspaper report of Herman Seydel. Stop. We used experimentally his product subenon but found it useless in arthritis. Stop. No favorable reports given out from this hospital about subenon.

Had the publicity associated with "Dr." Seydel's exploitation of his product gone directly from the Seydel Manufacturing Company to any of the better press associations or newspapers of the United States it would promptly have found itself—as merely a sheet of advertising material seeking for free publicity—in the editorial wastebasket. As it came to newspapers with the sponsorship of the American Chemical Society, a well known organization presumed to be composed of scientific men subject to the usual ethics which control scientific workers, press associations and newspapers cannot be condemned if they failed to recognize the definitely commercial background and effect of this item. Neither can thousands of unfortunate sufferers from arthritis be condemned if in response to this

¹ Subenon is claimed to be a calcium double salt of benzyl succinic and benzoic acids. In November 1935 Seydel declared his intention to submit the product to the Council on Pharmacy and Chemistry. The product was already commercially available at that time. It is rather before either new or of established value—facts which the American Chemical Society might have taken into consideration before permitting widespread exploitation under its sponsorship. The product has not yet been submitted to the Council.

item they demand of their physicians that they be given opportunity to test this unestablished drug. But in these circumstances the sufferer from arthritis is the guinea-pig and "Dr" Seydel and his company are the financial gainers with the American Chemical Society as their unpaid agent.

When the item appeared in the newspapers a telegram was sent by the Director of the Division of Drugs, Foods and Physical Therapy of the American Medical Association and by the Editor of *THE JOURNAL* to the president of the American Chemical Society pointing out the circumstances involved in this case and protesting the use of the American Chemical Society for aiding the premature and unethical exploitation of this proprietary. It was suggested that proper officials remove the paper by "Dr" Seydel from the program of the American Chemical Society. This, as we go to press, the president of that society has refused to do. The American Chemical Society cannot dodge its responsibility in this case. It is neither within its province nor within its competence to give critical judgment on the treatment of disease. If it wishes to maintain the respect of the medical profession and the public, the American Chemical Society cannot permit itself to be used as an agent for unestablished proprietary remedies in the exploitation of the sick.

ACNE AND CARBOHYDRATES

Patients with acne vulgaris, it has long been thought, are usually intolerant to carbohydrates. However, much recent evidence does not support such a view. Whereas earlier observations indicated that in many cases of acne borderline hyperglycemia is present, the majority of the more recent reports show that the sugar content of the blood of these patients does not differ significantly from that of normal subjects and that they show no evidence of a lack of tolerance to dextrose. In fact, the observation that the incidence of skin disorders was considerably less in a large series of diabetic patients than in a similar series of normal subjects led one investigator¹ to treat patients with furunculosis with a high carbohydrate diet and dextrose injected intravenously. The results obtained were uniformly favorable.

The foregoing alleged beneficial effect of carbohydrate therapy on furunculosis suggests that this regimen might prove of value also in the treatment of the more pronounced and pustular types of acne. A study of this question has been recently reported.² Ten patients who had been troubled with the severe and predominantly pustular form of acne for from six months to ten years were hospitalized and given a high carbohydrate diet, containing 5 Gm of carbohydrate, 1 Gm of protein and 1 Gm of fat per kilogram of body

weight. In addition, 1,000 cc of a 5 per cent solution of dextrose in physiologic solution of sodium chloride was administered intravenously each day. This treatment was continued for the two weeks the patients remained in the hospital and the high carbohydrate diet was continued after dismissal during follow-up periods varying from six to fourteen months. Dextrose tolerance tests were made on each patient at the beginning of the period of treatment and all curves obtained were normal with the exception of two, which were of the flat type. Sugar was not found in the urine at any time during the two weeks period of intensive carbohydrate therapy and at the end of the period the sugar content of the blood after fasting was normal in all cases.

These data obviously give no indication of an intolerance to carbohydrate. The clinical results are interesting. In five of the ten patients there was definite improvement during the two weeks period, and this continued during the follow-up period until the skin cleared. Two patients showed questionable improvement, and the condition of three remained unchanged. In no instance did a patient become worse as a result of treatment. Three of the patients showed transient outbreaks of acne during the follow-up period. In one instance this was associated with menstruation, and in another with the eating of tomatoes. Thus, further evidence is presented in support of the contention that patients with acne do not show an intolerance to carbohydrate and, indeed, that a carbohydrate-rich diet is frequently of value in the treatment of this disease. Possibly other types of foods, or perhaps specific foods may be involved as etiologic agents in acne rather than the long suspected carbohydrates.

INDEX CATALOGUE OF THE LIBRARY OF THE SURGEON GENERAL'S OFFICE

Under date of May 4, 1936, Major Edgar Erskine Hume, librarian of the Army Medical Library, announced to the Surgeon General the completion of the first volume of the fourth series of the *Index Catalogue* of the Library. Volume 10 of the third series appeared in 1932, and publication has been suspended in the intervening time. The history of the publication is briefly reviewed in the introduction to the new volume of the new series. When it first appeared, the *Index Catalogue* was unique as the only attempt to index the important medical literature of the world. As the Army Medical Library received a greater number of periodicals and more books, pamphlets and other medical publications than any other medical library capable of issuing such a publication, the *Index Catalogue* most nearly approximated a complete catalogue of medical literature.

The *Index Medicus* was founded in 1879 and, as our readers know, was subsequently taken over by the American Medical Association and is now issued as

¹ Tauber E. B. Hyperglycemia in Diseases of the Skin. *Arch Dermat. & Syph.* 27: 198 (Feb.) 1933.
² Crawford G. M. and Swartz J. H. Acne and the Carbohydrates. *Arch Dermat. & Syph.* 33: 1035 (June) 1936.

the *Quarterly Cumulative Index Medicus*. To some extent there is duplication of the work necessary for preparing the *Quarterly Cumulative Index Medicus* and the *Index Catalogue*, though the claim is made that the *Index Catalogue* is far more comprehensive than the *Index Medicus*. Incidentally, the cost of issuing 1,000 copies of one volume of the *Index Catalogue* is estimated to be \$33,000, or \$33 per individual volume.

In presenting this new volume, certain changes have been made which are improvements in presentation of the material. For example, volume numbers are in Arabic numerals instead of Roman, unnecessary punctuation has been avoided, and there has been a shortening of inclusive pagination. The same classification is followed as has been used since the beginning of the first series, although of course new knowledge has made necessary new subheadings. Nomenclature has been improved by avoiding eponyms, although in some instances, as in Addison's disease, this has not been possible. It has been estimated that the changes are sufficient to save approximately one fifth of the available space. The Army Medical Library receives 1,509 periodicals, the *Quarterly Cumulative Index Medicus* receives some 1,400. Users of the two indexes will readily be able to determine for themselves which method of indexing has the greater facility. By its very nature the *Index Catalogue* is invariably far behind the *Quarterly Cumulative Index Medicus* in making available references to current medical periodical literature. However, the *Index Catalogue* makes available in one volume all the material up to the time of its publication.

Users of the *Index Catalogue* should be under no illusion as to the extent of material covered. It is not possible, and certainly not worth while, to attempt to index every article appearing in every one of the 1,509 periodicals received by the Army Medical Library, and it is quite obvious by reference to the *Index* that the editors have not attempted a complete indexing of this material. This is the system that has been followed by the *Index Catalogue* and the *Quarterly Cumulative Index Medicus* as well as by the *Index Medicus* from the first. The compilers of the *Index Catalogue* are to be congratulated on their editorial judgment.

Notwithstanding the minor criticisms here offered, the *Index Catalogue* is one of the most useful works of reference available in the field of medical bibliography. The economically minded may estimate that the completion of the alphabet in this manner will require anywhere from ten to twenty years and will cost approximately \$400,000. During the same period the *Quarterly Cumulative Index Medicus* will also be making available an index of the periodical literature of medicine at a cost of approximately \$40,000 a year. There will be considerable duplication of work which might in some way be avoided. It remains for medical leadership both governmental and extra-governmental to work out some plan whereby this may be done.

Current Comment

CAUSES OF SICKNESS AND DEATH

It is not as easy to determine the really important causes of sickness and death at present as appears on first glance. There are many approaches to the problem, but the relative importance attached to a particular disease depends largely on the source of information. Britten¹ has recently reviewed some of the angles of approach and indicated the various pictures that are yielded. Thus, in one table, in which the mortality rate for the whole United States in 1933 was listed only by primary causes, it was obvious that some of the causes, notably influenza and pneumonia, diarrhea and enteritis, and diseases of the heart, would have been increased if contributory causes also had been listed. As compared, however, with morbidity statistics, the mortality rates and their interpretation are relatively simple. Diseases that appear at the top of any list based on records of illness depend almost wholly on the method of collection. In a morbidity table based on reported incidence of those diseases which are by law notifiable in various states and are hence all communicable diseases, largely epidemic and principally of children, chronic disease is virtually omitted and many mild contagious cases are not included. In judging the importance of a disease it is necessary to consider the fatality as well as the incidence. When based on reports to the Public Health Service and the Cleveland study, rabies and tetanus head the list for numbers of deaths per hundred cases. Neither of these diseases is included in the table of the first seventeen important reportable diseases of 1933. Periodic canvasses (about every three months) were made for a year in 9,000 families in eighteen states. The four leading diseases, as based on annual incidence per thousand, were colds and bronchitis, influenza and pneumonia, tonsillitis and gastritis, as compared with measles, influenza, syphilis and scarlet fever in the group of important recorded diseases in 1933. Reports of sick benefit associations in industry give still another image, since such reports usually cover disabling illness lasting eight days or longer. In such a study influenza and pneumonia come first, followed by rheumatism, tonsillitis and appendicitis. The prevalence of diseases at any one time must be sharply distinguished from the incidence of illness. Thus, chronic conditions such as rheumatism and hernia may be important with respect to the ill health of the population but not show up in any great number in a study of cases of illness, because they are overshadowed by acute recurring conditions. Diseases that are increasing in frequency merit special attention. Data are not available, however, to cover this point except from the mortality rates, which are unsatisfactory because of changes in case fatality of specific diseases. None of the approaches to the problem seem to throw light on the important aspect of the protection of the worker against disease arising out of his occupation. When Britten attempted to bring the various approaches into a more or less unified whole, the tentative conclusion was drawn that the principal diseases appear to be (1)

¹ Britten, R. H. Important Causes of Sickness and Death. *J. Health Rep.* 51: 247 (July 17) 1936.

influenza and pneumonia, tuberculosis, heart disease, (2) cancer, rheumatism, dementia praecox, (3) syphilis, appendicitis, mental defect and results of childbirth. Since the importance of having accurate knowledge of the frequency and severity of different diseases is obvious, it is strongly to be hoped not only that accuracy and increase in the factual data will continue to improve but also that the statistical methods of reaching conclusions may be developed to give reasonably accurate information

Medical Economics

MUTUAL TRUST BETWEEN PHYSICIAN AND PATIENT IN MEDICINE

The patient who distrusts his physician will not and cannot tell him the whole truth and nothing but the truth. The patient who subconsciously doubts his physician may censor facts at the expense of his recovery. The physician who lacks the confidence of a patient will try to fill the gaps in his knowledge with guesses and laboratory gadgets or else take refuge in a "look and a bottle." This has happened whenever government, contracts or other arrangements in the distribution of medical service have disturbed or destroyed continuous, confidential, personal relations between patient and physician. In some systems of insurance and workmen's compensation, medical associations—usually after years of struggle—have restored some sort of freedom of choice and mutual confidence. The result has always been an improvement in the service. Is it necessary to introduce systems that destroy these essential features of good medical service?

The medical profession has always held to the principle that change in medical service must have the single objective of better care for the health of those who need such service. Physicians are not interested in arguments for change based on the profits that might accrue to financial and industrial interests, on political expediency or even on their own apparent financial advantage, if the service is to suffer thereby.

Through the experience of centuries in many different forms of society the medical profession has learned that certain elements are essential to good medical service. One of these elements is mutual confidence, which springs from the freely chosen association of physician and patient. Compulsory association sows distrust.

Patients, not diseases, are the objects of medical treatment. Treatment rests on a meeting of two personalities, the patient and his physician. Successful, helpful relations must be between these two personalities and not between an institution, insurance system, laboratory or industry and a personality.

The patient who suspects that interests hostile to him may be influencing the physician will consciously or unconsciously describe his symptoms with a view to meeting the supposed or real antagonism. Modern psychiatry confirms this conclusion and emphasizes its importance. Laboratory technic has not displaced the necessity of confidence in diagnosis, nor has elaborate equipment made it unnecessary in treatment.

Free choice is an essential element in furthering medical progress. It is the most effective method yet discovered to insure the "survival of the fittest" in the medical profession. The selection is not always perfect, but it is more fair and impartial than selection influenced by financial or political considerations. Coercion of the decision distorts and corrupts the verdict of professional success. Professional progress has always rested on high standards of admission and then on free competition, within the limits of approved ethical regulations.

The individual choice may not always be wise, but a compulsory choice hampers the success of the best physician, while a free choice helps him to give the best service of which he is capable. Potential power of choice tends to hold all medical service to a high plane.

Economic compulsion of choice has the same evil effects that have always followed advertising and solicitation by the physician. In practice compulsory choice is almost always accompanied by advertising and solicitation, and the choice is

often made by some impersonal corporation or institution that is concerned more with other interests than with the health of the patient. This impersonal body selects a physician not for an individual patient but for a group.

Group selection usually involves mass treatment. This policy is being urged on the medical profession just as analogous fields are rejecting it. A generation ago crime and insanity were treated almost exclusively by mass confinement in asylums and prisons, mass education was glorified and mass treatment of poverty by alms and in poorhouses generally approved. Progress in criminology, psychiatry, education and social work has been measured largely by the extent to which individual personal relations have supplanted mass measures.

Nowhere else is this personal relation such a fundamental element of successful treatment as in medicine. Progress toward better treatment, unless all the teachings of the past are false, will be found in the introduction of methods making the choice of physician more intelligent and the personal relations more permanent and confidential.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Society News—At a meeting of the Craighead-Poinsett County Medical Society in Trumann, July 22, speakers were Drs Isaac G. Duncan, on diagnosis and treatment of most common kidney infections, John A. Hughes, headache, Matthew W. Searight, gynecology, Edward G. Campbell, peptic ulcer, and John L. McGehee, pilonidal sinus, all are from Memphis.

CALIFORNIA

University News—The University of California recently announced a gift of \$2,000 from Mrs. Paul Wegefert, Coronado, for support of studies on the common cold.—In a student registration of 14,418 at the University of California, Berkeley, only three students died from natural causes during the academic year 1935-1936. The total student mortality was eight deaths. Of the entire student population, 11,997 were given some treatment in the Cowell Memorial Hospital.

FLORIDA

Committee Enlarged—The committee on maternal welfare of the Florida Medical Association has changed its name to the committee on maternal welfare and child health and added the following physicians as members: Drs. Luther W. Holloway, Jacksonville, William W. McKibben, Miami, Council C. Rudolph, St. Petersburg, and William E. Sinclair, Orlando.

GEORGIA

Increase in Venereal Disease—A total of 12,771 cases of venereal disease was reported to the state department of health in 1935, which is 2,161 more cases than reported for a group of other diseases including malaria, tuberculosis, whooping cough, diphtheria, typhoid and pellagra. For this group of diseases, a total of 10,610 was reported. The number of cases of syphilis was 7,358, while those of gonorrhea totaled 5,413. The rate for syphilis per hundred thousand of population was 242.8.

ILLINOIS

Maternal Welfare Program—The state department of public welfare has announced a plan to promote better hygienic care for prospective mothers and infants. Efforts will at first be concentrated in ten counties of the state showing the highest maternal and infant mortality rates and for which statistical material has been assembled for eight years: Richland, Pulaski, Alexander, Coles, Crawford, Montgomery, Morgan, Saline, Boone and Effingham.

Chicago

Professor Edwin O. Jordan Dies—Edwin O. Jordan, Ph.D., emeritus professor of bacteriology, University of Chicago, died at the Central Maine General Hospital, Lewiston,

Maine, September 2, from cerebral thrombosis, aged 70. Dr. Jordan was a native of Thomaston, Maine. He received his degree of bachelor of science from the Massachusetts Institute of Technology in 1888, his degree of doctor of philosophy from Clark University in 1892 and an honorary degree of doctor of science from the University of Cincinnati in 1920. From 1888 to 1890 Dr. Jordan was chief assistant biologist to the Massachusetts Board of Health, lecturer on biology, Massachusetts Institute of Technology, 1889-1890, fellow in morphology, Clark University, 1890-1892. In the latter year he became affiliated with the University of Chicago as associate in anatomy, holding successively the titles instructor, assistant professor of bacteriology, associate professor and professor. In 1914, when the department of hygiene and bacteriology was formed, Dr. Jordan was appointed chairman. Although officially retired from the university in 1933, Dr. Jordan had been offering graduate courses and conducting research in the department of hygiene and bacteriology. He was at one time chief of the serum division of the Memorial Institute for Infectious Diseases, now known as the John McCormick Institute of Infectious Diseases, of which he was a trustee, editor of the *Journal of Preventive Medicine* until its discontinuance in 1932, and joint editor of the *Journal of Infectious Diseases*. The Andrew McLeish Distinguished Professorship at the University of Chicago was awarded to him in 1932. He was president of the Society of American Bacteriologists in 1905, of the Chicago Pathological Society in 1906, of the American Epidemiological Society from 1929 to 1931, and of the Institute of Medicine of Chicago in 1932. Other societies of which he was a member include the American Public Health Association, American Association of Pathologists and Bacteriologists, American Physiological Society, Society of Experimental Biology, American Society of Naturalists, American School Hygiene Association and American Water Works Association. He was a member of the International Health Board of the Rockefeller Foundation from 1920 to 1926 and a member of the board of scientific directors, International Health Division of the Foundation. He was also a member of the medical fellowship board of the National Research Council and a fellow of the American Association for the Advancement of Science. He was elected a member of the Council on Foods of the American Medical Association in 1933 and of the National Academy of Sciences in the spring of 1936. He was awarded the Sedgwick Memorial Medal of the American Public Health Association in 1934. This medal was named for W. T. Sedgwick, a biography of whom was written jointly by Dr. Jordan, Dr. George H. Whipple and Charles-Edward A. Winslow, Dr. P. H. An outstanding bacteriologist, Dr. Jordan has contributed extensively to the literature of his field, one of his best known volumes being "General Bacteriology," which in 1931 underwent its tenth revision.

INDIANA

New Chairman of Department of Gynecology—Dr. Carl Habich, Indianapolis, has been appointed chairman of the department of gynecology at the Indiana University School of Medicine, and Dr. Jackson T. Witherspoon has been placed in charge of research in the department. A graduate of the school of medicine, Dr. Habich has been a member of the staff of the department of gynecology for about twenty years. Dr. Witherspoon was formerly instructor in clinical gynecology at Tulane University of Louisiana School of Medicine, New Orleans.

State Medical Meeting in South Bend—The Indiana State Medical Association will convene at the Jefferson Plaza, South Bend, October 6-8, for its annual session. Speakers will include the following:

Dr. Byrl R. Kirklm Rochester, Minn. Roentgenologic Features of Acute Pulmonary Diseases
Dr. Lincoln F. Sise Boston Present Day Anesthesia
Dr. Russell L. Cecil New York Early Diagnosis and Treatment of Pneumonia
Dr. Frederick A. Collier Ann Arbor Water Metabolism
Dr. Fred L. Adair Chicago The Cervix Uteri
Dr. Lee Wallace Dean St. Louis Nasal Sinus Disease of Infants and Young Children
Dr. Francis E. Senechal Chicago Early Diagnosis of Syphilis and Its Treatment
Dr. Elmer L. Seeringhaus Madison Wis., Endocrine Therapy in General Practice
Dr. John A. Toomey Cleveland A Critical Evaluation of Recent Advances in the Prophylaxis and Treatment of Contagious Diseases

The annual banquet Wednesday evening will be addressed by Dr. John H. Upham Columbus Ohio President-Elect American Medical Association on Changing Times in Medicine and Gordon J. Lang Ph.D., Chicago Are Doctors Human? A certificate of merit will be presented posthu-

mously to Dr. Walter J. Leach, New Albany, president of the state society in 1935. For entertainment, many side trips have been planned in addition to the annual golf and trap shooting tournaments. A dinner for women physicians will be held Monday evening, and Dr. Agnes Beulah Cushman, Chicago will speak on "Experiences in India." The annual smoker and stag party will be held the same evening, when the golf and trap shooting prizes will be awarded. The women's auxiliary will meet, October 6-7. Dr. Charles P. Emerson, Indianapolis as guest speaker, will discuss "What Can the Woman's Auxiliary Contribute to the Practice of Medicine?"

IOWA

Clinical Meetings—Drs. Dean D. Lewis and Walter E. Dandy, professor of surgery and adjunct professor of neurologic surgery, Johns Hopkins University School of Medicine, Baltimore, addressed a special meeting of the Des Moines Academy of Medicine and Polk County Medical Society September 4, on "Diagnosis of Bone Lesions" and "Diagnosis and Treatment of Brain Tumors" respectively. The guests conducted clinics in the afternoon. They conducted a similar program before the Linn County Medical Society, Cedar Rapids, September 3. At the regular meeting of the Des Moines group, September 26, Dr. Oliver J. Fay, Des Moines will speak on the subject "Would the Practice of Medicine as Envisaged Through the Social Security Act Contribute to the Security of Either the Public or the Medical Profession." Dr. William G. MacCallum, Baltimore, will address the Linn County Medical Society, October 2, on "Characteristics of the Hypophysis."

MAINE

Society News—Drs. Frederick C. Holden, New York, and David Riesman, Philadelphia, addressed the Hancock County Medical Society, Bar Harbor, July 24, on "Pelvic Infections in Women" and "Diagnosis and Treatment of Heart Failure" respectively. At a recent meeting of the Washington County Medical Association in Eastport, Dr. Frederick J. C. Smith, Eastport, among others, spoke on the diagnosis of acute appendicitis.

Medicolegal Society Formed—At a recent conference of medical examiners in Rangeley, a state medicolegal society was established with the following officers: Drs. Herbert C. Scribner, Bangor, president, John G. Towne, Waterville, vice president, George L. Pratt, Farmington, secretary, and William Holt, Portland, treasurer. Eligible for membership are the medical examiners, the attorney general of the state and his assistants and the county attorneys. Meetings are to be held at the time of the annual meeting of the Maine Medical Association.

MASSACHUSETTS

Health Cabin Dedicated—A cabin, erected at a cost of \$1,200 by the Worcester Exchange Club, was presented to officers of the Southern Worcester County Health Association in a formal dedicatory program August 12. The cabin is on the site of the Sterling Health Camp which through the season now cares for about 500 children. The children are divided into groups and stay at the camp four weeks each. About 3,000 children have been cared for at the health camp since its establishment in 1924.

MICHIGAN

Joint Meeting—The University of Michigan and the Children's Fund of Michigan held a conference at Marquette August 19-20. The session opened with a symposium on "What Constitutes a Complete Health Service for the Community," presented by Dr. Hugo A. Freund, Detroit, president of the fund, Dr. John Sundwall, Ann Arbor, Louise Knapp, R.N., Detroit, Howard B. Lewis, Ph.D., and Paul H. Jeserich, D.D.S., Ann Arbor. Other speakers included:

Dr. Henry J. Vandenberg, Grand Rapids Present Knowledge of the Cause and Cure of Cancer
Howard J. McClusky, Ph.D., Ann Arbor Growing Up Mentally
C. H. Jamieson, D.D.S., Detroit Some Aspects of a Full Denture Practice
George E. Morgan, D.D.S., Milwaukee Practical Pediatrics for the General Practitioner
Dr. Arthur C. Curtis, Ann Arbor Etiology and Management of Chronic Arthritis
Dr. Norman F. Miller, Ann Arbor The Obstetrics Problem

The program concluded with a discussion of community health services among others by Dr. Clyde C. Slemmon, Lansing state health commissioner and Miss Marjorie Delavan, director bureau of education state department of health Lansing.

MINNESOTA

Personal—Dr Hugh Cabot, Rochester, gave two lectures at St Thomas's Hospital, London, August 24-25, on "Treatment of the Obstructing Prostate" and "Cryptorchidism, with Particular Reference to the Effect of Malposition on the Testis and Methods of Treatment"—Dr Ralph M. Tovell, assistant professor in anesthesia at the University of Minnesota (Mayo Foundation), Rochester, has resigned to become chief anesthetist at the Hartford Hospital, Hartford, Conn., effective September 1—Dr Melvin S. Henderson, Rochester, has been appointed a corresponding member of the Argentine Society of Orthopedic Surgery.

Chiropractor Leaves State—Goes to Iowa—The Minnesota State Board of Medical Examiners, July 14, filed a complaint against A. A. Nitzke, charging him with practicing healing without a basic science certificate at Windom. Before the warrant could be served Nitzke left the state and, according to the board, is practicing chiropractic at Storm Lake, Iowa. Investigation disclosed that while he was neither registered under the basic science law in Minnesota nor licensed to practice chiropractic in the state, he was placed in charge of the chiropractic office of M. E. Tegels, who left on a trip to be gone about six weeks. Evidence was obtained to show that Nitzke gave chiropractic treatments to a number of Tegels' patients during the week of July 6. Any one learning that Nitzke is practicing in the state is urged to communicate with the state board.

MISSOURI

Director of Rural Health Named—Dr John W. Williams Jr., Springfield, health officer of Greene County for the past eleven years, has been appointed director of rural health with the state board of health under the social security program. Dr Lynn M. Garner, health officer of Miller County, has succeeded Dr Williams in Greene County.

Fall Clinical Conference—The Kansas City Southwest Clinical Society will hold its fourteenth annual fall clinical conference at the new Municipal Auditorium, Kansas City, October 4-8. Guest speakers will include

- Dr George E. Bennett, Baltimore. Treatment of Fractures of the Neck of the Femur. Recent, Old and Recurrent Dislocations of the Shoulder.
- Dr Milton A. Bridges, New York. Evaluation of the Under Par Man. Present Status of Nutrition in Relation to Disease. Fads and Fallacies Regarding Food and Diet.
- Dr Joseph A. Capps, Chicago. A Follow Up Study of a Series of Cases of Bacterial Endocarditis. Air Embolism versus Pleural Reflex as a Cause of Syncope in Operative Procedures in the Thorax.
- Dr George W. Crile, Cleveland. The Genesis and Surgical Treatment of Essential Hypertension. A Critical Review of 26,219 Operations on the Thyroid Gland with Special Reference to the End Results.
- Dr Morris Fishbein, Chicago. Heart Disease—How to Live Long in Spite of It.
- Dr Albert C. Furstenberg, Ann Arbor. Acute Infections of the Pharynx, Mouth and Neck. A Clinical and Pathological Study of Tumors and Cysts of the Head and Neck.
- Dr Urban Maes, New Orleans. Infections of the Dangerous Areas of the Face—Their Pathology and Treatment. The Justification for Exploratory Laparotomy in the Absence of a Definite Diagnosis.
- Dr Jay Arthur Myers, Minneapolis. Research Advances in the Diagnosis and Treatment of Tuberculosis. Modern Methods in Tuberculosis Control. Driving Tuberculosis from Our Midst.
- Dr Benjamin Weems Turner, Houston. Texas. Urethral Stricture in the Male and in the Female—History. Etiology and Treatment. Urology in Children.
- Dr Derrick T. Vail Jr., Cincinnati. Optochiasmatic Arachnoiditis. Its Relation to Sinus Disease and Multiple Sclerosis. Posterior Sclerotomy in the Treatment of Expulsive (Subchoroidal) Hemorrhage.

Scientific papers will also be presented by members of the society. New features this year include clinicopathologic conferences and special clinics on the heart, chest, gastro-intestinal tract, orthopedics, cancer and obstetrics and gynecology. Round table luncheons will be held each day, with addresses by two guest speakers. A public health meeting will be held Monday evening October 5. Tuesday evening the session will be presented in conjunction with the Jackson County Medical Society. Wednesday evening will be devoted to entertainment and the alumni dinner will be on Thursday evening.

MONTANA

Plague-Infected Ground Hog—Surg. Clifford R. Eskey, U. S. Public Health Service, in charge of plague suppressive measures. San Francisco, has reported plague infection in fleas and lice from ground hogs killed in Small Horn Canyon, about twelve miles southwest of Dillon, Beaverhead County. According to Dr Eskey's report, this is the first direct evidence that plague exists among marmots in America and demonstrates that the infection may be recovered from lice as well as from fleas taken from these rodents. Surgeon Eskey later reported that

plague had been identified in a sick ground hog. This hog, killed July 31 in Indian Creek Canyon, fourteen miles north-east of Beaver, Beaver County, Utah, is believed to be the first plague-infected marmot reported in the United States, according to *Public Health Reports*.

NEW YORK

Laboratory Head Honored—Dr Morris Maslon, Glens Falls, was honored at a testimonial dinner at the Fort William Henry Hotel, Lake George, August 5, celebrating his twenty-fifth anniversary as head of the Warren County Laboratory. Among the speakers were Drs Burke Diefendorf, Glens Falls, and Thomas Ordway, dean and professor of medicine, Albany Medical College. Dr Leonard H. Hulsebosch, Glens Falls, president of the Warren County Medical Society, and Miss Rose Q. Strait, superintendent, Glens Falls Hospital, arranged the dinner.

Personal—Harry Hamilton Laughlin, Sc D, assistant director of the Carnegie Institution, Cold Spring Harbor, received the honorary degree of doctor of medicine from the University of Heidelberg at the recent celebration of the five hundred and fiftieth anniversary of the university.

New York City

Tuberculosis Conference—The seventh clinical session on chronic pulmonary diseases held under the auspices of the Tuberculosis Sanatorium Conference of Metropolitan New York will be at Cornell University Medical College October 7. Dr Foster Murray, chairman of the clinical section of the conference, will preside, and a symposium on "Occurrence of Fluid in the Course of Artificial Pneumothorax" will be presented by Drs Hazel McLeod Riggins, Edgar Mayer, David Ulmar, John M. Nicklas, Valhalla, and William J. Ryan, Pomona.

NORTH CAROLINA

Graduate Assembly—The Medical Society of the State of North Carolina sponsored a graduate assembly at Banners Elk, August 20-21. The first day was devoted to a scientific program and the second to clinics conducted by Dr John H. Musser, professor of medicine, Tulane University of Louisiana School of Medicine, New Orleans. On the program were

- Dr Verne S. Caviness, Raleigh. Pneumonia.
- Dr Clyde M. Gilmore, Greensboro. Rheumatic Heart Disease.
- Dr Charles H. Cocke, Asheville. Evolution of Modern Treatment of Tuberculosis.
- Dr Duncan W. Holt, Greensboro. Backache.
- Dr William Allen Charlotte. Inheritance of Shaking Palsy.

Dr Musser made the principal address at a banquet at Pinnacle Inn Thursday evening. Dr Cocke was toastmaster. The clinics were held at Grace Hospital.

Changes at Wake Forest College—Dr Coy C. Carpenter, who has been acting dean at Wake Forest College of Medicine, Wake Forest, has been elected dean to succeed Dr Thurman D. Kitchin who was made president of the college in 1930. A new biochemistry laboratory has been equipped and the former space assigned for research, which is to be financed by a grant from G. Layton Grier, D.D.S., president of the L. D. Caulk Company, Milford, Del. Herbert C. Tidwell, Ph.D., recently in the department of biochemistry at Duke University, Durham, has been appointed Grier professor of biochemistry and will devote most of his time to research. A new laboratory for embryology and microscopic anatomy has been provided, the departments of gross and microscopic anatomy and those of pathology and bacteriology have been combined with added facilities and staff. Dr Edward S. King, professor of physiologic chemistry and bacteriology, is on leave of absence to spend the current semester at Harvard University Medical School, Boston, and Dr George C. Mackie, professor of physiology and pharmacology, at the University of Edinburgh.

OHIO

Hospital News—The Oxford Retreat, Oxford, a sanatorium for nervous and mental patients founded in 1882, was closed July 16 and its building leased to Miami University.—Dr Neal N. Wood, formerly director of Hillman Hospital, Birmingham, Ala., has been appointed director of Stirling-Loving University Hospital, Columbus.

Graduate Course in Ophthalmology—The Cleveland Ophthalmological Club announces that its annual graduate course in ophthalmology will be given December 7-9 and requests that those interested make early application for enrollment. The fee is \$15. Application should be made to Dr Albert D. Ruedemann, Cleveland Clinic, Cleveland, chairman of the program committee.

PENNSYLVANIA

Society News—Dr Bernard J Alpers, Philadelphia will address the Harrisburg Academy of Medicine, September 15, on "Common Nervous Complications Encountered in General Practice"—The Lehigh County Medical Society held its annual outing August 11 at the Lehigh Country Club

State Program for Crippled Children—With the aid of funds allotted by the Social Security Board, a plan for rehabilitation of crippled children has been launched by the state department of health. The state has been divided into twelve districts, in which a local orthopedic surgeon will have charge of the work. Children will be located, their disability diagnosed and recommendation made for treatment. Four clinics will be held in each district every year. Braces and appliances will be bought with social security funds and hospitals will be paid \$4 a day per patient for necessary services. The first clinic was held at Geisinger Hospital, Danville, August 20, under the direction of Dr Royal L Simon, Williamsport. Seventy children were examined.

SOUTH DAKOTA

Personal—Dr Clarence E Sherwood, Madison, has been appointed health officer of Lake County to succeed the late Dr Emerson W Goldman, it is reported—Dr Raymond P Frink, Wagner, has been appointed physician to the Yankton Sioux Indian reservation, succeeding Dr Gregory R. Waters

TEXAS

Society News—Drs Paul C Williams and Harold A O'Brien addressed the Dallas County Medical Society, September 10, on "Hypertrophic Arthritis" and "Tumors of the Testicle" respectively—Drs Walter R Russell, Purdon, and William C Tenery, Waxahachie, addressed the Navarro County Medical Society in Corsicana, August 1, on "Handicaps Overcome by a Country Doctor" and "Emergency Treatment of Burns" respectively

Division of Industrial Hygiene—The Texas State Department of Health has created a division of industrial hygiene financed by social security funds, with Dr Carl A. Nau, formerly professor of physiology at the University of Oklahoma School of Medicine, as director. Preliminary surveys are now in progress for location of potential health hazards in industry, which will be studied in detail in the laboratory now being equipped.

WEST VIRGINIA

Industrial Hygiene Unit Formed—A bureau of industrial hygiene has been established in the state department of health with Dr Otto J Swisher Jr, Berkeley Springs, as director. The bureau is financed by federal funds, under the provisions of the Social Security Act, matched by state appropriations. Among its first activities will be a survey of the silicosis hazard in the state. At a meeting of the state health commissioner with the advisory compensation committee of the West Virginia Medical Association it was agreed that x-ray plates made by the bureau in suspected cases would be used for no other than the survey purposes and that all persons suspected of having the disease would be advised to see their personal physicians.

Society News—Drs Russel Kessel and Andrew E. Amick, Charleston, addressed the Central West Virginia Medical Society in Webster Springs, July 25 on "Conservative Management of Pelvic Inflammatory Diseases" and "Practical Factors in the Management of the Acute Diarrheas in Infants and Children" respectively—The annual social outing of the Cabell County Medical Society was held at the Guyan Country Club Huntington, August 20 with a golf tournament followed by a dinner—Dr William B Scherr, Morgantown, addressed the Monongalia County Medical Society, August 4, on gynecologic subjects—The annual conference of health officers and meeting of the West Virginia Public Health Association will be held in Wheeling October 12-14

WISCONSIN

Personal—Dr Robert S Vivian has resigned as health officer of Beloit to devote his time to private practice—Dr John W Lowe Merrillan has been appointed health supervisor of the district including Ashland Bayfield Burnett Douglas Iron Sawyer and Washburn counties with headquarters at Ashland

Society News—The medical societies of Walworth, Kenosha and Racine counties held a joint meeting at Lake Geneva July 1, dedicated to Dr Benjamin J Bill, Genoa City, one of the oldest practicing physicians in the state. Speakers on the scientific program were Drs John C. Docter, Racine, on breast feeding, Francis D Murphy, Milwaukee, diagnosis and treatment of heart disease, Robert M Grier, Evanston, Ill., breech presentation, and Lathan A Crandall Jr, Chicago, practical aspects of liver function—Drs Lawrence V Liting and Lester McGary, Madison, addressed the Sauk County Medical Society, Baraboo, July 29, on "Skin Cancer and Its Treatment" and "Hay Fever and Asthma" respectively

PHILIPPINE ISLANDS

New Leprosariums Planned—A special committee of the bureau of health has selected sites for three regional treatment stations for lepers in Luzon Enrie, Cagayan, Bangued, Abra and Norzagaray, Bulacan. The president of the islands advocates establishment of these stations, according to the *Journal of the Philippine Islands Medical Association*, believing that it is unwise to segregate all lepers in Culion.

GENERAL

Study of Deaths from Excessive Heat—The North Central states had the highest death rate from excessive heat during the years 1931 to 1933, according to a study recently published by the Metropolitan Life Insurance Company in its *Statistical Bulletin*. Of nine groups of states, the East North Central states, including Ohio, Indiana, Illinois, Michigan and Wisconsin, and the West North Central group, including Minnesota, Iowa, Missouri, North and South Dakota, Nebraska and Kansas, had the highest group rates, each 2.2 per hundred thousand. Within these groups were the highest rates for individual states except Arizona and Nevada. They were Wisconsin 3.9, Iowa 3.2, and Illinois 3.1. The rate for Arizona was .97 and for Nevada .86. The rate for two groups of Southern states was .08 and for the Western Southern states of Oklahoma, Arkansas and Louisiana it was .09. When the rates for white and colored persons were separated, however, the rates for Negroes in the South were about twice as high as those for the white population.

Tuberculosis Meeting—The Mississippi Valley Conference on Tuberculosis and Mississippi Valley Sanatorium Association will convene at the Pere Marquette Hotel, Peoria, Ill., September 24-26. The preliminary program includes the following speakers:

Mr Murray A. Auerbach, Indianapolis, Training Workers in the Field of Practical Tuberculosis Activities.
Dr Hoyt E. P., "Evaluating Our Work in Terms of Improved Tuberculosis."
Dr David O., "Finding the Case: An Evaluation of Methods."
Mr Theodore J. Werle, Lansing, Mich., A Study of Tuberculosis in the Law.
Dr Amelia T. Wood, Muncie, Ind., What Should Our High Schools Teach About Health?
Dr Jay Arthur Myers, Minneapolis, Tuberculosis in a Health Teaching Program.
Miss Fannie B. Shaw, National Tuberculosis Association, The Objectives of School Health Education.
Dr Warren Wadsworth, Detroit, Bronchoscopic Observations of Tracheobronchial Obstructions in Tuberculosis.
Dr Sumner S. Cohen, Oak Terrace, Minn., and Kenneth A. Phelps, Minneapolis, Bronchiectasis Associated with Tuberculosis.
Dr Carl V. Weller, Ann Arbor, Mich., Pathologic Features of Bronchogenic Carcinoma.

There will be a symposium on nontuberculous pulmonary lesions Thursday afternoon with the following speakers: Drs. Ferris Smith, Grand Rapids; Jacob J. Singer, St. Louis; Cameron Haight, Ann Arbor, and Oscar A. Sander, Milwaukee. A joint session of the sanatorium association and the tuberculosis conference will be held Friday morning. Speakers will be Dr Arthur A. Pleyte and Metta Bean Milwaukee on "Opportunities for Finding Tuberculosis in Relief Families"; Dr Robinson Bosworth, Rockford, Ill., "The Role of the Sanatorium in the Control Program"; Dr Myers, Minneapolis, "Latent Period Between Infection and So-Called Adult Disease as Occurring in Childhood up to Adolescence," and Dr Allen K. Krause, Tucson, Ariz., "Pulmonary Tuberculosis in Childhood." An x-ray clinic will be conducted Friday evening by Drs Henry Kennon Dunham and Vera V. Norton Cincinnati.

Academy of Ophthalmology and Otolaryngology—The forty-first annual convention of the American Academy of Ophthalmology and Otolaryngology will be held at the Waldorf Astoria Hotel, New York, September 26 to October 3 under the presidency of Dr Frank E. Burch, St. Paul. Sir John Herbert Parsons, London, the guest of honor will speak at the opening joint session Monday morning on Ophthalmology.

and Research." At this session Dr Burch will give the presidential address, and a symposium will be presented on "Manifestations of Diseases Affecting Cerebral Nerves Supplying Eye, Ear, Nose and Throat Due to Involvement of the Central Nervous System" by Drs Donald J Lyle, Cincinnati Marvin F Jones and Henry A Riley, New York. The succeeding mornings will be devoted to conferences and the afternoons to addresses by the following speakers, among others

- Dr Lee W Dean St Louis, Fundamental Principles in the Treatment of Allergic Rhinitis with Special Reference to Iontophoresis (Ionization)
- Dr Robert H Ivy Philadelphia Tumors and Cysts of the Mouth and Jaws of Interest to Otolaryngologists
- Dr Alan C Woods Baltimore Allergy in Clinical Ophthalmology
- Dr Samuel Hanford McKee Montreal, Canada Sarcoma of the Uveal Tract—Malignant Melanoma
- Dr Arthur J Bedell Albany N Y Pigmentation of the Fundus
- Dr John J Shea Memphis, Tenn Indications for Blood Transfusion in Otolaryngologic Work
- Dr Joel J Pressman Los Angeles A New Method of Radium Application in Cancer of the Bronchus
- Dr Parker Heath, Detroit Visual Sequelae from Meningococcus Meningitis
- Dr Karl L Stoll Cincinnati Glaucoma and Nevus Flammeus

The section on instruction is sponsoring a special symposium Tuesday evening on "Lymphatic Drainage of the Head," presented by Dr Oscar V Batson Philadelphia, Dr Augustus G Pohlman, Omaha, and Olof Larzell, Ph D, Portland, Ore. The committee on deafness prevention and amelioration will present a symposium Tuesday afternoon on progress in this field, with the following speakers. Drs Horace Newhart, Minneapolis, Austin A Hayden, Chicago Burt R Shurly, Detroit, and Miss Betty C Wright, executive director American Society for the Hard of Hearing, Washington, D C. Monday evening there will be a dinner meeting at which a panel discussion on graduate medical education will be presented. Dr Willard C Rappave, dean Columbia University College of Physicians and Surgeons, will introduce the discussion, and participants will be Drs Ralph A Fenton Portland, Ore Dean M Lierle, Iowa City, Harris P Mosher, Boston, Cecil S O'Brien, Iowa City Harry S Gradle, Chicago, Walter B Lancaster, Boston, and William D Cutter secretary, Council on Medical Education and Hospitals, American Medical Association, Chicago. For the first time the academy will have a scientific exhibit. Friday and Saturday will be given over to clinics at various hospitals, with a dinner at the New York Academy of Medicine Friday evening for those participating.

Deaths in Other Countries

Lord Moynihan of Leeds, emeritus professor of surgery, University of Leeds and chairman of the Army Medical Advisory Board, died in Leeds, September 7, aged 70.

Government Services

Closing Date for Applications Changed

The U S Civil Service Commission announces that the closing date for receiving applications for examinations for medical officers announced in THE JOURNAL August 29 has been changed from September 8 to September 15.

Forty-First State Free from Bovine Tuberculosis

Rhode Island is the forty-first state to be designated a modified accredited area, practically free from bovine tuberculosis. The term modified accredited area means that there is less than one half of 1 per cent of tuberculosis among cattle as shown by official testing. Tuberculosis eradication was undertaken in Rhode Island about twenty years ago and has been greatly increased in the last five years.

Medicomilitary Inactive Training

The eighth annual training course for medical department reservists of the U S Army and Navy will be held at the Mayo Foundation, Rochester, Minn, October 4-17. Morning hours will be devoted to professional work in special clinics and study groups, while the afternoons and evenings will be given over to a medicomilitary program under the direction of the surgeon of the seventh corps area and the surgeon of the ninth naval district. Enrollment, limited to 200, is open to all army and navy reservists of the medical departments in good standing. Applications should be submitted to the surgeon of the seventh corps area, Omaha, Neb, or the surgeon ninth naval district Great Lakes, Ill.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 25, 1936

The Annual Meeting of the British Medical Association

The 104th annual meeting of the British Medical Association was held at Oxford. At the representative meeting a discussion took place on the important subject of the space occupied in the *British Medical Journal* by the publication in extenso of the proceedings of the scientific sections at the annual meeting. It was moved (1) that it be left to the discretion of the editor as to how fully they be published and (2) that in consequence of the curtailment thus entailed a special edition of the *Journal* be devoted to papers of the sections. From the last annual meeting these ran to 244 pages of the *Journal* over a period of twenty-five weeks. While allowed discretion as to the occasional papers, the editor must publish the opening papers of every section. This year there were twenty sections with thirty-eight meetings. The papers to be published might run to 190,000 words or more. There was an objection to the bulkiness of the material and also to the fact that some of it might be out of date at the time of publication.

Dr R G Gordon, chairman of the *Journal Committee*, said that this matter had exercised the committee. A great proportion of the *Journal* was occupied by these papers, which were of unequal value. No one would like to go back to the publication of all the papers read at the annual meeting, which had been abandoned. The opening papers were now published and the committee had decided that in future the authors would be asked to cut them down to 3,000 words, leaving it to the discretion of the editor to allow a little excess should the paper so demand. The separate publication of the proceedings of the annual meeting would be expensive, running to \$7,500. This was done at the London clinical meeting of 1919. It was thought that the contributions—the result of four years of war—would be of special interest, but the sales were negligible. There were difficulties in the proposal that the opening papers should be submitted to the editor like other articles. Unless the opener was assured of publication, he might not take the trouble to prepare his paper. Also extreme pressure on the editorial staff would be involved. The first part of the resolution was carried and the second part lost by a large majority.

In his report on *Journal* policy, Dr Gordon stated that 1,008 original articles were received last year and 544 published. The latter had to be closely edited. The editorial department received 12,972 letters and sent out 8,722. Books received for review amounted to 908, of which 595 were reviewed, a large proportion, in view of the average value of the books now published. It has been decided to adopt a new typography and a new type face for the *Journal* and to contract with a printing firm for the whole production instead of doing the composition and setting in the Association's House, as at present.

ANNOUNCEMENTS IN NEWSPAPERS

The following recommendation of the council was moved: "That in the opinion of the association the lay press should never be utilized by a practitioner to publish his change of address, to announce his movements, or to announce his surgery (office) or consulting hours. There is no objection to such matters being issued by a circular letter to patients of the practice. Such circulars should be issued in sealed envelopes and be confined to those whose names have been on the books of the practice during the last two years and who are not

known to have transferred themselves to another practitioner" The recommendation, amended by omitting the word "sealed" and substituting "are on the books of the practice" for "have been during the last two years," was carried

THE FUTURE OF MEDICINE HEALTH CENTERS

In his presidential address Sir Farquhar Buzzard, regius professor of medicine in the University of Oxford, said that the day had passed when any doctor, whether in general or consulting practice, could legitimately carry on as an isolated and independent unit ready to meet all the requirements of his patients. He must be part of a team. Modern means of communication made possible the establishment of health centers where the personnel and equipment necessary for skilled diagnosis and treatment can serve large areas. Every physician in the area should belong to the service and be part of the team, of which each member had his own specific functions. For two reasons general practitioners should become more intimately associated with such health centers. The voluntary hospitals were understaffed and therefore the standard of efficiency was not as high as it would be if general practitioners participated in the work. In the second place they would benefit if they could devote even two or three hours a week to hospital work, thus keeping in touch with colleagues and abreast of contemporary advances. Sir Farquhar envisaged a central board, based on the chief hospital, but representative of all interests and institutions concerned with the health of the district. Where a medical school was included it would send delegates of the more academic departments. The board would coordinate all the preservative, preventive and curative services within the district.

The whole system of voluntary hospitals was threatened by the establishment of municipal hospitals all over the country, which in the future would be equally well equipped and afford the same opportunities for clinical study and, unlike the former, would pay for full time or part time study. Thus, with the increasing demand of well-to-do patients for treatment in hospitals, must lead to the disappearance of the purely honorary position of the staff in voluntary hospitals to some system of payment for their part time services.

General practice was disturbed and still threatened by recent changes. Insidiously but steadily it had been lopped of many of its branches. This was partly in response to the demand of the public, for economic or other reasons that various services, not limited to the field of public health, should be controlled by local authorities. But he failed to see why general practice should not assume a more important role in the future. The saving of life had become the job of institutional team work, the saving of health and the prevention of illness, in the long run more important, must be initiated by the general practitioner in the home. But to perform this work efficiently he must help to staff those medical services, preventive and curative which have been diverted to the control of public health authorities.

TREATMENT OF FRACTURE OF NECK OF FEMUR

Opening a discussion in the Section of Surgery, Royal Whitman stated that fracture of the neck of the femur was amenable to the rules that govern the treatment of other fractures. By the abduction method deformity could be corrected and displaced fragments apposed with ease and certainty. In former years the proportion of union obtained in complete medial fractures was very low. 6 per cent in one series, 11.6 in another. The lowest percentage of union reported for the abduction method was over 53. Henderson of the Mayo Clinic estimated the prospect of repair at 90 per cent in patients under 60 and at 65 per cent beyond that age.

Smith-Petersen based his spiking operation on the capacity for repair demonstrated by the abduction method. To reduce the percentage of failure he exposed the fractured surfaces, adjusted by direct manipulation and fixed his flanged nail. In his first series of twenty-four cases union was attained in 75 per cent, in a second series of twenty six, in 70 per cent. Several deaths occurred, but not directly from the operation. The experiences of others had been less fortunate. Another operation was apposition of the fragments by the abduction method and fixing them by the Smith-Petersen nail. Whitman suggested that the insertion of the nail impaired the capacity for repair by injuring the cancellous tissue. The early resumption of activity claimed was a doubtful advantage. The fragile cortex of elderly patients might give way.

THE NEW SECTION OF NUTRITION

Sir Robert McCarrison opened a discussion at the new Section of Nutrition, which was inaugurated at this meeting, on "Nutrition in Health and Disease." He said that last among the sections it was not the least and the day was not far distant when, instead of one morning being devoted to its work, it would rank with the Section of Medicine as a three-day fixture. It was becoming apparent that the science of nutrition was the foundation of a more rational medicine. He hoped that in the future the work of the section would not be limited to physiologic, biochemical, pathologic and medical aspects of the subject but would include veterinary and agricultural topics. The foods now called "protective" were discovered centuries ago by certain races of northern India whose physique and health were unsurpassed. Such foods must be produced on soils that were not depleted of essential plant nutrients, such as iodine, which was needed for the normal nutrition of man. Poverty was not the only cause of malnutrition. Education of the people and better education of ourselves were urgent necessities. It might be said that the medical curriculum was already overloaded. If so, let it be pruned, let us teach the student less about disease and drugs and more about health, more about nutrition, which is the very basis of health.

THE POLLUTION OF SHELLFISH

In the Section of Public Health Dr. R. W. Dogson, director of shellfish services, Ministry of Agriculture, said that had we set out to ensure the continued existence of typhoid in this country we could have hardly found a better plan than that of turning out the crude sewage from the large centers of population on to a shellfish bed and then distributing the shellfish all over the country. Success might be doubly assured by importing, as we did, shellfish from countries in which the incidence of typhoid was much greater than our own. The disposal of sewage by discharge into the sea was described as "purification by dilution." In the presence of shellfish it might be described as "purification by concentration." An oyster could filter out and retain for a considerable period all the suspended matter from at least 10 gallons of water in the twenty-four hours. Attempts to grapple with the situation had been ineffective. The deviation of sewers was impracticable owing to its cost. So was the purification of sewage. Closure of polluted fisheries had been done on a considerable scale. Two thirds of the mussel beds in England and Wales had been closed. The only practicable form of purification was one that was carried out under artificial conditions in tanks. The alternative was that all molluscan shellfish would have to be banned.

THE USE AND ABUSE OF MANIPULATIVE SURGERY

In the Section of Orthopedics Mr. Blundell Bankart said that the great majority of civilized people had acquired restriction of the natural mobility of their feet, so that it

could not flatten without meeting with resistance of the soft parts, producing pain. But the completely flat foot was painless. The medical profession and the public were obsessed with supporting the arch of the foot. In theory this was ridiculous, for the foot was meant to be an active supple member not rigid like a block of wood, and in practice this had proved a failure. On the other hand the bonesetter smashed the arch of the foot, or, to put it less crudely, he restored its mobility, so that it could flatten without resistance and therefore without pain, and he cured his patients. Foot strain (not flat foot) was one of the commonest ailments and might be postural or traumatic in origin. It could be cured by manipulation and in no other way.

As for the other side of the picture, a physician brought his son with an obviously tuberculous elbow. He had taken him to a bone setter, who had violently manipulated the joint and it had flared. As the bone setter had no medical training it might be said that he never should manipulate a joint. But what about flat foot and other cases cured by bone setters after failure to get relief elsewhere? Mr. Bankart still heard of orthopedic surgeons of repute who treated so-called flat foot with arch supports, who did not recognize sacro iliac strain, the commonest cause of pain in the back, and who professed to be familiar with manipulative surgery but seldom practiced it. To dispense with bone setters, surgeons should be willing to undertake all the manipulative work that was previously done by these.

Osteopathy Mr. Bankart described as an American stunt based on the unsupported assertion that almost all diseases are caused by imaginary displacements of the spine. It had been investigated up to the hilt and found wanting. It was up to all orthopedic surgeons to see that these confidence tricks were exposed and to ensure that manipulative surgery was practiced and taught in all medical schools.

EXHIBITION OF MEDICAL BOOKS AND MANUSCRIPTS

The famous Bodleian library arranged an interesting exhibition of medical books and manuscripts, such as would be possible nowhere else. The earliest manuscript was an English missal of A. D. 970 containing a magical device for discovering whether a sick man will live or die, a matter in those days important to the clergy in the administration of extreme unction. There was a manuscript written about 1290, giving the first known representation of dissection, an English herbal of about 1100 in which many of the plants were drawn from living specimens, and another of somewhat later date in which is depicted a mad dog and a bitten man in a hydrophobic seizure. But the exhibition was chiefly concerned with the study of medicine at Oxford, and especially with the famous group of Oxford men who adorned the medical profession in the seventeenth century. The statutes of the Faculty of Medicine, written before 1350, were shown. There were manuscripts of some of the medical authors studied at Oxford in the Middle Ages—Hippocrates, Galen, Isaac Judaeus and Nicolaus Praepositus. The earliest record of a medical degree is in the Register of Congregation, where it is recorded that Thomas Edmonds was allowed to proceed to the degree of D.M. in 1450. There was also a manuscript of the "Rosa Anglica" by John of Gaddesden (who died in 1361), the earliest account of phototherapy. He treated a son of Edward I. of smallpox by wrapping him in scarlet cloth. The greatest name in Oxford medical history of the sixteenth century is that of Thomas Linacre, founder of readerships in both Oxford and Cambridge. His translation of Galen's "De Temperamentis" on vellum was shown. The books of the seventeenth century began with Harvey's "De Motu Cordis" (1628), in which he first published his discovery of the circulation of the blood.

PARIS

(From Our Regular Correspondent)

Aug. 1, 1936

Two-Stage Lobectomy

The advantages and disadvantages of two-stage lobectomy was the subject of a paper read by Robert Monod at the May 15 meeting of the Société de chirurgie of Paris. In a paper read at the July 14, 1934, meeting Monod had defended the principle of a one-stage lobectomy, when no pleural adhesions exist, for bronchopulmonary suppuration. At that time, however, he called attention to the fact that such a one-stage operation is always undertaken with some degree of anxiety as to the result. A lobectomy, when no pleural adhesions exist, can be followed by immediate cardiopulmonary accidents as well as certain later ones, such as extension of infection to the mediastinum, to other lobes or to the pleural cavity. To avoid such complications, the most important measures employed at present are baronarcosis, bronchorespiration and irreversible drainage. In spite of these additions to the technic, two potential dangers must be faced: (a) cardiopulmonary accidents during the operation and (b) extension of infection to the pleura after operation. The patient is often a poor operative risk because of his bad cardiac condition and because of the long standing infection. An empyema is especially to be feared owing to the fact that the lobectomy stump may open and allow pus to escape into the pleural cavity, giving rise to a very virulent and rapidly spreading infection.

The two-stage operation has certain advantages according to Monod. The first stage is one of preparation of the pleura: i.e. adhesion of the noninvolved lobe (left) or lobes (right) to the parietal pleura. Another advantage of the two stage operation is that it places less of a burden on the heart. Finally, liberation of the involved lobe during the first stage enables it to discharge much of its purulent contents through its main bronchus. The disadvantages of the two stage operation are that the risks due to the anesthesia are twice as great as in the one-stage operation, one is less able to take care of the pedicle following the lobectomy, fistula formation occurs more frequently, and removal of the lobe itself is more difficult. A two-stage lobectomy ought to be performed when no pleural adhesions are present, as follows. During the first stage the involved lobe is mobilized with or without preparation of the pleura to aid the noninvolved lobe or lobes to become adherent to the chest wall, while during the second stage, after immediate lobectomy and care of the pedicle, the chest wall is hermetically closed followed by irreversible drainage.

In younger patients with a normal heart, with little infection or fever, without expectoration, and with only slight adhesions, the one-stage operation is indicated, but in patients with fever, evidences of toxemia and a doubtful cardiac condition, a two stage operation is safer. Monod reported a case of lobectomy for bronchiectasis of the left lower lobe in a boy 18 years of age, in which a two-stage operation had been followed by an excellent result.

In the discussion, Maurer stated that the question of infection of the pleural cavity was the most important one. When there is little secretion, lobectomy for bronchiectasis is successful in from 80 to 90 per cent of the cases.

Sequelae of Acute Respiratory Disorders

The Société d'hydrologie et de climatologie médicale de Paris chose the subject of sequelae of acute disorders of the respiratory viscera for discussion at its March 16 meeting.

The first paper was by Professor Rist, who stated that a certain number of acute disorders of the respiratory organs, although apparently cured can be followed by cicatricial lesions giving rise to functional disturbances in some patients, or at least such lesions constitute areas of diminished resistance which

favor some other pathologic condition. As examples of sequelae of a healed pneumonia, Rist cited interlobar adhesions and of a pneumococcal (diffuse) pleural exudate, obliteration of the free pleural space, i. e., adhesions between the costal and visceral pleurae. Such sequelae complicate greatly the artificial pneumothorax treatment, if a pulmonary tuberculosis develops later. It is of no importance when one is confronted later with these sequelae whether the primary infection is pneumococcal or streptococcal, because it bears no relation to the obliterating adhesions. The same held true for bronchiectases. The original causative organism has disappeared at the period when the sequelae are encountered clinically. Attention was directed to the mistakes in diagnosis, especially from the roentgenologic point of view. A thickened pleura, although it offers resistance to the needle employed for an exploration, does not yield an abnormal shadow on the film. No pathognomonic sign of an obliteration of the pleural cavity exists. All one knows is that the establishment of an artificial pneumothorax is impossible, even though the needle is introduced at a number of places on the chest wall. A sclerosis of the pulmonary parenchyma following an acute frank pneumonia is always very complex, both in adults and in children. It is accompanied by an emphysema the characteristics of which both as to etiology and to tissue changes are quite distinct from those of the sclerosis. The use of the latter term has been greatly abused, especially as applied to sclerosis of the apexes and to that accompanying an emphysema. At present there is a tendency to ascribe all sorts of roentgenographic changes to sclerosis which really bear no relation to it. Bands, foci and thickenings of the parenchyma are all ascribed to sclerosis. The latter is of no clinical importance unless complicated by bronchiectasis. The latter never exists in the sense of the classic interpretation of the term unless there is an accompanying infection of the epithelial lining and wall of the bronchi as well as of the adjacent pulmonary parenchyma.

From the period at which the lesions of the primary pneumopathy, instead of disappearing by resolution, persist and sclerosis results, the infection establishes itself in the contiguous areas. The infection persists and often is latent. The physiologic mechanisms that are responsible for the spontaneous disinfection of the previously normal respiratory tract do not function in a portion of the parenchyma the structure of which is seriously altered. The various acute pneumopathies are the principal factor in the etiology of bronchiectasis, other factors such as tuberculosis, hereditary syphilis and recurrent rhinobronchitis being of only limited etiologic importance. Even if there exists a congenital predisposition to bronchiectasis, one cannot deny the necessity of a sclerogenous infection in transforming such a predisposition into a real bronchiectasis.

Rist emphasized the value of bronchography with iodized oil as a diagnostic and prognostic measure. The treatment of choice for bronchiectasis is artificial pneumothorax for the early cases and lobectomy for those in which such a method of treatment is not successful.

In the discussion Sergeant expressed the belief that there are many different causes of a bronchiectasis. Some are of congenital origin, but these constitute the minority. The non-congenital type can follow an acute bronchopneumonia and persist for a long time, or it can develop on the basis of a bronchopulmonary sclerosis and have as a sequel marked dilations which are not improved either by phrenicectomy or by collapsotherapy.

Lereboullet stated that in a large number of cases of bronchiectasis in children the initial role of bronchopneumonias was not very apparent and that they seemed to act as a factor aggravating already existent lesions. Phrenicectomy had been successful in some cases. This was equally true of placing the children in bed with the head lower than the feet. In children the prognosis of bronchiectasis is relatively favorable.

Leon-Kindberg thought that, although a congenital origin of bronchiectasis could not be denied, such a cause was very rare. Collapsotherapy was of little value in case of infection. In fact, disastrous results might follow its use.

BERLIN

(From Our Regular Correspondent)

July 16, 1936

The Society for Research on the Circulation

The Society for Research on the Circulation recently convened jointly with the Medical Committee of the German Society for Industrial Protection. Professor Reiter, president of the National Health Bureau, acted as chairman of the joint meeting. The common topic of discussion proposed was 'Circulatory Disorders from the Standpoint of Social and Industrial Hygiene.'

W. Weitz of Hamburg spoke first on the hereditability of circulatory diseases. When this type of defect appears among members of one family it is more frequently to be encountered in a group of siblings or in a collateral branch and less likely to appear as a directly inherited trait. Heart disease probably follows the dominant as well as the recessive hereditary transmission. The high familial incidence of inherited cardiac defects, as has been verified by observation, depends in particular on hereditary predisposition to angina and articular rheumatism, wherein a special susceptibility of the cardiac valves may also play a part. Manifestly inherited, as research on twins and families has established, are those constitutional cardiac disorders which frequently accompany infantilism, asthenia, endocrine dysfunction, unstable sympathetic nervous conditions, excessive susceptibility to fatigue, and nervous and psychopathic disturbances. In many such cases a dominant hereditary transmission could be detected. Dominant heritability is an important etiologic factor in high arterial pressure. External influences such as might be exerted by alcohol, nicotine, psychic excitement and hard physical labor probably serve to make manifest a disease already present in a latent form.

S. Koller of Bad Nauheim demonstrated with statistics that circulatory diseases have become shockingly important in recent years. Group examinations show a circulatory disturbance present in every thirteenth person, and circulatory disease is responsible for every fourth fatality. Aortic sclerosis is found in the middle decades of life in nearly every one. Certain it is that the aging of the population and the improvement in diagnostic accuracy have increased the incidence of circulatory disease as represented statistically. Whether, in addition, an actual increase has taken place cannot be stated with certitude. In medical statistics a frequently unavoidable bias may influence both the individual observation and the compiled material, and this constitutes a source of error.

A further report was submitted by Koelsch, occupational hygienist, of Munich, on 'Circulatory Impairment by Occupational Intoxication.' The usual occupational intoxications are caused by partial impairment of the cardiac muscle and of the vascular system, some encroach on the nutrition of the cardiac muscle as toxins of the blood, others affect the autonomic nervous system. Irritant gases can lead, by means of vagus shock, to complete arrest of cardiac action. An endocarditis produced by inhalation of poisonous gas must be considered out of the question. A specific cardiac reaction to lead poisoning is not recognizable, although impairments of the heart muscle were observed in forced animal experiments. Acute saturnism in man is accompanied by many dyspneic manifestations which are perhaps due to spasms in the coronary vessels. Severe cardiac disturbances in chronic lead poisoning are to be regarded as secondary phenomena. Functional disturbances of cardiac action may be due to the effect on the vagus and the sympathetic combined with endocrine dysfunction. Nicotine assumes a pathologic occupational role in the tobacco industry.

New workers have been known to suffer attacks of cardiac palpitation, tachycardia, increased blood pressure and so on

Hanns Lohr of Kiel then spoke on "Mechanical Impairment of the Circulation" In the most severe contusions of the thorax, external lesions are not necessarily present, although the heart itself may suffer the most serious damage Lacerations of the valves and tendinous fibers are seldom found in completely healthy hearts In "commotio cordis" one finds with regularity pronounced, characteristic changes in the electrocardiogram, posttraumatic decline in the arterial blood pressure, and acute dilatation of the heart Disturbances in cardiac rhythm are entirely independent of the vagus It is essential to correct diagnosis of the commotional manifestations that all cardiac symptoms should appear immediately after the accident, for heart and vascular disorders that appear later on may also be elicited by the cerebral system

Hermann Schriddle of Dortmund discussed the effect of electrical trauma on the circulatory system Animal experimentation is to be interpreted with the utmost caution, since man is capable of reactions to the electric current quite unlike the reactions of animals In cases of burns caused by an electric arc with its heat of about 3,000 C., complete necrosis in the walls of the blood vessels in the burned area is to be observed Impairment from an electric current produces a contraction of the blood vessels, the severity of which is in proportion to the current's strength Symptoms of cardiac dysfunction in such cases are due to blood perfusion disturbances in the coronary vessels, which lead at length to heart failure In 48 per cent of fatalities from electric currents, arrest of respiration is the cause of death, the cardiac death observed in 52 per cent is not in every case related to ventricular fibrillation Although alternating and direct currents exercise a similar effect on both respiration and circulation, the alternating current is from three to four times more powerful than the direct current In case of electrical trauma it is therefore necessary that any attempted resuscitation be directed to the circulatory as well as to the respiratory apparatus Despite years of research, no explanation of the exact cause of death in these cases has been forthcoming But one thing is certain impairment caused by electricity will chiefly involve the circulatory system

T Fürst of Munich has made a study of the circulation of young male workers with regard to occupational selection He was therefore able to furnish his audience an insight into the postwar biologic changes in the constitution of the average youth of trade apprenticeship age Chronologically, the first phase of the change, chiefly characterized by impaired nutrition, coincides with the period directly following the war In the second period, external constitutional impairments became particularly numerous The third phase (covering the period from 1930 to 1936) was marked by an increase in functional disturbances of the circulatory and nervous systems The number of these functional anomalies of the circulation is nearly double what it was in prewar years

As A Weber of Bad Nauheim pointed out, the great increase in fatal cases of circulatory disease, observed in all civilized countries, must be ascribed to a certain wear and tear on the organism Heredity is a prominent pathogenic factor in hypertension but coronary sclerosis may be traced to the most disparate environmental factors as well By suitable adaptation of living habits the progress of hypertension may be retarded, but it is questionable whether a hypertension once established can be reduced again to its latent stage The hypertonic patient will ultimately die of renal insufficiency, apoplexy or progressive cardiac insufficiency unless death should take place earlier from an intercurrent illness The cardiac insufficiency manifests itself gradually If this condition receives timely treatment working capacity and the life span can be prolonged for many years

BELGIUM

(From Our Regular Correspondent)

July 25, 1936

The Third International Congress on Air Service in Medical Emergencies

The medical air service association (l'Aviation sanitaire) met at Brussels to examine a series of problems relating to the organization of medical emergency air service in the colonies and to the cooperation of private and public agencies in the event of a disaster

The third International Congress on Air Service in Medical Emergencies approved the recommendations of the International Committee for Research (which reflect the opinion of all students of the subject) with regard to the coordination of effort and the establishment of permanent collaboration between aeronautic and sanitary organizations

The congress went on record as desirous that collaboration be established among all countries and that favorable progress in this direction be brought to the attention of the various national committees on emergency aviation by the International Committee of Research

To hasten assistance in emergency cases in regions lacking transport facilities the congress recommended that international agreements guarantee a practical system of liaison between aircraft and the ground, also that arrangements be made to assure persons carried in aircraft the necessary medical attention both aloft and on the ground To this end special instruction should be given the staffs of all aircraft and a permanently organized ground first aid service should be instituted at all flying fields The third congress reiterates the recommendation of the first congress that any aircraft actually engaged in medical emergency flight should be subjected to a minimum of red tape incident to international travel (customs examinations, taxes and so on) and should be accorded priority in landing The congress further recommends that special removable international insignia be adopted for the exclusive use of aircraft actually engaged in the fulfillment of an errand of mercy yet not qualified to display the insignia of the Red Cross

Problems to be discussed by the fourth congress are (1) instruction in the utilization of aircraft in medical emergencies in the colonies, (2) safety aboard aircraft on medical missions, (3) respective duties of the aeronautic and of the medical personnel in event of evacuation by aircraft

The Injurious Effects of Heliogravure

Dr Glibert's monograph recently appearing in the *Bruxelles medical* warns against a variety of occupational poisonings, including serious intoxications that occur among the employees of printing establishments engaged in the relatively new process of heliogravure The noxious substances involved are hydrocarbons of the aromatic series that bear collectively the proprietary name of "Xylois" The most visible sign of trouble manifested by the employee is a slightly olivaceous pallor The symptoms, during the static stage of the intoxication, are caused by the strong destructive action of the noxious substance on the patients' blood (aplastic anemia) The syndrome consists of intermittent attacks of vertigo, epistaxis and, what is more characteristic, gingival hemorrhage, "bruises" without any history of trauma, "spots" on the skin, abnormal and persistent pallor, and a feeling of depleted vitality The exhibition of all or some of these symptoms by a worker in heliogravure should serve as an adequate warning and calls for a thorough hematologic examination Therapeutic measures are in these cases thus far purely symptomatic and are identical with those used in aplastic anemias of any sort It is impossible for the workers to take prophylactic precautions, a worker can hope to avoid the intoxication only by discontinuing his work Prophylactic measures are possible, however, but it will be necessary to recommend their adoption through official channels

Medical Service for Colonial Natives

The Queen Elizabeth foundation for providing the colonial native population with medical attention (*Fondation Reine-Elisabeth d'assistance medicale aux indigenes* [Foream]) created in 1930, has received from the Belgian government and the government of the Belgian Congo an endowment of 200,000,000 Belgian francs. In addition the foundation has benefited by numerous voluntary donations, notable among which is the personal gift of Queen Mother Elizabeth herself.

The organization has as its objective the improvement of health and hygiene among the indigenous population in the Belgian Congo as differentiated from the European colonials. At present the Foream in addition to caring for the sick in hospitals, dispensaries and ambulant units is taking a demographic census of the native population. The society also does social welfare work such as the care of mothers and children. To carry on, the foundation employs, in addition to native personnel, twenty-nine physicians, twenty-one white health officers, all graduates of the Institute for Tropical Medicine at Antwerp, and 125 white graduate women nurses.

Industrial Medicine

A government edict has reorganized the Industrial Inspection Service. As a unit of the general occupational protection authority a special corps of physicians has been assigned to protect the health of workers. This corps is formed from those members of the industrial medical service who hold a doctor's degree in medicine, surgery and obstetrics. The mission of the reorganized medical service is (a) to supervise and control the organization by industrial employers of instruction in hygiene for apprentices, the details of procedure to be established by edict, (b) to assist in effecting the proper occupational orientation of apprentices, (c) to make a detailed study of occupational physiology and pathology, (d) so to coordinate the information accumulated in this field that it may prove useful to all branches of welfare work, (e) to undertake at least once each month a medical examination of all those persons practicing occupations (in industrial plants or elsewhere) in which a recognized risk of contracting an occupational disease is present and further, to maintain an up-to-date record of the health of each worker examined, (f) to preach the fundamentals of occupational prophylaxis to the workers and to promote practical sanitary measures among them, (g) to supervise the enforcement of legally prescribed regulations of a medical nature.

The Tenth Congress of the International Association of Physicians

The convention of the International Association of Physicians was held at Brussels. The president of the Belgian Medical Federation, Dr Mattlet, before welcoming the foreign delegates, paid tribute, while the assembly stood to the memory of Queen Astrid. Dr Tornel, delegate from Spain and president of the tenth convention, likewise honored the memory of the queen of the Belgians, who had so well understood her role of sovereign and of mother. Dr Tornel then gave his address of welcome. He commented on the questions appearing in the order of the day and took occasion to refute the opinion prevalent in some quarters, that professional medical groups are exclusively concerned with the material interests of physicians. The speaker stressed present-day medicosocial trends. It is not necessary, he said "that the social concepts of the present should destroy those secular principles and he further affirmed that 'if those principles are respected the medical profession far from opposing progress will cooperate loyally in the best interests of the sick and of society'."

Final Homage to Father Damien

The mortal remains of Joseph Veuster known in religion by the name of Father Damien the priest who sacrificed himself for the lepers of the Island of Hawaii have finally forty-

seven years after his death, been returned to his native land. The king, the highest dignitaries of church and state and a crowd numbering thousands were all on hand to await the arrival of the training ship *Mercator*, which bore the body homeward. Father Damien was born at Tremeloo in 1840. In 1873 he sailed away to take up his voluntary exile at the leper colony on the island of Molokai. In 1876 he became aware that he himself had become infected with the disease and thus he revealed in his daily discourse, no longer referring to the sick as "my brothers" but as "we who are afflicted with leprosy." He died in 1889. The casket was borne to the cathedral with great solemnity, 300 members of the obscure hero's family marched in the cortege. Later, passing by way of the little village of Tremeloo, the remains were brought to Louvain, where the interment took place.

BUENOS AIRES

(From Our Regular Correspondent)

July 2, 1936.

The Adrenals and Diabetes Mellitus

According to Houssay and Biasotti, adrenalectomy diminishes pancreatic diabetes in toads as much as hypophysectomy does. The effect produced by the removal of the hypophysis and both adrenals is not greater than that produced by the removal of only one of these glands. Adrenal cortex extract given to the animals with pancreatic diabetes, attenuated by adrenalectomy or hypophysectomy, fails to intensify the condition, which is intensified by administration of the anterior lobe of the hypophysis. This fact proves the veracity of the statement given by the authors in 1933 and 1935, according to which the hypophysis has a diabetogenic action in which the adrenals play no part. The reason of the attenuation of pancreatic diabetes after adrenalectomy is unknown. Probably the attenuation is due either to suppression of still unknown adrenal hormones or to inhibition of the hypophysis, but the problem is still unsolved.

Honors Conferred on Foreigners

The Academia Nacional de Medicina has appointed the following persons honorary fellows: Drs George Marmescu, Harvev Cushing, J B Morelli, W B Cannon, A Austre gisilo, Lucas Sierra and Carlos Charlin.

Medical Lectures

Dr J B Morelli of Montevideo lectured recently in Buenos Aires on polycystic lung and on giant emphysema, associated with a lesion of the pulmonary artery, in several members of a family.

Prof G Mouriquand of Paris will give, in the near future a series of lectures on pediatrics and medical climatology. Dr Fred H Albee is expected soon to visit the several medical centers of Buenos Aires for a week.

Effects of Acetylcholine

Drs Battro and Lanari performed intra-arterial injections of 0.04 Gm of acetylcholine in human subjects. The injection at the femoral artery caused the following symptoms in the area supplied by the artery: intense redness, slight pain, perspiration, pilar erection and increase of the amplitude of the pulse wave. These modifications differentiate the presence of the spastic from that of the organic factor in diseases of the peripheral arteries because they appear in cases of arterial spasm but not in cases in which there are organic arterial lesions. Aside from the symptoms mentioned the injection made at the humoral artery produces a contracture of the muscles of the injected forearm and hand which lasts from thirty seconds to a minute in patients suffering from myotonia and is absent normally. The injection made at the carotid artery in normal persons produces redness, perspiration and miosis of the pupils.

the face corresponding to the side on which the injection is performed and salivation, and, as general symptoms, motor agitation and sometimes conjugate deviation of ocular movements, nausea, bradycardia and irregularities of the cardiac rhythm with auricular fibrillation. There are no accidents complicating the injection, the effects of which rapidly disappear.

Deaths

Dr Telemaco Susini, formerly professor of pathologic anatomy, who introduced bacteriology in Argentina, honorary member of the Academia Nacional de Medicina, has died, aged 83.

Dr Arturo Zabala, head of the Hospital Rivadavia, ex president of the Sociedad de Cirugia and an honorary member of the Academia Nacional de Medicina, is dead.

NETHERLANDS

(From Our Regular Correspondent)

July 25, 1936

Granulocytopenia and Aminopyrine

The *Nederlandsch tijdschrift voor geneeskunde* has published a series of monographs by Vries, Groen and Gelderman on angina agranulocytotica—granulocytopenia. Over a three year period thirteen cases, several of them fatal were observed in which the principal etiologic factor was the use of some medication. In two of these cases the disorder followed an injection of arsphenamine, in nine absorption of aminopyrine or antipyrine was inculpated. In two doubtful cases the possibility of the use of barbitol or its derivatives was not excluded. In five additional cases the manifestation followed precisely after the use of aminopyrine. The latter are reminiscent of similar cases described by American and Danish authors. A checking by the leukocytic formula should be regularly a part of any therapy that involves the use of antipyrine and aminopyrine.

Since the publication of these articles, numerous others have appeared in different countries. The foregoing authors themselves have recently made first hand observations of four new cases two of these were fatal and one (that of a physician) was extremely grave. A Polak Daniels and Heybroek have just described two other fatal domestic cases.

The arguments already advanced in support of an etiologic relationship between the use of aminopyrine and subsequent disturbances are substantiated by the established fact that in Denmark, where the medical profession has been induced to refrain from the prescription of the drug, not a single case of angina agranulocytotica has appeared. On the other hand, Madison and Squiers and Plum and von Bonnsdorff have observed several recovered cases in which a recurrence of manifestations (shivering, decrease in the number of white corpuscles) took place when the use of aminopyrine was renewed. The Council on Pharmacy and Chemistry in America and Adams in England have warned against its use.

In case of necessity, aminopyrine might be administered without detriment to the hospitalized patient who is under regular hematologic control. But the Dutch authors consider that in many cases the administration of this substance could be advantageously superseded by other procedures. In any event the unrestricted and frequently protracted use of aminopyrine by so many persons and for such a diversity of ailments should be prohibited. Furthermore, these authors are unanimously agreed that angina agranulocytotica is not an aminopyrine intoxication but rather an idiosyncratic manifestation in certain subjects. This hypersensitivity may be congenital or may erupt only after the addiction has lasted for a period of months or of years without apparent ill effect.

Experimental studies such as those undertaken by Miller and by Climenko perhaps offer something of an insight into the influence of aminopyrine on the bone marrow. But it would

be foolish to expect the publication of such data to effect any substantial curtailment of the current abuses. This is a difficult problem all the more so as the manufacturers of pharmaceutical 'specialties' are wont to conceal the true nature of their products behind a varied and fantastic nomenclature.

Regulation of Medical Service for Aviation

New legislation (of Oct 26, 1935) to govern the medical supervision of aerial navigation has just been made public. The following points are worthy of attention.

The physician attached to an airport has the right before the taking off or after the landing of an aircraft to make a medical examination of the passengers and crew whenever circumstances justify such a procedure. This examination must entail no expense to the person examined and it must take place at the same time as the usual police and customs inspections in order to obviate all delay and not to hamper the continuation of a journey.

The official in charge of an airport shall see to it that, excepting in case of the transportation of sick persons in a craft especially set aside for them, no person who presents the symptoms of any one of the contagious diseases mentioned in article I of the statute, on the suppression of contagious disease, shall be permitted to embark without the favorable recommendation of the physician attached to the airport. If the physician is momentarily absent, the authorities of the airport can defer the departure of the sick person pending the required recommendation of either the medical officer or some other physician. The contagious diseases in question are plague, cholera, yellow fever, exanthematous typhus and smallpox.

The competent authority of the airport will see to it that on arrival of an aircraft which is subject to inspection by the medical officer the craft shall remain in isolation until the examination has been concluded. Similarly, no aircraft will be permitted to leave an airport until the compulsory medical inspection has been carried out.

The members of the ground personnel at the field are allowed to furnish all such assistance as may be necessary to assure the safety of the craft and of the airport, but they must do their utmost to avoid contact with the crew or passengers.

If an aircraft liable to medical inspection should land elsewhere than at an airport, its commanding officer is compelled to communicate immediately with the burgomaster of the commune in which he finds himself. The commanding officer must see to it that his craft remains as isolated as the necessary assistance of third parties in the landing will permit.

Marriages

JAMES BRECKINRIDGE LOUNSBURY, Ann Arbor, Mich., to Miss Beatrice Thomen of St George, S I, New York, July 11.

HAVELOCK FRANK FRASER, Bellingham, Wash., to Miss Dorothy Bishop Cassel of Decatur, Ga., recently.

JOHN ALEXANDER, Ann Arbor, Mich., to Miss Emma Woolfolk of Detroit at Canandaigua, N Y, July 11.

THOMAS LOWRY, Minneapolis, to DR. ELIZABETH PANET CHITTENDEN of New York, July 3.

BERNARD A FLESCH, Lake City, Minn., to Miss Kathleen Cecile Dohan of St Paul, July 9.

LOUIS J HIRSCHMAN, Detroit, to Mrs Hanna C Kellogg of Battle Creek, Mich., August 15.

CARL OSCAR LUNGERHAUSER of Newton, Ga., to Miss Helen Jones of Bainbridge, recently.

RICHARD P STRONG to Miss Grace Nichols, both of Boston in London, England, July 23.

VICTOR ANDRE DIGILIO to Miss Elizabeth Leedes, both of Philadelphia, recently.

JOSEPH B WOLFFE to Miss Evelyn Leedes, both of Philadelphia, August 9.

Deaths

Mayer Harris Lebensohn ☉ Chicago, Hahnemann Medical College and Hospital, Chicago, 1895, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903, formerly vice president and counselor of the Chicago Ophthalmological Society, instructor in ophthalmology at the University of Illinois College of Medicine, Chicago, from 1907 to 1914, for many years attending ophthalmologist to the Illinois Charitable Eye and Ear Infirmary, Mount Sinai Hospital, Orthodox Jewish Home for the Aged and the Marks Nathan Jewish Orphan Home, aged 71, died, June 26, at the Mayo Clinic, Rochester, Minn., of embolism following a minor surgical operation

James Franklin Ackerman ☉ Asbury Park, N. J., New York Homeopathic Medical College and Hospital, 1890, past president of the Monmouth County Medical Society, formerly president of the board of education and library association served in the secret service during the World War, fellow of the American College of Physicians, was chairman of the board of governors of the Marlboro (N. J.) State Hospital and member of the board of governors of the Allenwood (N. J.) Sanatorium and Monmouth County Hospital for Tuberculosis, aged 71, president of the board of governors of the Fifth Memorial Hospital, Neptune, where he died, August 5

Richard Olding Beard ☉ Minneapolis, Chicago Medical College, 1882, secretary from 1888 to 1903 and from 1906 to 1925 of the University of Minnesota Medical School, and director of the department of physiology from 1888 to 1912 and professor from 1888 to 1925, when he became emeritus professor, from 1925 to 1932 executive secretary of the health council of Minneapolis and Hennepin County, honorary fellow, formerly secretary, vice president and president of the Minnesota Academy of Medicine, aged 79, died, August 14

James Burnside Wands Lansing, Tenafly, N. J., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885, member of the Medical Society of New Jersey, past president of the Bergen County Medical Society, for many years member of the local board of health and medical inspector of the public school system, on the consulting staff of the Englewood (N. J.) Hospital, aged 78, died June 9, in Paramus, of carcinoma of the sacrum and prostate

Charles Everett MacDonald ☉ Major, U. S. Army, retired, Woodstock, Vt., New York University Medical College, 1896, served in the medical reserve corps of the U. S. Army for many years, veteran of the Spanish-American and World wars entered the medical corps of the regular army as a major in 1920 and was retired in 1930 for disability in line of duty, aged 62, died, June 20, in St. Elizabeth's Hospital, New York, of pneumonia, following an operation for gastric ulcer

Edward Daniel Hurley ☉ Boston, Harvard University Medical School, Boston, 1904, member of the American Academy of Ophthalmology and Oto-Laryngology and the New England Ophthalmological Society fellow of the American College of Surgeons, aged 54, consulting ophthalmologist to the Choate Memorial Hospital, Woburn, and St. Mary's Infant Asylum, ophthalmic surgeon-in-chief to the Carney Hospital, where he died June 8 of coronary sclerosis

Arthur Brown Chase ☉ Oklahoma City, Harvard University Medical School, Boston 1892 professor of clinical medicine, University of Oklahoma School of Medicine past president of the Oklahoma County Medical Society, counselor of the Fourth District of the Oklahoma State Medical Association fellow of the American College of Physicians, aged 66 on the staff of St. Anthony's Hospital where he died, July 20 of subarachnoid hemorrhage due to a fall

Richard N. W. K. Horner ☉ Watkins Glen, N. Y., University of the City of New York Medical Department, 1887 health officer of the consolidated health district comprising the towns of Dry, Reading and the village of Watkins Glen aged 73, died, June 17, in the Robert Packer Hospital Sayre, Pa. of carcinoma of the esophagus and arteriosclerotic cardiovascular disease

Titian J. Coffey, Los Angeles, University of Southern California College of Medicine, Los Angeles 1898 University of Pennsylvania Department of Medicine, Philadelphia 1899 fellow of the American College of Surgeons at one time assistant professor of obstetrics at the University of California Medical Department aged 62 died July 31

Philip Ball Moss ☉ Selma Ala. Johns Hopkins University School of Medicine Baltimore, 1909 past president of the Dallas County Medical Society recording secretary of the

Y. M. C. A., board of directors, for many years state bacteriologist, on the staff of the King Memorial Hospital, aged 52, died, June 4, of heart disease

Richard H. Edmondson, Morgantown, W. Va. Hahnemann Medical College and Hospital of Philadelphia, 1890 member of the West Virginia State Medical Association, formerly city and county health officer, served during the World War aged 69 formerly on the staff of the Monongalia County Hospital, where he died, June 20

John Bunting Haines, Philadelphia, Jefferson Medical College of Philadelphia, 1916, member of the American Urological Association, on the staffs of the Hospital of the Protestant Episcopal Church, Philadelphia and the Delaware County Hospital, Drexel Hill, aged 46, died, June 28, of cerebral hemorrhage and hypertension

Walter Henry Mytinger ☉ La Fayette, Ind., Ohio-Miami Medical College of the University of Cincinnati 1912, served during the World War, medical officer of the Veterans Administration in Indianapolis, superintendent of the William Ross Sanatorium, aged 51, died suddenly, June 13, of cerebral hemorrhage

Omer Atherton Newhouse ☉ Major, U. S. Army, retired, San Antonio, Texas, Rush Medical College, Chicago, 1900 served during the World War, entered the medical corps of the U. S. Army in 1920 as a major, was retired in 1934 for disability in line of duty, aged 59, died, June 5, in the Station Hospital

Thomas W. Lauterborn, Montclair, N. J., University of the City of New York Medical Department, 1880, at one time on the staffs of the Essex County Isolation Hospital for Contagious Diseases, Belleville and the Essex Mountain Sanatorium, Verona, aged 77, died June 13, of pulmonary tuberculosis

William Thomas McKinney, Cave Spring, Ga., Vanderbilt University School of Medicine, Nashville, Tenn., 1893, member of the Medical Association of Georgia, for many years on the staff of the Georgia State School for the Deaf, aged 71, died, June 3, in a hospital at Rome

George Rustedt, Rutland, Vt., University of Vermont College of Medicine, Burlington, 1876, member of the Vermont State Medical Society, formerly city health officer, aged 84, for many years on the staff of the Rutland Hospital, where he died, June 18, of uremia

Attilio Francis Galasso ☉ Morristown, N. J., Columbia University College of Physicians and Surgeons, New York, 1930, secretary of the Morris County Medical Society clinical pathologist to the Morristown Hospital, aged 31, died, June 29, of coronary embolism

Marietta Haslep, Indianapolis University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883, at one time a medical missionary in China formerly member of the school board, aged 70, died, June 2, in the City Hospital, of a fractured humerus due to a fall, and hypostatic pneumonia

Carl Gilbert Lundquist ☉ Leola S. D. Rush Medical College Chicago, 1919, past president of the Aberdeen District Medical Society, aged 52, died, June 26, in St. Luke's Hospital, Aberdeen, as the result of injuries received in an automobile accident

Drayton Margart Crosson, Leesville S. C., University of Tennessee Medical Department, Nashville, 1883, member and past president of the South Carolina Medical Association, formerly state senator and mayor of Leesville, aged 77, died July 16

E. Earl Houck ☉ Du Bois, Pa. Baltimore Medical College 1906, fellow of the American College of Surgeons, on the staff of the Du Bois Hospital and the Maple Avenue Hospital aged 55, died, June 27, of coronary occlusion and arteriosclerosis

William Haight Madison, Silva, N. C., Tulane University of Louisiana School of Medicine New Orleans, 1929 member of the Medical Society of the State of North Carolina aged 33, died, June 16, of a self-inflicted bullet wound

George Harold Jamieson Oshkosh, Wis. Marquette University School of Medicine Milwaukee, 1927 member of the State Medical Society of Wisconsin aged 36, died June 15 of carcinoma of the lumbar vertebrae and bladder

Emanuel Bernard Fink ☉ Chicago, Rush Medical College Chicago 1920 professor of pathology and bacteriology at the Chicago College of Dental Surgery on the staff of the Cook County Hospital aged 46, hanged himself, June 16

Edward Joseph Novotny, Lorain Ohio St. Louis University School of Medicine 1921 member of the Ohio State Medical Association on the staff of St. Joseph's Hospital, aged 41, died suddenly June 17 while playing golf

Juniattus A Fisher, St Louis St Louis College of Physicians and Surgeons, 1899, member of the Missouri State Medical Association, aged 63, died, June 16, in the Missouri Baptist Hospital of carcinoma of the lung

Dewey Aday, Bartlesville, Okla., University of Arkansas School of Medicine, Little Rock, 1930, member of the Oklahoma State Medical Association, aged 37, died, June 9, of an accidental overdose of procaine hydrochloride

Clayce Remine De Forest, Clarksburg, W Va University of Maryland School of Medicine, Baltimore 1920 aged 44 died, June 15, in the Hillview Farms Sanitarium Washington, Pa, of pneumonia and chronic nephritis

Henry S Wahl, Wausau, Wis., Chicago Medical College, 1884 member of the State Medical Society of Wisconsin aged 75, died, June 12 in a hospital at Kansas City, Kan, as a result of hypertrophy of the prostate gland

Lucius Henry Hayman Pasadena, Calif Rush Medical College, Chicago, 1878, member of the State Medical Society of Wisconsin, formerly a practitioner in Boscobel Wis., Civil War veteran, aged 90, died, June 3

William Gardner Gabie, Seattle, McGill University Faculty of Medicine Montreal, Que., Canada, 1907, member of the Washington State Medical Association, aged 57, died June 25, of coronary thrombosis

John Elmore Bailey, Middletown Conn., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885, member of the Connecticut State Medical Society, aged 73, died, June 5

Arthur Leo Curtis, Washington, D C Howard University College of Medicine, Washington, 1912 aged 46 died June 28 in Castle Point, N Y, of chronic pulmonary tuberculosis and tuberculous laryngitis

Harvey Peter Hess, Pine Grove, Pa Hahnemann Medical College and Hospital of Philadelphia, 1896 formerly bank president, and member of the school board, aged 64, died, June 22, of cerebral hemorrhage.

Charles M. Headrick, Plattsmouth, Neb., College of Physicians and Surgeons, Keokuk, Iowa, 1876 College of Physicians and Surgeons of Chicago, 1896 aged 82, died June 4, of hypostatic pneumonia

Joseph M. Parker, Oron Hill, Md College of Physicians and Surgeons, Baltimore, 1878, aged 82, died, June 9 in the Providence Hospital, Washington, D C, of congestive heart disease and mitral stenosis

James Ellsworth Holmes, Columbus, Ohio, Starling Medical College, Columbus, 1892, member of the Ohio State Medical Association, on the staff of the Grant Hospital, aged 72, died, June 19, of heart disease.

Andrew Douglas Carter Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1895 aged 64, died June 21, in Ocean City, N J, of hypertension and arteriosclerosis

S Dugan Graves, Bastrop, La., Louisville (Ky) Medical College, 1904, member of the Louisiana State Medical Society, for many years deputy coroner, aged 51, died, June 28, of angina pectoris

Samuel Blair, Apache, Okla., Hospital College of Medicine, Louisville, (Ky) 1887, member of the Oklahoma State Medical Association, aged 85, died, June 13, in a hospital at Lawton of heart disease.

Charles P Bacon Evansville, Ind., University of Pennsylvania Medical Department, Philadelphia, 1861, aged 99, died, June 18, of acute dilatation of the heart and hypostatic pneumonia.

William Edgar Williams, McBee, S C, Medical College of Virginia, Richmond 1916, served during the World War aged 46, died May 24, in a hospital at Hartsville, of toxic hepatitis

William Preston Haynes Washington D C George Washington University School of Medicine, 1924, aged 36, died, June 29, of a ruptured esophageal varix and cirrhosis of the liver

Ezra Leslie Meads, Loose Creek, Mo Bennett Medical College, Chicago, 1914, served during the World War, at one time county coroner, aged 43, died June 11, of angina pectoris

George E Clements Crawfordsville, Ind., Rush Medical College, Chicago, 1900, served in the Canadian Army during the World War, aged 65, died, June 17, of cerebral hemorrhage.

Charles Albert Fisher, Los Angeles, College of Physicians and Surgeons, Los Angeles 1913, member of the California Medical Association, aged 58, died, June 19, of heart disease

Murdock Lloyd Davis, Allenton, Mich., Trinity Medical College, Toronto, Ont., Canada, 1877, aged 86, died, June 3, in the University Hospital, Ann Arbor, of duodenal ulcer

Frank Cramer Wright Grove City, Ohio, Starling Medical College, Columbus, 1897, on the staff of the Mount Carmel Hospital, Columbus, aged 60, died, June 23, of heart disease

Jacob Ritter Esterly, Reading, Pa., Jefferson Medical College of Philadelphia, 1891, aged 62 died June 21, in the Wernersville (Pa.) State Hospital, of chronic endocarditis

John Isaac Green, Bath S C University of Georgia Medical Department, Augusta, 1891, aged 66 died, June 3, in a hospital at Asheville, N C, of tuberculosis of the lungs

William Moody Hunt, Murdo S D Cleveland Medical College 1894, served during the World War, aged 70, died, June 18, of coronary thrombosis and cerebral embolism

Frank Leslie Gilbert North Stratford, N H Tufts College Medical School, Boston, 1898, served during the World War aged 62, died June 24, of cerebral hemorrhage

Frank D Gray, Long Beach, Calif., Medical College of Ohio, Cincinnati, 1880, formerly a practitioner in Fort Worth Texas aged 77, died, June 8, of chronic myocarditis

John Wesley Nixon, Kansas City, Mo Marion-Sims College of Medicine, St. Louis, 1896, served during the World War, aged 65, died, June 13, in Excelsior Springs

Ivory Campbell, Norene, Tenn (licensed by Tennessee State Board of Medical Examiners in 1889), Civil War veteran, aged 91, died, June 6, of bronchopneumonia

George Heller, Baltimore, Baltimore Medical College, 1897 aged 61, died, June 10, in the Johns Hopkins Hospital, of injuries received in an automobile accident.

Giovanni Grana, Rochester, N Y Regia Università di Palermo degli studi Facoltà di Medicina e Chirurgia, Italy, 1894, aged 70, died, June 26, of myocarditis

William Pancoast Blanton, Bowie, Texas, University of Louisville (Ky) Medical Department, 1893, aged 63, died, June 10, of chronic myocarditis and nephritis

Frank D Fleury Omro, Wis Ensworth Medical College, St. Joseph, Mo, 1908, veteran of the Spanish-American War, aged 60, died, June 16, of coronary disease

Jesse H King, Worthington, Pa., Western Pennsylvania Medical College, Pittsburgh, 1887, aged 75, died, June 26, of chronic nephritis and cerebral hemorrhage

Louis Canepa, New Orleans, Tulane University of Louisiana Medical Department, New Orleans, 1903, aged 55, died, June 20, of cerebral hemorrhage and myocarditis

Jerome L Artz, Camden, N J, Hahnemann Medical College of Philadelphia, 1881, aged 75, died, June 12 of chronic myocarditis and coronary thrombosis

Emma Warner Demaree, Lincoln, Neb., Northwestern University Woman's Medical School, Chicago, 1895, aged 84, died, June 14, of arteriosclerosis

William Davis, Woodbridge, N J Hahnemann Medical College and Hospital of Philadelphia, 1893, aged 70, died, June 2, of cerebral hemorrhage.

Pinkney Alexander Teat, Jackson, Miss (licensed in Mississippi in 1906), aged 58, died, May 27, in a local hospital, of pneumonia.

John P Blakely, Fort Smith, Ark Arkansas Industrial University Medical Department, Little Rock, 1893, aged 78, died, May 9

Ernest L Battelle, South Gate, Calif., Chicago Homeopathic Medical College, 1886, aged 83, died June 25, in a local sanatorium

Lewis Nye Bump, Somerville, Mass Albany (N Y) Medical College, 1893, aged 68, died, June 5, of coronary thrombosis

Francis J Drake, Wellston Ohio, Ohio Medical University, Columbus, 1894, aged 78, died, June 1, of arteriosclerosis

Ora F Thomas, Chillicothe, Ill., Chicago Medical College 1878, aged 81, died, May 27, of cholelithiasis and chronic pancreatitis

James Thomas Gallagher, Boston (licensed in Massachusetts by years of practice), aged 83, died, June 30, of myocarditis

Robert H Miles, Lyndon Kan., College of Physicians and Surgeons of Chicago 1885, aged 81, died, June 19, of senility

Charles P Taylor, Clarksburg, W Va Baltimore University School of Medicine, 1893, aged 66, died, May 24

Bureau of Investigation

RU-MARI

An "Arthritis Cure"—Essentially a Solution of
Washing Soda

Recently many inquiries have been received by the Bureau of Investigation requesting information on a product that is sold in England and the United States under the trade name "Ru-Mari"

The following letters are typical

From Los Angeles a physician writes

I am enclosing some literature on Ru-Mari and would appreciate any information you may have on the product. Can you tell me whether a chemical analysis has been made on the product?

"I Was Attacked by Arthritis—"**MR. HUGH WALPOLE**

Famous English Author of *VANESSA* and other important novels called to Hollywood from London to adapt *DAVID COPPERFIELD* to the screen tells in this unsolicited letter how

Genuine

RU-MARI

(from the United Kingdom)

relieved his suffering and saved his writing career

"When I was working at the Metro-Goldwyn Mayer studios, I was attacked by Arthritis. I was ill for some weeks in Hollywood, then went to New York and was in a hospital there getting worse all the time. I was so bad that I was taken on a stretcher aboard the *Benagaria* and attended by a doctor and nurse. When I arrived in London I was taken again on a stretcher to a nursing home. I had some fifteen doctors. Nothing gave me relief. It was told there was little if any chance I should ever be able to write again. The prospect was hopeless and dreary indeed, and the mental torture continued night and day. Shortly thereafter a friend of mine introduced a bottle of liquid which he said had worked quite successfully with numbers of people. I took a dose that night and the next morning felt much better. Then I began taking RU-MARI in earnest. Within two weeks the swelling had gone down so amazingly that the specialists were astonished. That was a year ago and I have had no touch of rheumatism at any time during the year. This is an exact true account of how RU-MARI helped me."

H. J. Walpole

HUGH WALPOLE

● IF YOU SUFFER FROM ARTHRITIS,
SCIATICA, NEURITIS

or similar ailments when caused by acid conditions DO NOT DELAY another day before trying this new scientific formula developed by a physician in Ireland and used extensively by the medical profession in Great Britain.

MR. LIONEL BARRYMORE

of stage and screen says of RU-MARI "NOTHING IN SO HELPFUL." Stricken with Barrymore found that RU-MARI is. This remarkable prescription is offered in America duty prepaid.

Send \$5.00 today for this amazing scientific preparation or \$2.00 C.O.D. plus a few cents postal charges.

Act Now to Relieve Torture!

Also from Los Angeles a hospital superintendent writes

My attention was called to a new proprietary preparation which is being marketed in California at the present time. The advertising matter supplied by the company contains testimonials from prominent members of the movie colony here.

An inquiry from New York reads in part

Can you give me any information about a preparation called Ru-Mari (alleged cure for arthritis)? I have just received the enclosed circular in regard to it from Los Angeles which you will note contains recent testimonials from Lionel Barrymore, Hugh Walpole and others.

From Columbus, Ga., a physician inquires

I am writing to you regarding Ru-Mari which is advertised to cure arthritis. It is made in England. Do you know anything about this? I should greatly appreciate any information you can give me regarding this product.

Ru-Mari is one of a list of products with the "Ru" prefix sold by Ru-Mari, Ltd., First Avenue House, High Holborn London, W.C.1. Other Ru-Mari products advertised in England include "Ru-Mex," described as a "pain relieving lotion for external application, including headaches, sprains, strains, sunburn, open wounds, bruises, etc." "Ru-Malax—a pleasant liquid Cascara preparation," and "Ru-Mol—Vitamin Capsules (A & D)"

A booklet entitled "The Treatment and Cure of Rheumatoid Arthritis, Rheumatism and Allied Ailments," bearing the London company address, describes Ru-Mari as "strongly antacid in character and capable of destroying every disease germ in the body." In the same booklet appears the statement "It cannot be too strongly emphasized that Ru-Mari is a cure and not merely a relieving agent."

The American version, "A Treatise on Arthritis and Allied Conditions," emanating from 3149 Wilshire Blvd., Los Angeles considerably modifies the curative claims. The United States postal laws prohibit promoting through the mails schemes to obtain money by means of false and fraudulent pretenses. This booklet claims that "Ru-Mari is not the product of a mass-production laboratory. It is personally and carefully compounded by its discoverer, the thoughtful, gentle, kindly Irish practitioner, Dr. William Beggs, who dedicated himself to its formulation and perfection."

According to report, one Don Eddy of Los Angeles filed the original American trade style, and later was joined by Leslie Harris, Frank W. Wead, Joseph C. Chene, Felix F. Preeg, Mark B. Speer, Isabel Hopkins and S. V. Goldfarb as partners to form the American Ru-Mari Company of 3149 Wilshire Blvd., Los Angeles.

Don Eddy is reported to have been for several years a columnist on the Los Angeles *Examiner* and later general manager of Harry Langdon Productions. He was employed (1929-1935) by the Metro-Goldwyn-Mayer Studios as a writer. The Metro-Goldwyn-Mayer stationery is prominently featured in the Ru-Mari testimonial letter of cinema actor Lionel Barrymore ("Ars Gratia Artis"). Another testimonial letter widely circulated by the promoters in furthering the sale of their product is from the pen of Hugh Walpole, prominent English fiction writer.

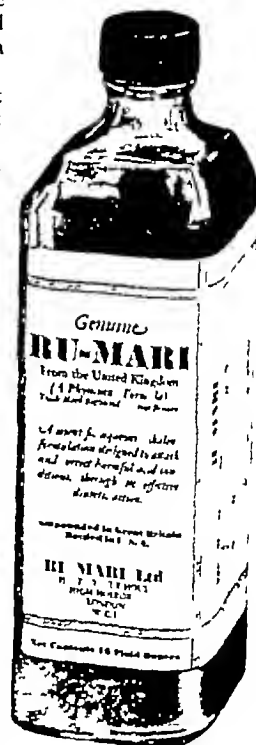
The trade package of Ru-Mari, bottled in the U.S.A., modestly claims the nostrum to be "a scientific aqueous alkaline formulation designated to attack and correct harmful acid conditions through its effective diuretic action."

Three original packages of Ru-Mari purchased direct from the American Ru-Mari Company were submitted to the A.M.A. Chemical Laboratory for examination at the request of the Bureau of Investigation. The Laboratory report follows:

LABORATORY REPORT

Each bottle contained about 475 cc. of an amber-colored liquid with a slight aromatic odor, saline and bitter taste, basic reaction to litmus and with a specific gravity of 1.006 (25°C.). The liquid was clear with a few particles of suspended flaky material.

Qualitative tests indicated the presence of the following: Chlorides, sodium, potassium, carbonates and small traces of



tartrates, sulfates, nitrogen, and phosphates. Bromides, iodides, salicylates, acetates, heavy metals, nitrates, magnesium, calcium, neocinchophen, cinchophen, emodin bearing (laxative) drugs, uva ursi, antipyrine, colchicine, cimicifuga, salophen, aminopyrine, capsaicin and pinene were not found.

"Quantitative determinations yielded the following

| | Per Cent |
|--|----------|
| "Total solids (100 cc) | 1.14 |
| Ash | 1.06 |
| Sulfated ash | 1.52 |
| Alkaline chloroform extract | 0.0 |
| Acid ether extract | 0.07 |
| Titrateable alkalinity (calculated as OH ⁻) | 0.18 |
| Titrateable carbonates (calculated as CO ₃ ⁻) | 0.28 |
| Sodium | 0.37 |
| Potassium | 0.11 |
| Organic material | 0.04 |

"From the foregoing, it may be calculated that the product contains approximately 0.65 per cent sodium carbonate (Na₂CO₃, anhydrous) equivalent to 1.76 per cent hydrated sodium carbonate (washing soda) and 0.30 per cent potassium hydroxide (lye) with a trace of organic material.

"A product essentially similar may be prepared by dissolving 1.76 Gm. of washing soda and 0.3 Gm. of pure lye in water to make 100 cc of solution."

Thus Ru-Mari is a typical nostrum, essentially an alkaline solution, advanced as specific for conditions in which it could not possibly have specific effects, and supported by testimonials from persons better known for artistic attainment than for medical knowledge or scientific judgment.

Correspondence

ELIMINATING ODOR OF GARLIC

To the Editor—M. A. Blankenhorn and C. E. Richards (*THE JOURNAL*, August 8, p. 409) present the results of certain experiments which they interpret—quite erroneously—into a sweeping refutation of work previously reported by L. A. Greenberg and me (*THE JOURNAL*, June 16, 1935, p. 2160) demonstrating that the odor on the breath after eating onions or garlic arises from material retained in the mouth. Blankenhorn and Richards believe that the odor comes wholly from essential oil passed into the blood stream during digestion and aerated out in the lungs.

Their experiments were ingenious if incomplete. They gave garlic soup and garlic oil by stomach to a patient with stenosis of the esophagus and three hours later observed by sense of smell a garlic odor on the breath. To one of two patients with occlusion of the larynx they fed garlic salad and garlic oil, again some three hours later they noticed a fouling of the breath as it came out of the tracheal opening. These would appear to be conclusive demonstrations of their thesis that garlic odor reaches the breath wholly by way of the blood stream, but in reality Blankenhorn and Richards, in their eagerness to prove their point, have intentionally or unintentionally failed to quote a statement made in our paper thereby casting an entirely false interpretation on our work.

Our statement concerns the previous investigation of F. A. Lehmann (*Untersuchungen über Allium sativum* [Knoblauch], *Arch f exper Path* 147:245, 1930), who gave garlic extract by stomach tube to rabbits and determined, by chemical analysis, the amount of the oil reaching the expired air from the blood stream. Concerning this work we said: "The doses of oil he used were enormous, from 4 to 5 cc. of the juice pressed from garlic and containing from 8 to 10 mg. of essential oil. This amount would be equivalent to 6 to 8 Gm. of the vegetable. Such a dose, given to a rabbit weighing 1.5 Kg., would correspond to 300 or 400 Gm. of garlic given to a man. The amount of oil appearing in the expired air was so slight as to fall within the limits of the error of the method of analysis definitely less than 1 per cent of the oil appearing in the

breath in spite of the massive dose that had been given. Lehmann's work really offers no support to the belief that the odor on the breath after eating ordinary amounts of onion or garlic comes from the blood by way of the lungs."

Blankenhorn and Richards (carefully avoiding quantitative methods) give no indication of the amount of garlic administered but only of the oil. They gave 400 mg. to their subjects before they could detect the odor on the breath after a lapse of three hours. They simply repeated Lehmann's old experiment, on which we had commented: "400 mg. of oil is the yield from one-half to 1½ pounds of garlic. We are willing, indeed anxious, to concede that any one eating a pound of garlic at one sitting may have the odor in the blood as well as in the mouth, but our point was, and still is, that no one eats a pound of raw garlic. Our experiments were carried out with amounts within reason and with such no appreciable amount of oil appears in the blood stream. We proved this point by administering to our subjects garlic sealed in gelatin capsules, the breath was not tainted and no oil could be found in it by chemical analysis."

The significant point, however, is the time elapsing between the ingestion of the garlic and the appearance of the odor. If the smell comes from the blood following digestion, minutes or hours must pass before the breath is tainted. This delay is contrary to common experience in eating onions: the characteristic odor appears immediately. In the experiments of Blankenhorn and Richards, some three hours elapsed even after the massive doses of garlic oil before the odor was detected on the breath.

Blankenhorn and Richards, with every facility at hand, did not carry out the obvious experiment—really a control for their experiments—of having their patient with esophageal stricture chew garlic and then spit it out. None of the essential oil could reach the blood stream but I can assure them that their patient's breath would nevertheless have smelled so strong that it would be unnecessary to call in disinterested witnesses to prove fouling—the whole hospital ward would have testified to it. I cannot understand why Blankenhorn and Richards failed to carry out this procedure unless they were more anxious to throw discredit on our work than to discover the facts. It is fortunately an experiment that any one can perform to prove to himself that the odor comes from the mouth and comes from there, not after a delay of three hours, but immediately.

Blankenhorn and Richards, scrupulously avoiding quantitative methods, depending wholly on the uncertain criterion of faint smell, and recording no observations as to whether or not their subjects' breaths were foul before the tests, have made no attempt to duplicate our perfectly simple experiments. Yet they have no hesitation in saying that the chloramine solution we find effective in destroying mouth odor merely "masked" the garlic smell. This they attempt to show by using a chloramine mouth wash eighteen hours after feeding an unstated amount of garlic.

Since publishing our work we have tested for deodorizing properties numerous mouth washes and find a diluted solution of sodium hypochlorite to be somewhat more effective than the chloramine we originally recommended. The hypochlorites destroy garlic oil in a test tube as well as in the mouth, but they have no persistent odor that would disguise the smell of garlic. Only those substances which actually break down chemically the odoriferous substance are effective deodorants. And this is not our conception of "masking" an odor. The hypochlorites have no effect whatever on the breath odor from alcohol, which definitely emanates from the blood stream.

HOWARD W. HAGGARD, M.D., New Haven, Conn.
Department of Applied Physiology,
Yale University

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ARSPHENAMINE REACTIONS

To the Editor—I have been treating a recently acquired case of syphilis in a healthy Negro weighing about 150 pounds (68 Kg.) I started him on 0.6 Gm of neoarsphenamine and he became a bit nauseated. During the following week I repeated the dose and he had to go to bed with extreme joint pains and nausea and vomiting. This lasted several days and I had to discontinue its use. I then commenced a series of six injections of bismuth salicylate in oil with no untoward consequences. On their completion his strongly positive reaction became negative Kolmer and plus minus Kahn. I then tried to give him a series of bismuth arsphenamine sulfonate but ten minutes after the first injection (intramuscularly) he became nauseated and ill. This lasted for almost one hour. I immediately discontinued all arsenic and merely gave him a weekly injection of bismuth salicylate associated with 0.65 Gm of potassium iodide three times a day. Is there any other arsenical I might safely try in this case or must I stick to bismuth? I see no advantage in adding mercury since I feel that bismuth supplants it. Also if I make him blood and spinal fluid negative under my regimen when shall I quit and what shall be his further care? Also if on subsequent examinations he again becomes positive, what should be my procedure? In a nutshell my patient has been unable to withstand a small dose of neoarsphenamine and also bismuth arsphenamine sulfonate intramuscularly. However three doses of neoarsphenamine brought him down from 4 plus to plus Kahn. After about fifteen doses of bismuth salicylate in oil, his blood test shows 1 plus instead of \pm his Kolmer showing moderately positive against negative after the three doses of neoarsphenamine. In other words continued treatment with bismuth salicylate alone shows a gradually returning positive blood test. That means he cannot tolerate small doses of arsenic, and bismuth alone apparently is doing him no good. I am wondering whether mercury injections would help him and if so, what procedure I should follow. Please omit name. M D Maryland

ANSWER.—It is difficult to identify the type of arsphenamine reaction from the description given. Only two types of arsenical reactions signify definite sensitization to the drug, namely, dermatitis and the blood dyscrasias. While there is no evidence of dermatitis in this case, it is possible that the extreme joint pains, nausea and vomiting lasting for several days may signify a blood dyscrasia. It is essential to be sure of this point because, if it is at all possible to do so the patient's treatment must be continued with an arsphenamine.

The only other type of immediate reaction that tends to recur after repeated injections of the drug is the angioneurotic symptom complex usually manifested by the so-called nitritoid crisis. This reaction may be avoided by very slow administration of the drug or by the preliminary administration of epinephrine or atropine. The description given does not sound like the nitritoid crisis.

Mild gastro-intestinal reactions, lasting from a few hours to as long as twenty-four hours, may occur in approximately 50 per cent of patients treated with the arsenical drugs. They may be in part eliminated by regulation of the bowels, by omission of a meal immediately preceding treatment and by a light meal after treatment. Such mild gastro-intestinal reactions that do not depend on an underlying cause, such as hepatitis, a blood dyscrasia or the angioneurotic symptom complex, should be disregarded in the treatment of a patient with early syphilis. It is so important to administer the arsenical drugs from the standpoint both of the public health and of the patient's ultimate outcome that the patient should be urged to put up with the minor inconvenience of such reactions.

Mapharsen recently introduced into the treatment of syphilis, is a drug that probably does not cause the angioneurotic type of immediate reaction and causes gastro-intestinal reactions in a somewhat lower proportion of cases than the arsphenamines. It is suggested that this patient's treatment be recommenced with mapharsen. In order to rule out the possibility of a blood dyscrasia it would be wise to start with a very small dose, i. e. 10 mg., following which a white and differential count should be done at twenty-four hour intervals for the next three days. If the white count is significantly reduced, i. e., below 4000 and if this reduction is particularly at the expense of the granulocytes this should be taken as an indication that further administration of any of the arsenical drugs might produce agranulocytosis or aplastic anemia. If also there is any sign of bleeding from the gums or of cutaneous purpura it

may be assumed that the blood platelets have been damaged and that further arsenical treatment may cause a genuine and serious thrombocytopenic purpura. If, however, there is no change in the blood count and no bleeding, the dose should be cautiously increased by 10 mg increments until the average therapeutic dose of 60 mg is reached. If this can be done without producing serious reaction, further treatment should proceed by the method suggested by the Cooperative Clinical Group, with mapharsen substituted for arsphenamine, for example, courses of ten injections of mapharsen alternating with courses of from six to eight injections of bismuth salicylate treatment being given continuously for a minimum period of eighteen months.

The present tendency of the blood serologic test to relapse to positive may be due to asymptomatic neurosyphilis, and the patient's spinal fluid should be tested promptly.

If the patient is really intolerant to the arsenical drugs and cannot take them because of dermatitis or a blood dyscrasia, and if the spinal fluid is negative, treatment must be continued with bismuth compounds and mercury alone. In view of the small amount of arsenical treatment so far given, the total duration of treatment should be from three to five years and during this period it should so far as possible be continuous with courses of intramuscular bismuth compounds alternating with courses of mercury by injection. This amount of treatment should be given arbitrarily, regardless of when the patient's blood serologic test becomes negative.

If the spinal fluid is positive and if actually intolerant to trivalent arsenical drugs, it probably will be possible to use tryparsamide, a pentavalent compound, without difficulty.

Mercury by injection, if properly used by the patient, is both safer and better than mercury by injection.

SYPHILIS IN CHILD AND MOTHER

To the Editor—A young couple with their first born came to me about the baby because of what they termed running ears. They had consulted three other doctors and the child had been given local treatment for the condition of the ears. The baby was 3 months old January 24. The child presented a picture of a feebly developed body shriveled countenance, fissures about the angles of the mouth and the anus bulging and eczematoid scales on the forehead and scalp. Snuffles was present and an otopyorrhea on both sides. The voice was harsh when crying. The child nursed poorly had sores in the mouth whined and fretted. Intermittent strabismus was present. The child was restless to sleep and fretful when awake. Occasional bleeding from the nose occurred. The blood Wassermann of the father was negative of the mother 4 plus. The father gave a history of a soft chancre on the penis ten years previously. He was treated and reported cured by his doctor at that time. The mother gave no history of an infection that she knew of. Three reports from blood specimens for the father were negative. I began treatment of the infant with intramuscular sulfarsphenamine 0.1 Gm. twice weekly for two weeks then weekly and shall continue so for eight doses. Since treatment of the baby was begun many symptoms have cleared and it is improving in weight and appearance. I also began treatment of the mother with sulfarsphenamine intramuscularly 3 Gm weekly. Under the circumstances found would I be justified in treating the father with three negative Wassermann tests for syphilis? What can I do more to test for positive syphilis in the father so as to get to treatment at the earliest possible moment? Would a spinal puncture be justifiable as a further test? Please speak about the virtues of the various preparations that might be indicated in these cases other than what I am now using. Any other information bearing on these cases will be greatly appreciated. Please omit name.

M D., Alabama.

ANSWER.—This inquiry deals with two fundamental problems first the treatment of congenital syphilis, second the status of the father. In a new-born baby with syphilis considerable caution must be used in the administration of an arsphenamine, because not infrequently these infants have an overwhelming spirochetemia involving particularly the liver. Under such circumstances the use of an arsphenamine preparation may result in a Hertzheimer reaction severe enough to prove fatal. As this child is apparently tolerating the arsphenamine satisfactorily its continued cautious use intramuscularly is warranted. When the sulfarsphenamine course is completed the addition of mercury to the therapeutic program in the form of mercury rubs, 2 Gm under the abdominal binder may be used. The alternate use of the sulfarsphenamine and the mercury should be continued for at least eighteen months. Sulfarsphenamine has produced blood dyscrasias and so the patient must be watched for such a complication. Bismuth arsphenamine sulfonate is another antisyphilitic remedy that may be used intramuscularly in infants and it has the advantage of combining the heavy metal bismuth with the arsenical. The subsequent treatment program is dependent on the child's reaction to the treatment and later manifestations of syphilis.

The status of the father raises two points for discussion. Has he had syphilis and been cured of it? Did the mother acquire syphilis previous to marriage and he not become infected? To settle the first issue an examination of the spinal fluid is essential, if it is found to be negative in the presence of the repeatedly negative serologic tests, treatment is not necessary. He should, however, be placed on observation and be reexamined from time to time at yearly intervals to note whether or not he subsequently develops any evidence of the disease. In regard to the second phase of this question, if the mother had acquired her infection some time previous to her marriage she might have a syphilitic child and her husband not acquire the disease from her. This seems the least probable of the two hypotheses in view of the history of the father's having had a penile lesion some years before. In either instance, treatment of the father is not warranted now unless the spinal fluid is found to be positive. However, he should have annual reexaminations both clinical and serologic.

MILKY SERUM WITH LIPEMIA

To the Editor—I have what seems to me to be a most unusual case of a girl aged 11 whose blood when removed into a test tube appears normal for the first three minutes of exposure and then begins to separate into a normal clot and an opaque milky serum which when standing separates in turn into a lower watery layer taking up about five sixths of the total volume and an upper layer of pure white taking up the remaining sixth of the volume. I have been unable to find any cellular elements in either of these layers. The blood picture is as follows: red blood cells 4 250 000 per cubic millimeter, white blood cells 9 200 per cubic millimeter, hemoglobin 75 per cent (Sahi) differential count polymorphonuclears 65 per cent, small lymphocytes 25 per cent, large lymphocytes, 5 per cent, monocytes and transitionals 5 per cent. The white cells appear normal and none were found suggesting a hyperplasia of the bone marrow or of other blood forming organs. The child weighed 51 pounds (23 Kg.). There was a small psoriasis over the upper parts of the extremities and the lower portion of the abdomen. Also there were numerous small depigmented areas on the legs which were said to be the sites of former ulcers. The tonsils were moderately enlarged and appeared to be chronically infected. The cervical glands were moderately enlarged. These were the only lymph glandular structures in the body that were palpable. The heart and lungs were clear. The spleen was enlarged about 3 cm. below the costal margin and was tender. The liver was enlarged to about the same distance below the costal margin and showed also a slight enlargement upward. There were two intractable ulcers on the shin of the right leg and these were not punched out in appearance but rather seemed to have a hyperplasia of granulations. These ulcers were said to be of the same type from which the child had suffered frequently on previous occasions. The child had scarlet fever at the age of 5, complicated by bowel obstruction and acute pancreatitis requiring operation and drainage. Her mother says that her undernourishment, poor development and chronic ulcers dated from that time. The mother and father appear healthy. Their blood shows a negative Kahn test. There are four other children in the family all of whom are in an average state of health. One of them has a congenital heart lesion possibly a patent foramen ovale which seems to be adequately compensated. Considering the peculiar reaction of the patient's serum on exposure to air I hardly see how a Kahn test could be done on her blood. I would appreciate your giving me any clue to this case which you can. I have suspected aleukemic leukemia but why should the serum appear milky in this phase of the disease? As I have pointed out the fresh milky serum shows no cellular elements whatever. I should also have said that the child's urine is negative for albumin and sugar.

M D West Virginia.

ANSWER.—The milky serum is most likely due to a lipemia and is not indicative of a leukemia. Leukemia is furthermore excluded by the normal blood examination. An aleukemic myelosis or lymphadenosis is not characterized by such a milky serum and can be diagnosed only by splenic or bone marrow puncture.

The enlargement of the liver and spleen speak for some disturbance of the reticulo-endothelial system, such as Niemann-Pick's disease, or lipid histiocytosis. In this disease, which usually affects young female children there is an accumulation of lipoids in the reticulo-endothelium of the liver, spleen and other organs. A lipemia may lead to increased deposition of lipoids in this system with hepatic and splenic enlargement. There may be bone changes.

Normally the blood contains from 0.5 to 0.8 per cent of fats and lipoids. After fat-rich foods this may be greatly increased, and after every fatty meal there may be enough fat in the blood to make it turbid. The distinctly cloudy serum in the case described speaks for a pathologic lipemia, although turbid plasma may sometimes be found with a normal lipin content. Lipemia occurs most often in diabetes, nephrosis and alcoholism, and less often in cirrhosis, jaundice and advanced tuberculosis. In diabetes the blood fat may rise to 20 per cent, and the cholesterol is also high, especially in acidosis. About 80 per cent of patients with diabetes have a blood fat above 0.67 per

cent, which is the upper normal value. It is usually between 0.7 and 1.5 per cent, and increases with the severity of the disease and the increase in fat intake.

A careful study of the lipid and cholesterol content of the blood should be made, and the skin lesions should be studied for possible lipid or cholesterol deposition as in xanthomas. In this case diabetes and nephrosis are excluded by the normal condition of the urine.

INFECTION WITH SYPHILIS FROM NEEDLE WOUND

To the Editor—1 Can syphilis be contracted from the prick of a hypodermic needle in the skin? 2 Can syphilis develop without an initial lesion? I am not referring to larger abrasions of the skin. 3 If no disease can occur without an initial lesion why encourage future Wassermann tests? These things are happening frequently but I have in my own experience or the experiences of my colleagues yet to have such a small injury show up later with a chancre. Our own technician has just recently had such an experience and is seeking all light available on the subject. If your authority has had personal experience or knows definitely of such experience among his colleagues we will appreciate such information.

M D Kansas

ANSWER.—1 Syphilis may be contracted from a prick in the skin of a hypodermic needle or of a surgical instrument, provided the needle or instrument has recently been used on a patient freshly infected with syphilis. The danger is greatest during the incubation period of syphilis and during the existence of primary or florid secondary lesions, but there is probably some danger from such contact with any patient who has had syphilis as recently as two years. Between two and five years the danger diminishes rapidly and after the fifth year of infection it is virtually nonexistent. The same comments apply to early congenital as to early acquired syphilis.

2 Syphilis can develop without an initial lesion, not only when the infection is acquired by such trauma as mentioned but also when it is acquired by the more usual forms of contact. There are numerous cases on record of direct blood stream infections in physicians, dentists and nurses following trauma with an instrument, in whom the first sign of infection was the secondary outbreak. Even the secondary lesions may be completely lacking or so trivial as to escape attention, the infection in its early stages being nearly or entirely symptomless.

3 The facts mentioned in paragraph 2 constitute the justification for a Wassermann follow up in a person exposed to syphilis by such trauma. The danger of infection, however, depends almost entirely on the duration of infection in the patient on whom the instrument was used.

4 The prophylactic treatment of such an injury should be immediate and should consist in laying open the puncture wound to the approximate depth of penetration of the needle, and the packing of the incised wound with 33 per cent mild mercurous chloride ointment, which is allowed to remain in situ for twenty-four hours.

FLUORINE IN WATER SUPPLIES

To the Editor—It is my understanding that a great deal of work has been done on the problem of the fluorine content of raw water supplies and if you could throw any light on the following subjects it would be appreciated. 1 What amount of fluorine in the raw water supply is considered objectionable? 2 Would water with a fluorine content of 1.1 parts per million be harmful? 3 Would water with a fluorine content of 1.5 parts per million be considered a definitely inferior source to one with a fluorine content of 1.1 parts per million or 0.9 parts per million? 4 Is there any treatment that would lend itself to application either before or after zeolite softening treatment, which would either eradicate or reduce the fluorine content of the water? It is my understanding that flocculation and precipitation in a lime-soda ash treatment plant sometimes reduces the fluorine content of the filtered effluent. Is this due to the precipitation of the colloids (which could be accomplished by floc formed by the addition of alum to either the untreated or the treated water) or is this due to chemical action in the lime-soda ash softening process?

LEE E. BRANSFORD M D Jacksonville, Fla

ANSWER.—1 H T Dean and Elias Elvove (*Pub Health Rep* 50 1719 [Dec. 6] 1935) report that a mild type of mottled enamel is endemic in Colorado Springs, Colo., and in Galesburg and Monmouth, Ill., where the mean annual fluoride (F) content of the municipal water supplies based on monthly examinations for a period of about one year was respectively 2.5, 1.7 and 1.8 parts per million. They also report that at Pueblo, Colo., where the fluorine content of the public water supply was 0.6 part per million, the mottled enamel index in children was negative. Ryder (*American Water Works Journal*, November 1935) reports that water containing from 0.9 to 1.0 part per million will cause a dental defect known as mottled enamel, if consumed by children of susceptible age. For children particularly sensitive, it should be below 0.7 part per million.

2 Based on experience elsewhere, such a water might be harmful to children. It is possible, however, that the other chemical constituents of a water may have an effect on the harmful properties of fluorine and might well be investigated.

3 The harmful effects seem definitely to be related to the quantity of fluorine present in the water.

4 C. S. Boruff (*Indust. & Engin. Chem.* 26:69 [Jan.] 1934) reports that

Removal of injurious quantities of soluble fluorides from drinking waters can be accomplished by dosing with alum with subsequent removal of the floc by sedimentation and filtration. Under certain conditions contact beds of activated alumina or some other aluminum compound that may be developed for this purpose may prove feasible. Household drinking supplies could be treated by shaking the water with activated alumina in suitable containers. The decanted waters would be clear. Softening with the addition of excess lime causes the coprecipitation of considerable fluoride. The extent of the above treatments will depend on the fluoride concentration in the raw water and the amount of fluorides which will ultimately be established as the toxic limit allowable in water supplies.

R. H. McKee and W. S. Johnston (*Indust. & Engin. Chem.* 26:849 [Aug.] 1934) report "the development of a method for removing fluorides from potable water by absorption by carbon. The process, however, has the handicap that at the time of treatment the water must be a pH of 3 or less."

The practicability of using any of these methods is dependent on the chemical characteristics of the water to be treated. It would be wise therefore before adopting any treatment process to seek the advice of a competent chemist.

TREATMENT OF SYPHILIS

To the Editor—A man aged 39 developed a tender swelling on the anterior aspect of the right tibia at the junction of the middle and lower thirds in September 1933. The swelling gradually became larger and was diagnosed as osteomyelitis. A surgeon everted the bone and inserted a pack. I saw the patient first in February 1934. At this time he was walking by means of a crutch and was unable to hear any weight on his leg. Although his history was entirely negative, a Kahn test showed his blood to be four plus in syphilis. Starting Feb. 17, 1934, he received weekly injections of nearsphenamine 0.6 Gm. for ten injections, after which he developed an exfoliative dermatitis. This cleared up on the administration of sodium thiosulfate intravenously daily for four doses of 1 Gm. each. The patient was immediately placed on weekly injections of iodobismutol. He was able to walk without crutches following his fourth injection of nearsphenamine. Iodobismutol injections were continued from April 1934 to December 1934 (thirty-two injections in all). The patient has been unable to take any form of arsphenamine immediately developing an exfoliative dermatitis from nearsphenamine, sulfarsphenamine and even 0.1 Gm. of bismuth arsphenamine sulfinate. The blood Kahn test has been steadily four plus since onset of treatment. A spinal Kahn test was negative when taken in February 1934 and was again negative in October 1935. Since December 1934 the patient has been on biweekly injections of sodium bismuth thioglycolate. The blood Kahn test October 10 was four plus. Thorough physical examination with emphasis on the cardiovascular system including roentgenograms is entirely negative. The patient feels well; he weighs 180 pounds (82 Kg.) and his leg has never bothered him since his fourth injection of nearsphenamine. For the last three months he has been on mixed treatment of mercury and potassium iodide orally with biweekly injections of sodium bismuth thioglycolate. Will you please tell me if you think it is possible for the patient to transmit syphilis? What further treatment should be used considering his intolerance to nearsphenamine? Do you think he is Wassermann fast or has he had inadequate treatment? Please omit name and address. MD West Virginia

ANSWER.—Resorting to the use of bismuth in this case has been good judgment as the patient's intolerance to the arsenicals has been well shown by his reactions to the various arsphenamine preparations used. Further efforts to give an arsenical of any type are contraindicated because the persistence of the positive serologic reaction in itself is not sufficient reason to jeopardize the patient's future by further injections of arsphenamine. The fact that the cardiovascular examination was negative for evidence of aortic disease and that repeated examinations of the spinal fluid have been negative places this patient in either the latent syphilis group or the Wassermann-fast osseous syphilis group.

The likelihood is that the disease is of more than three years duration, and with the treatment the patient has had thus far there is small chance that he is infectious. Further treatment should consist of repeated injections of the bismuth preparation, perhaps twelve injections to a course with intervals of three months between the courses. The bismuth treatment should be continued for the next three years. It is not infrequent to find a persistently positive Wassermann reaction in patients with osseous syphilis and the continued bismuth therapy alone will often revert the serologic reaction to negative sooner than will combined treatment with arsphenamine and bismuth compounds. At the same time the bismuth compound will maintain the patient in a noninfectious state. The treatment to date has perforce

been inadequate because of the patient's idiosyncrasy, and the continued use of bismuth compounds is the most potent means now at his physician's disposal to reverse the serologic reaction to negative.

NEUROSYPHILIS

To the Editor—A man aged 45 who first consulted me in September 1934 was awakened fourteen months ago by a severe pain in the left knee and in the tibia. It was a dull pain at first then a sharp severe pain which hits and fades. The skin is sensitive following relief from the pain. All but two attacks have come at night. The patient is sensitive to heat and cold. Heat causes pains in the eyeballs. He has heat and cold chills. Extra exercise results in an attack. There are dizziness and slight nausea. Examination showed fixed pupils. The patient is 5 feet 6 inches (168 cm.) tall and weighs 137 pounds (62 Kg.). The Wassermann and Kahn reactions of the blood are 4 plus under treatment; the blood remains the same. Treatment was as follows: In 1934 potassium iodide caused a reaction and had to be discontinued. Five doses of nearsphenamine 0.3, 0.3, 4.5, 0.6 and 4.5 Gm. and of tryparsamide 2 Gm. were given during October and November. Because of reactions from November 1934 to January 1935 weekly doses of mercurous 0.1 Gm., bismuth sodium tartrate 1.5 per cent or bismuth sodium tartrate and mercuric salicylate were given. Treatment was omitted from Jan. 23 to March 20, 1935. The Wassermann reaction was 4 plus, the weight 143 pounds (65 Kg.). From March to April the patient received six doses of nearsphenamine 0.6 Gm. and six doses of tryparsamide 2 Gm. During May a course of mercury and potassium iodide was given; there was too much reaction from the potassium iodide swelling of glands occurring. The patient was given 100 doses of yellow mercurous iodide; the same nervous reaction occurred to this. The patient rested in June. In July three doses each of nearsphenamine and tryparsamide were given. October, November and December 17, 0.1 Gm. of mercurous was given. The patient has rested since Jan. 17, 1936. He takes doses of phenobarbital when restless. He complains very little at present. Once in a while a slight pain occurs. He weighs 143 pounds (65 Kg.) now. He is feeling good and does his usual work. There is slight pupillary reaction. The Wassermann reaction is 4 plus. I am seeking information regarding the future course. Would the malaria reaction be indicated in this case? I will appreciate any information as to treatment and drugs best to use. This is probably a Wassermann fast case and I do not want to overtrear and certainly not undertreat. One item of interest that I failed to mention is that he had some thickening and discoloration of the palms of the hands. He thought it was the result of poison from varnish. It had been present for many years. This all cleared up under treatment. MD Iowa

ANSWER.—This patient probably has neurosyphilis, as evidenced by fixed pupils and the subjective symptoms. A spinal fluid examination would yield valuable information as to the type of central nervous system involvement that is present. In all probability the patient will remain Wassermann fast irrespective of the kind or amount of treatment used. If the spinal fluid is strongly positive, a course of fever therapy is indicated. If malaria is not available, the intravenous use of a typhoid-paratyphoid vaccine sufficient to give a febrile reaction of 103 or 104 F every third day might be considered. Fever therapy whether by malaria, vaccines or one of the newer fever producing machines should not be used without proper precautions under hospital supervision and only by those familiar with this type of therapy.

MANAGEMENT OF SYPHILIS

To the Editor—A woman aged 38 gives a history of having had syphilis for the past eleven years which she contracted from her first husband. She shows no signs of the disease clinically but has a positive Wassermann reaction. She states that she never had any symptoms or signs in the entire period with reference to the skin or mucous membranes. She has received treatment irregularly by different physicians in the past. She states that she could never tolerate arsenic preparations intravenously on account of vomiting spells following the injections. She was given preparations of bismuth and arsenic intramuscularly at various intervals. At present the only finding is a positive Wassermann reaction. What is the prognosis? Please omit name. MD New York

ANSWER.—With the information furnished it is difficult to answer. One would be in much better position to advise if one knew the results of the lumbar puncture and if one knew that cardiovascular syphilis had been ruled out. These are the two complications of late syphilis that are most damaging and yet which may remain hidden for some time. Therefore the patient should be examined from those two points of view at once. If nothing is found we would not be especially alarmed about the positive Wassermann reaction and would simply recommend a course of weekly injections of bismuth salicylate, a total of ten or twelve injections twice a year for possibly three years, giving potassium iodide between the courses of injections.

If involvement of these organs is found it would naturally require quite a different regimen and the advice would depend on the conditions discovered.

TREATMENT OF SYPHILIS

To the Editor—A well developed man aged 29 complained on his first visit of general weakness, lack of pep, and slight pains at times in the posterior urethra. Examination March 27, 1935, revealed slightly active reflexes, nervousness, irritability and a 4 plus Wassermann reaction. He has received fifty injections of nearsphenamine of 0.9 Gm each, fifty injections of bismuth sodium tartrate and potassium iodide regularly. Today he feels fine without complaints, and the Wassermann reaction is 4 plus. What would you suggest? Continue as I am doing, alter the treatment in some way or stop treatment altogether?

M D New Jersey

ANSWER—This patient has had an excessive amount of treatment without serologic improvement. Treatment should be stopped altogether for a time and then a spinal puncture should be done. If there is evidence of neurosyphilis, tryarsamide treatment is indicated and later on fever therapy. If the spinal fluid is negative and the blood serum still positive after the rest period, some other arsenical may be substituted, either arsphenamine or mapharsen, alternating with courses of another bismuth compound such as the salicylate. The treatment of a Wassermann fast case is discouraging but not hopeless.

PERSISTENT DERMATITIS

To the Editor—For eight years I have been troubled with an obstinate skin condition. While I was taking my premedical work I earned some money during the summers as a painter and decorator. It was while I was doing this that a vesicular condition appeared on the fingers of both hands. Soon there was a peeling of all the skin to the dermis causing weeping and considerable itching. In fact the itching was so intense that the rubbing and scratching I did made it worse. With the aid of ointments the condition improved somewhat. When I began the medical course it got worse, possibly because of the irritation caused by formaldehyde and phenol in which the cadavers were placed. I had the opportunity to get medical attention under a good allergy man. He tried many skin tests on me all proving to be negative. Several Wassermann and Kahn tests also proved negative. The allergist made an autogenous vaccine of some pustules that formed and gave me injections twice weekly over a period of more than four months without improvement. From that time there have been periods of improvement followed by a breaking down again of the skin of my fingers. As soon as I began my clinical work I made acquaintance with some of the best dermatologists in the country. With ointments and weekly x-ray treatment the condition cleared up nicely. I was tried on all sorts of ointments—sulfur, Whitfield's tar and so on. Tar (White's formula) seems to have been the best. The skin between my toes was examined and found to be in good condition. When I left school for my internship the skin on all my fingers was as normal in appearance as could be. The first winter during my internship caused my hands to become dry and chapped. The skin condition reappeared and has been with me ever since. This is a terrible handicap especially in surgical work. I know that water and soap do the skin no good but I have to wash my hands after treating infections. At present the skin over the affected areas is dry, thick and cracked. There are several vesicles, some of which are open and cause an oozing with resultant itching. There are no other lesions anywhere on my body. Please omit name.

M D New York.

ANSWER—The tops of the vesicles should be examined for ringworm fungi. If found, crude coal tar ointment or modified Whitfield ointment (3 per cent salicylic acid and 6 per cent benzoic acid in rose water ointment) alternated with soaks in 10 per cent solution of sodium thiosulfate, should be used. If no ringworm is present, the hands should be protected by the use of rubber gloves for pus dressings. On removing the gloves, one should bathe the hands in 50 per cent alcohol with 0.5 per cent salicylic acid and apply a lotion originated by William Allen Pusey:

| | Gm or Cc |
|----------------------|---------------|
| Liquid petrolatum | 16.0 |
| Oil of rose geranium | 0.1 |
| Oil of bergamot | 0.1 |
| Oil of lavender | 0.1 |
| Sodium benzoate | 0.5 |
| Powdered tragacanth | 2.0 |
| Mix and add water | to make 120.0 |

First shake up the oils and powders, coating the inside of the bottle. Then add the water, one fourth the amount each time, and shake vigorously. This makes a thick emulsion, a small amount of which should be rubbed into the hands after each washing. At times a liberal amount of it the excess being wiped off on a paper towel, may be substituted for washing. Use hot water as little as possible, always follow it, when used, with cold water and use the mildest obtainable soap. Each night anoint the hands liberally with 10 per cent boric acid in rose water ointment, petrolatum or equal parts of wool fat and petrolatum, wearing cotton gloves.

In the effort to raise the threshold of irritability, calcium lactate 4 Gm, with an equal amount of lactose, dissolved in half a glass of warm water, may be taken two times a day, dilute hydrochloric acid being taken after meals. Sodium thiosulfate, 1 Gm intravenously every other day, also may act favorably.

GLYCOSURIA OR DIABETES IN INFANT

To the Editor—A girl baby aged 8 months weighing 14 pounds (6.35 Kg) at present and 27 inches (68.5 cm) in length has been ill since the latter part of November 1935, when the mother noticed that the baby no longer ate well and that she was losing weight. The weight at that time was 14½ pounds (6.58 Kg). The infant was taken to the hospital for observation. She was a normal appearing and very active youngster and nothing abnormal was found except a trace of sugar in the urine. The anorexia persisted and also the loss of weight. The blood sugar was taken on two occasions and was 0.90 and 0.95. Three units of insulin was given twice daily with some resultant increase in appetite. The diet was chiefly solid food, junkets, pureed vegetables, orange and tomato juice, a total of 750 calories a day. Milk was taken from a glass as it had been since 4 months of age. Food was taken at three meals a day. The baby was given halibut liver oil, vitamin B and G syrup and orange juice. Gains were slow and uncertain. After three weeks the weight was only 14 pounds 9½ ounces (6.63 Kg). Physiologic solution of sodium chloride was given subcutaneously for three days, 120 cc daily and the weight went up to 15 pounds (6.8 Kg). She was discharged from the hospital still showing an occasional trace of sugar and eating well only with insulin. Now in the past two weeks since coming home the weight has steadily dropped and is now 14 pounds. She no longer takes adequate calories, possibly 500 daily and less than a pint of fluids daily, chiefly tomato juice. Insulin is being given in doses of 2 units three times daily. Can this be true diabetes? Is the babe on an adequate regimen? I would like suggestions as to treatment and prognosis. Please omit name.

M D Michigan

ANSWER—More information would be extremely helpful before a diagnosis of diabetes mellitus could be made in this case. The age of the infant would not preclude such a diagnosis, as the condition has been known to occur in infants under 1 year old. The chief symptoms, as stated in the history, are anorexia and loss of weight. Anorexia would be an uncommon symptom in diabetes mellitus. The trace of sugar in the urine requires further investigation. As a general rule the earlier the onset of diabetes, the more severe is the glycosuria. It is stated that the infant shows an occasional trace of sugar in the urine. It would be wise to ascertain whether the substance in the urine causing the reduction is actually a sugar. Occasionally lactosuria occurs, and differentiation of lactose and dextrose can be made by fermentation tests. Alimentary glycosuria, pentosuria and renal glycosuria might be nondiabetic causes for the traces of sugar in the urine. The blood sugar estimations, 90 and 95 mg per hundred cubic centimeters, are within range of normal (70 to 100 mg, average 90). Therefore no hyperglycemia has been demonstrated. A further investigation by means of sugar tolerance tests would seem indicated. A normal curve obtained by means of this test would rule out the diagnosis of diabetes mellitus. In a true diabetes, glycosuria and hyperglycemia are the essential phenomena. In the case under discussion there is a slight glycosuria and no hyperglycemia. Therefore, from the data presented, the diagnosis of true diabetes mellitus cannot be made. Other organic causes that might be responsible for the anorexia should be sought for and, if found, would determine the treatment and the prognosis.

TREATMENT OF FOOT INJURY

To the Editor—A man came to my office March 23 with a history of injury to the right foot about an hour before I saw him when he (a volunteer fireman) had been helping at a fire and a long ladder was dropped accidentally on his right foot. The skin was broken and the foot was sore at the point where the ladder struck. In my office there was found to be some swelling of the big toe and on the dorsum of the foot below the longitudinal arch, a fracture was palpated, the slight abrasion and place of injury were on the dorsal aspect of the foot at the distal end of the first metatarsal bone. Roentgenograms taken at once (anteroposterior and lateral) showed no fractures. Forty-eight hours after the injury there was only a little soreness and discomfort. Treatment consisted in elevation of the foot, no weight bearing and alternate hot and cold compresses. Since the roentgen examination of March 23 showed no fracture, no cast was put on the foot. I was not satisfied and so on March 27 I asked for another roentgenogram which revealed a greenstick fracture on the side of the cortex of the bone of the third and fourth metatarsal bones at the proximal end. There is no swelling or pain now. Is it now advisable to put on a cast? Our city carries no compensation insurance for such accidents. The city will pay the doctor's bill. My question is: Have I done enough to protect the patient, the city and incidentally myself? Please omit name and address.

M D Michigan

ANSWER—A metal arch support of german silver or of aluminum covered with leather should be carefully fitted to the foot and should be worn for at least six weeks. No weight should be borne on the foot unless the arch support is being worn.

If it is impossible to obtain such a metal support, a plaster-of-paris support can be molded under the arch and bandaged on or fitted in the shoe.

It is necessary to take these precautions to avoid a possible painful disturbance of the mechanics of the foot.

POLIOENCEPHALITIS WITH FACIAL PALSY

To the Editor—A girl aged 5 years became ill in November 1935 with what the parents thought was a severe cold. The child did not improve but developed also nausea vomiting and constipation. Examination disclosed the conjunctivae injected the nasal mucosa congested the throat mildly injected and facial paralysis on the left side, of supranuclear origin. Physical and neurologic examination was otherwise negative. She showed some improvement for three days and then became drowsy had some rigidity of the neck and all reflexes were increased. The temperature was 101 F. This phase lasted for five days. After the temperature fell a weakness of the flexors of the left foot developed lasted for four days and left no apparent residual. The facial paralysis persists and is a source of worry to the parents. It is most noticeable when the child is cold or when she smiles or grimaces. There is no apparent muscular atrophy. Treatment consists of gentle massage three times daily heat and potassium iodide. I have read the answer to the query on Bell's palsy in THE JOURNAL February 29 page 727. Will electrical stimulation benefit this patient? Would operation be advisable? Please omit name.

M D Indiana

ANSWER—The patient apparently has had a central lesion of an inflammatory nature and has probably a polioencephalitis.

Electrical stimulation will do but little good in this case, since the lesion is central. The length of time already elapsed without further improvement indicates that probably the maximum amount of recovery has already occurred. There is no available treatment for such a centrally induced facial palsy.

PASSIVE TRANSFER METHOD IN ALLERGY

To the Editor—The July 4 issue of THE JOURNAL on page 57 contained an answer to a question relative to the passive transfer method of testing in allergy work which interested me considerably. Apparently the inquiry was stimulated by my recent article which appeared in the *Cleveland Clinic Quarterly*. The method is of course used only as an adjunct to two other methods of allergy investigation. I have utilized the passive transfer method for complete tests in over 200 individuals the majority of whom were children. I believe that here it serves its greatest purpose and represents a distinct help in allergy investigation. The technique at the Cleveland Clinic has differed somewhat in the performance of such tests in comparison with that which you have outlined. We have not found it essential or advisable to dilute the serums as this would preclude clear cut reactions. We inject at least 0.3 cc. of the serum into each site for testing, and we do not consider 0.1 cc. as sufficient to sensitize the skin locally. If 30 cc. of blood is withdrawn from the patient to be tested there will be from thirty-two to forty-two sites. To ensure complete sensitization of the skin with the serum a period of forty-eight hours is required. On attempting to use the sites after twenty-four hours we have found the test results to be very unsatisfactory. We feel that only those sites which have not demonstrated any reaction can be used after the first tests have been made. On the occurrence of a definite reaction the reaction at the particular site has been exhausted and is not satisfactory for subsequent testing. We have found it preferable to wait forty-eight hours after the first set of tests are made to ensure complete absorption of the antigen from the site. To enable the physician to know the exact location of the serum a mark should be made at the site with a sharp scalpel owing to the fact that it is impossible to mark the skin in any other way to determine definitely where the serum has been placed.

I M HINKANT M.D. Cleveland

VASOMOTOR RHINITIS

To the Editor—In your reply to M.D. N.Y. re vasomotor rhinitis (THE JOURNAL August 15 p. 521) you state 'though injections of alcohol may be tried that method is not recommended.' A satisfactory experience with the alcohol injection extending over a period of seventeen years leads me to inquire why the method is not recommended.

In many cases the sensitization is local and whether the offending irritant reaches the sensitized cells of the nasal mucosa through the blood stream or directly by contact relief can be had only by avoidance of the irritant which is frequently impossible, or by desensitization of the tissues of the nasal cavities.

In the presence of a known allergin this may sometimes be accomplished by systemic treatment with injections of increasing doses of the specific provocative allergin if it is not too numerous and can be determined or by the desensitization locally of the nasal mucosa by the injection of alcohol combined with phenol or by the surface application of pure phenol to the nasal mucous membrane. The results of this method of treatment have been so gratifying that I have discarded the tedious expensive and unsatisfactory trial and error method of systemic desensitization.

While the alcohol phenol method sometimes needs repeating it seems frequently that the vicious circle is broken and the results are permanent. Many patients have gone from three to five years without a recurrence and should a repetition of the treatment be necessary it is such a simple matter as not to be considered an objection to its use.

A word as to the pain involved in the injection method. A local anesthetic soluble in the alcohol must be added to the mixture otherwise the pain is intolerable and seems not to be mitigated in the least by the preliminary use of cocaine or other local anesthetics.

J G ROBERTS M.D. Pomona Calif

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AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov 7 See Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

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AMERICAN BOARD OF RADIOLOGY Cleveland Sept 25 27 Sec Dr Byrl R Kirkin Mayo Clinic Rochester Minn

AMERICAN BOARD OF UROLOGY Chicago Dec 4 6 Sec Dr Gilbert J Thomas 1009 Nicollet Ave Minneapolis

Kentucky June Examination

Dr A T McCormack, secretary State Board of Health of Kentucky, reports the written examination held in Louisville June 10-12 1936 The examination covered 11 subjects and included 110 questions An average of 70 per cent was required to pass Eighty four candidates were examined all of whom passed The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|---|-----------|-----------|----------|
| College of Medical Evangelists | (1935) 81 | (1936) 81 | 82 |
| University of Illinois College of Medicine | (1935) 82 | (1935) 82 | 82 |
| University of Louisville School of Medicine | (1935) 77 | 81 | 88 |
| (1936) 78 | 78 | 80 | 80 |
| 82 | 82 | 83 | 83 |
| 83 | 83 | 83 | 83 |
| 84 | 84 | 84 | 84 |
| 85 | 85 | 85 | 85 |
| 86 | 86 | 86 | 86 |
| 87 | 87 | 87 | 87 |
| 88 | 88 | 88 | 88 |
| 89 | 89 | 91 | 92 |
| University of Cincinnati College of Medicine | (1936) 85 | * 88 | * 88 |
| University of Pennsylvania School of Medicine | (1933) 82 | | |
| (1936) 83 | | | |

Seven physicians were licenced by reciprocity from July 27 through August 3 The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|---|-------------------------|-----------|------------------|
| Georgetown University School of Medicine | (1932) | | Ohio |
| University of Georgia School of Medicine | (1935) | | Georgia |
| University of Kansas School of Medicine | (1935) | | Kansas |
| Louisiana State University Medical Center | (1936) | | Louisiana |
| Central Medical College of St Joseph Missouri | (1897) | | Missouri |
| Meharry Medical College | (1935) | | Tennessee |
| University of Tennessee College of Medicine | (1934) | | Tennessee |

* This applicant has received the M B degree and will receive the M D degree on completion of internship

Utah June-July Report

Mr S W Golding, director, Department of Registration, reports the written examination held in Salt Lake City, June 29-July 1, 1936 The examination covered 10 subjects and included 100 questions An average of 75 per cent was required to pass Seventeen candidates were examined, all of whom passed Three physicians were licensed by reciprocity and 2 physicians were licensed by endorsement The following schools were represented

| School | PASSED | Year Grad | Per Cent |
|--|-----------|-----------|----------|
| University of Colorado School of Medicine | (1935) | | 79 |
| George Washington University School of Medicine | (1934) | | 81 |
| (1935) 84 (1936) 83* | | | |
| Northwestern University Medical School | (1936) 83 | 84 | 84 |
| University of Maryland School of Medicine and College of Physicians and Surgeons | (1935) 81 | | 84 |
| Harvard University Medical School | (1935) | | 83 |
| University of Nebraska College of Medicine | (1935) | | 80 |
| University of Oregon Medical School | (1935) | | 82 |
| University of Pennsylvania School of Medicine | (1935) 84 | 86 | 87 |
| University of Texas School of Medicine | (1935) | | 83 |
| Marquette University School of Medicine | (1936) | | 78 |

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|---|-------------------------|-----------|------------------|
| Rush Medical College | (1935) | | Illinois |
| University of Louisville School of Medicine | (1935) | | Kentucky |
| Washington University School of Medicine | (1934) | | Missouri |

| School | LICENSED BY ENDORSEMENT | Year Grad | Endorsement of |
|--|-------------------------|-----------|----------------|
| College of Medical Evangelists | (1936) N B M Ex. | | |
| Licentiate of the Royal College of Physicians of the Royal College of Surgeons Edinburgh and of the Royal Faculty of Physicians and Surgeons Glasgow | (1930) N B M Ex. | | |
| License has not been issued | | | |

Book Notices

Passive Vascular Exercises and the Conservative Management of Obliterative Arterial Diseases of the Extremities By Louis G Herrmann A B M D Assistant Professor of Surgery College of Medicine of the University of Cincinnati and the Cincinnati General Hospital With a foreword by Mont R Reid M D Cloth Price \$4 Pp 288 with 84 illustrations Philadelphia & London J B Lippincott Company 1936

This work describes one of the most interesting developments in the field of peripheral vascular disease, a treatment by rhythmic alternation of environmental air pressure In the introduction, general remarks are made concerning conservative treatment of obliterative vascular disease, the principles underlying passive vascular exercises nature's methods of developing collateral circulation, the importance of local hyperthermia, and the control of pain It is also pointed out that the vast majority of patients with obliterative arterial diseases of the extremities receive little or no active treatment until some complication such as infection or gangrene sets in There is a fascinating chapter on the historical development of the use of suction to improve arterial circulation in the extremities, with illustrations of these primitive and cumbersome machines, from which the present types of apparatus gradually developed This chapter represents a valuable contribution to the history of medicine Next the physiology of peripheral circulation and the physiologic effects of changes in environmental pressure and temperature are discussed This chapter is a clear easily understandable summary of present knowledge as applied to the therapy by suction and pressure One would like to see more direct evidence that the negative pressure actually sucks more blood into the treated extremity

In the fourth chapter the mechanism of collateral circulation and its spontaneous and therapeutic development are studied There follows an excellent description of the general management of peripheral vascular disease Due emphasis is laid on the fact that passive vascular exercise is only one link in the chain of therapeutic procedures which are all directed toward an adequate collateral arterial circulation

In the sixth chapter the basic mechanical principles of the passive vascular exercise apparatus, as developed for clinical purposes by Herrmann and Reid, are described The author modestly describes the development of the present apparatus but fails to mention the tremendous amount of thought and energy, trial and error devoted to the development of more and more efficient devices until the present product was obtained He then describes the technic of administering these treatments carefully going into minute details, enumerating the reasons for failure to obtain satisfactory results, and establishing criteria to determine improvement

In the eighth chapter the responses of various clinical entities to this form of treatment are discussed Finally the proper application of this mechanical device is stressed and a routine procedure used in the Peripheral Vascular Clinic of the University of Cincinnati for the study of such cases is described

While this monograph has been primarily written for the guidance of men who wish to employ the alternating suction and pressure therapy, it actually covers the entire diagnosis and treatment of obliterative peripheral vascular disease This is rightly so as nobody can suddenly understand peripheral vascular disease in all its aspects by simply becoming interested in an ingenious mechanical device Undoubtedly the greatest merit of this book is that it affords a wide dissemination of knowledge concerning peripheral circulatory disturbances This disease entity was previously recognized only in its terminal stages and treated by heroic and mutilating methods

Because of the rapid development within the last four years of this apparatus from large, cumbersome and technically incomplete devices to the newer, rugged, small, portable machines it is to be hoped that even more simple and equally efficient methods will be presented in the future so that an even larger number of patients may be benefited by passive vascular exercise The painstaking work and tireless energy that are represented in this monograph have already borne fruit all over the country They have made doctor and patient conscious of peripheral vascular disease.

Adult Intelligence A Psychological Study of Test Performances By Theodore Weisenburg M.D. Anne Roe Ph.D. and Katharine E. McBride Ph.D. Paper Price \$1.40 Pp 155 with 14 illustrations New York Commonwealth Fund London Oxford University Press 1936

The problem of exploring adult intelligence and characterizing it scientifically has been one that has confounded psychologists for years. The weakness of the standardized psychologic tests in investigating the intelligence levels and other capacities of adults has been one of the reasons why purely psychiatric and analytic procedures have been of more value to the clinician. The present volume makes no attempt to devise any new tests and, in a way, evades the determination of what constitutes an intelligent or an unintelligent adult. The problem of intelligence quotients and other expressions of the trait that are described as intelligence is not particularly emphasized. The tests that are used for giving intelligence quotients and mental ages are used only as part of the battery which these authors have compiled to deal with this problem. The reason for the present study lay in the approach which Dr. Weisenburg was making to the study of aphasia; the result of which study has previously been published and discussed in these columns, but Dr. Weisenburg and his associates were interested in finding out why some of the so-called aphasic reactions occurred frequently and in otherwise "normal" individuals. For that reason a number of tests of various sorts, intended to obtain a cross-section of adult test performances, were brought together and many interesting observations were obtained, which are reported in the present book. There is a good summary of earlier studies of intelligence tests of adults. The tests are described in another chapter and the distributions of the material in the samples are carefully tabulated and presented. One of the more interesting statements made is that sick persons in the hospital whose illnesses are not mental diseases (and who constitute the subjects in the present study) make excellent subjects for research on adult intelligence, most psychiatrists who are consultants to general hospitals would disagree with this. Any one with any experience with test material realizes that even a minor illness invalidates test results and that no amount of weighing can be made to obviate this factor. Nevertheless there seem to be some valid conclusions drawn in the present study and the evidence and careful study of the material that was obtained are well worthy of perusal by any one interested in the problem of examining adults intellectually. In their conclusions the authors point out the value of the various types of tests that they have used and it is noted that the vocabulary test, the analytic test and the absurdities test, as well as the educational tests, were most useful. It is also found that abilities sampled by tests requiring the use of language remain fairly constant through the thirties and that only a slight decline is noted thereafter. In other tests there were found marked declines in ability after the thirties. There are a number of gaps in the material presented by these authors which will need to be filled in later but, as in the case of Weisenburg and McBride's work on aphasia, the study shows extensive use of accepted statistical and experimental techniques and some fairly definite observations. There are good chapters on sex and age comparisons as related to the tests. Nevertheless this is not a book suited for merely cultural reading but rather a monograph to be used by those faced with the problem of understanding factors involved in the presence or lack of intelligence in the adult.

Practical Aspects of Psychoanalysis A Handbook for Prospective Patients and Their Advisors By Lawrence S. Kubie M.D. Cloth Price \$2 Pp 223 New York W. W. Norton & Company Inc. 1936

The present volume causes one to wonder whether the author is not rash. He seizes by the forelock the factors which have laid psychoanalysis open to the present-day criticisms and discusses them. He does not try to defend psychoanalysis as a technique or to explain the theory of the science but rather attempts to show its practical aspects in the way in which one would try to show practical aspects in medicine when guiding a patient to an appropriate specialist for his particular disorder. Psychoanalysts have developed codes of treatment of means of gaining admission to the field and of making financial arrangements that are peculiarly their own and cannot be compared to similar codes found in the medical profession as a whole. Nevertheless the volume explains well why it is

that psychoanalysis should be done only by those who are members of the psychoanalytic society of their particular community, why it is the patients have to make carefully thought out financial arrangements, and why the fees of psychoanalysts are so high. He discusses the attitude that the patient should take toward his treatment and toward his analyzer, and the attitude that should be taken by the family and by outside physicians toward this form of treatment. To those psychiatrists who have been admitted to the fold of psychoanalysis, the present volume will seem trite. To those who are outside the fold but are sympathetic some of the material will seem controversial and so much will be accepted as the psychiatrist's sympathy permits. But it is likely that to those who are not versed in psychoanalysis the tone of the book will seem to be commercial, somewhat unscientific and somewhat ecclesiastical. The volume probably will be of aid in clearing up certain arguments which the patient who is able to be analyzed will have in his mind and should at least to some extent resolve doubts which the critical layman will bring up, often severe, and which often have laid open psychoanalytic schools to considerable criticism. Stylistically it is not particularly profound, and it is slightly defensive.

Endocrinologie Par Noël Flegatnger médecin do l'Hôpital Ambroise Paré Collection des Initiations médicales publiée sous la direction du Dr A. Sézary Paper Price 20 francs Pp 152 with 19 illustrations Paris Masson & Cie 1935

This dissertation represents an attempt to present in very brief form the essentials of endocrine physiology, diagnosis and therapeutics. It is part of a series of treatises on practical medical subjects issued by the publishers, a forty page supplement to the present volume is devoted to advertisements of these and other books. About twenty-two pages are devoted to glandular physiology, a feat of compression that is a tribute to the author's courage but not to his erudition or critical judgment. The remainder of the work is concerned with endocrine dyscrasias, including a final chapter on therapy. One notes with apprehension the irrational character of many of the glandular products recommended by the author for clinical use.

Comparative Psychology A Comprehensive Treatise Vertebrates By Carl J. Warden Ph.D. Assistant Professor of Psychology Columbia University Thomas N. Jenkins Ph.D. Assistant Professor of Psychology New York University and Lucien H. Warner Ph.D. Research Associate Department of Zoology Pomona College Psychology Series Albert T. Poffenberger Ph.D. Editor Professor of Psychology Columbia University Cloth Price \$4.50 Pp 560 with 80 illustrations New York Ronald Press Company 1936

In a review covering the previous volume of this thorough work on comparative psychology it was pointed out that the material was systematically assembled and that the volume would be of great value to naturalists, general psychologists and possibly the psychiatrist who was interested in cultural matters closely allied to his own field. While the behavior of fishes, birds and reptiles, to which the present volume is devoted, probably has no direct bearing on the problems of psychologic medicine, there are types of behavior paralleling the human carefully studied here. The authors are planning to analyze, systematize and describe comparative psychology in three volumes. The first volume, on principles and methods has already appeared. The volume on plants and invertebrates should soon be in the hands of the public, and the present volume deals with the psychology of the vertebrates. In the same way in which biologists have recapitulated the history of the race in the fetal history of the individual, just so one can see in this study a recapitulation of behavior development through the various vertebrates until the behavior of the primate closely approaches that of the human infant. Each chapter is devoted to a single class and in the chapter one finds emphasis placed on receptivity, and locomotion and other reactive capacities. Whenever possible there is some discussion of inactive states modified behavior, and escape reactions and as the mental processes become more complicated there are cited numerous examples of such reactions as multiple choice delayed reaction reaction experiments, education of animals for service the use of tools and other interesting phenomena. The volume is well documented several thousand references being given. It should prove to be a valuable source book to the biologist and the physiologist. Its value to the general physician and even to the psychiatrist appears to be more obscure.

Ätiologie und Therapie der Varizen und des varikösen Symptomenkomplexes. Von Dr. med. habil. Felix Jaeger, Oberarzt der chirurgischen Universitätsklinik Berlin. Mit einem Geleitwort von Prof. Dr. Georg Magnus. Paper. Price 6.46 Mark. 1 p. 76 with 48 illustrations. Leipzig: Johann Ambrosius Barth 1936.

This is a small, clearly written pamphlet on the etiology and treatment of varicose veins and the varicose syndrome, based on the large material of the outpatient department of the surgical clinic in Berlin. There were about 1,500 such patients a year. The clinical picture is described, with excellent reproductions of photographs. Nothing is added to the well known theories about the causes of varicose veins except the emphasis on a hereditary weakness of the venous wall and the fact that valvular incompetence is only a secondary phenomenon. In the treatment the author advocates the use of salt and sugar solutions without preliminary ligation of the saphenous vein. A follow up of results showed 118 per cent recurrences and 218 per cent failures, leaving 664 per cent permanent cures. Even among this last group only 129 per cent had perfect results, whereas in 535 per cent the cosmetic result was poor, as the varices were palpable or visible as hard thrombosed cords. However, these patients were satisfied as their complaints were relieved. In spite of these modest results, the author does not advocate high venous ligation. In the last chapter some anatomic studies are presented which reveal the rather startling fact that the communicating veins and deep veins may also be affected by varicosities and that the involvement of the venules, especially above the inner malleolus, is responsible for the pigmentation, eczema and ulceration at this site. This presentation is an honest picture of the methods used and the results obtained in the Berlin surgical clinic. As such it may be recommended to men interested in the subject of varicose veins. It does not contain any new ideas or any indication of progress and sadly differs from past publications of this clinic.

Handbook of Physical Therapy. This Volume Contains Articles by Various Authors That Have Been Adopted and Authorized for Publication by the Council on Physical Therapy of the American Medical Association. Second edition. Cloth. Price \$2. Pp. 436 with illustrations. Chicago: American Medical Association 1936.

This handbook contains articles that have been accepted for publication by the Council on Physical Therapy of the American Medical Association. Several members of the Council have one or more articles in it. This is not a book for specialists—it is a handbook for the student, technician and general practitioner. The purpose is to acquaint the physician and surgeon with a therapy that will aid in arriving at a cure or relieving the disabled and uncomfortable patient. The field of physical therapy is covered in a concise manner, with necessary details given adequate exposition. There are sufficient illustrations, photographs and graphs to aid the reader. Charts, with the illustrative and legendary features carefully attended to afford excellent methods for teaching students and therapists. The chapter on body mechanics and posture is of definite merit. It presents the standard posture charts as well as methods of training in different age groups. All the chapters on physical agents and methods and their clinical application are presented in a scientific manner, revealing a strong adherence to facts and deductions from proper experimentation.

Fotografía del estómago. Sus aplicaciones en el diagnóstico del cáncer del estómago. Por el Dr. Herbert Hofmann. Paper. Pp. 127 with 104 illustrations. Buenos Aires: Aniceto Lopez Imp. 1936.

This monograph unfortunately does not present adequately the progress made in gastrophotography by such workers as Garin and Bernay of Lyons and Rehfuess of Philadelphia in the six years since the papers of Aschner and Ehrenthel (1930) and the books of Bécart and of Bernay (1931). The author has worked with Heilpern's gastrophotor, the results shown are so poor and unconvincing as to discourage every one. The well known 'lunar landscapes' are shown in numerous photographs but they obviously are not clear or intelligible pictures of either the normal or the pathologic mucous membrane. The discussion is not critical. The apparatus itself has been well described and a discussion of its optical capacity attempted. Presumably the author was not familiar with the critical literature comparing gastrophotography, gastroscopy and the x-ray relief technic, for if he were he would scarcely have published this

book. The difficulties of the optical system have not been surmounted as well in the instrument of Heilpern as they have in that of Garin and Bernay or the modifications of Rehfuess. The two main objections to gastrophotography, however, have not been mentioned by the author: namely (1) the impossibility of "aiming" the exposure and hence of knowing which part of the gastric mucosa is shown in the picture, and (2) the impossibility of obtaining films sensitive enough to bring out the slight differences in the color of the gastric mucosa, ranging as it does from yellow to orange red and red.

The Normal Diet and Healthful Living. By W. D. Sansum, M.D., Chief of the Staff of the Sansum Clinic, R. A. Hare, M.D., Member of the Staff of the Sansum Clinic, and Ruth Bowden, B.S., Dietitian of the Sansum Clinic, Santa Barbara, California. Cloth. Price \$2. Pp. 243. New York: Macmillan Company 1936.

Several years ago Dr. Sansum published a little book called "The Normal Diet," which proved to be one of the most successful of the popular treatises on the subject. It was succinct, sensible and understandable. That brochure has been expanded into the present volume and the same characteristics have been preserved. Most of the emphasis is placed on diet and its manipulation in the management of disorders of nutrition and the correlated functions of digestion and elimination—subjects in which Dr. Sansum has been interested and in the treatment of which his success is well known. Chapters on allergy, underweight and overweight, the care of the teeth and bacterial infection are new, as well as a chapter on a survey of methods of treatment which rapidly reviews the "many forms of treatment which have found acceptance in the practice of scientific medicine." The authors review these briefly in the hope that the reader will understand more of the care he may have under the physician of today. This chapter reviews briefly but ably rest, physical therapy, psychotherapy, drugs, vaccines, gland extracts, surgery, orthopedics and nursing. It is somewhat surprising to find no discussion of diabetes. Some of the opinions expressed are the following: Fatigue and the afternoon lag are associated with low blood sugar, and carbohydrate in quickly assimilable form will give relief. Pulpless teeth, even when they show no x-ray changes, are usually infected. The increase in obesity is due to the increase in the consumption of fats in this country. Food is our best source of vitamins, and if the diet is well balanced there is little need of using artificial products. The vitamin concentrates so frequently available today should be used only on the advice of a physician.

Röntgenographie Technique. A Manual for Physicists, Students and Technicians. By Darmon Atelle Rühnhart, A.M., M.D., F.A.C.B., Professor of Roentgenology and Applied Anatomy, School of Medicine, University of Arkansas. Second edition. Cloth. Price \$5.50. Pp. 431 with 183 illustrations. Philadelphia: Lea & Febiger 1936.

The new edition of this work affords an opportunity to make anew a favorable review of the successful effort of the author to provide a satisfactory textbook of roentgenographic technic. The technical procedures are fully described, having in mind the needs of x-ray technicians, medical students and classes of radiologic technic and those physicians who do some technical roentgenographic work for themselves. After a brief section on electric currents, x-ray machines, tubes and dark room equipment, there is listed a series of introductory experiments which it would be wise for every student of radiographic technic to follow through. Such experiments do more than any amount of reading to fix in mind the physical principles on which successful roentgenographic technic is based. The technic of roentgenography of the various anatomic divisions of the body is then taken up seriatim, with abundant text and numerous illustrations. The book is commendable for the purpose set forth in the author's foreword.

L'année thérapeutique. Médications et procédés nouveaux. Par A. Raylna. Dixième année 1935. Paper. Price 18 francs. Pp. 195. Paris: Masson & Cie 1936.

The 1935 French Year Book on Therapeutics is divided into two parts. Part 1 deals with progress in the treatment of diseases and symptoms. Part 2 takes up therapeutic methods and technics. It may be recommended to the physician who has a reading knowledge of French, as this annual naturally covers the current French literature better than the reviews published in other countries.

Creative America Its Resources for Social Security By Mary van Kleeck. Cloth Price \$3 Pp 353 New York Covici Friede 1936

American industrial history and current conditions are presented from the point of view of a conflict between "creative America" and the possessors of capitalized wealth. It is argued that the domination of the possessors is responsible for restricted production and the consequent poverty of the "creators," and that the removal of this domination and organization of industry, on the basis of scientific management, would provide plenty for all

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Radium Poisoning Liability of Employer — Irene La Porte was employed by the defendant radium corporation from May 1917 to December 1918 and for about six weeks in 1920 to paint numerals on watch dials with a luminous paint containing, among other ingredients, radium sulfate. She applied the paint with a camel's hair brush, which she pointed with her tongue and lips. In the latter part of 1927, approximately seven years after she left the employ of the defendant, she first suspected that she might have radium poisoning, but in the early part of 1928 her dentist and her physician assured her that she did not. In October 1930 she began to have pains in her legs and joints, and her condition was definitely diagnosed as radium necrosis. She died in June 1931, and an autopsy disclosed the cause of death to be osteogenic sarcoma of the pelvis due to radium poisoning. About a year later the plaintiff, as administrator of the estate of the deceased, sued the defendant to recover damages. When the defendant corporation pleaded the statute of limitations, the plaintiff instituted the present suit in the United States district court, D. New Jersey, to enjoin the defendant from pleading the statute, on the ground of equitable fraud.

There is no question, said the United States district court, but that dial painters, at the time the deceased worked in the defendant's factory, ingested and breathed radium sulfate. The dial painters were protected neither by special methods or devices nor by scientific ventilation. In the light of the knowledge of today it is tempting to create the thought that the defendant must have been negligent in some way. Today, industrial methods which the defendant then employed would not be merely negligent but criminal. But, observed the court, this case must be decided on the facts as they existed in the light of the knowledge of 1917 to 1920. The important factual question is to determine how much the scientific and medical world and the defendant then knew about the industry. Even today, the court said, problems concerning radium have hardly been touched. A decade and more ago theories presently accepted were in a stage of controversial experimentation or unknown. Several writers, as early as 1913, suggested that radium salts which were not eliminated from the body would eventually be deposited in the bone structure and there replace the calcium and actually become a part of the structure in the form of radium sulfate. This was theory and there were no computations at that time to indicate what percentage of a given amount of the soluble or insoluble salt taken internally would eventually reach the bone.

In 1917 many dangers to the human body from radium and radium emanation were recognized. Long exposure to emanation irradiation and x-rays had resulted, among a few technicians and scientific men, in fatal or dangerous injuries. But, the court observed the knowledge existing in 1920 concerning radium was so colored with conjecture and theory that it is now impossible impartially and reliably to rationalize it. The evidence was clear that the defendant was utterly ignorant of the harmful effects attendant on its factory process until 1924, when its attention was directed to an alleged case of radium necrosis suffered by one of its former employees. At that time it sponsored an investigation into the situation which developed

little information of value. Following this and other investigations, however, an article was published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Dec 5, 1925, p 1769) entitled "Some Unrecognized Dangers in the Use and Handling of Radioactive Substances," by Dr Harrison S Martland. This article first established the occupational hazard in the dial painting industry.

Considering the matter in the light of knowledge existing in 1920, said the court, it is difficult to understand how the defendant can be said to have perpetrated a fraud when it, a commercial enterprise, failed to draw inferences which no physician had ventured, to the effect that its industry was suicidal to its workers. The court, therefore, felt constrained to find that in 1920 and up to 1924, in which time the two year period of limitations would have elapsed, there was neither knowledge of an occupational hazard in the dial painting industry nor, in the light of the knowledge concerning radium, reason for the defendant to believe or to have known of a hazard. The defendant could not have been under a duty to disclose a hazard which, so far as it or the world knew, did not exist. The court refused to enjoin the defendant from pleading the statute of limitations. —*La Porte v United States Radium Corporation*, 13 F Supp 263

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine Boston, Oct 20-22 Dr Franklin P Lowry, 313 Washington St Newton Mass., Secretary
American Academy of Ophthalmology and Otolaryngology New York, Sept 26-Oct 3 Dr William P Wherry 107 South 17th St Omaha, Executive Secretary
American Association for the Study of Neoplastic Diseases Washington D C Sept 17-18 Dr Eugene R Whitmore, 2139 Wyoming Ave. N W Washington D C Secretary
American Association of Industrial Physicians and Surgeons Atlantic City, N J, Oct 5-6 Dr Volney S Cheney Armour and Co. Union Stock Yards Chicago Secretary
American Association of Obstetricians Gynecologists and Abdominal Surgeons Bretton Woods N H Sept. 14-16 Dr James R. Bloss, 418 Eleventh St., Huntington W Va. Secretary
American Association of Railway Surgeons Chicago Nov 5-7 Dr Daniel B Moss 547 West Jackson Blvd Chicago Secretary
American Clinical and Climatological Association Richmond Va. Oct. 19-21 Dr Francis M Rackemann 263 Beacon St. Boston Secretary
American College of Surgeons Philadelphia Oct. 19-23 Dr George W Crile 40 East Erie St. Chicago Chairman Board of Regents
American Hospital Association, Cleveland Sept. 28 Oct 2 Dr Bert W Caldwell 18 East Division St Chicago Executive Secretary
American Public Health Association New Orleans Oct. 20-23 Dr Reginald M Atwater, 50 West 50th St. New York Executive Secretary
American Roentgen Ray Society Cleveland Sept 29 Oct 2 Dr Eugene P Pendergrass 3400 Spruce St. Philadelphia Secretary
Associated Anesthetists of the United States and Canada Philadelphia Oct 19-23 Dr F H McMechan 318 Hotel Westlake Rocky River Ohio Secretary
Association of American Medical Colleges Atlanta Ga., Oct. 26-28 Dr Fred C Zappie 5 South Wabash Ave. Chicago Secretary
Association of Military Surgeons of the United States Detroit Oct 29-31 Dr H L Gilchrist Army Medical Museum Washington D C Secretary
Central Association of Obstetricians and Gynecologists Detroit Oct. 15-17 Dr Ralph A Reis 104 South Michigan Blvd. Chicago Secretary
Delaware Medical Society of Rehabilitation Oct 12-14 Dr William H Speer 917 Washington St Wilmington Secretary
Indiana State Medical Association South Bend Oct 6-8 Mr Thomas A Hendricks, 23 East Ohio St. Indianapolis Executive Secretary
Inter State Postgraduate Medical Association of North America St. Paul, Oct 12-16 Dr W B Peck 27 East Stephenson St. Freeport, Ill., Managing Director
Kansas City Southwest Clinical Society Kansas City Mo Oct 5-8 Dr J V Bell 1103 Grand Ave., Kansas City Mo Secretary
Kentucky State Medical Association Paducah Oct 5-8 Dr Arthur T McCormack, 532 W Main St Louisville Secretary
Michigan State Medical Society Detroit Sept. 21-24 Dr C T Ekelund, 35 West Huron St Pontiac Secretary
Mississippi Valley Medical Society Burlington Iowa Sept. 30-Oct. 2 Dr Harold Swanberg 510 Maine St Quincy Ill Secretary
Nevada State Medical Association Reno Sept 25-26 Dr Horace J Brown 20 North Virginia St Reno Secretary
Ohio State Medical Association Cleveland Oct 7-9 Mr C. S. Nelson, 79 East State St. Columbus Executive Secretary
Omaha Mid West Clinical Society, Omaha Oct. 26-30 Dr J D McCarthy 107 South 17th St. Omaha Secretary
Oregon State Medical Society The Dalles Oct. 8-10 Dr Morris L Bridgman 1020 S W Taylor St Portland Secretary
Pennsylvania Medical Society of the State of Pittsburgh Oct 5-8 Dr Walter F Donaldson 500 Penn Ave. Pittsburgh Secretary
Tri States Medical Society of Texas Louisiana and Arkansas September Texas Oct 26-27 Dr John M Eli Mt Pleasant Texas Secretary
Virginia Medical Society of Staunton Oct 13-15 Miss Anna V Edward 1200 East Clay St Richmond Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

62:1253 (July) 1936

- Basal Metabolism of Girls. President's Address. F. B. Talbot. Boston.—p. 1.
- Basal Energy Metabolism and Creatinine in Urine. I. Observations on Children. N. B. Talbot. Boston.—p. 16.
- *Improvement in Diagnosis of Whooping Cough. Correlation Between Sedimentation Rate and Cell Count of Blood on Basis of Proved Cases. A. E. Gold and H. O. Bell. Belleville, N. J.—p. 25.
- Metabolism of Adolescent Girls. IV. Mineral Metabolism. C. C. Waag, Mildred Kaucher and Mary Wing. Cincinnati.—p. 41.
- Pathologic Alterations in Lipid Content of Adrenals in Infancy and in Childhood. Maud L. Menten and M. P. Smith. Pittsburgh.—p. 54.
- Beta Hemolytic Streptococcal Infection in Infancy and in Childhood. III. Placental Transmission of Antifibrinolysin and Antistreptolysin. V. W. Lippard and G. W. Wheeler. New York.—p. 61.
- Recovery of Filtrable Virus from Children with Influenza. I. Epidemiologic and Clinical Observations. I. J. Brightman and J. D. Trask. New Haven, Conn.—p. 67.
- Id. II. Experimental Disease in Ferrets. I. J. Brightman. New Haven, Conn.—p. 78.
- *Inhalation of Epinephrine Hydrochloride for Relief of Asthma in Children. J. B. Graessner and A. H. Rowe. Oakland, Calif.—p. 92.
- Hypophyseal Infarctum. Treatment with Anterior Hypophyseal Extract. Final Report. E. K. Shelton, L. A. Cavanaugh, Santa Barbara, Calif. and H. M. Evans. Berkeley, Calif.—p. 100.

Improvement in Diagnosis of Whooping Cough—Gold and Bell report the results of the blood counts and determinations of the blood sedimentation rate in a series of proved cases of pertussis, they show the value and limitations of these laboratory procedures as aids in the diagnosis of atypical whooping cough, they discuss the difficulties encountered in the diagnosis of pertussis and review the literature, with especial reference to the diagnostic criteria in current use. A comparison of the usefulness of the various laboratory methods as an aid in early diagnosis of either the typical or the atypical forms of whooping cough suggests the following facts: 1. In the catarrhal stage (a) the cough plate-droplet method still remains indisputably the most successful approach, (b) the blood count proves to be too unreliable a basis on which to venture an interpretation of the leukocyte-lymphocyte formula, and (c) the sedimentation test is found to be misleading and, in the advent of retardation, becomes valueless through loss of its proper diagnostic significance in the absence of a characteristic blood count. 2. In the paroxysmal stage (a) cultures with cough plates are positive in only 67 per cent of the cases, while single tests are not always successful and require at least three days for results, (b) hematologic studies show that the expected typical lymphocytic reaction is present in approximately 80 per cent of the cases as the most presumptive evidence and (c) retardation of the sedimentation rate was demonstrated in at least 94 per cent of the cases in the series in which there was no complication, and it proved to be a valuable laboratory adjunct. 3. In the period of decline (a) cough plates are usually sterile, indicating the decreased contagiousness in this stage, (b) the sedimentation test possesses no special diagnostic importance in this late period, yet it may serve as a sensitive indicator of a complicating pathologic activity, and (c) the practical significance of the complement fixation test, the agglutination test and the cutaneous tests (included in the later half of the paroxysmal stage) is questionable.

Epinephrine Hydrochloride for Relief of Asthma—Graessner and Rowe show that the inhalation of epinephrine hydrochloride for relief of asthma is a practical and effective procedure in children of all ages and that success with this procedure is dependent on the use of a stronger solution than

is usually employed in the treatment of asthmatic symptoms, preferably 1:100, and an atomizer capable of delivering a fine vapor-like spray. This was accomplished by modifying the nebulizing mechanism of the common all glass atomizer. To prevent spilling of the solution into the mouth during use, an inverted moat was incorporated in the atomizer. This special feature was found desirable after several patients had complained of severe pain in the epigastrium, which resulted from the swallowing of small amounts of the solution accidentally spilled into the mouth. Such accidents cannot occur with the present atomizer. The method of using the atomizer is simple, but nevertheless it requires a modicum of coordination, which patients occasionally find difficult to acquire without considerable practice. Children aged 1 or 2 years cannot, of course, furnish the necessary cooperation to utilize the procedure. Children from 3 to 5 years of age may be trained to inhale properly and even to manipulate the atomizer themselves, but in general young children must use the mask apparatus designed to conform to the configuration of the face and to cover the nose and mouth. An atomizer of somewhat different external design than that previously described fits into the handle of the mask apparatus. A motor driven pump may be used instead of the hand-operated bulb to furnish air pressure for the mask. The authors say that, since the perfection of this method, they have used it as a routine for all patients. It is surprising how readily the younger patients learn to use the apparatus. The authors describe several case histories and conclude that the relief obtainable by this means is comparable, and in some respects superior, to the relief obtained with epinephrine hydrochloride administered hypodermically. The results obtained with inhalation therapy are superior to those obtained with all commonly used proprietary remedies.

American Journal of Medical Sciences, Philadelphia

192:1152 (July) 1936

- Existence of Intrinsic Deficiency in Pellagra. Preliminary Report. V. P. Sydenstricker, E. S. Armstrong, C. J. Derrick and P. S. Kemp. Augusta, Ga.—p. 1.
- Studies in Diabetes Mellitus. IV. Etiology. Part II. E. P. Joslin. Boston. L. I. Dublin and H. H. Marks. New York.—p. 9.
- Treatment of Diabetic Coma. J. W. Conn. Ann Arbor, Mich.—p. 23.
- Viscosity Proteins and Lipids of Blood Plasma in Essential Hypertension. J. T. Brundage, A. Cantarow and R. S. Griffith. Philadelphia.—p. 30.
- Use of Calcium Gluconate as Circulation Time Test. S. J. Goldberg. Philadelphia.—p. 36.
- Effect of Two Water Insoluble Squill Glucosides on Electrocardiogram. C. C. Maher and W. W. Sittler. Chicago.—p. 41.
- Role of Laboratory in Diagnosis of Gallbladder Disease. H. Shay and Cecelia Riege. Philadelphia.—p. 51.
- *Effect of Ergotamine Tartrate on Nonmigrainous Headaches. W. G. Lennox, T. J. C. von Storch and P. Solomon. Boston.—p. 57.
- Comparison of Prolactin Bio-Assays in Teratoma and Other Conditions. S. E. Owen and M. Cutler. Chicago.—p. 61.
- Spontaneous Pneumothorax Simulating Acute Abdominal Affections. F. Steigmann and H. A. Singer. Chicago.—p. 67.
- Method for Determining Sedimentation Rate and Red Cell Volume in Infants and Children with Use of Capillary Blood. C. H. Smith. New York.—p. 73.
- Macrocytic Anemia in Liver Disease. Particularly Cirrhosis. Observations on Incidence, Course and Reticulocytosis with Correlated Study of Gastric Acidity. D. H. Rosenberg with technical assistance of A. Walters. Chicago.—p. 86.
- Aneurysm of Abdominal Aorta. Study of Seventy Three Cases. R. H. Kampmeier. New Orleans.—p. 97.
- *Abdominal Pain of Vascular Origin. J. E. Dunphy. Boston.—p. 109.
- Vascular Changes in Intermittent Claudication. Note on Value of Arteriography in This Symptom Complex. J. R. Veal and Elizabeth M. McFetridge. New Orleans.—p. 113.

Effect of Ergotamine Tartrate on Nonmigrainous Headaches—Lennox and his collaborators administered ergotamine tartrate to forty-six patients suffering from nonmigrainous headaches associated with aseptic meningitis, intracranial pressure, subnormal intracranial pressure following removal of spinal fluid, postconvulsive headache, sinusitis, or artificially induced by means of histamine phosphate injected intravenously. Ergotamine tartrate was given to these patients in the same manner as to patients with migraine. 0.5 mg intravenously or subcutaneously. Besides the patient's statement of the effect on the pain, record was kept of the occurrence of nausea and vomiting, and of changes in blood pressure and pulse rate. The headache of these forty-six patients was relieved in 15, unchanged in 63 and worse in 22 per cent, as compared

with 89.8 and 3 per cent, respectively, of 120 cases of migraine headaches. Study of the results in the various conditions represented in the nonmigrainous group shows that, of the seven patients relieved, three were in the group of eleven headaches of unknown cause and three were in the group of eight post-convulsive headaches. The large proportion of epileptic patients who were relieved brings to mind the supposed underlying relationship of epilepsy and migraine, though more important may be the fact that postconvulsive headaches are naturally short lived. Of the ten subjects made worse by the injection, five belonged to this unknown group and two to the postseizure group. Not only is ergotamine of little account in stopping nonmigrainous headaches, but it may, according to Barger, imitate a headache. To test this point the authors administered the drug to thirty-eight subjects who were at the time free from pain in the head. Six of the subjects complained of resulting mild headache.

Abdominal Pain of Vascular Origin.—If, as Conner suggests, visceral arterial disease is analogous to coronary disease, Dunphy believes that the past histories of patients dying of mesenteric thrombosis ought to reveal evidence, in a certain percentage of cases, of chronic abdominal pain preceding the acute attack. With this point in mind he reviewed the histories of all patients dying of mesenteric vascular occlusion, confirmed by necropsy, in the Peter Bent Brigham Hospital. In seven of twelve cases in which the occlusion was associated with arteriosclerosis there was a story of chronic recurrent abdominal pain preceding the fatal attack by weeks, months or years. In all these cases mesenteric arteriosclerosis appeared to be the most plausible cause of the abdominal pain, but unfortunately in nearly every case varying degrees of coronary sclerosis rendered a convincing interpretation of the cause of the pain impossible. One case was selected as indisputable evidence of the occurrence of abdominal pain of vascular origin. An evaluation of the clinical and pathologic evidence in this case leads to the conclusion that a gradual occlusion of the mesenteric arterial system by progressive thrombosis was the cause of recurrent abdominal pain of a duration of two months. Although the pain was severe, it was not sharply localized, did not radiate and was not associated with muscular spasm or exquisite tenderness of the abdominal wall. In the beginning it was definitely related to the ingestion of food and only later became constant. On the basis of these characteristics the following hypothesis is submitted: Vascular pain in the abdomen is the result of an anoxemia of the intestinal wall and is a true visceral pain manifested through sensory neurons in the sympathetic nerves independently of the musculocutaneous pathways.

American Journal of Physiology, Baltimore

110:1244 (June) 1936

- *The Postexercise Suppression of Kidney Function in Man. Frances A. Hellebrandt, C. Etta Walters and Mary Louise Miller. Madison, Wis.—p. 168.
- Comparison of Changes in Hydrogen Ion Concentration of Arterial Blood and Saliva During Variations of Pulmonary Ventilation. C. R. Brassfield. Ann Arbor, Mich.—p. 174.
- Distribution of Adrenergic Vasodilators in Rat. L. C. Wyman and Caroline Ann Suden. Boston.—p. 182.
- Vitamin C and Adrenal Cortical Hormone. J. L. Svirhely and E. C. Kendall. Rochester, Minn.—p. 187.
- Lesions in Pancreas and in Anterior Hypophysis with Fatal Acidosis Following Prolonged Intravenous Administration of Glucose (in Dogs). H. R. Jacobs and A. R. Colwell. Chicago.—p. 194.
- Experimental Induction of Estrus (Sexual Receptivity) in Normal and Ovariectomized Guinea Pig. E. W. Dempsey, R. Hertz and W. C. Young. Providence, R. I.—p. 201.
- Is a Portion of Pancreatic Secretory Response to a Meal Due to Absorption of Digested Food Products? J. Gray, M. S. Kim and A. C. Ivy. Chicago.—p. 210.
- Influence of Liver in Formation and Destruction of Bile Salts. J. L. Bollman and F. C. Mann. Rochester, Minn.—p. 214.
- Regeneration of Taste Buds After Suture of Lingual and Hypoglossal Nerves. J. M. D. Olmsted and R. R. Pinger. Berkeley, Calif.—p. 225.
- Fusillade Patterns of Inspiratory and Expiratory Muscles and Their Effects on Respiratory Act. R. Gesell. Ann Arbor, Mich.—p. 228.
- Some Physical and Physiologic Properties of System Insulin Tannic Acid. F. Bischoff. Santa Barbara, Calif.—p. 239.

Suppression of Kidney Function After Exercise.—For their studies Hellebrandt and her associates had the cooperation of healthy young adult women students majoring in physical education and accustomed to vigorous exercise. It was found

that mild exercise has no influence on water diuresis. Urine formation after exercise is stimulated by moderate activity. More rigorous exertion associated with breathlessness and sweating inhibits diuresis during the period of work. Brief violent exercise, such as is accompanied by lactic acid acidosis and a large oxygen debt, suppresses kidney function for from forty-five to sixty minutes. There is a lag of forty-five minutes before the greatest excretory diminution occurs. When diuresis is resumed, the rate of urine formation may exceed that attained at rest. The prolonged arrest of diuresis after brief violent exercise cannot be attributed to failure in absorption. The hypothesis suggested is that kidney function is suppressed after violent exercise because (1) blood is depleted of water by virtue of the increase in concentration of osmotically active components in the muscles, (2) a prolonged negative phase in blood pressure ensues, and (3) a resultant disturbance in the balance of osmotic and hydrostatic pressures reduces the volume of glomerular filtrate until the cardiovascular and physiochemical disturbances of exercise subside, from forty-five to sixty minutes after the cessation of muscular work.

Anatomical Record, Philadelphia

65:255-370 (June 25) 1936

- Number of Ganglion Cells in Dorsal Root Ganglions of Second and Third Cervical Nerves in Human Fetuses of Various Ages. Mary E. McKinniss. Pittsburgh and Woods Hole, Mass.—p. 255.
- Effects of Two Hypophyseal Gonadotropic Hormones on Reproductive System of Male Rat. R. O. Greep, H. L. Fevold and F. L. Hissaw. Boston.—p. 261.
- Comparative Studies on Origin and Development of Brachial Plexus. Ruth A. Miller and S. R. Detwiler. New York.—p. 273.
- Cytologic Studies by Altmann-Gersh Freezing Drying Method. I. Recent Advances in the Technique. N. L. Hoerr. Chicago.—p. 293.
- Response of Thyroid Glands of Hypophysectomized Newts to Injections of Phytone and Their Reaction After Cessation of Treatment. A. Elizabeth Adams and Florence Martindale. South Hadley, Mass.—p. 319.
- Role of Primitive Mesothelium in Development of Mammalian Spleen. E. A. Holyoke. Omaha.—p. 333.
- Survival of Deciduatoma in Unilaterally Pregnant Rat. R. A. Lyon and W. M. Allen. Rochester, N. Y.—p. 351.
- Pituitary Gland of Fundulus. S. A. Matthews. Philadelphia.—p. 357.

Annals of Surgery, Philadelphia

104:1160 (July) 1936

- Forgotten Chapter in History of Circulation of Blood. S. I. Haddad and A. A. Khairallah. Beyrouth, Syria.—p. 1.
- Surgical Treatment of Hyperparathyroidism Based on Thirty Cases Confirmed by Operation. E. D. Churchill and O. Cope. Boston.—p. 9.
- *Metastases to Thyroid Gland from Cancer of Colon. F. W. Rankin and C. H. Fortune. Lexington, Ky.—p. 36.
- Fall in Blood Pressure During Spinal Anesthesia. H. H. Bradshaw. Boston.—p. 41.
- Evipal Anesthesia in Thoracic Surgery. Studies in One Hundred Thoracoplasties for Pulmonary Tuberculosis. P. N. Coryllos and Sara Bass. New York.—p. 46.
- *Local Prophylactic Use of Anti-Gas Gangrene Serum. H. Lillenthal. New York.—p. 58.
- Acute Intestinal Obstruction by Persimmon Phytohezoar. Report of Two Cases. R. L. Hargrave and R. Hargrave. Wichita Falls, Texas.—p. 65.
- Transverse Incision in Upper Abdomen. Its Anatomic and Physiologic Advantages. R. L. Sanders. Memphis, Tenn.—p. 74.
- Experimental Studies of Uretero-Intestinal Anastomosis. Preliminary Report. H. L. Douglass and L. W. Edwards. Nashville, Tenn.—p. 87.
- Bilateral Aseptic Necrosis of Femoral Head. Problems Arising in Compensation Case. E. Freund. Venice, Fla.—p. 100.
- Treatment of Old Unreduced Nasal Fractures. S. Fomon. New York.—p. 107.
- Dislocation and Elongation of Long Head of Biceps Brachii. Analysis of Six Cases. E. L. Gilcrest. San Francisco.—p. 118.
- Lipoma of Extremities. E. M. Bick. New York.—p. 139.

Metastases to Thyroid from Cancer of Colon.—Rankin and Fortune point out that their case of cancer is distinguished from an ordinary generalized carcinomatosis because of the occurrence of metastases in the thyroid. Cancer of the large intestine is less apt to produce distant metastases than neoplasms arising elsewhere in the gastro-intestinal tract. Further, carcinoma in the upper portion of the colon is less prone to distant spread than that occurring in the rectum. Mucin production in colonic tumors is of two types. In the first group there are many goblet cells and the mucoid change represents a differentiation of the carcinoma toward the normal function of colonic mucosa. These tumors are not prone to distant metastases and are among the less highly malignant of intestinal cancers. The

other group is highly undifferentiated and the mucin is present within highly atypical cells—the so called signet-ring cells. These tumors are highly malignant and are prone to metastasize early and widely. The mucin formation in this particular carcinoma is of the first mentioned type. The spread of this neoplasm has been by both hematogenous and lymphatic routes. The involvement of the thyroid is undoubtedly by way of the adjacent carcinomatous cervical lymph nodes. In spite of the proximity, however, such an occurrence is extremely rare. In carcinoma of the colon it is even less frequent and in the particular type of cancer (an annular carcinoma just proximal to the hepatic flexure) represented by this case it is most unusual.

Prophylactic Use of Anti-Gas Gangrene Serum.—In 1930 Lienthal began the systematic employment of local application of anti gas gangrene serum to the freshly incised thoracic wall immediately after operative evacuation of a putrid abscess of the lung. In nine operative cases of intrathoracic fetid suppurative disease and one case of true gas gangrene of the leg, there was not a single visible postoperative anaerobic infection of the muscles or skin. Having placed the drainage material into the abscess cavity, the author completes the dressing by packing the entire wound of the chest wall from the abscess to the surface with gauze saturated with the serum. This was placed in the form of a doughnut packing, leaving an opening for the deep drainage. At the early subsequent dressings this serum impregnated gauze was not disturbed and when at the end of five or six days the doughnut was no longer adherent to the chest wall it was removed, leaving a perfectly clean healing surface, with the areolar septums sealed. From now on the abscess was treated in the manner best suited to the individual case but in spite of the still present anaerobic organisms, no infection occurred in the chest wall. And even when other abscesses developed in the depths and were evacuated through the same opening, the fresh virulent infection from these hitherto undrained pockets did not infect the healing, granulating wound of the thoracic wall. No systemic effect ascribable to the serum such as serum sickness or urticaria, has been observed, and the danger of this complication may probably be disregarded because no intravenous or other injections are made. The price of the product is an objection but may be counteracted by reduction in the time and expense of hospitalization.

Archives of Neurology and Psychiatry, Chicago

36: 1 230 (July) 1936

- Suicide and Mental Disease. Clinical Analysis of One Hundred Cases. G. R. Jameison. White Plains, N. Y.—p. 1.
Oxygen Saturation of Blood Draining Brain and Limbs of Patients with Epilepsy. W. G. Lennox and Erna L. Gibbs. Boston.—p. 13.
Prepsychotic Personality of Patients with Involutional Melancholia. W. B. Tittle. New York.—p. 19.
Phenomena Resembling Lilliputian Hallucinations in Schizophrenia. A. Angyal. Worcester, Mass.—p. 34.
Hemiedema in Cases of Hemiplegia. J. A. Luhan. Chicago.—p. 42.
Arachnecephaly with Extreme Eversion of End Brain. Anatomic Study. H. Kuhlbeck. Philadelphia and J. H. Globus. New York.—p. 58.
Subdural Traction and Posttraumatic Headache. Study of Pathology and Therapeutics. W. Penfield and N. C. Norcross. Montreal.—p. 75.
Occlusion of Anterior Spinal Artery. Clinicopathologic Report of Case and Review of Literature. H. Zeitlin and B. W. Lichtenstein. Chicago.—p. 96.
Cells of Nervous System in Acute and in Chronic Morphine. Correlation of Changes with Behavior. E. M. MacEwen and A. R. Buchanan. Iowa City.—p. 112.
Angio-Architecture of Substantia Nigra and Its Pathogenic Significance. K. H. Finley. Boston.—p. 118.
Electromyographic Studies of Neuromuscular Disorders. D. B. Lindsay. Cleveland.—p. 128.

Hemiedema in Cases of Hemiplegia.—Luhan points out that marked edema localized to the paralyzed side in cases of hemiplegia arouses curiosity and stimulates inquiry concerning the mechanism of its causation, it particularly raises the question of the existence of cerebral vasomotor centers of contralateral dominion. After reviewing the literature on hemiedema he reports the histories of seven cases that he observed. After the first four cases had been encountered, a series of 100 patients with hemiplegia were selected at random and examined for the purpose of determining the gross frequency of vasomotor disturbances in cases of recent and of long-standing hemiplegia. In the conclusion the author states that hemiedema, or edema more marked on the paralyzed side, occurring at some time

during the course of hemiplegia was noted in fifteen of 100 unselected cases of hemiplegia. However, such edema is usually mild, marked edema of the paralyzed extremities rarely occurs. The edema itself is probably of cardiac or of renal origin. The cerebral lesion effects a tendency to localize actual or potential edema to the parietic extremities. There is clinical evidence to suggest that some of the circulatory disturbances in hemiplegic limbs may be of cerebral vasomotor origin, quite apart from the purely mechanical factors inseparably linked with the hemiparesis, but thus far the results of clinical studies, which were checked with postmortem observations, have not furnished any critical evidence for localizing a cerebral vasomotor center of contralateral dominion.

Subdural Traction and Posttraumatic Headache.—Penfield and Norcross point out that posttraumatic headache associated with dizziness is a clinical entity. They report the histories of cases in which treatment with cranial insufflation was carried out. They also describe experimental studies and outline two methods of therapeutic insufflation, namely, (1) a formerly described intraspinal method of insufflation and (2) a not previously described method of direct intracranial subdural insufflation. They say that the subdural space under normal circumstances contains a small body of fluid quite separate from the cerebrospinal fluid. Small movements that occur between the brain and the skull when the head is moved quickly are probably made possible because of this fluid bed. Such movements between the pia and the arachnoid are impossible because of the tissue septums that normally connect these membranes. The pathologic basis of true posttraumatic meningeal headache consists in an intimate adhesion of the arachnoid to the dura, which causes obliteration of the subdural space in a smaller or larger area. This does not mean dense adhesions, such as those of a scar. The sensitive area, which is likely to be affected by this adhesion, is usually a meningeal artery in the dura or, less frequently, a dural sinus. The chronic pain is due to pressure or traction on one of these sensitive areas because of the rotation in position of the brain produced by the blow and maintained by the adhesion. Effective therapy must provide for collapse of the ventricular system and the simultaneous introduction of air into the subdural space. As the head is oscillated the brain, which is shrunken because of the collapse of the ventricles, pulls away from the overlying dural covering with considerable traction, owing to its own weight. This separation accounts for the cure which results from proper insufflation of air. Failure may occur when this reopening is incomplete, and adhesion continues to stimulate a sensitive area of dura.

Archives of Surgery, Chicago

33 1 186 (July) 1936

- Duodenogastric Intussusception. Experimental Study of Peptic Ulcer. J. K. Baxter with assistance of N. E. Baxter. Indianapolis.—p. 1.
Operative Experience in Cases of Pineal Tumor. W. E. Dandy. Baltimore.—p. 19.
Intestinal Obstruction Produced by Mesenteric Bands in Association with Failure of Intestinal Rotation. E. G. Wakefield and C. W. Mayo. Rochester, Minn.—p. 47.
Role of Reticulo-Endothelial System in Deposition of Colloidal and Particulate Matter in Articular Cavities. J. G. Kuhns and H. L. Weatherford. Boston.—p. 68.
Influence of Motion of Healing of Fractures. W. J. Potts. Oak Park, Ill.—p. 83.
Cysts of Semilunar Cartilages. G. E. Bennett and M. B. Shaw. Baltimore.—p. 92.
Cutaneous Hyperalgesia of Abdomen. Experimental Study. S. Nixon. Indianapolis.—p. 108.
Diffuse Genuine Phlebotasia. Report of Case. E. Freund. Venice, Fla.—p. 113.
Etiology of Deep Acetabulum and Intrapelvic Protrusion. A. M. Rechtman. Philadelphia.—p. 122.
Diagnosis of Cancer of Stomach. Use of Gastroscope and Gruskin Test. G. H. Pratt. New York.—p. 138.
Gaseous Distention Associated with Mechanical Obstruction of Intestine. J. S. Hibbard. Wichita, Kan.—p. 146.
Sixtieth Report of Progress in Orthopedic Surgery. J. G. Kuhns. E. F. Cave. S. M. Roberts. J. S. Barr and R. J. Joplin. Boston.
J. A. Freiberg. Cincinnati. J. E. Milgram. New York, and R. I. Stirling. Edinburgh, Scotland.—p. 168.

Operative Experience in Cases of Pineal Tumor.—Although an operative approach to the pineal region was proposed by Dandy in 1921, it was not until a decade later that the first pineal tumor was successfully extirpated. A disastrous

expense and annoyance toward pyelography. Cases of pyelitis or other urinary tract disease may be masked as essential hypertension and may continue to be unrecognized except in those few persons who develop infection or other acute urinary symptoms, thus directing attention to the urinary tract. Pain and frequency of urination in the female should not be dismissed so readily. Backache, pain in the legs, lassitude, listlessness and fatigue in the male should be subjected to a close scrutiny for prostatitis, vesiculitis and strictures. Diagnoses of "acid urine" and "strain" should be relegated to the prescientific era of medicine.

Bacteriophage Therapy of Chronic Furunculosis of Face—Gowen avers that the application of staphylococcus bacteriophage therapy to the face in cases of chronic furunculosis results in an exacerbation of the condition in from ten to twenty one days. Until this exacerbation occurs, clinical improvement does not take place. In cases responding well, clinical improvement seems to be associated with a disappearance of the aureus and citreus strains of staphylococci initially from the hands and secondarily from the face. When there is no diminution in the number of pigmented staphylococci there is no marked improvement, and bacteriophage therapy seems to be of no avail. When the skin flora is primarily sarcina, bacteriophage therapy has little, if any, effect on this type of flora and there is only a transient clinical improvement. There is evidence of an association between the ability of the skin to induce the S to R change and improvement. Bacteriophage therapy seems to stimulate rough colony formation to some degree. Because the flora of the face and that of the hands are similar, it would be logical to assume that the hands are continually playing a part in seeding new surfaces of the face and reseeding old surfaces.

Iowa State Medical Society Journal, Des Moines

26: 331-450 (July) 1936

- President's Address T A Burcham Des Moines—p 331
The Changing Times P E Sawyer, Sioux City—p 336
The Use of Barbitol Products F G Norbury Jacksonville Ill—p 338
Feeding Cases P C Jeans Iowa City—p 343
Classification and Management of Chronic Suppurative Otitis Media H L Williams Rochester Minn—p 346
Experience with Core of Urinary Tract Infections W R Hornaday, Des Moines—p 352
Preoperative and Postoperative Care of Thyroid Patient F B Dorsey Jr Keokuk—p 354
The Relationship Between the Industrial Surgeon, the Insurance Company and the Employee W C Goenne, Davenport—p 357
Prenatal Diagnosis of Spina Bifida L A Faber and L G Erickson, Dubuque—p 359

Johns Hopkins Hospital Bulletin, Baltimore

68 383-438 (June) 1936

- *Intranuclear Inclusion Bodies in Kidney and Liver Caused by Lead Poisoning S S Blackman Jr Baltimore—p 384
Observations on Pathologic Changes in Snprrenalectomized Dogs with Particular Reference to Anterior Lobe of Hypophysis Comparison with Addison's Disease W M Nicholson Baltimore—p 405
Polyuria and Polydipsia (Diabetes Insipidus) and Glycosuria Resulting from Animal Experiments on Hypophysis and Its Environs F L Reichert San Francisco and W E Dandy Baltimore—p 418

Inclusion Bodies in Lead Poisoning—Blackman found intranuclear acidophilic inclusion bodies in the tubular epithelium of the kidneys and in liver cells in twenty-one cases of lead poisoning occurring in children, and similar inclusions were reproduced in the kidneys of guinea-pigs, mice and rats by adding lead to the diet of these animals. These inclusion bodies are variable in size and shape. Many of them are quite large and are round, smooth and homogeneous in appearance. Some are plastic and assume the shape of the distorted nuclei in which they occur. Some of the nuclei contain many small granular and droplike inclusion bodies. Like the intranuclear inclusions of virus diseases the majority are stained by dyes, such as eosin and phloxin, and they give a negative staining reaction for thymonucleic acid. It is probable that the inclusion bodies represent accumulations in damaged cells of the acidophilic material which is present in smaller amounts in normal cells. As in virus diseases, the nuclei in which the inclusions of lead poisoning occur are increased in size and altered in shape and the arrangement of basophilic chromatin

in the nuclei is also abnormal. The quantity of chromatin is greatly increased in some nuclei. In many others the chromatin granules collect along the periphery of the nucleus and also along the margin of the inclusion body, leaving a relatively clear space between the inclusion and nuclear membrane. The cytoplasm of the affected cells in the kidney especially is also damaged. Some cells are enlarged. Many are thin, flattened and basophilic in appearance. Some cells contain fat, especially in the liver, and in both kidney and liver completely necrotic cells are found. Evidence of regeneration of tissue in the kidneys is indicated by the presence of mitotic figures and cells with basophilic cytoplasm. The tubules in each cortical ray of the kidney are especially damaged by lead, and in this location atrophied tubules, scars and slight chronic inflammation may be found. In most of the affected human livers, aside from fat deposits in the cytoplasm and marked changes in the nuclei of the hepatic cells, there is slight inflammation and scarring in the periportal areas, accompanied in some instances by slight proliferation of bile ducts.

Journal of Allergy, St. Louis

7 443-542 (July) 1936

- Reactions to Intracutaneous Injections of Nucleoproteins of Upper Respiratory Pathogenic Bacteria in Asthmatic Patients F A Stevens and L Jordan New York—p 443
Alum as an Adjuvant in Sensitizing Guinea Pigs to Ragweed Pollen (Ambrosia Artemisiifolia) A H W Caulfield M H Brown and E T Waters Toronto—p 451
Hypersensitiveness to Fungi G T Brown Washington D C—p 455
Blood Sugar Studies in Hay Fever and Asthma E L MacQuiddy A R McIntyre and D Koser Omaha—p 471
Heterophile Antigen Content of Pollen Negative Report P D Garvin and S A Kurland Denver—p 475
Critique of Perennial Treatment of Pollen Allergy M M Peshkin New York—p 477

Journal of Lab and Clinical Medicine, St. Louis

21 993-1104 (July) 1936

- Experimental and Clinical Observations Regarding Angina Pectoris and Some Related Symptoms D E Jackson and Helen L Jackson Cincinnati—p 993
*Complete Temporary Recovery of Long Duration in Acute Aleukemic Myeloid Leukemia Case Report I H Marcus Brooklyn—p 1006
Comparison of Xylose Tolerance with Blood Urea in Nephritic Rats H W Larson New York—p 1010
Comparative Studies in Chemotaxis J E Klein Chicago—p 1017
Constitution and Arthritis J Kovacs and E F Hartung New York with technical assistance of Virginia Hanscom—p 1022
Effects of Dyes on Endameba Histolytica in Vitro H Tsuchiya St Louis—p 1028
*Studies on Effect of High Sulfur Low Carbohydrate Diet in Chronic Arthritis J C Forbes R C Neale O L Hite D B Armistead and S L Rucker Richmond Va—p 1036
Bactericidal Action of Irradiated Oil of Pine on Hemolytic Streptococcus F A Stevens New York—p 1040
Relation of Bacterial Infection to Liver Injury Studies in Cinchophen Intoxication L S Radwin and M Lederer Brooklyn—p 1047
Lung Abscess Clinical Consideration of 101 Cases H C Lueth and D C Sutton Chicago—p 1056
*A New One Minute Method for Staining of Spirochetes Spirilla Spematozoa and Related Organisms A J Gelarine New York—p 1065
Influence of Physiologic Salines in Complement Fixation Reactions J E Faber Jr and L A Black College Park, Md—p 1069
Method of Quantitative and Qualitative Estimation of Platelets in Their Own Plasma Eleanor I Leslie and H N Sanford Chicago—p 1078
Ball Mill for Grinding Small Quantities of Bacteria J F Norton J H Dingle and T H Shenstone Kalamazoo Mich—p 1083
Determination of Fibrin by the Biuret Method J Fine London England—p 1084
Satisfactory Drinking Fountain for Caged Animals G Walker Baltimore—p 1087
Modification of Folin and Wu's Method for Sugar Determination M Sabynn Detroit—p 1089
Rapid Method for Routine Serum Protein Determination R O Bowman Providence R I—p 1092
Method for Microdetermination of Procaine in Cerebrospinal Fluid H Koster A Shapiro and Edna Posen Brooklyn—p 1096

Temporary Recovery in Acute Aleukemic Myeloid Leukemia—Marcus reports a case of aleukemic myeloid leukemia, which at the outset appeared to be of an acute type. The patient made a complete recovery for from eight to ten months, with no evidence of the disease either on physical examination or on blood study and then again evidenced the symptoms of acute myeloid leukemia and died. The case is of further interest because of the following (1) a family history of having a brother suffering from Vaquez's disease and

a sister with Hodgkin's disease, (2) the axillary skin infiltration, which later disappeared, (3) the occurrence of vesicles on the skin containing serosanguineous fluid with induration about the vesicles, (4) the onset of the disease with manifestations of the joints strongly suggesting rheumatic fever, (5) only slight splenic enlargement at any time and (6) the comparatively large number of lymphocytes found at various stages throughout the disease.

High Sulfur Low Carbohydrate Diet in Chronic Arthritis—Forbes and his co-workers observed the effects of a high protein low carbohydrate diet on the clinical course of patients with chronic arthritis, together with studies of the accompanying changes in urinary indole. Definite improvement resulted in the majority of cases, the best results being obtained in patients with rheumatoid arthritis. Especially good results were obtained in young persons in the early stages of the disease. Coincident with improvement, the indoluria, which almost invariably accompanied the disease in its active stages, diminished and finally disappeared. It is suggested that indole is causally related to chronic arthritis and that diets rich in sulfur aid in the detoxification of indole with consequent clinical improvement in the condition.

Staining of Spirochetes and Related Organisms—In employing Gelaric's method, the material to be examined is smeared on the slide in a thin layer and allowed to dry in the air. It is covered with the zirconyl chloride solution (2.5 Gm of recrystallized zirconyl chloride dissolved in 100 cc of a 10 per cent solution of sodium chloride), allowed to stand five seconds and then washed with water. The zirconyl chloride solution acts as a fixative. Then a few drops of citric acid solution (a 10 per cent solution of recrystallized citric acid in distilled water to which a few crystals of thymol have been added) are placed on the smear, allowed to remain for ten seconds and washed off with water. A few drops of staining solution (0.25 Gm of gentian violet dissolved in 100 cc of tenth normal sodium lactate solution adjusted to a pH of 8.4) are placed on the slide, allowed to remain for thirty seconds and then washed off with water. This is followed by momentarily covering the smear with a few drops of mercuric iodide solution (0.5 Gm of mercuric iodide in 100 cc of 0.5 per cent potassium iodide solution) and again washed with water. Uniformly excellent results may be obtained by counterstaining with aqueous carbol methylene blue solution (0.2 Gm of methylene blue dissolved in 100 cc of distilled water with addition of 0.2 Gm of phenol) for five seconds. The dye is then washed off and the slide dried with filter paper. The specimen is examined by means of the oil immersion lens. In staining spirilla, the cell outlines are sharply defined and the integrity of the cell body is maintained. The red cells show a finely granular rose-colored cytoplasm, while the chromatin of the white cells stains blue. The spirilla are stained a deep purple (when artificial light is employed but when the source of light is daylight the organisms appear to be stained a deep blue, in contradistinction to the other elements present, which stain a light blue) differentiating them easily from surrounding tissue. *Spirochaeta pallida* is stained a deep purple and is very sharply defined in the clear colorless field or in the faint pink base formed by the stained coagulated serum. With spermatozoa to obtain exact detail counterstaining is not recommended owing to overstaining of the organism. The different parts head, neck and tail, with their components can be readily distinguished. The method can also be used for staining other micro-organisms such as gonococci and pneumococci. The mechanism of the method is explained on a chemico-physical basis.

Journal of Nervous and Mental Disease, New York

83 645 772 (June) 1936

- Personality Psychogenesis and Psychoses W. A. White Washington D. C.—p. 645
Avertin and Encephalography Description of Special Frame J. E. Scarff and E. Walker New York—p. 661
Hallucinatory Experience of Changes in Visual Perception N. Ross New York—p. 671
Follow Up Study of One Hundred Patients Diagnosed as "Neurosis" B. I. Comroe Philadelphia—p. 679
Study of Absorption Spectrum of Cerebrospinal Fluid in Visible Part of Spectrum H. Mella St. Cloud Minn. and Mabel M. Blomberg Northport, Long Island N. Y.—p. 685

Journal of Nutrition, Philadelphia

12 1112 (July 10) 1936

- Effect of Different Forms of Iodine on Laying Hens. V. S. Asmundson H. J. Almqvist and A. A. Klose Davis Calif.—p. 1
Vitamin C Studies with Children of Preschool Age Gladys J. Everson and Amy L. Daniels with cooperation of Florence I. Scouler and Mary F. Deardorff Iowa City—p. 15
Studies on Relation of Diet to Goiter IV Antigoitrogenic Value of Some Foods. R. E. Remington E. J. Coulson and H. Levine Charleston S. C.—p. 27
Effect of Vitamin A (Carotene) Intake on Vitamin D Requirement of Rats in Production and Cure of Rickets Florence S. Tabor R. A. Dutcher and N. B. Guerrant State College Pa.—p. 39
Effectiveness of Malt Amylase on Gastric Digestion of Starches A. C. Ivy C. R. Schmidt and J. M. Beazell Chicago—p. 59
Technic for Determining Rate of Absorption of Fats Margaret House Irwin, H. Steenbock and Vera May Templin Madison, Wis.—p. 85
Comparative Rate of Absorption of Different Fats H. Steenbock Margaret House Irwin and Janet Weber, with technical assistance of Vera May Templin Meryl A. Pickering A. R. Kemmerer and E. J. Lease Madison Wis.—p. 103

Journal of Pharmacology & Experimental Therapeutics, Baltimore

57: 199 332 (July) 1936

- Local Anesthetic Actions of Certain Pyrazoline and Quinoline Compounds H. K. Sinha, Edinburgh Scotland—p. 199
Threshold Anesthetic and Lethal Concentrations of Certain Spinal Anesthetics in Rabbit. R. N. Bieter R. W. Cunningham O. Lenx and J. J. McNearney Minneapolis—p. 221
Addiction and Tolerance to Barbiturates? Effects of Daily Administration and Abrupt Withdrawal of Phenobarbital Sodium and Pentobarbital Sodium in Albino Rat E. J. Stanton Cleveland—p. 245
Effect of Acid on Guinea Pig Ileum Contracted by Acetylcholine and Histamine J. W. Sachs and J. M. Ivie, Durham N. C.—p. 253
Studies on Barbiturates XV Excretion of Barbiturals in Normal and Nephropathic Subjects W. P. Argy C. R. Linegar and J. M. Dille Washington D. C.—p. 258
Duration of Spinal Anesthesia in Rabbit. R. N. Bieter J. J. McNearney R. W. Cunningham and O. Lenx Minneapolis—p. 264
Some Pharmacologic and Toxicologic Properties of Vinyl Ether II Molitor Rahway, N. J.—p. 274
Cause of Delayed Death in Rat by Isopropyl Betabromomallyl Barbiturate Acid (Nostal) and Some Related Barbiturates H. G. O. Holck and P. R. Cannon Chicago—p. 289
Studies on Respiratory Actions of Drugs by Means of Phrenic Potentials I. Nicotine H. Gold and W. Modell New York—p. 310
Reactions of Human Fetal Gastro-Intestinal Tract in Vitro A. D. McLachlan Oxford England—p. 324

Kentucky Medical Journal, Bowling Green

34: 277 320 (July) 1936

- Medical Care of Peptic Ulcers. C. W. Dowden Louisville—p. 280
Treatment of Peptic Ulcer The Allergic Aspects F. A. Simon, Louisville—p. 284
Surgical Treatment of Peptic Ulcer I. Abell Louisville—p. 286
Carcinoma of Rectosigmoid L. W. Frank Louisville—p. 294
Latest Developments in the Field of Medicine Report of American Medical Association Convention M. Casper Louisville—p. 291
Pneumococcal Meningitis Report of Untreated Recovered Case with an Unusual Sequela C. Baron Covington—p. 302
The Nervous Child J. W. Bruce Louisville—p. 303
Tularemia as It Involves the Eye A. O. Pfingst Louisville—p. 307
The Southern Medical Association J. H. Hendren Pineville—p. 309
Anorectal Infections Abscesses and Fistulas R. C. Alley, Lexington—p. 312
Infections of Kidney from a Medical Point of View O. Grant Louisville—p. 314

Ocular Tularemia—The oculoglandular type of tularemia in which Pfingst is especially interested is not infrequent. Apparently it occurs in all parts of the United States. Last year he observed two cases of ocular tularemia, the first in his experience. The cases occurred in young men who had killed and skinned rabbits a few days prior to the ocular symptoms. Ten days later the diagnosis was verified by a positive agglutination test. The case ran a slow but acute course, the preauricular submaxillary and cervical glands suppurating and finally necessitating incision. Treatment consisted of washing the conjunctiva with antiseptic solutions, hot cloths to the enlarged glands and the use of 15 cc. of antitularemia serum (Foshay) intravenously on successive days for two doses. Complete recovery without sequel took place in five months. When the patient was last examined the agglutination test was still positive. The disease usually involves both eyes. Typical cases present multiple discrete ulcers of the palpebral conjunctiva with indurated margins. The disease is associated with swelling and marked injection of the conjunctiva of the lids and considerable chemosis. The preauricular glands and later

the lymphatic glands under the angle of the jaw nearly always become enlarged and tender and often abscessed. There is considerable discharge of mucus, as a rule. Constitutional symptoms, chill, fever and depression prevail as in other types of the disease. The disease closely resembles Parinaud's conjunctivitis and leptothrix conjunctivitis (Verhoeff). The clinical features aid in differentiation, but the positive diagnostic sign in ocular tularemia is the agglutination of *Bacterium tularense* in the blood of a tularemia patient. Most cases of ocular tularemia terminate in spontaneous recovery in several months and leave no sequels, although a small percentage of cases have terminated fatally by way of a general bacteremia.

Maine Medical Journal, Portland

27: 139-154 (July) 1936

- Occipitoposterior Positions R B Love Gorham—p 139
Value of Pavaex Therapy H C Saltzstein M P Meyers and S Rosenzweig Detroit—p 147

Medical Bull. of Veterans' Adm., Washington, D C

13 1110 (July) 1936

- Cardiovascular Syphilis L A Kapp—p 1
Use of Copper and Iron in Treatment of Secondary Anemias M H Saadorf H B Cupp and J L McGhee—p 16
Iron Copper and Liver Treatment in Hypochromic Anemia W H Crede—p 22
Copper in Treatment of Anemia W W Bourke—p 28
Incidental Appendix L B Kline—p 32
Some Aspects of Lung Abscess J Mandelberg—p 36
Xanthomatosis Schuller-Christian's Disease J Dauksys—p 40
Diathermy in Treatment of Lobar Pneumonia J R Boswell—p 52
Intradermic Diagnosis of Tuberculosis in Guinea Pigs L E Nolan—p 56
*Significance of Rales in Determination of Arrest of Tuberculosis R V Proffitt—p 58
Carcinoma of Larynx Laryngectomy, Artificial Larynx H V Hanson—p 61
Postmortem Examination G H Crofton—p 64
Physical Examinations for Disability Rating Purposes D O Smith—p 68
Habit Training for Psychotic Patients Josephine Stanley—p 73
The Library as Road to Reeducation in Responsibility for Neuropsychiatric Patients Lucy Conell—p 77

Rales in Determination of Arrest of Tuberculosis—Proffitt asserts that there has been a tendency on the part of many physicians, if the other conditions are met, to disregard the presence of rales in the lungs, even in the upper lobes, in the diagnosis of arrested tuberculosis. And they have apparently laid little stress on the type of rales in these cases. From his personal observation of many tuberculous patients and a recent review of several hundred case files, it has become apparent that the disregard of rales in the lungs, when making the diagnosis of arrested tuberculosis, has been ill advised in a proportion of cases. Moist rales in the upper lobes, such as are typically found in active pulmonary tuberculosis, are of the utmost importance, and only in rare instances should a diagnosis of arrested tuberculosis be made while they are present. In view of the most accepted theories concerning the anatomic and pathologic structures giving rise to rales, it would seem logical to assume that rales and activity might be divorced but experience teaches the close relation between the two, and until other criteria of a more reliable nature are formulated, one may do well to give due respect to the medium rale.

Ohio State Medical Journal, Columbus

32: 493-600 (June 1) 1936

- Factors Governing Fluid Therapy in Treatment of Enteritis G E Cullen Cincinnati—p 509
Acute Intestinal Obstruction R C Austin Dayton—p 514
Gastrointestinal Factors in Peptic Ulcer Syndrome L A Levison Toledo—p 517
Use of Iodized Oil in Gynecology J L Reyecraft Cleveland—p 524
Blood Stream Infection in Otolaryngology F F Piercy Youngstown—p 528
Series of Ramstedt Operations for Pyloric Stenosis in Infants H B Meader Toledo—p 531
Relation of the Practitioner to the Public Health Department. F M Waseley Findlay—p 534
Chronic Arthritis General Survey P R Lecklitner Canton—p 536
Compensatory Hypertrophy and Hyperplasia of Islands of Langerhans in Utero Congenital Hypoglycemia Due to Hyperinsulinism. W H Gordon Detroit—p 540

Psychoanalytic Quarterly, Albany, N Y

5: 147-302 (April) 1936

- Clinical Study of Learning in Course of Psychoanalytic Treatment T M French Chicago—p 148
Dreams and Dream Interpretation of the Diegueno Indians of Southern California Gertrude Toffelmier and Katharine Luomala Berkeley, Calif—p 195
Obscene Words E. Bergler, Vienna Austria—p 226
Male and Female Psychoanalytic Reflections on Theory of Genitality' and on Secondary and Tertiary Sex Differences S Ferenczi translated by H A Bunker New York—p 249
Inhibitions, Symptoms and Anxiety S Freud, translated by H A Bunker, New York—p 261

Public Health Reports, Washington, D C

51 799-830 (June 19) 1936

- Marine Hospitals and Beneficiaries of the Public Health Service S L Christian—p 799
Acute Response of Guinea Pigs to Vapors of Some New Commercial Organic Compounds XI Secondary Amyl Acetate F A Patty W P Yant and H H Schrenk—p 811

51 831-870 (June 26) 1936

- Relation of Physical Defects to Physical Growth of Children of Twenty One States Physical Measurement Studies Number Three W M Gafar—p 831
Distribution and Hosts of Human Flea *Pulex irritans* L. in Montana and Other Western States W L Jellison and G M Kohls—p 842

Puerto Rico J Pub Health & Trop Med., San Juan

11: 639-822 (June) 1936

- Hormodendrum Pedrosoi Etiologic Agent in Chromoblastomycosis C W Emmons and A L Carrión San Juan—p 639
Chromoblastomycosis New Clinical Type Caused by Hormodendrum Compactum A L Carrión San Juan—p 663
Phialophora Type of Sporulation in Hormodendrum Pedrosoi and Hormodendrum Compactum C W Emmons and A L Carrión San Juan—p 703
Strains of Actinomyces Bovis Isolated from Tonsils C W Emmons San Juan—p 720
Ophthalmology in the Tropics W T Davis Washington D C—p 736
Practical Value of Intradermal Reaction with Trichinellosis Antigen for Diagnosis of Trichinellosis in Man W A Kalus, Kiev U S S R—p 768
Preliminary Study of Alkaloid like Material Obtained from Candemora or Momordica Charantia L L Torres Diaz San Juan—p 812

Science, New York

54 126 (July 3) 1936

- New Estrogenic Substance from Ovaries R H Andrew and F Fenger Chicago—p 18
Biologic Effects of Homologous Thymus Implants in Successive Generations of Rats. N H Einhorn and L G Rowntree Philadelphia—p 23
*Secretion of Antidiuretic Hypophyseal Hormone in Response to the Need for Renal Water Conservation. A Gilman and L S Goodman New Haven Conn—p 24
Researches on Pyrimidines CLIII Structure of Vitamin B₁ T B Johnson and Anne Litzinger New Haven Conn—p 25

An Antidiuretic Hypophyseal Hormone—Gilman and Goodman base their conclusion, that the antidiuretic substance found in the urine has its origin in the posterior pituitary gland and is probably identical in nature to the pharmacologic preparations derived from that gland, on the following evidence: 1 Hypophysectomized rats, dehydrated to the point of death (forty hours), fail to secrete this antidiuretic substance in their urine. Control rats under identical experimental conditions always show appreciable amounts. 2 Both the antidiuretic substance of the urine and solutions of posterior pituitary of the same antidiuretic strength are destroyed to the same degree by thirty-minute hydrolysis with 1 per cent hydrochloric acid, thirty-minute hydrolysis with sodium hydroxide and thirty-minute reduction with one tenth normal sodium bisulfate. 3 The molecular size of both the antidiuretic substance extracted from the pituitary and that excreted by the kidney is such that no appreciable loss in activity results from a three hour dialysis with a cellophane membrane with a wall thickness of 0.00072 inches. The authors interpret these experiments as strong evidence that (1) an antidiuretic substance is secreted by the posterior pituitary, (2) this substance is a true hormone, passes into the circulation and acts on the kidney, (3) the pituitary hormone in its circulation through the kidney filters through the glomerulus and escapes into the urine, in which it is relatively stable and easily detectable, (4) the need for water conservation by the body is a stimulus for the secretion of this hormone.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

59 135 276 (June) 1936

- Motor Cortex in Man in Light of Hughlings Jackson's Doctrines O Foerster—p 135
Influence of Experimental Lesions of Spinal Cord on Knee Jerk II Chronic Lesions E G T Liddell—p 160
Origin of Posterior Cerebral Artery D J Williams—p 175
*Meningitis Serosa Circumscripta Spinalis (Spinal Arachnoiditis) J St C Elkington—p 181
Spinal Compression Caused by Echondrosis of Intervertebral Fibrocartilage Review of Recent Literature W A Hawk—p 204
*Progressive Dementia, Without Headache or Changes in Optic Disks, Due to Tumors of Third Ventricle G Riddoch—p 225
Afferent Path of Pupillary Light Reflex in Monkey H W Magonn, D Atlas W K Hare and S W Ranson—p 234
Clinical Application of Craniovertebral Dynamics to Encephalography T J C Von Storch—p 250

Meningitis Serosa Circumscripta Spinalis—Elkington analyzes the clinical and operative observations of forty-one cases of spinal circumscribed serous meningitis. While the pathogenesis is often obscure it is suggested that trauma, meningeal infections and syphilis are among the causes. The essential change is the development of adhesions and cysts in the spinal subarachnoid space, which produce secondary intramedullary changes by compression and ischemia. The symptoms and signs closely resemble those of spinal compression by tumor, but certain points of value in the differential diagnosis are noticed. The disease is predominantly one of middle age, and a history of definite spinal trauma, of past infection of the subarachnoid space or of syphilis is of value. Though the more common mode of onset is that of an insidious spinal compression, the commencement with spontaneous pain, when it occurs is highly suggestive. Examination of the cerebrospinal fluid does not serve to distinguish the condition from spinal compression due to other causes. The diagnosis can be suspected but not established before operation. The prognosis must be regarded as grave but is least so in those cases in which operation is performed early before irreversible changes have occurred in the cord itself.

Progressive Dementia Due to Tumors of Third Ventricle—In his presentation of two cases of tumor of the third ventricle, Riddoch pays little attention to focal symptomatology but stresses the occurrence of progressive dementia in absence of severe headache, of vomiting and of either papilledema or optic atrophy. Gross hydrocephalus was present in both cases and was, it is believed, the cause of the mental deterioration. Progressive dementia, without headache and papilledema, may occasionally result from invasion of both frontal lobes and the anterior part of the corpus callosum by an infiltrating glioma or a centrally placed meningioma but the dissociation and its duration are again dependent on the rate of development of the pathologic process. When ventricular blockage is very slow and progressive but variable the process extending over a period of months or years as in the present cases, headache, vomiting and papilledema may be absent even at a stage when dementia or stupor general enfeeblement and incontinence are advanced. The severity of these symptoms indicates the degree of reduction of general cerebral function from slow compression. That great improvement may follow relief from compression by removal of its cause is in favor of the view that impairment of blood supply is the primary factor. In the causation of headache, gross variation in tension in the vessels, especially the arteries and venous sinuses and dural septums probably plays an important part. Few hypothalamic symptoms were present, which is not surprising as the floor of the third ventricle was not directly involved by the growth in either case. Polyuria and polydipsia adiposity or loss of weight were absent. In one case transient glycosuria occurred with the first attack of unconsciousness twelve years before, and in the other case excessive sweating and mild fever were present throughout the observed part of the illness. Abnormal drowsiness so common with lesions in this region was a prominent feature in both

cases. That the anterior part of the midbrain was affected in each case was shown by the pupillary abnormalities, including reflex iridoplegia. But since the lethargy appears from the first to have been associated with mental dulness, it is safer to assume that it was a general rather than a focal symptom.

British Journal of Dermatology and Syphilis, London

48:281 336 (June) 1936

- Erythema of the Ninth Day (Milian) H Gordon—p 281
Influence of Bejel on Second Generation E H Hudson and Susan S Crosley—p 288
Rosacea like Tuberculid L Forman—p 299
Note on Supposed "Calcinosis of Scrotum" F P Weber—p 312

British Journal of Experimental Pathology, London

17:159 248 (June) 1936

- *Artificial Opsonization of Bacteria J Gordon and F C Thompson—p 159
Evidence Regarding Mechanism of Elimination of 1,2-Benzpyrene 1,2,5,6-Dibenzanthracene and Anthracene from Blood Stream of Injected Animals P R Peacock—p 164
Behavior of Louse-Borne (Epidemic) and Flea Borne (Murine) Strains of Typhus Rickettsia in Tissue Cultures M Aschner and I J Khigler—p 173
Production and Persistence of H and O Agglutinins and Complement Fixing Bodies in Persons Inoculated with Typhoid Endotoxin Vaccine E Grasset and W Lewin—p 179
Purified Foot and Mouth Disease Virus I Studies on Some of Its Physical Properties J A Galloway and W J Elford—p 187
Production of Antiserum with Suspensions of Potato Virus X Inactivated by Nitrous Acid F C Bawden N W Pirie and E T C Spooner—p 204
Typhus Group of Diseases in Malaya Part IV Isolation of Two Strains of Tropical Typhus from Wild Rats R. Lewthwaite and S R Savor—p 208
Id Part V Weil-Felix Reaction in Laboratory Animals R Lewthwaite and S R Savor—p 214
Observations on Polysaccharide Complex and Variants of Vibrio Cholerae P B White—p 229
Thymus and Adrenals in Response of Organism to Injuries and Infections H Selye—p 234

Artificial Opsonization of Bacteria—Gordon and Thompson have followed up and extended the work of Reimer and of Neufeld. In addition to tannic acid and the various salts studied by the previous workers a large range of other substances has been tested for opsonic action on the staphylococcus. This range includes many vegetable tannins, salts of chromium, iron, aluminum, lead, zinc, copper, magnesium, calcium, barium, cadmium, nickel and cobalt, and also gallic, acetic, lactic and sulfuric acids, trinitrophenol, formaldehyde and catechin. A definite parallelism has been found between tanning action and opsonic activity and it is considered that the irreversible chemical changes characteristic of tanning are responsible for the changes in physical properties which make phagocytosis possible. Dehydration is an invariable consequence of tanning action, but the authors do not consider it to be the primary factor. The substances that show opsonic activity almost always possess agglutinating power—a property which a tannin would be expected to show on theoretical grounds.

British Journal of Ophthalmology, London

20:321-384 (June) 1936

- Etiology of Chronic Primary Glaucoma E O Kistner—p 321
Intensity of Light in Relation to Examination of Eye C E Ferree and G Rand—p 331
*Relationship Between Conjunctivitis and Trachoma A F MacCallan—p 346
Incidence of Myopia in China O D Rasmussen—p 350
Principles of Orthoptic Training Sheila Mayou—p 360

Relation Between Conjunctivitis and Trachoma—MacCallan enumerates the various forms of conjunctivitis which on occasion may bear some resemblance to trachoma. He divides them into (1) common conditions (follicular conjunctivitis in children, acute conjunctivitis with follicles and chronic conjunctivitis with corneal vascularization of former interstitial keratitis or former phlyctenular ulceration), (2) uncommon conditions (spring catarrh, toxic follicular conjunctivitis, Parinaud's conjunctivitis, swimming bath conjunctivitis with inclusions, conjunctivitis with inclusions not of swimming bath origin, nongonococcal conjunctivitis with inclusions in infants and follicular type of tuberculous conjunctivitis or syphilitic conjunctivitis), (3) rare conditions (actinomycosis, sporotrichosis).

chosis squirrel plague conjunctivitis and bilateral lymphoid infiltration of the conjunctiva) and (4) tropical conditions (trachoma dubium and chronic gonococcal conjunctivitis). In the absence of infiltration of the normally clear cornea by a cellular exudate, and of the vascularization characteristic of trachoma, conjunctivitis may be determined to be nontrachomatous. In many cases of follicular trachoma, stage 1, the appearance of the follicles and their position at each extremity of the retrolarsal fold of the upper lid is characteristic. However, no such characteristic appearance obtains in trachoma when there are no obvious follicles, but merely a widespread subepithelial infiltration which makes the conjunctiva red and velvety.

British Journal of Physical Medicine, London

11 21-40 (June) 1936

- Treatment of Arthritis by Hydrotherapy W S C Copeman—p 22
Physical Treatment of Injuries R Kovacs—p 24
Short Wave Therapy as Superior Form of Deep Heat Therapy J Patrold.—p 27

British Journal of Urology, London

8: 105 204 (June) 1936

- Massive Cyst Adenoma of Muller's Duct Causing Retention of Urine Report of Case. R C Begg—p 105
Horseshoe and Horseshoe Kidney Concave Downward G Gordon Taylor—p 112
Ureterocele Case Reports of Bilateral Ureterocele in Identical Twins L W Riba—p 119
Pelvic Ureter in Women Effects of Gynecologic Lesions E Catherine Lewis—p 132
Congenital Anorchia R H Fleet—p 141
Kidney as Bacterial Filter (Significance of Tuberculous Bacilluria) W L Forsyth and K Saman—p 144

British Medical Journal, London

1 1239 1284 (June 20) 1936

- Acute Lesions of Upper Abdomen. N C Lake—p 1239
*Epidemic Nausea and Vomiting R Miller and M Raven—p 1242
A Box Mask for the Administration of Oxygen J A Campbell—p 1245
Decreasing Mortality and Eliminating Phthisis in Mental Hospitals A W B Livesay—p 1246
*Ophthalmoscopic Signs of Death C R Salisbury and G S Melvin—p 1249
Hyperchromaemia D Chamberlain—p 1251

Epidemic Nausea and Vomiting—Miller and Raven state that in March 1936 there occurred in an English boarding school an epidemic which presented some novel features and resembled the widespread epidemics recently reported in Denmark under the title of "epidemic nausea." Its symptoms consisted either of vomiting of sudden onset or of nausea, to which was added in a fourth of the cases the sensation of giddiness, sometimes of considerable severity. The illness ran a short afebrile course, all the patients, with one exception, being fully restored to health within forty-eight hours, yet in spite of its apparent mildness the epidemic attacked within a period of fifteen days no less than one half of the pupils and one third of the adults in the school. Altogether among 117 residents there were fifty-two cases, this total including four pupils who became ill at their own homes within a week of leaving the school. Considered primarily a disease of the alimentary system, it becomes difficult to account for the symptom of giddiness, absence of fever, the suddenness of the onset of the vomiting and the absence of diarrhea in the English cases. The English epidemic resembles one originated by some form of food contamination; the heavy incidence of cases in the first two days of the outbreak suggests this although the same phenomenon may be seen in epidemic poliomyelitis, which all do not yet admit may be due to infected food. In this connection the only type of gastro-intestinal infection which seems to be worth considering is a possible gastric type of Sonne dysentery. Regarded as a possible infection of the central nervous system, such a hypothesis is favored by the suddenness of the onset of vomiting, the occurrence of giddiness and the absence of fever, but it is impossible to hazard any opinion on the type of infection of the nervous system that could be responsible for the epidemics.

Ophthalmoscopic Signs of Death—According to Salisbury and Melvin, definite changes easily visible with the ophthalmoscope, appear in the retina in the dead or dying. In

life the actual movement of the column of blood is visible in the retinal veins. As death approaches the stream seems to become slightly irregular and "lumpy" although without any actual breach of continuity. Later there is definite fragmentation of the column, and these masses of blood can be seen to move (like marching men) toward the optic disk and then drop over the edge of the optic cup. This is not a transitory effect. Although no actual timing has been attempted, one would estimate that the movement is visible for about ten to twelve minutes on an average. During this time two changes gradually occur. The rate of motion becomes progressively less and the fragmentation progressively more definite. It is as though the marching columns of men, at first in close formation and without organization, gradually formed into companies, with definite intervals between them. These intervals become greater as the rate decreases. After all movement has ceased the interrupted columns are still plainly visible. So long as the mediums remain transparent there is no difficulty in differentiating this appearance from the former or from the normal appearance during life.

East African Medical Journal, Nairobi

13: 65-96 (June) 1936

- Medical History of Uganda A R Cook—p 66
Impressions of Malaria in India D B Wilson and Margarete Wilson—p 82

Indian Medical Gazette, Calcutta

71: 309-372 (June) 1936

- Comparative Study of Action of Atabrine and Atabrine-Plasmochin Combination on Indian Strains of Malaria R N Chopra, J C Gupta and B Sen—p 309
*Role of Infection in Etiology of Infantile Cirrhosis of Liver Subodh Chandra Lahiri—p 313
Immunologic Methods in Determination of Infection in Random Sample of Hospital Admissions Part II Frequency and Concentration of Agglutinins for Proteus X Strains in Series of Hospital Patients C L Pasricha K Bannerjee and S Lal—p 320
Investigation of Yaws (Koya Disease) in Warangal C F Chenoy, M Ahsan Siddiqui and A C Abraham—p 322
Gastric Analysis in Asthma. L. Everard Napier and Dharmendra.—p 326
Pyrexia from Bacillus Cereus Two Cases T H Thomas and A. C. Bose—p 327
Treatment of Syphilis by Modenol. F R W K Allen.—p 329
Effect of Ingestion of Vitamin C on Vitamin C Concentration of Milk of Lactating Women. R. K. Chakraborty, A N Roy and B C Guha—p 335
Note on Use of Cyanogas A Dust as a Raticide and Pulicide. M Jacob—p 336
Note on Museum Making III Method for Preserving and Mounting Pathologic Fluids P V Gharpure—p 338

Infection and Infantile Cirrhosis—Lahiri investigated the etiology of twenty-five consecutive cases presenting clinical features of infantile cirrhosis of the liver. The health of the mothers in most of the cases was bad. Gross dietetic errors were noticed in only a small number of cases, but a history of irregular feeding was present in all. The total count was generally between 10,000 and 20,000 per cubic millimeter. There were small mononuclear counts, generally from 44 to 60 per cent, polymorphonuclears from 22 to 47 per cent. In one case enlargement of the liver was noticed several days after the onset of fever a fact also noticed by Ghosh (1887) in some of his cases. In other cases the liver was already enlarged and hard when first examined. The spleen was enlarged in sixteen cases. Enlargement occurred after the fever had continued for some time, and always after the enlargement of the liver. The quantity of the urine was normal or slightly less. There was no difficulty in micturition in any of the cases. The reaction of the urine was acid in all cases. While the presence of bacilli in the urine is not pathognomonic of infection, the signs and symptoms, such as fever enlargement of the spleen along with the enlargement of the liver, leukocytosis febrile reactions to autovaccine (prepared from urine and blood culture) and ultimate recovery from the disease by vaccine injections in some cases point to infection being an important etiologic factor. The presence of hemolytic streptococci in the blood of one of the patients also favors the same view. Though in most of the cases the presence of bacilli could be demon-

strated in the urine, symptoms of bladder or renal disease were virtually absent. In the presence of other evidence of infection this may be taken to mean that the real site of infection was not the urinary tract but elsewhere in the body, the bacilli being simply excreted through the kidneys. The conspicuous hepatic features of the cases point to the liver as being the chief site of infection. Slow pyrexia closely resembled that generally seen in many cases of infantile cirrhosis of the liver. It can be concluded that in many cases presenting typical clinical features of infantile cirrhosis of the liver infection plays an important etiologic part. In order that an infection may gain a foothold in an organ with such an extraordinary vitality as the liver has, it is necessary, though not absolutely essential, that it should be previously deranged by long continued dietetic errors or by some other devitalizing factors.

Journal of Tropical Medicine and Hygiene, London

39 125 136 (June 1) 1936

- Unproved Case of Piota Originating in Ceylon H. Fox —p 125
Experimental Transmission of *Trypanosoma Rhodesense* by *Glossina morsitans* from Man to Sheep and Back to Man J. F. Corroo —p 125
Blood Lipid Studies in Leprosy G. G. Villela, A. Castro and Jeanette Van D. Andersoo —p 126

Lancet, London

1 1279 1336 (June 6) 1936

- *Treatment of Human Puerperal Infections and of Experimental Infections in Mice with Prontosil L. Colebrook and M. Kenny —p 1279
*Protection of Mice Against Streptococci and Other Infections by *p*-Aminobenzenesulfonamide and Related Substances G. A. H. Buttle, W. H. Gray and Dora Stephenson —p 1286
Macroscopic Agglutination Test in Weil's Disease A. W. Pot —p 1290
Late Results in Operative Treatment of Intracranial Tumors H. Cairns —p 1291
Estrin Treatment of Cystic Disease of Breast E. Dahl Iversen —p 1294
Evidence of Bullet Wound Self Defense or Murder? G. R. Osborn —p 1295

Treatment of Puerperal Infections—Colebrook and Kenny treated thirty-eight cases of puerperal fever infected by hemolytic streptococci with oral and intravenous or intramuscular doses of the hydrochloride of 2,4-diaminoazobenzene-4'-sulfonamide (prontosil). Subject to confirmation by further experience, the impression has been gained that in many of the more severe cases the drug has exerted a definitely beneficial effect, manifested by an unexpectedly prompt fall of temperature and remission of symptoms, and supported by a substantial reduction in mortality. Three patients in whom there was a generalizing peritonitis on admission recovered without laparotomy under large doses of the drug. The clinical results, together with the mouse-protection experiments, support the view that further clinical trial is amply justified and that there is more hope of controlling these streptococcal infections by the early administration of this or some related chemotherapeutic agent than by any other means at present available. While the drug has been well tolerated by most of the patients, there have been transient toxic effects in some and many have shown indications of a mildly irritant effect on the tissues of the urinary tract. Three developed sulfhemoglobinemia. At present there is no indication from animal experiments that the drug is likely to have a beneficial effect on puerperal infections by organisms other than the hemolytic streptococci, and in view of the toxic effects referred to its administration should be confined to such cases. Apart from the fact that the growth of the streptococcus is somewhat retarded (although not suppressed) in the serum of patients under treatment little is known as to the nature of its antimicrobial influence in the animal body. The invasive character of the streptococcus seems to be unchanged by contact with the drug or the serum of treated animals. There is no evidence of any "immune response" being evoked by it.

Protection Against Experimental Infections—Buttle and his co-workers found that *p*-aminobenzenesulfonamide will protect mice against streptococcal infection. It has the same therapeutic activity as hydrochloride of 2,4-diaminoazobenzene-4'-sulfonamide but is less toxic when given orally so that it is possible to obtain better protection by giving larger doses.

Protection can be obtained against streptococci belonging to different serologic types. Some protection of mice against meningococcal infection has been demonstrated, but it has not been possible to demonstrate protection against staphylococci or pneumococci. Increase in the number of sulfonamide groups attached to the benzene nucleus to three is accompanied not by increase but by extinction of the streptococcidal activity. The anilide of sulfanilic acid is as active as the amide. Sulfanilic acid itself has a smaller, but not negligible, protective action. Azo compounds derived from *p*-aminobenzenesulfonamide and phenolic cinchona alkaloids are inferior to hydrochloride of 2,4-diaminoazobenzene-4'-sulfonamide, in this respect.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

52 935 982 (Juin 15) 1936 Partial Index

- *Physiopathology of Fatal Accidents Following Pulmonary Embolism. M. Villaret, L. Justin Besançon and P. Bardin —p 936
*Investigations on Experimental Prevention of Accidents Following Pulmonary Embolism. M. Villaret, L. Justin Besançon and P. Bardin —p 941
Practical Lessons Furnished by Provoked Galactosuria Test in Pulmonary Tuberculosis Treated by Aurotherapy R. Beoda and H. Salmona —p 945
Serious State After Suboccipital Puncture in Patient with Cerebral Tumor M. Pinard and Temerson —p 951

Physiopathology of Pulmonary Embolisms—Villaret and his collaborators studied the question of how and in what manner a clot situated in a pulmonary artery can induce death. The physiologic problem of clinical accidents following pulmonary embolism can be summed up in the following question: How can the pulmonary aggression caused by the embolus act on the whole organism? There are two theoretical answers to this question: 1. The pulmonary embolus can affect directly the respiratory and circulatory functions of the lung. 2. The embolus once arrived in the lung can cause general accidents of reflex nature. A long study of the physiopathology showed the authors that neither of these explanations is exact but that each, depending on the individual case, contains a certain amount of truth. They carried out experimental studies on dogs and obtained large emboli by means of large pearls of enamel without lead. To obtain a certain and regular pulmonary embolism it was necessary to use the external right jugular vein for the introduction of the pearls. Mucilaginous grains in aqueous suspension also were effective. In order to obtain small emboli they injected powdered stone. The effects of large emboli were studied in more than fifty dogs. The first conclusion of the work was that it was practically impossible to cause death in a few minutes or even in several hours even by means of voluminous emboli in dogs. They were impressed by the slowness of the effect of the emboli on the respiratory rhythm. The production of small emboli was found to effect extraordinarily little change in dogs. The surprising contrast between the size of the embolus and the importance of the dyspneic phenomena that resulted in dogs was the most noteworthy result of the experiments. The authors therefore believe that sudden death can only be the result of a reflex determined by the embolizing particles on the nervous terminals of the pulmonary arterioles.

Prevention of Accidents Following Pulmonary Embolism—Villaret and his collaborators think that anatomical facts show that there is no constant relationship between the size of the embolic obstruction of a pulmonary artery and the severity of the clinical phenomena that are produced. Physiologic investigations have confirmed the idea that sudden death can be the result only of an inhibiting reflex and that it does not depend ordinarily on the mechanical prevention of the blood flow in the lung. Furthermore anatomical investigations have demonstrated the essential part of pulmonary vasomotor phenomena caused by embolism. The postembolic pulmonary infarct follows the same mechanism as apoplexy of nonembolic origin. In investigations using rabbits and dogs it was found that once a dog has received ephedrine, atropine and sodium bicarbonate rapid death can no longer be produced with a volume of embolism identical with one that would previously have caused death. On the contrary acidosis obtained by intravenous injection of a solution of hydrochloric acid causes the embolism to become much more rapidly fatal. Alkalosis

the other hand, produced by intravenous injection of a solution of sodium bicarbonate, causes the embolism to become fatal much more slowly. Thus both neurovegetative factors and humoral factors become important modifiers of the reaction to embolism in dogs and rabbits.

Presse Médicale, Paris

44: 1001-1024 (June 20) 1936

Problem of Gallbladder Atony M Chiray I Pavel A Lomon and Georges Rosanoff—p 1001

*Air Cysts of Lung Revealed in Course of Staphylococcal Septicemia P Pruvost P Isch Wall M Rymer and J Seemanna—p 1005

New Contribution to Physiopathologic Study of Cerebral Hemorrhage D Paulian and I Bistriceano—p 1009

Diverticulum of Pole of Large Tuberosity of Stomach P Hillemand J Garcia-Caldéron, W Aubrun and H Arlsson—p 1011

Intestinal Infarct and Hernial Strangulation R Fontaine and J Kunlin—p 1015

Deforming Fibrous Osteitis of Paget H Grizud—p 1018

Air Cysts of Lung in Staphylococcal Septicemia—

Pruvost and his co workers describe the case of a man, aged 26 whose disease appeared to develop in four successive and distinct phases. The first was characterized by septicemia alone to which the prognosis was attached. The secondary lung alterations, even though they changed the clinical appearance of the disease, did not change the prognosis. In the course of the second stage there was no longer septicemia either clinical or bacteriologic, and it was then possible to make an etiologic diagnosis of a pulmonary suppuration of staphylococcal origin. In the course of the third phase of the disease the lung changes produced no fever or effect on the general septicemia, the phase of uncomplicated cyst. The fourth period was characterized by a generalized pneumothorax with a large cavity and was the phase of balloon cyst or ruptured cyst. Thus in one patient successive phenomena characteristic of cysts namely, infectious phenomena followed by mechanical ones, were observed. The suppuration of the cyst dominated the clinical history in the course of the first stage of the disease and the increase in size of the cyst and its rupture dominated the succeeding phases.

Physiopathologic Study of Cerebral Hemorrhage—

Paulian and Bistriceano believe that it is possible that extravasation of blood causes compression necrosis not only of the peripheral cerebral tissue but also of the veins and arteries. They investigated this possibility in two cases. In one case, histologic examination revealed a double cerebral hemorrhage, an old one affecting the right lenticulostriate region and the more recent one the opposite side in the same area. The hemorrhage followed a rupture of the lenticulostriate arterioles as a result of cerebrovascular sclerosis. In the other case necropsy revealed a voluminous hemorrhagic area the size of a mandarin occupying the superior portion of the left parietal lobe. The hemorrhagic area penetrated deeply into the centrum ovale of the region and compressed the central nuclei of the left side. There was no connection between the ventricular cavities. Microscopic examination of sections at the level of the hemorrhagic area showed hard masses of blood surrounded by a fibrous capsule. In certain regions the masses of erythrocytes were delimited by a large zone of migratory cells of neuroglial or leukocytic origin and an abundant infiltration of old hemorrhagic granulations. In the more peripheral area was a manifest gliofibrillary reaction, and an abundant invasion of blood pigment was noted. The vessels were dilated and filled with red blood cells. The veins also showed in certain regions hyperplastic walls and sometimes torn walls with an abundant leukocytic infiltration. The authors therefore believe that arterial hemorrhage can thus by compression produce changes in the neighborhood of the veins which are similar to the peripheral lesions caused by the original hemorrhage.

Schweizerische medizinische Wochenschrift, Basel

66: 657-676 (July 11) 1936 Partial Index

*Experiments on Significance of Waves in Electrocardiogram W Knoll—p 657

*Balneotherapy in Venous Thromboses T Schaeppi—p 659

Masked Gout, C J Finck—p 660

Treatment of Ganglions, M Saegesser—p 663

Significance of Waves in Electrocardiogram—Knoll points out that for a while it seemed that it had been definitely established that the QRS complex, together with the after

fluctuation, the T wave, indicated the ventricular systole, whereas the subsequent not deflected line up to the beginning of the P wave supposedly corresponded to the ventricular diastole. However, others advanced a different interpretation. The author was induced to reinvestigate this problem by observations he made on work electrocardiograms of thoroughly trained sportsmen. During work that was accomplished with the legs, the leads were taken from the arms in order to determine in what manner and how rapidly the electrocardiogram would change under the influence of the exertion of work. It was found that at the onset of work usually after one or two cardiac contractions, characteristic elevations and other changes appeared in the T waves whereas the QRS complex was hardly at all changed. If the QRS complex corresponded actually to the ventricular systole, it was difficult to comprehend why, particularly in the event of greater exertion no changes would be manifest in this part of the electrocardiogram, whereas the T waves, the after fluctuations, showed such great changes. In order to gain a better insight into this problem, the author devised a method of experimentation which would permit the simultaneous recording of the mechanical processes on the heart and of the electrocardiographic curve in such a manner that the two could be compared. The author decided on the cinematographic photography of the heart and on electrocardiography by means of Siemens' transportable tension electrocardiograph. His experiments were made on a dog and later on a monkey (hamadryad). The author describes the recording, shows reproductions of some of the records he obtained and compares his method with similar ones recently described in the literature. He admits that contraction is a mechanical process while electrocardiography is an electrical one, and that for this reason a direct comparison is impossible. However, investigations conducted by de Jong demonstrated that the two processes follow each other rapidly and may even concur. The author points out further that between the state of dilatation of a muscle fiber and its tendency to contract there is a connection in that the stimulus for contraction is dependent on the state of tension. Consequently he sees in the concurrence of the QRS complex with the diastole that condition which is the basis for the subsequent contraction. To be sure, he admits that this is only a possibility for which there is as yet no definite proof. In his cinematographic records, the ventricular contraction goes from the base to the apex and there are also slight time differences between the two sides of the heart. Moreover, since there is no real period of rest, Schellong's opinion gains in probability, namely, that during life there coexist always irritable and nonirritable muscle fibers, that is, those which are ready to contract and those which are not, contracted and dilated ones.

Baths in Treatment of Venous Thromboses—Schaeppi calls attention to a type of bath that is helpful in the treatment of varicose veins and of venous thrombosis and which can be given in private homes. Into a full bath (approximately 150 liters) of a temperature of 37 or 38 C, a salt mixture is placed consisting of 500 Gm of sodium bicarbonate and 100 Gm of alum. The patient remains in this bath for twenty or thirty minutes a day, but care must be taken that the temperature remains approximately the same (by adding more hot water). The total number depends on the type and severity of the disorder. As a rule, from twenty to twenty-five baths are sufficient. In case of phlebitides and of venous thrombosis, he recommends a preliminary treatment with leeches, but, if the phlebitis is superficial, the baths can be begun five or six days later. For the deep thromboses he recommends an interval of three or four weeks. The latter patients are carefully lifted into and out of the bath in order to prevent embolism. The swelling of the legs and feet commences to disappear as a rule after six or eight baths. The curative period of the severe thromboses, which otherwise may extend over several months, can be considerably reduced by the bicarbonate-alum baths. The same can be said about the superficial phlebitides. In simple varicose veins, the efficacy of the baths is not quite so convincing. The author admits that a protracted warm bath itself produces a hyperemia of the skin, however, control experiments with indifferent baths prove that they do not have the same effect as the bicarbonate-alum baths.

Giornale di Tisiologia, Naples

10 83 100 (June 30) 1936

- *Hypophysis in Experimental Tuberculosis M Mosco—p 83
Sclerosing Chronic Tuberculosis of Adrenals with Compensatory Hypertrophy C Pana—p 86
Value of Tuberculin Skin Reaction in Adults A D'Arienzo—p 91

Hypophysis in Experimental Tuberculosis—Mosco performed histologic studies of the hypophysis of a lot of forty guinea-pigs with experimental tuberculosis of a chronic and attenuated type. The changes in the hypophysis consisted in the presence of congestion and hemorrhage in the anterior, posterior or both lobes, proliferation of glial and connective cells of the posterior lobe, in which granulomatous tissues existed only in rare cases, nonfollicular granulomatous infiltration of the anterior lobe and degeneration of the nucleus and protoplasm of the cells of the anterior lobe at the sites where there was no granulomatous infiltration. Giant cells, tubercles and tubercle bacilli were not found. The author believes that the histologic changes of the hypophysis in the animals of his experiment resulted from the effects of tuberculosis at a distance rather than locally. The results of the experiment confirm the part played by tuberculosis in the pathogenesis of hypophyseal syndromes.

Policlinico, Rome

43: 1187 1230 (June 29) 1936 Practical Section

- *Progressive Muscular Dystrophy Treatment by Pancreatic Extracts G Meldolesi—p 1187
Appendicocoele Case A Breccia—p 1200

The Treatment of Progressive Muscular Dystrophy—Meldolesi reports satisfactory results from the administration of total pancreatic extract in large doses, by mouth in forty-eight patients suffering from progressive muscular dystrophies of several clinical varieties and of different intensity. The extract is administered until the processes of digestion, especially tryptic digestion, become normal. In all cases further development of the condition is controlled in about six months. The results depend on the possibility of reversibility and compensation of the pancreatic and muscular alterations that are characteristic of the disease. In cases in which treatment is given early in the development of the disease the establishment of atrophic and retracting phenomena is prevented and the activity of the muscles returns to normal by hypertrophy of the muscles not as yet involved in the pathologic process. In cases of moderate evolution in which pancreatic lesions have taken place and there is more or less muscular retraction the static and motor functions greatly improve, especially if the necessary orthopedic and surgical corrections are made. In grave cases in which the static and motor capacities are greatly impaired, the treatment fails to give practical results but improves the movement and general condition of the patient. In certain cases the muscular and general improvement of the patients is surprisingly good even in desperate cases.

Arch. Urug de Med, Cir y Especialid, Montevideo

8: 465 572 (June) 1936 Partial Index

- Prealelectatic Tympanism of Bronchial Obstruction C Savagnies Laso and R A Cairni—p 469
Alopecia and Parathyroid Insufficiency J C Plá and A. Fahregat—p 479
*Temporary Biologic Sterilization by Human Sperm C J Escuder—p 484
Leukocytic Formula and Tuberculosis A R. Gines—p 503
Medical Method for Parturition Kreis Procedure M Rodríguez Zimenó—p 512.

Temporary Sterilization of Women by Injections of Semen—Baskin's technic (*Am J Obst & Gynec* 24 892 [Dec.] 1932, abstr *THE JOURNAL*, April 22 1933 p 1286) is as follows. After intercourse in which a condom is used the semen is brought to the office as soon as possible. One cubic centimeter of a 1 per cent hexylresorcinol solution is added the entire amount is drawn into a syringe and an intraglutal injection is performed. No semen is used with a count of less than 80 000 000 spermatozoa per cubic centimeter. Three injections are given at seven day intervals. The amount of semen injected each time varies from 2 to 5 cc. From his experience with a group of twenty-one women Escuder concludes that

success depends on careful technic. Sterility lasts for twelve or fifteen months. The injections are harmless to women. Injections of sperm cause no grave local reactions or endocrine disturbances. The method of sterility is especially indicated in tuberculous women in whom pregnancy is contraindicated.

Medicina Ibera, Madrid

2 132 (July 4) 1936

- *Toxic Disturbances Following Intravenous Injections of Calcium. A Alvarez Fernandez—p 1
Psychopedagogic Study and Treatment of Abnormal and Delinquent Children F Fierres Perez—p 4

Toxic Disturbances Following Injection of Calcium—Alvarez Fernandez reports three cases of pulmonary tuberculosis in which the appearance of toxic symptoms (chills, fever, diarrhea, vomiting, vertigo, disturbances of respiration, intense warm appearance of pallor and asthenia), following the intravenous injections of calcium gluconate and lactate, respectively, made it necessary to discontinue the calcium treatment. The solutions used in the injections vary in concentration between 5 and 10 per cent. Patients treated by intravenous injections of calcium chloride or calcium thiosulfate did not develop toxic symptoms even if 10 per cent solutions of calcium chloride or thiosulfate were administered. However, the administration of intravenous injections of calcium chloride or calcium thiosulfate to two patients suffering from tuberculous hemoptysis resulted in the production of hemoptysis following the injection and in disappearance of the former on discontinuation of the latter. The author is skeptical of the results of the calcium treatment in hemoptysis and believes that hemoptotic cases can be included in the group of cases in which the administration of calcium chloride results in the production of toxic disturbances.

Munchener medizinische Wochenschrift, Munich

83: 1039 1078 (June 26) 1936 Partial Index

- Intra Uterine Impairment of Fetus H Naujoks—p 1039
*Menstrual Cycle of Three Weeks Duration H Futh—p 1044
*Some Electrocardiographic Aspects of So-Called Nervous Heart E Ekey—p 1051
Chronic Relapsing Icterus R. Meissner—p 1053
Thoughts on Evaluation of Patients with Nervous Disorders A Werner—p 1054
*Diet for Children with Fever Liselotte Meyer—p 1057

Pregnancy and the Twenty-One Day Menstrual Cycle—Futh says that Wahl's report (abstracted in *THE JOURNAL*, April 18, 1936, p 1432) induced him to study the duration of gestation in women who have a menstrual cycle of three weeks. He says that in women with a menstrual cycle of twenty-one days or less the birth of a mature infant can be expected before the 280 day term in 78 per cent of the cases. Only a small percentage of these women give birth after 280 days, and about 16 per cent bear the fetus longer than 280 days. Of the latter infants, about 12 per cent are hypermature at birth, whereas according to Zangemeister, excessive size is observed in only 7 per cent of the total number of past term infants, that is in women with a short menstrual cycle it is approximately twice as frequent as is ordinarily the case. In view of these facts the author concludes that the practitioner has to be careful in computing the date of delivery for women with a menstrual cycle of three weeks and that for instance permission to travel should not be given toward the end of the gestation, since confinement may take place before the normal term.

Electrocardiographic Aspects of So-Called Nervous Heart—Ekey describes a number of cases with cardiac symptoms in which the ordinary examination disclosed no pathologic changes in the heart and which for that reason were at first diagnosed as nervous heart. Electrocardiography, however, disclosed organic cardiac defects and the author concludes that electrocardiographic examination should always be made in cases of so-called nervous heart.

Diet for Children with Fever—The diet recommended by Meyer for children with fever is practically free from protein. It furnishes large quantities of fluid in the form of sweetened tea and fruit juices. Nurslings are given in addition to these fluids one raw egg yolk, and older children are given some steamed fruit and toast and later also two raw egg yolks. Depend-

on the duration of the fever, the diet is continued for from two to eight days or even for twelve days. This form of diet is usually well liked by the children and also well tolerated. The diet supplies the great fluid requirements of the organism during fever, it is readily assimilated (carbohydrates, chiefly sugar) and furnishes an adequate amount of calories. Rapid passage through the stomach prevents vomiting and the absence of protein is advantageous, particularly in cases in which the kidney and the liver are impaired. The intake of large amounts of lipoids and vitamins improves the general condition and the defense powers of the organism.

Strahlentherapie, Berlin

56 181 360 (June 20) 1936 Partial Index

- *Treatment of Sciatica W. Altschul—p. 181
- *Roentgen Treatment of Coccygodynia. C. I. Baastrup—p. 184
- Observations on Exclusive Roentgen Treatment in Advanced Carcinomas of Vagina and Uterine Cervix F. Baclesse—p. 189
- Extirpation of Tumor and Roentgen Irradiation in Treatment of Cancer of Breast J. Borak—p. 200
- *Treatment of Radiodermatitides and of Their Malignant Complications H. Bordier—p. 205
- Roentgen Treatment of Thrombophlebitis L. Eisler—p. 228
- Ray Treatment of Sarcomas Particularly of Bone Sarcomas Grashey, Glauner and Meese—p. 234

Treatment of Sciatica—Altschul says that in the treatment of sciatica he obtained favorable results with a combination of roentgen irradiation of the region of the root and of the course of the nerve and of injections of radium chloride into the region of the root. The roentgen rays are applied in doses of 200 roentgens to each of the fields (one over the root and one or two over the painful regions). After an interval of two weeks, the injection treatment is begun. Six injections (one each day) are made into the region of the root. At the first three injections 1 millicurie is given, at the last three 2 millicuries. Two weeks later, another series of roentgen irradiations are applied. This combination therapy has produced favorable results, but in some cases either of the methods alone produced lasting results.

Roentgen Treatment of Coccygodynia—According to Baastrup, the term coccygodynia is applied to various disorders that have only the localization of the pain in common. The best defined entity is the traumatic form, which is most frequent after deliveries, particularly in primiparas. Some of the traumatic cases are caused by a fall on the coccyx (skating, falling downstairs or other accidents). Coccygodynia may be elicited also by tumors, tuberculosis, osteomyelitis, rheumatism, uterine disorders, hemorrhoids and fistulas. The symptoms of coccygodynia are difficulty in sitting down and getting up from the sitting position, pain during defecation, particularly when there is constipation, and local pain and sensitivity of the coccyx. In discussing the treatment, the author says that hydrotherapy, diathermy, heat treatments, baths, faradization, antineuralgics and protein therapy have been recommended for the traumatic forms, if these measures fail, the surgical removal of the coccyx is indicated. The operation counteracts the pain but involves considerable dangers (osteomyelitis of the sacrum, fistulas, infections). Moreover, the operation is usually a failure in the nontraumatic forms. The hydrotherapeutic and other expectant measures likewise fail often to produce the desired results. The author decided to try roentgen treatment in an extremely severe case which had proved refractory to several other treatments. He applied 300 roentgens, using a filter of 5 mm of aluminum. The pain decreased until it had practically disappeared. At the appearance of mild signs of release, two more doses of 150 roentgens each and later a dose of 200 and a dose of 300 roentgens were applied, all of them with good results, the patient being now free from symptoms. The author describes fifteen other cases of coccygodynia (seven traumatic and eight of other origin) in which he resorted to roentgen therapy. He usually applied 300 roentgens but tried different filters and intensities. In some of the patients, other treatments had been tried without success. Ten of the fifteen patients are practically well now. One other patient, who is well now, was operated on for hemorrhoids so that it is difficult to say whether the operation or the roentgen rays effected the cure. One patient could not be found in the follow up inquiry, one was only temporarily improved and the roentgen treatment was without effect in

two. The author considers roentgen treatment justified in men (provided the testes are covered) and in women who are past the age of the menopause.

Treatment of Radiodermatitides—Bordier discusses the dermatitides and their malignant complications that occur in workers with roentgen and radium rays or after treatment with these rays. He points out that numerous antiseptic preparations were tried but failed. The results of the remedies that were intended to influence the nutrition likewise failed to come up to expectations. Brocker suggested the use of infra-red rays and obtained favorable effects with these rays in two cases of ray dermatitis. The author, however, prefers diathermy, calling attention to the favorable effect exerted by the high frequency currents on the trophic disturbances in the tissues. If the ray dermatitis is in a region in which the tissues consist largely of fat (abdomen) and the circulation of the humors is deficient and vitality of the tissues is impaired, the treatment must aim at increasing the vitality by stimulating the circulation of blood and lymph fluid in the region of the ulceration. Diathermy exerts a hyperemic action not only in the region of the ulceration but also in the tissues underneath. A lead electrode is applied 3 or 4 cm from the edge of the ulcer. A second electrode is applied on the other side of the ulcer so that the high frequency current passes through the tissues under the ulcer. The treatments are applied in series of twelve or fifteen sessions. The intervals between the sessions differ from case to case, but the interval between the series does not exceed a month. For the ray dermatitides that develop in tissues that have little fat (face, hand, leg and so on), the author recommends coagulation by diathermy, the aim being to destroy the tissues that have been injured by the rays. Following the coagulation he applies gauze compresses saturated with 1 per cent phenol. The bandages are changed daily. For the ray dermatitides that assume a malignant character, the author likewise recommends coagulation by diathermy. He employed it for twenty-five radiologists who suffered from malignant degeneration of keratotic fields. He cites passages from some of the reports written by the radiologists themselves.

Wiener Archiv für innere Medizin, Vienna

29 1 160 (July 1) 1936 Partial Index

- *Changes in Hypophysis During Beriberi O. Marburg and K. F. Wenckebach—p. 1
- Thoracic Electrocardiographic Lead in Diagnosis of Myocardiac Lesions C. L. C. van Nieuwenhuizen—p. 25
- *Glutamic Acid as Substitute for Salt: Relations Between Concentration of Urea and Chlorides in Urine of Normal Persons and of Those with Renal Disorders in Course of Tolerance Tests with Sodium Chloride and Urea F. Mainzer—p. 53
- Heredity of Endocrine Disturbances Berta Aschner—p. 69
- Dynamics of Nitrogen Metabolism in Renal Diseases R. Berkmann and T. Wolpianska—p. 95
- Plasma Protein Bodies and Sedimentation Speed of Erythrocytes W. Beiglböck and G. Obersohn—p. 107

Changes in Hypophysis During Beriberi—The observation that the pressor principle of the hypophysis counteracted the vascular symptoms of beriberi induced Marburg and Wenckebach to investigate whether the vascular defects of patients with beriberi might not be caused by a dysfunction of the intermediate and posterior lobes of the hypophysis and particularly by that of their basophil cells. The authors made their studies on the hypophyses of Chinese workers. They found that degeneration and atrophy of the basophil elements, chiefly of the smaller ones, was the most common and the most noteworthy change. They admit that histologic pictures do not permit conclusions regarding the gradual development of a process, nor do these histologic aspects indicate whether the changes of the hypophysis were primary or produced by disorders of other organs. Nevertheless, they think that these changes exerted some influence on the symptoms of beriberi. This is the more probable since the changes in the adrenals and the tuber cinereum, which might be of importance in beriberi were virtually irrelevant.

Glutamic Acid as Substitute for Salt—Mainzer directs attention to his first report on glutamic acid as a substitute for sodium chloride (abstracted in THE JOURNAL, June 20, 1936 p. 2205) and, in view of the fact that the glutamic acid is eliminated partly as urea, he now describes his studies on the

relations between the concentration of urea and chlorides in the urine. He made tolerance tests with urea and sodium chloride, alone or together, on normal persons and on those with renal diseases. Moreover, in some of the tests he replaced the urea by glutamic acid. It was found that there is an antagonism between the concentration of the nitrogens and the chlorides in the urine. This antagonism differs only quantitatively in normal persons and in those with renal disease. A mathematical analysis of the problem makes it seem probable that the antagonism in the concentration is due to an osmotic antagonism between urea and chloride. The greater the renal insufficiency, the greater also the practical importance of this antagonism in the concentration.

Wiener medizinische Wochenschrift, Vienna

86:733 792 (July 4) 1936 Partial Index

Diagnosis of Peritonitis in Nurlings and Children J. A. Aht—p. 737
Is Fever a Constant Symptom During Incubation Period of Measles?
Z. von Barabás—p. 740

Is It Permissible to Use Sterilized Human Milk in Feeding of Pre-
mature Infants? J. Bernheim Karrer—p. 742
Congenital Ear Fistulas and Their Differential Diagnostic Significance
During Childhood B. Dragisic—p. 748

*Syphilis-like Roentgenologic Aspects in Nonsyphilitic Skeletal Diseases
During Nursing Age B. Epstein and Mariba Klein—p. 750
Syndrome of Celiac Disease in Congenital Cystic Pancreatic Fibroma
tosis and Bronchiectasis G. Fanconi, E. Uehlinger and C. Knauer
—p. 753

*Connections Between Zoster and Varicella K. Kundratitz—p. 788

Syphilis-like Roentgenologic Aspects in Skeletal Diseases—Epstein and Klein describe eight cases of nonsyphilitic bone diseases in which the roentgenologic aspects greatly resembled the various stages of syphilitic skeletal disorders. All except one of these cases were of a septic pyemic nature and showed involvement of the joints. They appeared, like the syphilitic bone diseases, on the epiphyseal ends, even on those that were far removed from the focus of the disease. This permits the assumption that, in the growth zones of the bones and in the adjoining diaphyseal portions, there were in addition to the clinically recognizable foci also changes that resulted from toxic or bacterial influences. In spite of the apparently severe nature of the changes, retrogression set in, and in the majority of cases the pathologic changes disappeared entirely under the authors' observation. In this disappearance too they resembled the syphilitic bone diseases. The patients observed by the authors were children who were in the first year of life, that is, the bone disorders developed at the same time at which the syphilitic changes usually appear. From this it is concluded that the skeleton has a certain predisposition for such disorders at this time of life. The authors stress the importance of these observations for the differential diagnosis of skeletal disorders during early childhood. On the other hand, they show that even the roentgenologic examination of the bones does not always permit an etiologic diagnosis during the first few months of life.

Relation Between Zoster and Varicella.—Kundratitz reviews the epidemiologic and clinical factors that were cited in earlier reports in support of an etiologic relationship between zoster and varicella but says that there are still some investigators who, in spite of this evidence, reject a connection between the two conditions. He then cites cases of his own observation which indicate an epidemiologic relationship between zoster and varicella and reports studies he conducted on the immunizing action of zoster against varicella. Other factors which he considers indicative of a common etiology of zoster and varicella are the identical cytologic aspects of the zoster and varicella blisters as well as the identical morphologic and staining characteristics of the elementary bodies in the vesicular contents of new zoster and varicella efflorescences which also show crossed agglutination. The author admits that the complement fixation reaction gives contradictory results, but he thinks that with a certain technique the results would be more uniform. He points out that it has not been determined as yet why in some cases the symptomatology of zoster and in others that of varicella develops. Some have assumed that the virus may appear as a neurotropic mutation or as a dermatotropic one. Another explanation is that differences in the

infected persons might be responsible for the differences in manifestation. In this connection the author points out that varicella occurs frequently in children, or at the age when acute exanthems are most frequent, whereas zoster occurs chiefly in adults, who are more subject to diseases of the nervous system. These varying reactions to the same virus would corroborate Pirquet's theory of different allergic reactions during the various age groups. Other observers have expressed the opinion that the development of zoster could be explained as the result of a cutaneous immunity, which had been acquired by adults either through an attack of varicella or by so-called silent infection. The author concludes that it can no longer be doubted that zoster and varicella are etiologically related, for outside of the virus of varicella no other virus has as yet been demonstrated in cases of zoster, and assumptions of the existence of a different virus are merely unproved hypotheses.

Hospitalstidende, Copenhagen

70 677 688 (June 30) 1936

*Theophylline with Ethylene Diamine and Its Application in Therapy
T. Geil—p. 677

Theophylline with Ethylene Diamine and Its Application in Therapy—Geil asserts that coronary disturbances (sclerosis or thrombosis) and complications present the main field for the use of theophylline with ethylene diamine and discusses the marked therapeutic value of this agent in cardiac asthma and Cheyne-Stokes respiration. He reports a case of coronary thrombosis with violent precordial pain, in which large doses of morphine were ineffective but intravenous injections of theophylline with ethylene diamine immediately allayed the pain. In a patient with grave syphilitic disorder of the aorta and heart given massive doses of digitalis the injection of theophylline with ethylene diamine was followed by a typical digitalis bigeminy. The effect of theophylline with ethylene diamine as a diuretic apparently does not surpass that of other purine derivatives.

70 689 700 (July 7) 1936

*Quantitative Investigations on Resorption of Vitamin A in Case of
Celiac Disease Studies on Hypovitaminosis A I. C. Friderichsen
—p. 689
Pathogenesis of Infectious Toxic Encephalopathy J. V. Jørgensen
—p. 699

Resorption of Vitamin A in Celiac Disease—By determining the weakest light irritation that can cause an oculomotor reflex, Friderichsen obtains the quantitative expression of the degree of hypovitaminosis A in infants. In a case of celiac disease in an infant with fairly grave hypovitaminosis A revealed by this method, vitamin A in sweet milk, mashed carrots and spinach and a concentrated vitamin were not resorbed. After administration of mother's milk the reflex irritability of the eye against light rapidly became normal and the characteristic changes seen in hypovitaminosis (pale and yellowish complexion, dry and scaly skin, pigmentation, brittle hair, keratosis on the plantae) disappeared. Because of the reduced resorption of vitamin A in celiac disease the author suggests that the disease may be a manifestation of a disorder of the reticulo endothelial system.

Hygiea, Stockholm

98 417-464 (July 15) 1936

*Contribution to Question of Treatment of Anorectal Strictures in
Inguinal Lymphogranuloma G. Redell—p. 417

Treatment of Anorectal Strictures in Inguinal Lymphogranuloma—In a woman, aged 42, having marked anorectal changes and a history of syphilitic infection more than twenty years earlier, the Wassermann reaction was negative on the first appearance of the anal symptoms in 1926. There is a strongly positive intracutaneous Frei reaction and the anatomic pathologic picture, Redell says, is such as often appears in inguinal lymphogranuloma. The process with more and more pronounced stricture of anus and rectum threatened to necessitate an artificial anus but after intravenous treatment with Frei antigen considerable improvement in passage has resulted and the patient now manages relatively well without anal stenosis.

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DELIVERY AND CARE OF THE NEW- BORN INFANT OF THE DIA- BETIC MOTHER

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AND
EDWARD H RYNEARSON, M D
ROCHESTER, MINN

Priscilla White¹ recently has written a most comprehensive article on the problems which arise when a diabetic woman becomes pregnant. It is not our purpose to reconsider this entire subject but rather to offer suggestions for one of its phases, namely, the delivery and care of the new-born infant.

Prior to the discovery of insulin, pregnancy for the diabetic woman was particularly dangerous. Fortunately, then, the fertility of diabetic women was low and few of them conceived, a high percentage of those who did conceive died, as did most of the infants. Since the discovery of insulin the situation has changed. Many of those who have diabetes in childhood now live to reproduce. The fertility of women who have diabetes that has been controlled is higher than was that of diabetic women before insulin was discovered, in addition, diabetes now can be better controlled during pregnancy, so that more infants come to the period of viability. This does not mean that diabetes complicated by pregnancy is no longer a problem, on the contrary, new problems have arisen, chiefly those of reducing fetal mortality. There has been a gratifying decrease in maternal morbidity and mortality.

Prepartum, intrapartum and postpartum deaths of infants of diabetic mothers have maintained a high rate. Priscilla White stated the problem well when she said "Prevention of the death and decay of the over-ripe fetus of the diabetic mother is a challenge today to the obstetrician and research worker in the field of diabetes."

The approach to this problem first involves the consideration of the time and mode of delivery, and, secondly, the postpartum care of the child. In considering the time and mode of delivery it should be emphasized that the obstetrician is not dealing with a normal woman. No matter how well the diabetes is controlled there are too many abnormal factors involved to permit of a casual decision. The usual conceptions of pregnancy are no longer correct when the expectant mother is diabetic. A diabetic woman who becomes pregnant is an abnormal woman who requires special care and consideration. Every effort should be made to keep her condition satisfactory, not only for her

sake but because there is an additional life at stake—a life which is in much greater danger than the mother's. As previously mentioned, we believe we know enough about diabetes to prevent the mother's death from that cause, but the important question is how and when should she be delivered to give the baby the best chance? In all probability the baby is going to be large, for 60 per cent of such babies weigh more than 8 pounds (3.6 Kg.), as compared to 9 per cent of babies of normal mothers. This means a more difficult labor if the mother is allowed to go to term. The fact that the baby is large does not mean that it will be healthy, on the contrary, it may be "flabby" and born dead. The incidence of stillbirth in cases in which the mother is diabetic is many times that occurring in normal deliveries. Not only is the child likely to be injured by the difficulties of labor but it often succumbs in utero to the abnormal state existing in the last few weeks of pregnancy. If the child can be spared this abnormal state which culminates in the stress and strain of normal delivery, its chances for life are materially increased. For this reason we advocate delivery by cesarean section in the thirty-sixth or thirty-seventh week of pregnancy, at which time sterilization can be accomplished if permitted and advisable. We agree with White, who said "Premature delivery of the fully developed, though chronologically premature infant of the diabetic mother by cesarean section is the obstetrician's successful answer to the challenge."

What are the immediate dangers confronting this new-born child and how can they be met? Particularly during the third trimester of pregnancy the pancreas of the infant has been attempting to supply the insulin the mother lacked. After birth the child's pancreas continues to overfunction and produces hypoglycemia.

There is ample evidence to support this statement. In 1915 Carlson and Ginsburg² removed the pancreas from pregnant bitches that were almost at term and found that diabetes failed to develop in the bitch until after delivery but occurred soon after. This indicated that the fetal pancreas supplied the needed insulin for the diabetic bitch. Bower and Heilbrun³ reviewed the subsequent efforts to prove and disprove this conclusion. Pack and Barber⁴ offered strong support and also answered those critics who doubted the permeability of the pancreas to hormonal transmission, when they injected insulin into the fetuses of goats and produced a decrease in the maternal blood sugar. Britton⁵

2 Carlson A S and Ginsburg H. The Influence of Pregnancy on the Hyperglycemia of Pancreatic Diabetes. *Am J Physiol* 36:217-222 (Jan) 1915.

3 Bower B D and Heilbrun, Norman. Pregnancy and Diabetes with a Report of Five Cases and a Review of the Literature, *Am J M Sc* 183:803-811 (June) 1932.

4 Pack, G T and Barber, Donn. The Placental Transmission of Insulin from Fetus to Mother. *Am J Physiol* 90:466 (Oct.) 1929.

5 Britton S W. Maternal and Fetal Blood Sugar Changes Under Various Experimental Conditions. *Am J Physiol* 95:178-185 (Oct) 1930.

From the Section on Obstetrics and Gynecology (Dr Randall) and the Division of Medicine (Dr Ryneerson) the Mayo Clinic.
1 White, Priscilla. Pregnancy Complicating Diabetes. *Surg Gynec. & Obst.* 61:324-332 (Sept.) 1935.

reversed this procedure when he injected insulin into a pregnant cat and studied the fetal blood sugar. He found a decrease in the kitten's blood sugar, which rapidly returned to normal.

The amount of sugar in the blood of normal mothers and infants was studied by Morriss,⁶ who found the average value for the mothers' blood sugar to be 135 mg per hundred cubic centimeters and that for the infants' blood sugar to be 115 mg per hundred cubic centimeters. Rowley⁷ found normal values for blood sugar of the mothers and no significant changes in the amount of sugar in the blood obtained from the umbilical cords. Revesz and Turolt⁸ found that the value for the sugar in the blood of the umbilical artery was 10.33 per cent lower than for the sugar in the blood of the umbilical vein, the value for the maternal blood sugar was higher than either. The amount of sugar in the mother's blood increased during labor. Schretter and Nevinny⁹ and Popova¹⁰ found that the value for the normal infant's blood sugar may be low for several days following birth. This unquestionably is related to the activity of the infant's pancreas. Holzbach¹¹ found insulin in the pancreas of normal fetuses of all ages, including one fetus that weighed but 21.5 Gm. He also reported a case of diabetes¹² in which the value for the mother's blood sugar increased from 120 to 210 mg per hundred cubic centimeters within a few hours following the intra-uterine death of her child.

Dubreuil and Anderodias¹³ first reported the finding of hypertrophy and hyperplasia of the islands of Langerhans in a fetus of a diabetic mother. Not only were the islands present in large number but they were from thirty to forty times the usual size. This far exceeds the figures of normal fetal island cells as given by Nakamura,¹⁴ who found that the fetal islands were about four times the size of those found among adults but reported none so large as those found in the fetuses of diabetic mothers. Wiener,¹⁵ Gray and Feemster,¹⁶ Holzbach,¹⁷ Lawrence,¹⁸ Nevinny and Schretter,¹⁹ Schretter and Nevinny,²⁰ Sennewald,²¹ Stepp,²² Ehrlich,²³

Gordon²⁴ and Higgons²⁵ all have reported cases in which the islands were large and numerous. In cases in which the value for the blood sugar was determined, it was found that the value for the fetal blood sugar was much lower than that for the maternal blood sugar, the former often was so low as to produce the symptoms of hypoglycemia.

There is no doubt that hypoglycemia explains many of the deaths of infants born to diabetic mothers, although in his review Skipper²⁶ said "The occurrence of fatal hypoglycemia in the child after delivery has not been proved."

In an effort to treat this condition, Wilder and Parsons²⁷ in 1928 suggested that the infants should be fed immediately after birth. Sennewald successfully treated an infant who had hypoglycemia by administering a solution of dextrose by rectum. Higgons also has reported a successful result.

Our interest in the treatment of fetal hypoglycemia became acute following the successful outcome in a case in which the patient was treated by Dr. Wilder in 1933; this case has been reported in detail elsewhere.¹ Briefly, the child was delivered by cesarean section and shortly thereafter it was found that the value for the capillary blood sugar was 43 mg per hundred cubic centimeters. At this time the child presented the convulsive movements and cyanosis that are so typical of severe hypoglycemia. By means of intramuscular injections of dextrose and frequent feedings for several days, the child was enabled to live and is still alive and well.

We now report our results in subsequent consecutive cases.

REPORT OF CASES

CASE 1.²⁸—*History.*—A married woman first came to the clinic in February 1928 complaining of the typical symptoms of diabetes mellitus which had been present since the month of her marriage August 1927. She had lost 17 pounds (7.7 kg). She was in her fourth month of pregnancy. She was instructed regarding the proper care of her condition and dismissed with instructions to take 14 units of insulin daily.

She did not return until April 1933, when she reported that this pregnancy had terminated by spontaneous abortion in the sixth month. A second pregnancy terminated in December 1929, the eighth month with the delivery of a stillborn infant. The third pregnancy terminated spontaneously at seven and a half months in February 1931. This child survived. Her fourth pregnancy terminated in the seventh month in February 1932. The child lived only seven hours.

At the time of the examination in April 1933, she was found to be in about the tenth week of pregnancy. She had had great difficulty in the control of her diabetes and frequent severe insulin reactions had occurred. She was instructed in the proper care of her condition and dismissed with instructions to take 30 units of insulin a day. She was warned to avoid insulin reactions. Every effort was made to cooperate with her home physician who took excellent care of her until she returned to the clinic in the eighth month of pregnancy.

She was admitted to the hospital Sept. 30, 1933, because she had had a severe insulin reaction the day before. Because insulin reactions prove dangerous to the fetus a cesarean section was performed October 2 at which time the fallopian tubes were resected. Her convalescence was uneventful until

6 Morriss W. H. The Obstetrical Significance of the Blood Sugar with Special Reference to the Placental Interchange. *Bull. Johns Hopkins Hosp.* 28: 140-146 (April) 1917.

7 Rowley W. N. Observations on the Blood Sugar During Pregnancy and the Puerperium. *Am. J. Obst. & Gynec.* 5: 23-32 (Jan.) 1923.

8 Revesz Tibor and Turolt Max. Ueber die Beziehungen zwischen fetalem und mütterlichem Blutzucker. *Zentralbl. f. Gynak.* 50: 985-990 (April 10) 1926.

9 Schretter G. and Nevinny H. Der Blutzucker in den ersten Lebenstagen. *Ztschr. f. Geburtsh. u. Gynak.* 88: 258-276 1930.

10 Popova A. A. quoted by Ehrlich.²³

11 Holzbach Ernst. Das Pankreasbormon des ungeborenen Kindes. *Zentralbl. f. Gynak.* 53: 1907 (July 27) 1929.

12 Holzbach Ernst. Die Blutzuckerkurve einer pankreasdiabetischen Schwangeren. *Zentralbl. f. Gynak.* 50: 2610-2613 (Oct. 9) 1926.

13 Dubreuil G. and Anderodias. Hots de Langerhans géants chez un nouveau né issu de mère glycosurique. *Compt. rend. Soc. de biol.* 83: 1490-1493 (Nov. 9) 1920.

14 Nakamura Nobu. Untersuchungen über das Pankreas bei Feten Neugeborenen Kindern und Pubertätsalter mit einem Anhang Fälle mit Diabetes und Glykosurie. *Virchows Arch. f. path. Anat.* 253: 286-349 1924.

15 Wiener H. J. Diabetes Mellitus in Pregnancy. *Am. J. Obst. & Gynec.* 7: 710-718 (June) 1924.

16 Gray S. H. and Feemster L. C. Compensatory Hypertrophy and Hyperplasia of the Islands of Langerhans in the Pancreas of a Child Born of a Diabetic Mother. *Arch. Path. & Lab. Med.* 1: 348-355 (March) 1926.

17 Holzbach Ernst. Diabetes und Schwangerschaft, hier besonders die hormonalen Beziehungen zwischen Mutter und Kind. *Zentralbl. f. Gynak.* 53: 641-647 (March 16) 1929.

18 Lawrence R. D. Improvement of Diabetes in a Pregnant Woman Due to Foetal Insulin. *Quart. J. Med.* 22: 191-202 (Jan.) 1929.

19 Nevinny H. and Schretter G. Zuckerkrankheit und Schwangerschaft. *Arch. f. Gynak.* 140: 397-427 1930.

20 Schretter G. and Nevinny H. Zur Histopathologie der Zuckerkrankheit bei Neugeborenen und Säuglingen. *Arch. f. Gynak.* 143: 465-476 1930-1931.

21 Sennewald. Diabetes und Schwangerschaft. *Zentralbl. f. Gynak.* 54: 817-820 (March 29) 1930.

22 Stepp W. in discussion. *Verhandl. d. Gesellschaft f. Verdauungs- u. Stoffwechselerk.* 11: 156-157 1932.

23 Ehrlich Wilhelm. Leber angeborene Hypoglykämie. *Klin. Wchnschr.* 13: 584-585 (April 21) 1934.

24 Gordon W. H. Fetal Hypoglycemia Due to Hyperinsulinism. *J. Michigan M. Soc.* 34: 167-171 (March) 1935.

25 Higgons R. A. Hypoglycemia in the New Born. *Am. J. D. Child.* 50: 162-165 (July) 1935.

26 Skipper Fric. Diabetes Mellitus and Pregnancy. *A Clinical & Analytical Study (with Special Observations upon Thirty-Three Cases).* *Quart. J. Med.* 2: 353-380 (July) 1933.

27 Wilder R. M. and Parsons E. H. Treatment of Diabetes During Pregnancy. *Colorado Med.* 25: 372-382 (Nov.) 1928.

28 Randall L. M. and Ryneason E. H. Successful Treatment of Spontaneous Hypoglycemia of the Infant of a Diabetic Mother. *A Preliminary Report from Staff Meet.* *Mayo Clin.* 10: 705-707 (Nov.) 1935.

29 We are indebted to Dr. W. E. Coulter of Seneca for his cooperation in the management of this patient.

5 20 p. m., October 13 when a severe insulin reaction developed. This was associated with hemiplegia but was promptly relieved by orange juice. She was dismissed from the hospital and instructed to take 50 units of insulin daily. She has not had any further trouble or any insulin reactions.

Infant's Record—The child was a boy who weighed 7½ pounds (3,402 Gm). The value for the mother's blood sugar was 60 mg and for blood sugar of the umbilical cord 30 mg per hundred cubic centimeters. Obviously the mother had received too much insulin. The infant's blood was not obtained. He was given 10 cc of 10 per cent solution of dextrose intramuscularly. This dose was repeated one and two hours later. At this time, feedings by mouth were begun. 125 cc of lactic acid karo formula and 25 cc of a 50 per cent solution of dextrose were administered at each feeding. These feedings were given every two hours for fourteen hours at the end of which time a regular feeding schedule was instituted. Thirty cc of lactic acid-karo formula was administered every three hours. The subsequent course was satisfactory.

The first patient was a diabetic woman who had been pregnant four times prior to the present pregnancy and who had only one living child. She was successfully delivered of her baby by cesarean section in the thirty-seventh week.

CASE 2—History—The patient was first seen in 1932 when she was 30 years of age. Diabetes had been discovered two years previously and had been adequately controlled with a proper diet and 24 units of insulin a day. She consulted us on this occasion for infertility. The problem of pregnancy and diabetes was discussed thoroughly and she was advised against becoming pregnant.

She returned to the clinic April 23, 1934, she had been pregnant for seven months. Her diabetes had become more severe than it had been and 68 units of insulin daily was required for its control. Her general condition was satisfactory. She was advised to avoid insulin reactions and to return in one month for cesarean section.

Cesarean section was performed at 8 a. m. on May 26, 1934, in the thirty-seventh week of pregnancy. Her postoperative convalescence was satisfactory, and her diabetes became more easily controlled. In August 1934 she reported that she was well and that only 30 units of insulin was required daily.

Infant's Record—The child was a girl who weighed 8 pounds 11 ounces (3,941 Gm). There was a marked hydramnion. At the time of the cesarean section the value for the sugar in the mother's venous blood was 180 mg per hundred cubic centimeters for the blood sugar of the umbilical cord 88 mg and for the infant, as determined by the micromethod, 41 mg. The infant was very cyanotic, 10 cc of a 10 per cent solution of dextrose was administered intramuscularly at once and oxygen was administered. Five cc of 20 per cent solution of dextrose was administered by mouth each hour for the ensuing twenty-four hours at which time the feedings of the lactic acid-karo formula were begun. Thirty cc of the formula was given every two hours. The infant also received 10 cc of a 20 per cent solution of dextrose by mouth every two hours alternating with the formula. After twenty-four hours on this schedule, the normal schedule for infant feeding was instituted and the child made normal progress. The value for the infant's capillary blood sugar which was 41 mg per hundred cubic centimeters at 4 p. m. in spite of the heavy feeding schedule was only 60 mg the following morning. From this time on it was perfectly normal.

The second patient had fairly severe diabetes and was delivered of a child by cesarean section at the thirty-seventh week. The child suffered from fetal hypoglycemia but responded well to the treatment outlined. Both mother and daughter made an uneventful convalescence. The occurrence of hydramnion is a not infrequent finding in cases in which diabetic women become pregnant.

CASE 3³⁰—History—A woman first registered at the clinic in 1927, when she was 24 years of age. She had known of

the presence of diabetes mellitus for about nine months. She had been married for two years and had not been pregnant. She was instructed in the management of her diabetes and was dismissed with instructions to take 28 units of insulin daily.

She returned to the clinic in June 1934, when she was in the eighth month of her first pregnancy. Her diabetes had been well controlled during her pregnancy. During early pregnancy she had increased her insulin dosage to 45 units because of the attendant nausea and vomiting but had been able to decrease this to 35 units in recent months. There had been some edema of the ankles during the four weeks before her last visit to the clinic, but her blood pressure and ocular fundi were normal and there was no evidence of toxemia.

June 22, 1934 a cesarean section was performed. Her diabetes became very difficult to control but within a few days the patient responded normally and a satisfactory convalescence followed.

Infant's Record—The baby who was a boy weighed 7 pounds (3,175 Gm). At the time of the operation the value for the mother's blood sugar was 165 mg per hundred cubic centimeters for the blood sugar of the umbilical cord 70 mg, and for the infant's blood sugar, as determined by the micromethod, 46 mg. Ten cc of a 10 per cent solution of dextrose was injected intramuscularly and oxygen was administered. Ten cc of a 10 per cent solution of dextrose was given by mouth every hour for twenty-four hours. In addition, an effort was made to give 15 cc of the lactic acid-karo formula every two hours but these feedings were often regurgitated. At the end of twenty-four hours the administration of dextrose was discontinued and regular feedings of the formula were instituted. For the first three days the child had numerous attacks of muscular twitching and mild convulsive movements many of which seemed to disappear after feeding. On the fourth day these symptoms disappeared and he made an uneventful recovery. While the value for the blood sugar was not obtained in each of these attacks of twitching, it is likely that the attacks occurred in spite of a normal value for the blood sugar since a single determination on the morning of each of these days revealed that the value for the blood sugar was normal.

This baby presented as an outstanding symptom of hypoglycemia the development of marked twitchings and convulsive movements, for three days following birth. The subsequent course was normal.

CASE 4³¹—History—A girl first registered at the clinic in May 1930, when she was 19 years of age. She had had typical symptoms of diabetes mellitus for two weeks. The value for her blood sugar was 200 mg per hundred cubic centimeters. Her diabetes was readily controlled and she was dismissed with instructions to take 35 units of insulin daily.

She returned to the clinic in January 1931. Her diabetes had been well controlled and the value for her blood sugar was 150 mg per hundred cubic centimeters. She had been married in the interim, had become pregnant, and had had a miscarriage in the second month of her pregnancy.

She next came to the clinic in November 1931, when she reported that her diabetes had been controlled until she became pregnant three months before. Nausea and vomiting had made control a little difficult, but at this time her diabetes was well controlled and the value for her blood sugar was found to be 83 mg per hundred cubic centimeters. She was advised as to the proper care of her condition and was dismissed.

She returned to the clinic in March 1932. At that time she had been pregnant for seven months and reported that she had been troubled with nausea and some vomiting for three weeks and that edema of the face and feet had been present for two weeks. Her family physician had found appreciable quantities of albumin and casts in the urine. Otherwise she presented little evidence of toxemia of pregnancy, the chemical composition of the blood and the ocular fundi were essentially normal. In spite of adequate medical care, she expelled a dead fetus March 28, 1932. Her diabetes was controlled and she was dismissed with instructions to take 50 units of insulin daily.

Her next visit was in July 1934, when she was two and a half months pregnant. She had reduced her insulin dosage to 10 units a day until this pregnancy, when control of the diabetes

³⁰ We are indebted to Dr. R. R. Jeffries of Waukon, Iowa, for his cooperation in the management of this patient.

³¹ We are indebted to Dr. W. J. McCarthy of Madelia, Minn., for his cooperation in the management of this patient.

again became difficult. Her diabetes was controlled, and she was dismissed taking 55 units of insulin daily.

She returned to the clinic Nov. 2, 1934. At this time she was unable to control her diabetes in spite of the fact that she was taking 80 units of insulin daily. Aside from this and in spite of the fact that she had a toxic pruritus of pregnancy, she felt well. There was no evidence of any toxemia of pregnancy, and her ocular fundi were normal. Her diabetes was difficult to control because of the associated presence of a low renal threshold, which minimized the importance of glycosuria and made necessary more frequent determinations of the value for the blood sugar.

Because of her two previous unsuccessful pregnancies and since in the interim we had learned of the importance of fetal hypoglycemia and its treatment, she was advised to remain at the clinic for delivery.

This was accomplished by cesarean section Jan. 4, 1935, in the thirty-sixth week of pregnancy. Her convalescence was uneventful and her diabetes has been satisfactorily controlled since the operation.

Infant's Record—The child, who was a girl, weighed 6 pounds 11 ounces (3,040 Gm.) and was delivered at 9 a. m. on Jan. 4, 1935. The value for the infant's blood sugar, as determined by the micromethod, was 43 mg. per hundred cubic centimeters, while the value for the sugar in the mother's venous blood was 115 mg. The child was very cyanotic and required aspiration of mucus from the trachea and artificial respiration. She was given intramuscular injections of 10 cc. of a 10 per cent solution of dextrose and 20 cc. of citrated blood, and oxygen was administered. Every hour during the morning, she was given 15 cc. of lactic acid-karo formula. Because of cyanosis, 5 cc. of a 10 per cent solution of dextrose was injected intramuscularly at noon, and beginning at 1 p. m. 10 cc. of a 20 per cent solution was administered hourly by mouth, in addition to the formula. This was continued for two days, during which time her condition remained satisfactory. The value for her blood sugar increased from 43 mg. per hundred cubic centimeters at 9 a. m. to 77 mg. at 4 p. m. and to 133 mg. at 9:30 p. m., on the day of her birth. The value for the blood sugar never became low and two weeks later it was 99 mg. per hundred cubic centimeters. The child's condition has remained satisfactory to the present.

In this case cesarean section was performed in the thirty-sixth week of pregnancy. The mother was suffering from severe diabetes and had had two previous pregnancies, the first had resulted in miscarriage and the second had resulted in a stillbirth at the seventh month of pregnancy. The living child was suffering from hypoglycemia at birth, she responded nicely to treatment. Both mother and child are alive and well.

CASE 5—History—A woman, aged 28, who came to the clinic July 6, 1935, had been examined at the clinic intermittently for nine years. Her maternal grandfather had died of diabetes and one sister has diabetes. She had had an uneventful pregnancy at the age of 23. Examination at the clinic revealed that she was pregnant and nearing term. The value for the blood sugar was 146 mg. per hundred cubic centimeters. Exton's dextrose tolerance test revealed the following values for the blood sugar: 107, 142 and 230 mg. per hundred cubic centimeters. Diabetic care was instituted and on July 10, 1935, delivery occurred spontaneously. Her postpartum course was uneventful and her diabetes has been easily controlled without the administration of insulin.

Infant's Course—A male infant who weighed 3,630 Gm., was delivered at 2:35 a. m., July 10, 1935. The value for the mother's blood sugar was 142 mg. per hundred cubic centimeters and for the sugar in the blood of the umbilical cord 112 mg. The amount of sugar in the infant's blood was not determined at this time. At 3:15 a. m. 10 cc. of a 10 per cent solution of dextrose was injected into the child's buttocks. At hourly intervals beginning at 5 a. m., 10 cc. of a 20 per cent solution of dextrose was given by mouth. His condition remained good until just after the feeding at 9 a. m., when he became very cyanotic and regurgitated the feeding. The cyanosis of the face cleared rapidly and within twenty minutes his condition was much improved. At this time the value for blood sugar as determined by the micromethod was 112 mg. per hundred

cubic centimeters. At 10 a. m. he again became cyanotic, artificial respiration was necessary and carbon dioxide and oxygen were administered, mucus was aspirated and 10 cc. of a 10 per cent solution of dextrose was injected into the buttocks. The child was kept in an oxygen concentration of from 55 to 60 per cent, he improved, although muscular twitchings were marked. No difficulty was encountered until 1:30 p. m., when he vomited. Feedings by mouth were discontinued and he was given 10 cc. of a 10 per cent solution of dextrose intramuscularly every two hours. This was continued for twenty-four hours, at the end of which time feedings of the lactic acid-karo formula were begun, 10 cc. of this formula was given every two hours. At this time (July 11) whole lactic acid milk was given and with the exception of occasional vomiting, no difficulty was encountered. July 12 his condition was good and the muscular twitchings had ceased. The administration of oxygen was discontinued and the infant received the routine care.

Even with a normal value for the blood sugar, this infant had a precarious existence for the first two days, with cyanosis, muscular twitchings and vomiting as outstanding features. Since the mother had such mild diabetes, was at term when first seen and had had an easy labor with her first child, cesarean section was not advised.

CASE 6—History—The patient registered at the clinic in December 1922 when she was a girl aged 13 years. She had had typical symptoms of diabetes mellitus for six weeks. Her mother was a diabetic patient, and there was a marked familial tendency to obesity. The value for her blood sugar was 169 mg. per hundred cubic centimeters. She was 61 inches (155 cm.) tall and very obese, she weighed 177 pounds (80.3 Kg.). She was instructed in the qualitative restriction of carbohydrates and fats and advised to return in about six months.

She returned in July 1923 and reported that after she had followed the diet for several months she had lost 15 pounds (6.8 Kg.) but that she had become careless and her weight had increased to 170 pounds (77.1 Kg.). She was advised and urged to be more cooperative.

She again returned to the clinic in February 1924, when she weighed 175 pounds (79.4 Kg.). Despite her carelessness, the value for her blood sugar was 98 mg. per hundred cubic centimeters and the dextrose tolerance test showed a normal response.

She was next seen at the clinic in June 1933. At this time she was 24 years old, 5 feet 2 inches (157.5 cm.) tall and weighed 177 pounds (80.3 Kg.). She had not followed our advice but had been most careless and had treated her diabetes only when forced to do so by the development of pruritus vulvae. Her urine contained 8 per cent sugar and the value for her blood sugar was 226 mg. per hundred cubic centimeters. There was no evidence of diabetic retinitis. A daily diet of 550 calories was employed, this was supplemented with vitamins and minerals. By August 21 she had lost 21 pounds (9.5 Kg.) and her diabetes was well controlled. She was dismissed with a stern lecture regarding her negligence.

Shortly thereafter she was married and did not return to the clinic until Aug. 30, 1935, at this time she was pregnant. Her last menstrual period had occurred Dec. 29, 1934, and her expected date of confinement was Oct. 4, 1935. She reported that until she became pregnant her weight had remained between 145 and 150 pounds (65.8 to 68 kg.). The value for her fasting blood sugar was normal as were the results of both the standard and the Exton dextrose tolerance tests. Dr. Wagener examined her ocular fundi and found the typical picture of diabetic retinitis but in addition saw a definite cotton wool patch and other evidence of toxic retinitis. Three days later there were more cotton-wool exudates and further advances in the degree of the toxic retinitis. He favored early termination of the pregnancy. The interesting feature is that the retinitis was out of all proportion to the degree either of diabetes or of toxemia of pregnancy. However because of our faith in the importance of retinal examination and because of the diabetes a cesarean section was performed September 7. September 10 Dr. Wagener reported as follows: "There seems to be less activity and the retinitis probably will recede."

September 27 he found that the evidence of toxic retinitis had largely disappeared, leaving those changes typical of diabetic retinitis. Her convalescence was uneventful.

Infant's Record—A female child, who weighed 3,624 Gm, was born at 9 a m. Its general condition was very satisfactory. The value for the sugar in the mother's venous blood was 115 mg per hundred cubic centimeters, for the sugar in the blood of the umbilical cord 85 mg, and for the infant's blood sugar, as determined by the micromethod, 115 mg. Twenty cc of a 10 per cent solution of dextrose was injected into the buttocks at the time of delivery, and 10 cc. of this solution was injected each hour until 4 p m, when feedings of the lactic acid karo formula were begun by mouth. The value for the infant's blood sugar never was below normal, and with the exception of one episode of cyanosis, which occurred two hours after birth, her clinical course was uneventful.

This patient was an obese young woman who had not taken care of her diabetes and who suffered from a progressive toxic retinitis which necessitated termination of pregnancy by cesarean section. The toxic retinitis improved following this. In this case there was no distinct evidence of fetal hypoglycemia. This may have been attributable to the mild, atypical diabetes of the mother or to the prompt and consecutive injection of dextrose into the infant. It is unusual to see diabetes behave so erratically as it did in this case, at times it was rather severe, at other times it virtually was nonexistent.

CASE 7³²—History—A woman who came to the clinic Feb 10, 1936, was in the thirty-third week of her first pregnancy. She was 30 years of age and had had diabetes for seven years, which had been well controlled with proper diet and insulin. Control of the diabetes had not been difficult during her pregnancy. Her blood pressure and urine had been normal during the early part of her pregnancy and had been normal in December 1935. Two weeks later, marked edema of both legs developed and she consulted her family physician, who found that the value for her blood pressure, expressed in millimeters of mercury, was 170 systolic and 110 diastolic, and that the urine contained albumin, grade 2, on a basis of 4. She had no symptoms other than the edema. She was ordered to remain in bed and a milk diet was advised. Within two weeks the edema had disappeared but the value for the blood pressure remained high and albumin was consistently found in the urine.

At the clinic a specimen of urine, obtained by catheterization, was found to contain a few casts and albumin, grade 4 on a basis of 4. The value for the urea was found to be 50 mg per hundred cubic centimeters of blood. Examination of the ocular fundi disclosed a diffuse chorioretinitis, which especially involved the maculae and which apparently was inactive. There was a questionable deep hemorrhage in the superior nasal quadrant of the left eye.

As a result of these observations, cesarean section was performed February 12. The postoperative course was uneventful. There was inadequate lactation. The value for the blood urea decreased to normal (28 mg per hundred cubic centimeters), and the urine contained much less albumin (grade 2 on a basis of 4) than it did at the previous examination, otherwise examination of the urine did not reveal anything abnormal. The blood pressure at the time of her dismissal fourteen days after the operation was 136 mm of mercury systolic and 96 diastolic. There had not been any change in the ocular fundi.

Infant's Record—A female infant, who weighed 1,990 Gm, was born at 9 a m, Feb 12, 1936. The values for the mother's blood sugar before and after the operation were 142 and 234 mg per hundred cubic centimeters. Blood from the umbilical cord contained 173 mg of sugar per hundred cubic centimeters, and the value for the infant's blood sugar, according to the micromethod, was 99 mg. The child was very cyanotic and listless and required artificial respiration and aspiration of tracheal mucus. Five cc. of a 10 per cent solution of dextrose was injected into each buttock and the baby was placed in an incubator in which the oxygen tension was kept at 50 per cent. At noon, 10 cc. of a 10 per cent solution of dextrose was

injected into the buttocks and the child was given some water by mouth. Just before the feeding at 3 p m the value for the infant's blood sugar, as determined by the micromethod, was found to have decreased to 33 mg per hundred cubic centimeters. At this time the child was given 10 cc. of a 10 per cent solution of dextrose intramuscularly and 10 cc of the lactic acid-karo formula by mouth. Cyanosis became pronounced. The feeding was stopped and the child was placed in the oxygen incubator. Within a few minutes her condition had improved and the feeding was finished. A 10 per cent solution of dextrose was administered intramuscularly at 5 and 7 p m. At 9 o'clock the value for blood sugar was found to be 59 mg per hundred cubic centimeters. At 9 30 she received another intramuscular injection of the solution of dextrose and another feeding of the formula. During the first night efforts were made to feed the child by mouth with the formula and 10 per cent solution of dextrose, but both were regurgitated and it was necessary to administer a 10 per cent solution of dextrose intramuscularly, every two hours.

Lack of space prevents the detailed report of the child's condition and the treatment, but at noon of the second day of life, muscular twitchings occurred. These were followed in an hour by a mild convulsive seizure and cyanosis. Five cc. of a 10 per cent solution of dextrose was injected into the peritoneal cavity and the condition improved. After this treatment the value for the blood sugar was found to be 187 mg per hundred cubic centimeters. During the second night and the third day the muscular twitchings were prominent and because of the continued regurgitation of feedings by mouth the child was given intramuscular injections of a 10 per cent solution of dextrose. At 5 p m on this day the value for the blood sugar was still low, 66 mg per hundred cubic centimeters. During the third night and during the fourth day she retained the feedings, and the muscular twitchings were much less frequent than they had been. Intramuscular injections were no longer necessary and the value for the blood sugar was 87 mg per hundred cubic centimeters. After the fourth day there was no evidence of hypoglycemia and the child gained normally. On the tenth day the oxygen tent was removed.

The toxemia of pregnancy improved following cesarean section. The value for the infant's blood sugar was normal at birth, but hypoglycemia occurred later. This child also demonstrates the fact that the symptoms of hypoglycemia, such as cyanosis, muscular twitchings and convulsions, may occur for days and even after the value for the blood sugar has increased to normal or nearly to normal.

SUMMARY

The mortality among infants born to diabetic mothers has continued high despite advanced knowledge of the treatment of diabetes. We have reported the successful delivery in seven successive cases of diabetic mothers following the principles laid down by Wilder in a case previously reported. In seven of these eight cases³³ cesarean section was performed in the thirty-third or thirty-seventh week. By so doing we have avoided those dangers which arise during the last few weeks of pregnancy and have saved the mother and child from the risk of a difficult labor. Our experience proves the occurrence of hypoglycemia in the infants of diabetic mothers, and it is considered possible, as Higgons has suggested, that some deaths of children born to normal mothers may be the result of hypoglycemia. The latter should be investigated further.

In view of our experience we have instituted the following general plan for the management of the infant of the diabetic mother for the first few days of its life. The length of time that this program will need to be maintained will vary and will depend on the degree of prematurity, the length of time before food and fluid can be taken by mouth, and the duration of the period of readjustment of pancreatic function.

³² We are indebted to Dr H W Satterlee of Lewiston, Minn, for his cooperation in the management of this patient.

³³ Since this report was written we have successfully delivered another diabetic woman.

The concentration of sugar in the blood of the mother, the infant and the umbilical cord should be estimated immediately. It would be preferable to obtain separate samples from the umbilical artery and vein. Care should be taken to be certain that the pharynx and trachea are free of mucus and amniotic fluid. This is best accomplished by maintaining the head in a dependent position, although sometimes it is necessary to aspirate with a tracheal catheter. Occasionally inhalation of carbon dioxide and oxygen may be necessary to establish respiration. When respiration has started the infant is placed in a Hess incubator equipped with a cover and connected with an oxygen tank. The flow of oxygen is regulated in order to maintain an oxygen tension of 40 to 50 per cent for the first few hours. The temperature of the incubator is maintained at 85 F. Five cc. of 10 per cent solution of dextrose is administered into each buttock. Further injections of 10 cc. of a 10 per cent solution of dextrose are given at intervals regulated by the value for the blood sugar as determined by the micromethod by the behavior of the infant and by the ability of the infant to take feedings by mouth.

Feeding is attempted within four hours. Ten cc. of a 10 per cent solution of dextrose or 7 cc. of Marriott's lactic acid-karo mixture³⁴ is given every two hours for the first forty-eight hours if it can be tolerated. Then 30 cc. of lactic acid-karo mixture is given every three hours. Sufficient nursing assistance is secured to permit uninterrupted observation of the infant for the first forty-eight to seventy-two hours. Whenever the feeding is poorly taken or whenever twitchings, convulsive movements or cyanosis indicates the development of hypoglycemia 10 cc. of a 10 per cent solution of dextrose is given by mouth if possible, otherwise it is administered intramuscularly.

The length of the period of danger from the complications of hypoglycemia cannot be predicted with accuracy. The concentration of oxygen in the incubator gradually is diminished and when the infant maintains normal color in the ordinary atmosphere the administration of oxygen is discontinued.

34 All the paraphernalia to be used in the making of the lactic acid karo mixture should be sterilized. The formula for the mixture calls for 70 Gm. of karo syrup and 930 cc. of whole milk. These ingredients are mixed and boiled for fifteen minutes. The mixture is then cooled until ice cold. One hundred and twenty drops of 85 per cent solution of lactic acid is added to the milk and karo mixture, a drop at a time while the mixture is constantly stirred. Care should be taken not to warm the mixture too much before feeding or it may curdle.

A Bold Theory Concerning the Pituitary—Histologists and pathologists still differ among themselves as to the proper description of the pituitary and their lack of unanimity applies in particular to the pars nervosa. Specific functions have still to be found for the hyaline bodies of Herring for the end organs of Tello, for the pituicytes of Bucy and for the epithelial elements in the racemose glands of Lewis and Lee and those of Guizzetti. However, consideration of these various elements and of the portal circulation recently shown to connect the pituitary and the supra-optic nuclei in the floor of the third ventricle and the confirmation of the innervation of the infundibular process via the stalk from the supra-optic nuclei make possible the elaboration of an attractive theory concerning the secretion of the pressor substance. At times the basophilic cells themselves may wander directly into the pars nervosa. Secretory products are to be seen in the form of the hyaline or colloid bodies of Herring and the end organs of Tello and can pass up the stalk to enter the ventricle directly or may go via the portal system into the general circulation. Such a bold theory can hardly be said to be established by the evidence at hand.—Baumgartner, Leona. Pituitary Basophilism and Hypertension, *J. Biol. & Med.* 7: 327 (March) 1935.

NEOPLASMS OF THE SPINAL CORD

A REVIEW OF FORTY-TWO SURGICAL CASES

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There are but few organs in the human body in which neoplastic disease occurs in a more benign form and the results of surgery are more brilliant than in the spinal cord and its membranes. At the same time there is no organ in which total restoration of function following the removal of the neoplasm is so completely dependent on an early diagnosis. Unfortunately for the victims of spinal cord tumors, still too many of them are treated in the late stages of the disease—often after irreparable damage to the cord has occurred. If this condition is to be corrected, there must be a more general recognition of the early signs and symptoms of the disease and, most of all, there must be a general appreciation of the fact that a spinal cord tumor is not a rare but a relatively common lesion.

Our purpose in this report is to record our experiences over a nine year period in the treatment of forty-two cases of spinal cord tumor surgically. While these experiences have not been strikingly different from the published reports of other authors,¹ we are recording them with the belief that only through repetition and reemphasis of important diagnostic data will more of these lesions be recognized and treated during the early, hopeful stages of the disease.

INCIDENCE

There seems to be no very satisfactory way of arriving at the actual incidence of spinal cord tumors. While postmortem studies have undoubtedly contributed the most reliable figures to date, the incidence as arrived at by these studies is probably misleading.

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1. These include

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because of the infrequent practice of removing the spinal cord intact and inspecting carefully the spinal canal in autopsy materials

Analysis of our own cases indicates the incidence to be considerably greater than that reported by other authors.² Approximately 2,700 patients with complaints referable to the nervous system have passed through our office during the past nine years. In this group there have been thirty-seven verified spinal cord tumors, an incidence of 14 per thousand. In this series of office patients there have been 144 verified brain tumors, an incidence of one spinal cord tumor for every four brain tumors.

This group is not remarkable as to age distribution, the youngest patient was 13 years of age and the oldest 73, as shown in the chart. As in most other reported series there is a preponderance of females, our group consisting of twenty-seven females and fifteen males.

Our statistics would indicate a rarity of spinal cord tumors among the colored race, there being but three Negroes in the group. On the basis of relative population of the two races in this locality, this incidence might appear to be significant, yet we feel that it is not a fair index in view of the disproportion between the medical and hospital facilities available to each race.

PATHOLOGY

Only thirty-nine of the forty-two tumors were verified histologically, in three cases no biopsy was made. The three histologically unverified tumors were exposed at operation and the gross appearance was so characteristic that the diagnosis of neoplasm was to us unquestionable. The following statistics therefore, are based on thirty-nine microscopically verified tumors and three tumors verified by gross appearance only.

Dividing the forty-two tumors in the conventional manner according to their location with respect to the cord and meninges, we find them distributed as follows: intramedullary, eleven cases; extramedullary but intradural, sixteen cases; extradural, fifteen cases. In the intramedullary group there were five ependymomas, one glioblastoma multiforme, one spongioblastoma unipolare, one hemangioma and three tumors microscopically unverified. The extramedullary but intradural group consisted of nine meningiomas and seven neurofibromas. In the extradural group we found four myeloid endotheliomas, three osteochondromas, three metastatic carcinomas, three fibrolipomas, one sarcoma and one neurofibroma of the dumb-bell type.

Anatomically, the tumors were distributed with respect to the vertebral column as follows: five cervical, twenty-nine thoracic and eight lumbosacral.

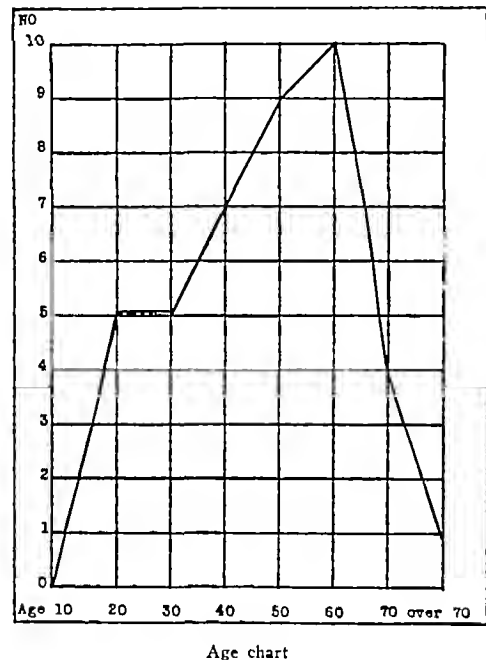
SYMPTOMS AND SIGNS

Since the symptoms and signs of spinal cord tumor are largely dependent on the anatomic location and size of the neoplasm, it is to be expected that each case will present its own diagnostic problems. Some late symptoms, however, are common to all spinal cord neoplasms, notably motor and sensory paralysis and sphincteric disturbances. It is the early symptoms of the slowly growing neoplasm that tax the diagnostic acumen of the physician. Neoplasms may simulate any disease of the spinal cord, therefore before one arrives at a diagnosis of degenerative disease of the organ an exhaustive study should have been made to exclude the possibility of a spinal cord tumor.

We shall not attempt to enumerate all symptoms and signs presented by the patients of this series. When

they were analyzed we found that, while they varied greatly according to the individual mode of expression, they could be grouped satisfactorily under the following general headings:

Pain—Most authors regard radicular pain as being the first and most prominent symptom of spinal cord tumor.³ This point of view has been so generally accepted that the diagnosis of tumor is often unnecessarily delayed because pain is absent even though the patient may present definite evidence of segmental cord disease. We believe that the importance of radicular pain as an early symptom has been overemphasized. While it is true that in our series root pain was the most frequent early symptom, it was present as such in but 50 per cent of the cases, in 26.5 per cent pain was absent during the entire course of the disease. In the latter group the length of time elapsing between the onset of symptoms and operation was considerably



longer than in the group having pain, the average interval in patients with pain was twenty-six months and in those without pain was thirty-eight months.

Exaggeration of pain caused by straining at stool, coughing or sneezing was an almost constant finding.

Sensory Disturbances—Subjective sensory disturbances were present in 83 per cent of our patients, objective sensory loss being present in 76 per cent. Sensory levels were demonstrated in twenty-three cases (55 per cent). In but thirteen of these, however, were we able to establish accurately by clinical examination alone the anatomic location of the lesion. In every case in which a sharply defined level was demonstrable, the patient had already rather advanced motor paralysis. This would indicate that a distinct sensory level is apt to be a late manifestation of the disease, especially when the neoplasm is benign. In analyzing the histories of the patients with sensory levels, we found that most of them had complained of paresthesias usually in the form of numbness and tingling of the lower extremities, before hypesthesia was recognized. It is in this stage

³ Bunts¹ Craig W. M. Pain in Spinal Cord Tumor. W. J. Surg. 40: 56 (Feb.) 1932. Fremont Smith. Maurice. Cord Tumor as a Cause of Abdominal Pain. Internat. Clin. 2: 171 (June) 1926. Kernohan, Woltman and Adson.² Tamaki.¹

² Elsborg.¹ Rogers.¹

of sensory loss that the diagnosis should be made if the best results are to be obtained

Motor Disturbances—Muscular weakness in some degree was the first symptom in thirteen cases (31 per cent), and only three patients came to operation without some demonstrable loss of motor power. Nineteen patients were bedridden and had been unable to walk for intervals varying from two months to four years. In most cases the paralysis progressed insidiously. But three of these patients became suddenly paraplegic after having suffered with pain for many months. In four cases motor weakness developed simultaneously with pain and was attributed by the patients to trauma.

Sphincteric Disturbances—Twenty-six patients (62 per cent) had some degree of sphincteric disturbance preoperatively. In thirteen cases the bladder disturbance was early and in thirteen it appeared late in the disease. In several cases no symptoms referable to the vesical sphincter had been noted, yet a large amount of residual urine was found.

Sympathetic Disturbances—Horsley was perhaps the first to call attention to the localizing value of vasomotor disturbance in lesions of the spinal cord. A general appreciation of these important signs was stimulated by Fay's⁴ report in 1928. He called attention to the color and pilomotor changes as well as to the sweating abnormalities in cases of spinal cord tumor. In our experience, color and pilomotor changes have been of limited value but disturbances of the sweating mechanism have proved most helpful. When a local cord lesion involves directly or indirectly the intermediolateral column of gray matter, the activity of the sweat glands below the level of the lesion is diminished. Below the level of such a lesion the skin is dry, while above this level the skin is moist. The sweat line can be readily demonstrated by gently passing the dry finger tips over the skin from below upward, and when the area of normal sweating is encountered a distinct "pull" or "hang" will be felt. In all our cases showing a distinct sensory line, this test was positive. In a number of cases the sweat line guided us to the correct segmental level of the lesion when sensory examination had proved inconclusive.

Reflexes—Abnormalities of the deep and superficial reflexes below the level of the lesion were an almost constant finding in this group, in only three instances did the patients come to operation with all reflexes normal. The type of reflex change was invariably dependent on the anatomic location of the lesion, those in the region of the conus and cauda equina showing absence or diminution of the regional tendon reflexes and those higher in the cord showing exaggeration of the tendon reflexes, with or without clonus, and abnormal superficial reflexes. In twenty-two cases (52 per cent) the paraplegia had progressed to the stage at which pathologic toe signs (Babinski, Oppenheim, Gordon or Schäffer) were present. Five patients (11 per cent) had complete paraplegia with "massing" of the reflexes.

The review of the foregoing data has impressed us with the difficulty of differentiating between the symptoms of spinal cord tumor and those arising from disease of other organs. These difficulties are graphically illustrated by the suspected disorders for which many of our patients were treated prior to their final diagnosis. Twenty-seven patients (65 per cent) received

treatment for conditions totally irrelevant to the true pathologic condition. Twelve patients (29 per cent) were subjected to surgical operations six for pelvic pain, two for suspected gallbladder disease, one for cord bladder and three for sciatic neuritis. Fifteen patients were treated for varying periods of time for spinal arthritis, flat feet, multiple sclerosis, combined sclerosis, central nervous system syphilis (negative Wassermann reactions), lead poisoning and herpes zoster.

These facts are not given with critical intent but are listed to emphasize the statement that the symptoms of spinal cord tumor may closely simulate disease of other organs. One of us (R. G. S.) in 1926 while resident surgeon at the Louisville City Hospital, performed a pelvic laparotomy on one of the patients of this group for relief of pelvic pain. Less than nine months later the same surgeon removed a large neurofibroma from one of the lumbar nerves. The symptoms that led to the first operation were in no way explained by the results of the pelvic laparotomy and no relief was experienced. Only after the passage of time were the symptoms so characteristic that the presence of a spinal cord tumor was unmistakable. Undoubtedly the correct diagnosis would have been established before the first operation had a more painstaking neurologic study been made.

The average length of symptoms before operation in the entire group was thirty-seven months. In the majority of cases, when viewed retrospectively, the symptomatology was sufficiently characteristic to have warranted a tentative diagnosis of tumor in the early stages of the disease.

CEREBROSPINAL FLUID

Study of the cerebrospinal fluid is perhaps the most valuable part of the laboratory examination of spinal cord tumor suspects. So much stress has been laid on the importance of this part of the examination, chiefly because of the refinement in the Queckenstedt test, that there seems to be a growing tendency to accept normal cerebrospinal fluid dynamics as positive evidence that no tumor exists.

In this series of patients there were eight instances (19 per cent) in which the cerebrospinal fluid dynamics was recorded as normal. We record the Queckenstedt test as being complete, incomplete and normal according to the following criteria. A complete block is characterized by an immobile column of fluid when deep jugular pressure is applied. Coughing, straining and external abdominal pressure will produce a rise even in the presence of a complete block due to engorgement of the spinal veins below the level of obstruction. An incomplete block is recorded when there is a slow rise of the fluid column after deep jugular pressure and a slow fall after its release. The fall in pressure is often associated with a new fluid level. When the fluid column rises promptly with the application of jugular pressure and falls promptly with release and the same fluid level is maintained, we consider the Queckenstedt test to be normal.

Probably the most important check on the interpretation of the Queckenstedt test is the protein content of the fluid. In no instance in our series did a partial or complete subarachnoid block exist without a very definite increase in the amount of protein. A complete obstruction was usually associated with the Frommann syndrome. Incomplete obstruction was often associated with xanthochromic fluid but the protein content was usually not sufficiently high to cause spontaneous coagu-

⁴ Fay, Temple. Vasomotor and Pilomotor Manifestations. Their Localizing Value in Tumors and Lesions of the Spinal Cord. Arch. Neurol. & Psychiat. 19: 31 (Jan.) 1928.

lation The protein content of the fluid in intradural tumors was consistently higher than in extradural tumors when an equal degree of subarachnoid block existed

Poppen and Hurxthal⁵ have demonstrated experimentally that, as long as an opening remains in the subarachnoid space as large as the bore of the lumbar puncture needle, no change from the normal should be expected in the Queckenstedt test These observations explain satisfactorily how it is possible for a relatively large tumor to be present with no demonstrable change in the mechanics of the fluid Certainly, when the patient's symptoms are suggestive of spinal cord tumor, the cerebrospinal fluid dynamics and chemistry are of real importance only when positive

The other cytologic, serologic and chemical studies of the fluid in our cases were all of relatively little importance in diagnosis The cell count was uniformly low The highest count, 26 cells per cubic millimeter, occurred in a case in which there was a rapidly growing intramedullary glioma The colloidal gold curve usually showed some atypical reduction of the gold chloride in direct proportion to the amount of protein present The Wassermann tests were negative in all cases

X-RAY EXAMINATION

The value of x-ray studies of the spinal column without the aid of contrast mediums in localization of spinal cord neoplasms has not been appreciated fully until recent years It remained for Camp, Adson and Shugrue⁶ by studying a large group of verified tumors to demonstrate conclusively the frequency with which bony changes in the vertebrae result from primary tumors of the spinal canal Many benign tumors arising within the canal, particularly neurofibromas and meningiomas, will show some local deformity in the vertebral pedicles or laminae

It was impossible to secure sufficient data in our early cases to determine accurately the incidence of such changes It might be said, however, that in the last twelve meningiomas and neurofibromas eight have shown definite bony changes in the vertebrae

IODIZED OIL

The use of iodized oil for accurate localization of spinal cord tumors is a most valuable procedure By some it may be considered an acknowledgment of inadequacy in interpreting neurologic signs, yet from a practical point of view the use of this opaque medium simplifies diagnosis in early cases and saves many laminae during operative procedures Twenty-two cases (52 per cent) of this series were studied by means of iodized oil In each instance the lesion was accurately localized In two cases a tumor was disclosed with iodized oil that was undemonstrable by neurologic examination and cerebrospinal fluid studies Only fresh iodized oil preserved in glass ampules is fit for use in the spinal canal When injected in quantities not exceeding 1 cc we have seen no harmful results that would make us fear its use By studying the patient carefully with the fluoroscope and taking serial films when necessary, perfect demonstration of filling defects has been accomplished even with this small amount

Not only is this method valuable in the accurate localization of tumors, but it further justifies its use by clearly differentiating between inflammatory adhesions

and tumors of the cord Widespread inflammatory adhesions over the surface of the cord give poor surgical results, and not infrequently a patient may be spared a needless operation by correct interpretation of the underlying pathologic condition by the use of iodized oil

TREATMENT

With the exception of malignant tumors of the vertebral bodies, we consider all neoplasms growing within or encroaching on the spinal canal to be surgical problems Benign tumors arising within the canal can usually be completely removed In twenty-three cases of this group, total surgical extirpation was possible A subtotal removal was accomplished in ten cases In the remaining nine cases there were soft intramedullary tumors and aside from the benefit afforded by the decompression nothing was accomplished surgically In six instances, however, enough tissue was obtained for histologic study

The technic of handling benign encapsulated tumors, particularly neurofibromas and meningiomas, is so well standardized that further comment is unnecessary However, it might be well to reemphasize the fact that the dural attachment of meningiomas should be excised widely or cauterized thoroughly with electrosurgery to insure against recurrence

In dealing with intramedullary gliomas we have followed a conservative practice If on exposure of the cord a tumor presents itself on the surface and appears to be reasonably well encapsulated, as is often the case with ependymomas and hemangiomas, a radical dissection is attempted This is never carried to the point, however, at which gross damage to normal cord substance becomes necessary

If a fusiform swelling of the cord is demonstrated and no tumor appears on the surface, we explore this swollen area with a small incision through the posterior commissure Should the tumor be well demarcated it is attacked radically, but when there is no evidence of demarcation no attempt is made to remove even enough for microscopic study, for regardless of the histologic structure of the growth the patient is subjected to intensive irradiation after healing of the surgical wound Three of the patients in this series have been so treated The following case history demonstrates graphically what may be accomplished by this conservative method

D W a white girl, aged 18 years had been bedridden for two months prior to operation The sensory line was indistinct and studies with iodized oil were necessary to disclose the exact level of the lesion A fusiform swelling of the cord, extending over approximately two segments was disclosed No demarcation between tumor tissue and cord substance could be identified and the wound was closed without a biopsy Intensive irradiation with both x-rays and radium extending over a period of sixteen months was employed Slow, gradual improvement ensued following the first course of treatment Symptoms regressed and again improved following further irradiation Many series of x-ray and radium treatments were given, and now nine years later the patient is walking with but little residue of her former paraplegia The accuracy of the diagnosis may be questioned but it is our belief that the patient had an intramedullary glioma of the cord It had the gross appearance of a neoplasm The symptoms disappeared with irradiation only to recur later and again disappear with further therapy

PROGNOSIS

Three deaths occurred in our group an operative mortality of 7.14 per cent One patient died of meningitis secondary to wound infection This was the only instance in which the wound did not heal primarily The second patient died five days postoperatively fol-

⁵ Poppen, J. L. and Hurxthal, L. M. Normal Cerebrospinal Fluid Dynamics in Spinal Cord Tumor Suspects. *J. A. M. A.* 103:391 (Aug.) 1934
⁶ Camp, J. D., Adson, A. W. and Shugrue, J. J. Roentgenographic Findings Associated with Tumors of the Spinal Cord Column, Spinal Cord and Associated Tissues. *Am. J. Cancer* 17:348 (Feb.) 1933

lowing the radical removal of a cervical ependymoma. The third patient died of pneumonia on the seventh postoperative day.

The degree of recovery following the removal of benign spinal cord tumors is remarkable even though there has been advanced disability. It is impossible to predict the probable degree of functional recovery from the appearance of the cord at operation. Some patients with cords of ribbon thinness will show a good return of function, while others with only moderate indentations will experience but little improvement. In general, it may be said that the rapidity with which symptoms develop is a fair index to the probable degree of functional recovery in cases presenting advanced neurologic changes. Those in which paraplegia develops slowly are apt to experience a greater degree of recovery than those in which the onset is more rapid. It is difficult to explain the variation in functional recovery from the appearance of the cord except on the basis of damage to the intrinsic circulation.

Rogers,¹ in attempting to set an index of prognosis, divides his patients into two groups—those that are spastic and those that are flaccid. He considers flaccidity, except in lesions of the cauda equina, to be a very bad prognostic sign. He expects spastic patients in whom the lesion can be completely removed to make a satisfactory recovery. Our experience has been somewhat different with regard to the prognosis of spastic cases. We view with grave concern cases that have progressed to the stage of "massing" of the reflexes. In this stage of paraplegia, we have seen but little functional recovery.

Patients with mild paraplegic signs recover completely within a relatively short time. Many of them will walk out of the hospital in from ten to fourteen days almost free from symptoms. In all cases, regardless of the length of time since the onset of symptoms, some restoration of function may be expected.

Prognosis is difficult in the glioma group. Apparently some ependymomas, even though possessing identical histologic characteristics, respond differently to irradiation. Our data on the response of other gliomas are too inconclusive to justify analysis, but it might be said that one should expect the same type of response to specific gliomas of the cord as would occur with the same type of tumor in the brain.

SUMMARY

1 The clinical, laboratory and x-ray data from forty-two cases of spinal cord tumor treated surgically were studied.

2 The percentage of neoplasms of the spinal cord that are benign is remarkably high, being 56 per cent in this series of cases. These benign lesions can usually be completely removed but if recovery without disability is to be assured the removal must be accomplished in the early stages of the disease.

3 Spinal cord tumor is a relatively common lesion and should not be the last consideration in a differential diagnosis of spinal cord disease.

4 Careful analysis of symptoms, physical examination, study of the dynamics and chemistry of the spinal fluid, x-ray examination of the spine and studies of the subarachnoid space with iodized oil will in every case disclose the presence and location of the lesion even in the early stages of the disease. The importance of pain as an early symptom of spinal cord tumor has been overemphasized. It was an early symptom in but 50 per cent of our patients and 26 per cent of them had no pain at any time.

5 Treatment is always surgical except in certain malignant tumors of the vertebrae. Complete removal of benign tumors is usually possible. Gliomas of the cord can occasionally be completely removed, but in most instances one must be satisfied with a subtotal removal followed by intensive irradiation. In certain gliomas even microscopic diagnosis should be dispensed with if biopsy would incur damage to normal cord substance.

6 It is impossible to predict the degree of functional recovery from the appearance of the cord at operation. Some cords of ribbon thinness will show a good return of function, while others with only moderate indentations will show very little recovery. Every patient with some preservation of function below the level of the lesion, even though it is only an isolated reflex, will experience improvement after the removal of the neoplasm.

ABSTRACT OF DISCUSSION

DR PERCIVAL BAILEY, Chicago. This presentation corresponds closely with my experience. I note the absence of children in the material, so I might supplement the presentation of Drs. Spurling and Mayfield with some remarks concerning these lesions in infancy and childhood. After several years' experience with the material from three large children's clinics, I am impressed with the extreme rarity of intraspinal tumors in infancy and childhood. Whereas as the authors have pointed out, the ratio between intraspinal and intracranial tumors in adult life is 1/4 or 1/6, in childhood this proportion is much greater, in my experience somewhere around 1/20. Also the pathologic character of the tumors in infancy and childhood is entirely different from that of the adults. The favorable character of these lesions in adults is largely due to the presence of a considerable proportion of meningeal tumors and neurofibromas that are encapsulated and can be totally removed. In childhood and infancy this is not true. The meningiomas and neurofibromas with the exception of those which are multiple usually begin to develop about the age of 15. Under that age they are rarely found. The tumors at this age are usually intramedullary gliomas or lipomas or dermoid cysts, which are much less favorable for operation. I have also been impressed in children with the importance of the erosion of the laminae to which attention was first called by the physicians at the Mayo Clinic. This is much more obvious during infancy and childhood than it is in adult life, probably for the reason that the bones are much softer. I should also like to emphasize what the authors said about the removal of intramedullary tumors. Intramedullary gliomas are predominantly ependymomas, as Dr. Kernohan has pointed out and these are benign tumors. I had one child 8 years of age with an intramedullary ependymoma in the cervical region. The child was having great respiratory difficulty. I made only decompression and split the posterior columns of the cord to make a biopsy. That child is still well and improved after eight years and he has had no x-ray treatment. In other cases I have made extirpation of these ependymomas. Certainly none of them have done any better than the child in whom I split the posterior columns and let the child alone without even giving him x-ray treatment so that one may question whether it is necessary to go to any great difficulty in removing one of these ependymomas. I wouldn't make the same statement concerning other types of intramedullary gliomas which one certainly ought to attempt to remove in many cases and should certainly irradiate afterward. They are however rare.

DR FRANK R. TEICHENOR, Kansas City, Mo. Concerning tumors in childhood I had one several years ago in a child 2 years of age. This tumor was reported by the pathologist as a meningioma. However the child lived five years and died of pneumonia. There was no autopsy. I cannot discuss the statistical aspect of this paper as my own statistics are not up to that point but certainly too much cannot be said for the early diagnosis of spinal cord tumors. It is not uncommon to receive patients who have had gallstones removed. I receive

observed a patient who was operated on and the gallstones were actually found, but the pain did not subside. During the period the patient was in bed recovering from the operation, she developed a paraplegia. Unquestionably the diagnosis of spinal tumor could have been made before the operation. Urethral or renal colic is another very frequent diagnosis. I have seen several cases in which renal and urethral operations were performed without relief, and afterward a spinal cord tumor was found. Those, of course, were the result of compression of the roots with pain phenomenon. Multiple sclerosis should be considered. In many instances multiple sclerosis is considered early and later symptoms of a spinal tumor become evident. In that instance, of course pain is not a feature. Concerning the Queckenstedt sign I find that even in the face of a negative one I am frequently able to locate the tumor by seating the patient before the fluoroscope and watching the progress of iodized oil as it passes down. Even in the absence of a block, it will hang in a good many instances. I have recently had a rather interesting series of cases so far as the pathologic condition is concerned which were not mentioned here. Melanomas, which I consider primary, may be classified under sarcomas. I have recently observed an extradural tumor which had been diagnosed by several pathologists as a lymphadenoma. Thus far, although I haven't searched the literature completely, I have found no mention of lymphadenoma. Another interesting lesion, which caused a marked dilatation of the spinal canal, was a herniation of the arachnoid through a perforation of the sleeve of the dura over one of the roots with the formation of a very large extradural cyst, apparently of long duration, because of the extensive dilatation of the spinal canal. This was quite evident on radiologic examination. The cyst was removed completely. The pedicle of attachment was found on the dural sleeve of this root. Behind the attachment the spinal cord was encased in normal dura, with a normal subarachnoid space.

ACUTE LARYNGOTRACHEOBRONCHITIS

LIVING PATHOLOGIC CONDITIONS SEEN IN ACUTE RESPIRATORY DISEASES

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AND

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Our purpose in this paper is to present the differences among certain acute respiratory diseases of children based on the objective appearances of the mucosa of the larynx and the tracheobronchial tree. These appearances represent living pathologic changes. Therefore they are, we venture to think, of the utmost importance to the physician as bearing on the pathologic conditions of the airway which the physician is called on to diagnose and treat in the child battling for his life against these pathologic states. Mention will be made of the clinical features sufficient to associate these appearances with the diseases considered.

NOMENCLATURE

The term "fulminating, acute, infective, nonspecific laryngotracheobronchitis," however descriptive it may be, is certainly not brief nor is it otherwise suitable beyond criticism. The disease is certainly not diphtheritic but it remains to be proved that it is not primarily or secondarily specific. Except as to rash, the malady has almost as much claim to clinical specificity as scarlet fever. "Nondiphtheritic laryngotracheobronchitis" is nearly as bad, and in addition it is a negative title. Influenzal tracheobronchitis, by which the disease

has been described,¹ is appropriate in the cases in which the influenza bacillus is found predominating. This constitutes about 5 per cent of our cases, though we have no means of knowing in how many cases this organism may have been the vanished primary invader. Moreover, most of the cases of the disease commonly called influenza and the grip are also primarily or secondarily streptococcic in character.

INCIDENCE AND EPIDEMIOLOGY

It is impossible to supply any exact figures in incidence of acute laryngotracheobronchitis because relatively few of the cases are recognized as a distinct morbid entity. Curiously, the literature shows that, though the existence of such an entity was recognized by at least two keen observers over a century ago,² the disease as such in the patient has been quite generally overlooked. The occurrence being chiefly during epidemics of so-called influenza, many of the cases are recorded under that name. Most of the fatal cases are registered in vital statistics as bronchopneumonia and pneumonia. Among these patients some really had bronchopneumonia but only as a secondary development, in almost all instances the primary disease was unrecorded. For this reason statistics are valueless as criteria of incidence.

PATHOLOGY

At autopsy pathologic changes of laryngotracheobronchitis are not as abundantly recorded as are those of diphtheria, but records are accumulating. Autopsies, however, show end results, we have thought it best to limit our presentation to the heretofore unrepresented living pathologic changes, the condition with which the physician has to deal in the living patient. The mucosa of the larynx is a deep red, slightly less deep on the cords. The subglottic tissues on each side extend medially, showing as mounding, intensely red, semi-elliptic folds, one below each cord.^{1a} These swellings are peculiar to children and are due to the loose connective tissue in the conus elasticus in childhood. Small patches of secretion may be seen but they can be wiped away cleanly, leaving no eroded or bleeding surface, there is no ulceration, no membrane comparable to that in diphtheria. The living pathologic condition of the bronchi is interesting and important. The appearances at the progressive stages have been described as follows:^{1c} "The tracheal mucosa is reddened. Its color deepens. Swelling of the mucosa begins. Later on exudate forms, at first serous, then mucoid, then purulent and finally thick, tenacious and exceedingly difficult of expectoration even by the robust adult. In infants

¹ These references include

- (a) Jackson Chevalier. The Bronchoscope as an Aid to General Diagnosis. April 1908 (color plate showing bronchoscopic view of influenzal tracheobronchitis).
 - (b) Jackson Chevalier. Influenzal Tracheitis. editorial Laryngoscope 22: 130-135 (Jan-Dec) 1912. Drowning of the Patient in His Own Secretions. *ibid.* 21: 1183-1185 (Dec) 1911.
 - (c) Jackson Chevalier. Influenzal Tracheitis. Peroral Endoscopy and Laryngeal Surgery. St. Louis. Laryngoscope 1915. pp. 480-482. Tracheite grippale. Endoscopie et chirurgie du larynx. Paris. Gastou. Douin 1920. pp. 509-511.
 - (d) Jackson Chevalier and Jackson C. L. Inflammatory Edema of the Larynx, Surgery of the Larynx, Trachea and Bronchi. in Lewis Dean. Practice of Surgery. Hagerstown. Md. W. F. Prior Company 4: 15-39 (chapter 7) 1930.
 - (e) Jackson Chevalier and Jackson C. L. Acute Infective Laryngotracheitis. The Nose, Throat and Ear and Their Diseases. edited by Chevalier Jackson and George M. Coates. Philadelphia. W. B. Saunders Company 1929. pp. 1118-1121.
 - (f) Jackson Chevalier and Jackson C. L. Acute Laryngotracheobronchitis. Bronchoscopy, Esophagoscopy and Gastroscopy. ed. 3. Philadelphia, W. B. Saunders Company 1934. pp. 311-312.
 - (g) Jackson Chevalier. Croupy Cough and Dyspnea Simulating Diphtheria Due to Infective Laryngotracheobronchitis. M. Clin. North America 5: 648 (Nov.) 1921 (color plate).
- ² Bland P. Nouvelles recherches sur la laryngo-trachéite connue sous le nom de croup. Paris 1823. Trousseau Armand. Nouvelles recherches sur la trachéotomie pratiquée dans la période extrême du croup. Paris, 1851.

Read before the Section on Pediatrics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13 1936.

Owing to lack of space this article has been abbreviated in THE JOURNAL. The complete article including a color plate will appear in the reprints, a copy of which may be obtained from the authors.

who are naturally almost incapable of expectoration, death may occur from inability to rid the air passages of secretion (drowning of the patient in his own secretions). The bronchi, or even the trachea itself may be occluded by mucosal swelling, or edema, actually causing death by the stenosis. Both these conditions are independent of bronchopneumonia, which may or may not exist." Subsequent observations have fully confirmed these observations. As in other conditions the rings, so characteristic of the normal, are obliterated by swelling. Some orifices are noted as filled with pus, and absence of bubbling indicates no passage of air. Still other orifices are found obstructed with straw-colored or brownish crusts. These crusts have the appearance of dried serum with little admixture of pus. It is true that thick pus too viscid to run down the glass walls of the collector is seen in various bronchial diseases,⁵ but no such dry gumlike and crusted secretion as that previously described is ordinarily seen in any disease other than the malady under consideration. In rare instances an outstanding feature of the endobronchial picture is the dry, sometimes even glazed, appearance of the tracheobronchial mucosa.

Laryngeal and Bronchoscopic Appearances of Diphtheria.—By means of direct laryngoscopy in children one sees at first an intense inflammation of the laryngeal mucosa, and even in the early stages it is noted that the subglottic tissues swell out so as to approach each other, looking, as protruded from each side below the cords, somewhat like the turbinal bodies in the nose. The membrane may come on any part of the larynx or on the subglottic swelling. Sometimes the membrane does not appear in either the fauces or the larynx. We have seen many such cases. The patients are always quite dyspneic and ashy in color. On putting down a

Therefore no attempt should be made to examine the larynx without proper preparation for a bronchoscopy, including bronchoscopic forceps that can be used to remove the obstructive exudate in case it is encountered. Many, many times we have saved a child from asphyxia by removing great masses of membrane with the bronchoscopic forceps. Early in the disease the membrane is tightly adherent and leaves a bleeding surface if it is pulled off. The children, however, are seldom seen in this stage, usually, when the bronchoscopist is called the membrane is being shed and there may be obstructive, cast-off membrane. Before this stage of shedding the membrane may look like edematous polyps in the nose, and whitish grapelike masses may be drawn up through the bronchoscope with the forceps, causing a sucking sound as they come through. When these appearances are encountered by the experienced observer there can be no question about the diagnosis. There are membranous and exudative forms of laryngitis and tracheitis but none are accompanied by exactly the clinical picture here described.

Laryngoscopic and Bronchoscopic Appearances in Laryngismus Stridulus.—In almost half the cases of acute laryngotracheobronchitis that we have seen the primary diagnosis of "spasmodic croup" had been made on an inferential basis. No one could ever make such a mistake by direct examination. It therefore seems proper to describe the laryngoscopic appearances in laryngismus stridulus. In most cases of laryngismus stridulus in children examined during the attack the mucosa is found to be lavender or violet but otherwise normal. In severe cases there is not only a glottic spasm but a laryngeal sphincteric closure. In these cases the cords are hidden by the closure of the ventricular bands, the aryepiglottic folds are crowded over in support of the bands. In most cases the glottic closure will relax and the child draw a deep breath. It will then be seen that except for the lavender, violet or grayish color of the mucosa, the larynx is normal. If the sphincteric closure does not promptly relax, allowing the patient to take a deep breath, the proper thing to do is to introduce gently a small bronchoscope and then start the child's breathing, if it has already stopped by insufflation of oxygen plus carbon dioxide, 5 per cent, combined with artificial respiratory movements. After respiration is fully established and going on rhythmically, the bronchoscope can be removed. It will then be seen that the glottis will abduct widely on

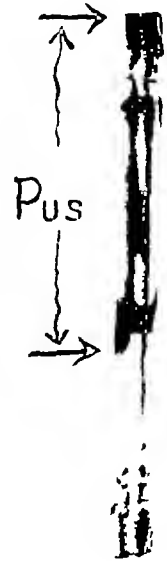


Fig. 2—A collecting tube showing pus aspirated from the bronchi of a baby, aged 15 months, very ill with streptococcal laryngotracheobronchitis. Aspirations with a catheter through the tracheostomy cannula by the nurse were necessary at frequent intervals. Many times the aspirations brought the child back to life from a seemingly moribund condition. Each time the partial atelectasis at both bases simulating pneumonia completely cleared. The obstructive character of the pus is obvious from the fact that it was so thick and tenacious it would not run down the inverted glass collecting tube. All together about fifty of these tubes were used. Additionally plugs and crusts were formed of this secretion (compare figure 3).



Fig. 1—Roentgenogram showing obliteration of the tracheal lumen complete at the point A by mucosal swelling complicating streptococcal laryngotracheobronchitis in a child aged 15 months. Recovery followed repeated bronchoscopic removal of plugs and crusts of tough gummy adherent secretion that produced atelectasis and impending asphyxia (compare figures 2 and 3).

bronchoscope, one finds obstructive exudate in the trachea or in either or both bronchial orifices. In most of these cases by the time the bronchoscopist is asked to make his examination the child is extremely dyspneic.

⁵ Jackson, Chevalier, and Jackson, C. L. Peroral Pulmonary Drainage: Natural and Therapeutic, with Special Reference to the Tussive Squeeze. *Am. J. M. Sc.* 186:849 (Dec.) 1933.

inspiration, especially the deep inspiration that the child will take because of the air hunger and the stimulus of the accumulated carbon dioxide on the respiratory centers. Thereafter, for a time at least, breathing will go on regularly with the laryngoscope in place but with the bronchoscope removed. Any one accustomed to examine the larynx without anesthesia will promptly recognize the abnormal sphincteric closure and the discolored but never red mucosa as in strong contrast to the deep fiery red that is present in both diphtheria and laryngotracheobronchitis. The difference between the latter two conditions has already been given. If the patient is examined a few hours after a croupy attack, the contrast between laryngismus stridulus on the one hand and the two diseases mentioned on the other is still more striking. The mucosa of the larynx and trachea will be found perfectly normal, but there is usually an abnormal flaccidity of the margins of the laryngeal orifice that is unmistakably typical.

It might be added here that our opinion is that in laryngismus stridulus the exciting cause of the attack is the sudden violent inspiration started by the entrance of secretions into the larynx. The nerve paths traveled are phylogenically very old, they are concerned with the sphincteric closure of the airway against the entrance of anything other than air. To this primary closure is added the secondary passive closure due to indrawing of an anatomically flaccid, usually rachitic, laryngeal orifice. It is this pathologic flaccidity that explains why relatively few children are affected to the degree noted in laryngismus stridulus. Mouth breathers are especially prone, because swallowing is almost impossible with an open mouth, hence secretions accumulate in the laryngopharynx and overflow into the larynx. This happens with any mouth breather, but lacking the rachitic, flabby, laryngeal orificial tissues the reaction is merely a partial awakening, a choking and a clearing away of the intrusive laryngeal secretions.

CLINICAL FEATURES

The symptomatology and almost all the clinical features of acute laryngotracheobronchitis are the same as those of laryngotracheobronchial diphtheria before the days of antitoxin. The chief differences today arise from the fact that we have no remedy for streptococcal infections that is in any degree comparable to diphtheritic antitoxin, the disease must run its course, usually long, and we are fortunate if we can keep the patient alive until the course is run. Space limits here forbid detailed reports of cases. The important clinical features were described by Chevalier Jackson^{1b} and illustrated by two typical cases, one an influenzal infection with recovery, the other streptococcal and fatal. A typical case may be cited here.

A typical case of streptococcal laryngotracheobronchitis with a misleading history and a favorable termination. A boy, aged 15 months, two days before admission fell and struck his head. Cold compresses were applied. The mother stated that "his nose started to run as if he had a cold in the head." That night the breathing became "heavy," and a cough started and soon became "croupy." The mother stated that the child had been playing with dried beans. Two unassociated physicians in succession prescribed medication but the breathing became more and more labored and Dr. Ralph Tyson was called. He made a diagnosis of laryngotracheobronchitis and advised direct laryngoscopic examination, for which the child was brought to Temple University Hospital. On admission the temperature was 104 F, respirations 30, pulse 110. There was marked indrawing at the suprasternal notch and the epigastrium. The condition was toxic. The color was slightly cyanotic, especially the fingers and toes. Dr. Ralph Tyson found dulness through-

out the chest most marked posteriorly and laterally. Coarse rales were heard all over on both sides. An oxygen tent with humidifier gave temporary improvement but asphyxia impended. Preparations were made for tracheotomy to relieve the obvious obstructive laryngeal dyspnea and for a bronchoscope to be inserted to maintain the airway during the tracheotomy. Direct laryngoscopy revealed cords fixed in the position of partial approximation. Immediately below the cords the lumen was just about obliterated by reddish swellings that met in the midline. A mucopurulent secretion was seen in the larynx and in the subglottic region. A 4 mm bronchoscope was inserted and a quantity of thick tenacious pus was aspirated. The relief of the dyspnea was immediate and the child became tranquil. The bronchoscope was held in situ to maintain an airway while a low tracheotomy was done. For four or five hours the condition of the patient was very satisfactory under catheter aspirations by the nurse, then he grew rapidly worse. The temperature was not high but the respiratory and cardiac rates rose rapidly. The breath sounds disappeared at the bases and the percussion note became dull. Bronchoscopy and the removal of plugs of thick secretion restored the patient to a very satisfactory condition. A few hours later the recurrence of symptoms and signs of obstructive secretions again required bronchoscopic removal. This cycle was repeated many times before the bronchial inflammation subsided and the mucosa and secretions became normal. The Proetz treatment was given the nose. Bacteriologic reports at first were Micrococcus

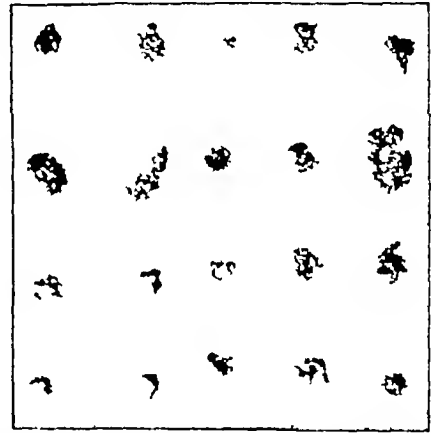


Fig. 3—Specimens of plugs and crusts of inspissated secretion bronchoscopically removed from orifices of bronchi where they were causing recurrent attacks of obstructive atelectasis simulating pneumonia in a child aged 15 months. These crusts were composed of bloody serum and the pus referred to in the legend to figure 2.

carrhalis, later *Streptococcus haemolyticus*. Medical care and management were directed by the pediatrician Dr. Ralph Tyson. Decannulation and perfect recovery followed in due course.

The foregoing case is not unusual in the misleading character of the preliminary history, and it is typical of a streptococcal laryngotracheobronchitis running a favorable course under treatment.

CONCLUSIONS

1 Acute laryngotracheobronchitis is a clinical type. It occurs most often and most severely during epidemics of so-called influenza. In from 3 to 5 per cent of the cases the influenza bacillus seems to be causative, occasionally other organisms seem responsible, but over 90 per cent of the cases are primarily or secondarily streptococcal. The mortality in children under three years is about 70 per cent.

2 In laryngismus stridulus, observations of the living pathologic condition show that the mucosa is lavender, violet or grayish but is otherwise normal and that the discoloration quickly disappears, when the airway is laryngoscopically held open, without leaving a trace of abnormality. It is suggested that attacks may be

due to inspiration of pharyngeal secretions during sleep. The consequent sudden and violent efforts to draw in air draw in the laryngeal orifice in a sphincteric closure. The nerve paths followed are phylogenically very old.

3 In diphtheria limited to the larynx and tracheo-bronchial tree there is a fibrinous exudate that objectively is very different from the inflammatory exudate seen in streptococcic infection of the same mucosal areas.

4 In acute laryngotracheobronchitis the outstanding feature of the bronchoscopically observed pathologic condition is the bronchial obstruction by inspissated secretion which the weak or absent cough reflex is unable to expel. Therefore the following points are important in the treatment of this disease:

(a) The routine administration of atropine and opium derivatives is illogical in theory and often fatal in practice.

(b) The superheating of the air in our hospitals and dwellings contributes largely to inspissation of secretions. Outside air at zero contains little water even at the dew point. When we heat this air to 70 F it becomes extremely desiccating to the secretions and almost caustic to the mucosa. The air surrounding the patient with laryngotracheobronchitis with inspissating secretions should be humid to saturation.

(c) In this disease an impaired percussion note and increased respiratory rate usually mean not pneumonia or bronchopneumonia but obstructive atelectasis.

(d) These signs call for peroral or tracheostomic aspiration of secretions. In extreme cases forceps removal of crusts is the only means of saving life. Such potentially fatal circumstances can be prevented by humid air and the avoidance of atropine, opiates and other desiccating medicaments.

5 In the treatment of babies one must remember that, relatively, a cat in the laboratory has nine lives, a dog has about three, but a baby in his crib has only one. It is a paramount duty of the pediatrician and the family physician to see that the baby gets intervals of rest and that such rest is not interfered with by too many examinations, by serum reactions, by torturing urticaria and by subdermal abscesses. This is not a criticism of scientific medicine but a reminder to the clinicians that they are the balance wheels of the therapeutic machinery.

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ABSTRACT OF DISCUSSION

DR. JOSEPH BRENNEMANN, Chicago. I hope that "streptococcic bronchitis" will not replace the term in common usage, laryngotracheobronchitis. The latter is descriptive and both clinically and pathologically adequate; the former is based on etiology and may call for recantation later. The Jacksons have said that the essential problem is that of the pediatrician and the general practitioner. One can only agree with that statement if it is meant to point out the great importance of early recognition of the nature and gravity of the disease. The one important person is the bronchoscopist; the one important thing to do is to keep the airways clear so that the child will not die of atelectasis due to obstruction by the characteristically thick, tenacious secretions. Compensatory emphysema doubtless also enters into the picture when no longer adequately compensatory. The all important measures to keep the airways clear are bronchoscopic aspiration as often as necessary and tracheotomy. The latter both relieves the subglottic obstruction and facilitates the removal of secretions through a catheter and negative pressure apparatus or through the bronchoscope itself. Intubation seems contraindicated. It frequently does not relieve the laryngeal obstruction and does not function in removing the

all important secretions. Contrary to the situation in laryngeal diphtheria the disease often lasts a long time and requires long retention and usually frequent reintroduction of the intubation tube. A child is now at the hospital who was intubated some fifty times elsewhere, who has a contracted larynx, no voice, a tracheotomy tube in place for months that may remain indefinitely. Bronchopneumonia may follow tracheotomy but it is the lesser hazard. Doubtless too, as Chevalier Jackson pointed out years ago, in laryngeal diphtheria what is thought to be pneumonia is more often bronchial obstruction in diphtheria due to membrane, here to thick secretions. I heartily agree to what has been said about atropine or belladonna. I am tempted to say the same of nearly all cough medicines that impair the tussive reflex and, while helping the parents, harm the child. In former experience nearly all of these children, usually infants, died. Recently most of them have lived because a bronchoscopist, trained by the Jacksons who devotes all his time to endoscopy is readily accessible—one of the greatest comforts of my professional life. Parenthetically, not one twentieth of the endoscopist's work has to do with foreign bodies in the usual sense.

DR. CLIFFORD G. GRULEE, Evanston, Ill. This meeting has lost something in not having seen the original paper, as I have, for there were several statements in it that were very interesting. One of the characteristics of the paper that struck me was the vagueness of the definition of the condition. I am not sure I know just exactly what they are talking about. Apparently Dr. Brennemann does. If they are talking about spasmodic croup that is one thing. If they are talking about a streptococcic involvement of the trachea, larynx and bronchi, that is another. That wasn't very clear in the original paper. The streptococcic infections have been known for a good many years. The inspissation of the mucus and the secretions have been recognized. The one thing that should be done that has not been stressed sufficiently which would prevent a great many bronchoscopic examinations and the necessity for them is that the child should immediately be put in a steam tent and kept there. When I say a steam tent I mean a steam tent. I mean that the steam shall be very thick and shall be kept up without any interruption over hours. In many instances, I know the condition about which we are talking, the steam tent does get results. I am not at all sure that I can agree with the authors or with Dr. Brennemann as to the danger of using atropine or belladonna in these cases. For the last twenty years I have used atropine and belladonna and steam in all my cases of respiratory infections of almost every sort except lobar pneumonia. I feel the results have been very good and I think that some of these can be attributed to the action of the atropine. On the other hand I think we owe to Dr. Chevalier Jackson and Dr. Chevalier Jackson Jr. a great debt for bringing to our attention two things: first, the pathology of this condition as seen in the bronchoscope and, second, the fact that so much of the disturbance is on the basis of the inspissated secretions.

DR. ISAAC A. ABT, Chicago. When a baby with laryngeal stenosis is seen in the home or brought to the clinic he needs immediate attention. Often it is difficult to classify at once the bacteriologic nature of the laryngotracheobronchitis. The Jacksons have already pointed out that the condition in question may be due to any one of a number of organisms. I am inclined to agree with Dr. Brennemann that the designation of "streptococcic laryngotracheobronchitis" may be too inclusive. While it is true that diphtheritic laryngitis is not as frequent at present as in former times, nevertheless it must be borne in mind. In the earlier years laryngeal stenosis due to diphtheritic invasion of the larynx seemed to occur more frequently than the variety of laryngotracheobronchitis that the Jacksons have just described. Cultures were always made and the pharynx was inspected carefully though immediate relief of the stenosis was indicated then as now. A great deal was said about intubation for relief of laryngeal stenosis. Indeed the introduction of the tube was a fine art though there are few intubations being performed nowadays and the laryngologists have favored tracheotomy. These children come into the hospital as emergency cases. They are extremely dyspneic and desaturated. The indication is for immediate relief. The vogue today is to

use the Mosher tracheocannula or so called life saver. Intubation would probably be an equally efficient and safe procedure and in some instances might tide the patient over until the edema and inflammation had subsided and the air passages had resumed a nearly normal function. It is true that intubation might not succeed in every case and a subsequent tracheotomy would have to be performed though on the other hand if the intubation tube is introduced skilfully no harm would be done. With reference to blood transfusion in these cases I must admit I am somewhat skeptical as to its indication. My impression is that these patients do not need blood. What they need is air. I realize that blood transfusion is widely used and in moderately severe cases no treatment is complete without one or more transfusions. Nevertheless one should meet the immediate indication and not supply blood when air is urgently needed. I would hesitate to place these strangling children in a steam tent. The amount of oxygen in these tents is limited. The exhaled air will sooner or later reduce the volume of available oxygen. If one wishes to supply moisture I think it would be better to increase the humidity of the whole room. This can be done by moistening large turkish towels and suspending them about the room so that the air is saturated to the dew point. In this way perhaps some of the gummy inspissated matter may be liquefied and expectorated.

DR. RALPH M. TYSON, Philadelphia. It has been my privilege to work with the Jacksons in a number of these cases. Cultures taken from the larynx and trachea showed that they are not diphtheritic. We have found the streptococcus and in one case the hemolytic *Staphylococcus aureus* as the infecting organism. Another point I want to emphasize is the value of oxygen plus the moisture. A machine can be arranged whereby the two can be obtained at the same time. I must disagree with Dr. Grulee with regard to the use of atropine or belladonna. It has been our experience that the drug is a dangerous one to use in these cases. The question also comes up as to just how one is going to procure rest for these children. The use of opiates has been tried and we have just about abandoned the use of either paregoric or codeine. I want to make it clear that we do not use transfusions during the acute stage. It must be remembered that these children have gone through a serious infection that is not over in a day or two and often lasts weeks and sometimes months. It is then of course that we use the transfusions.

DR. CHEVALIER L. JACKSON, Philadelphia. Dr. Tyson has almost closed the discussion for me, but there are one or two things on which I should like to comment. I was glad that Dr. Brennemann emphasized so convincingly the importance of proper postoperative care of the tracheotomic patient. Too often physicians and surgeons feel that the battle is won when a child has a tracheotomy tube in his trachea. Too often twenty-four to forty-eight hours later the child dies because of inadequate postoperative care. Crusts form in the trachea or swelling of the tissues lifts the lower end of the tube out of the trachea. One of many, many things may happen. A cannula may be absolutely clear of any obstruction after autopsy it is reported that the trachea and the tracheotomic cannula were found entirely clear—but were the main bronchi clear? That is equally important. We have heard enough about atropine and opiates from the pediatricians. While that subject was discussed at length in part of the paper that part was not read. I will let Dr. Tyson's discussion of that phase of the question stand without further comment. To avoid confusing the issue, since we are primarily discussing acute infective laryngotracheitis, I have limited myself to presenting here only the portions of the paper which deal directly with this condition. In the full paper as prepared for publication we attempted to describe the endoscopic appearance of the larynx and tracheobronchial tree in acute infective conditions such as acute laryngotracheitis and diphtheria, as well as that in certain other conditions. As to the steam tent I think Dr. Abt makes an excellent point in suggesting that we use a steam room rather than a steam tent, because in a steam tent too often there is heat. Heat, we think, is bad for these little patients. A steam room or the oxygen tent with cool, humidified oxygen is our preference in the Temple Clinic at the present time.

COMMON TUMORS OF THE EYELIDS

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AND

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Tumors of the eyelids are quite common, most of them excluding chalazia arising from the skin and its appendages. The greater number of such growths are benign but some are malignant.

In order to determine the types of common lid tumors and the relative frequency of each type and in an attempt to establish more accurate clinical diagnoses clinical and pathologic studies were made in a series of 100 consecutive cases.

Pathologically these 100 tumors were classified as follows: papillomas 34, nevi 17, carcinomas 15, sebaceous cysts 13, fibromas 5, sudoriferous cysts 4, hemangiomas 4, dermoid cysts 2, molluscum contagiosum 2, malignant melanoma 1, sweat gland adenoma 1, xanthelasma 1, granuloma 1.

Papilloma (cutaneous wart)—A benign neoplasm characterized by a localized overgrowth of epithelium and the underlying connective tissue. It is apparently the most common tumor of the lids. Such growths were found in middle aged or elderly persons, were usually single but occasionally multiple and, although most frequently located at the margin of the lid also appeared in other parts of the lid. Growth was slow, in most cases there had been no noticeable increase in size over a period of years. Typical papillomas were small, fairly firm and pedunculated and had nodular warty surfaces, they were not unduly pigmented, and consequently they were of approximately the same color and shade or only slightly darker than the surrounding skin. The most typical characteristics of papillomas were the pedunculation and the papillated surface, but occasionally the tumor arose from a broad base and its surface was smooth or only a bit uneven and in such cases it was difficult or impossible to differentiate clinically from a nevus or fibroma or even an early epithelioma. Ulceration of the surface was noted in only one case.

Under the microscope papillomas appeared to be formed by an overgrowth of epithelium and proliferation of the underlying connective tissue. The epidermis was thickened and large papillae were formed. The basal cells of the epidermis contained small amounts of pigment here and there and many mitotic figures, while the superficial cells showed excessive keratinization. Underlying the thickened epithelium and extending into the papillae was a variable amount of more or less dense, vascularized connective tissue stroma, which invariably showed perivascular and sub-epithelial infiltrates composed of lymphocytes. In one tumor the infiltrates were composed of lymphocytes and polymorphonuclear leukocytes.

Nevus—A congenital benign tumor characterized by a peculiar type of cell believed to arise from the end-apparatus of the cutaneous sensory nerves. Several nevi were seen, and it is apparently a common tumor. They usually occurred singly and often were located at the margin of the lid. According to the histories the nevi, with one exception, grew slowly or remained

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stationary over a period of years. Typical nevi were small to medium size, firm sessile growths, having smooth, delicately pigmented surfaces. This appearance varied and often it was difficult to differentiate a nevus from a papilloma, fibroma or early epithelioma, for example, two of the nevi were pedunculated, one



Fig. 1—Nevus

was translucent, one was soft, in several no pigment was seen and in two the surface was nodular or papillated. Pigmentation was never dense, consequently it was not considered characteristic.

The origin of nevi remains unsettled, they have been described as arising from the basal cells of the epithelium, from the endothelium of the blood vessels, from chromatophores and from the end-apparatus of the cutaneous sensory nerves. At present the tendency is to accept the last of the aforementioned theories, i. e., Pierre Masson's theory of derivation from the cutaneous sensory nerve end-apparatus. Microscopic

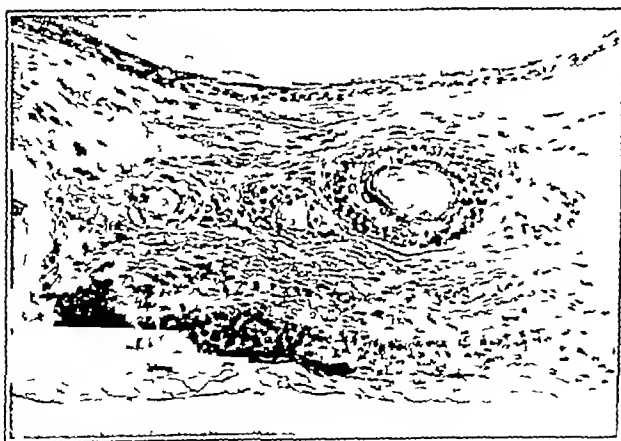


Fig. 2—Wall of sebaceous cyst

studies revealed two types of cells: nevus cells and the pigmented cells. The tumors were composed of nests, whorls or cords of nonpigmented, closely packed nevus cells lying in the dermis. The epithelium was usually normal but occasionally showed some downgrowth in isolated areas. The nevus cells were round or polyhedral and had large nuclei. Many multinucleated or giant nevus cells

were seen. A few fusiform pigmented cells known as melanoblasts, were present in and around the margin of the nevus cell groups. The stroma was composed of more or less dense connective tissue which interlaced between the nevus cell nests but did not extend between individual cells. Blood vessels were scanty as a rule. With one exception these tumors were evidently quiescent and no mitotic figures were found in the nevus cells.

Carcinoma—A malignant epithelial neoplasm characterized by proliferation and downgrowth of epithelium, with invasion through the lymph channels and destruction of the surrounding tissues. There are two types of skin carcinoma: the basal cell carcinoma or rodent ulcer, a relatively benign growth which is common in the eyelids, and the more malignant epidermoid carcinoma or acanthoma, which is not so common about the eye. Both types grow slowly and are locally malignant in that they invade and destroy the neighboring tissues but only the epidermoid carcinoma metastasizes to distant organs.

As is usual, all such tumors in this series occurred in persons beyond 40 years of age. Thirteen of the fifteen cases were rodent ulcers and two were epi-

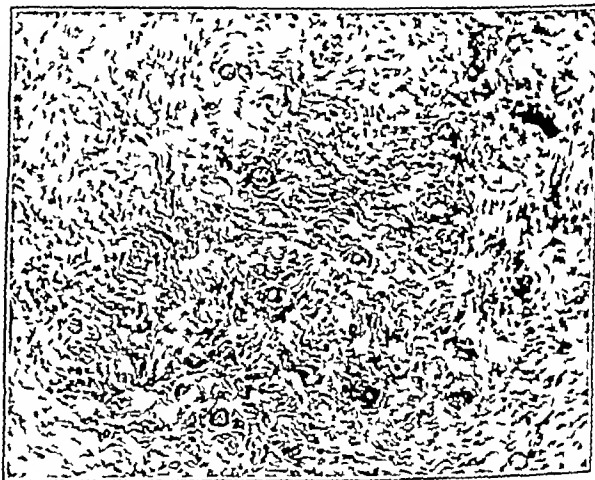


Fig. 3—Neurofibroma

dermoid carcinomas. A clinical differentiation between the two types was not possible in the tumors here reported, since locally they have much the same appearance and no distant metastases were evident. Several of the neoplasms were located near the medial canthus, a favorite site for rodent ulcer, however, others appeared in other parts of the lids. All were more or less elevated and had the characteristic indurated, rolled, nodular margins. Four of the early, smaller tumors had not yet ulcerated but in each the surface showed a central depression; the others presented a central, depressed, ulcerating, granulating surface covered with crusts.

The rodent ulcers under the microscope were composed of columns and irregular masses of deep blue staining cells which extended downward and infiltrated into the dermis and subcutaneous tissues. The cells resembled the basal layers of the epithelium but as a rule were somewhat smaller, they were small spindle or polyhedral cells with large nuclei and a scanty cytoplasm. Here and there cystic spaces gave evidence of degenerative changes in the tumors. A moderate number of mitotic figures were present. Prickle cell

evidences of keratinization and epithelial pearls were absent. A fibrous tissue stroma, infiltrated in many places with lymphocytes and plasma cells occupied the areas between masses and columns of epithelial cells. Erosion and ulceration of the surface were present in most of the tumors.

The epidermoid carcinomas were characterized by downgrowths of stratified squamous epithelium, composed in great part of cells of the prickly cell type with intercellular fibrils and areas of keratinization within the tumor, which gave rise to the typical epithelial pearls characteristic of this type of neoplasm. In the connective tissue stroma were areas of lymphocytic and plasma cell infiltration. Erosion and ulceration of the surface were present in both tumors.

Sebaceous Cyst—A cystic tumor of the skin arising from a sebaceous gland. Typical cysts arose from a broad base and appeared as yellowish white rather firm, elevated nodules with smooth nonpigmented surfaces. Some were located in the region of the cilia at the margin of the lid, while others occurred in other parts of the lid. These cysts were sometimes difficult to differentiate clinically from fibroma or xanthelasma.

The cysts were lined with stratified squamous epithelium and contained a material which appeared to be made up of degenerated epithelial cells and fatty debris.

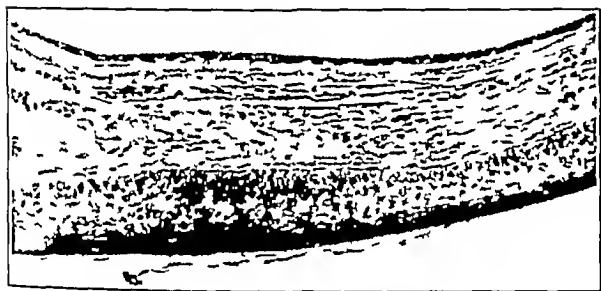


Fig 4—Wall of sudoriferous cyst

Sudoriferous Cyst—A cystic tumor of the skin arising from a sudoriferous gland. Such cysts appeared as translucent, yellowish brown nodules, they arose from broad bases and invariably had smooth surfaces. These tumors transmitted light, a property which served as an infallible differential diagnostic sign.

The cyst lining of low cuboidal epithelium enclosed an optically empty cavity.

Hemangioma—A congenital benign tumor composed of an overgrowth of newly formed blood vessels. There are several types of angioma, three of which were encountered in this series of cases.

Two typical cases of plexiform angioma were seen in infants. In one the tumor had been visible three weeks, appearing as a small, dark red spot on one lower eyelid. It had grown rapidly and on admission, appeared as a dark red, bleeding, ulcerating, granulating nodule approximately 6 mm in diameter. It was attached to the skin by a broad pedicle. The clinical diagnosis lay between angioma and granuloma. The tumor in the other child was larger and was located in the upper lid and forehead, it had the typical dark red appearance. Structurally the tumors were composed of masses of newly formed capillaries or, rather, small endothelial tubes, some of which were apparently solid. An enormous number of mitoses

were present. In one tumor the surface epithelium had ulcerated and the underlying vascular tissue was infiltrated with leukocytes.

In a man, aged 53, with nevus vinosus or so-called port wine stain, there were two small, slightly elevated, dark red tumors in the lower lid which had not



Fig 5—Hemangioma nevus vinosus or port wine stain

increased in size since infancy. Under the microscope the tumor was seen to be composed of many dilated capillaries situated directly beneath the normal epidermis. As was expected in a stationary tumor, no mitoses were found.

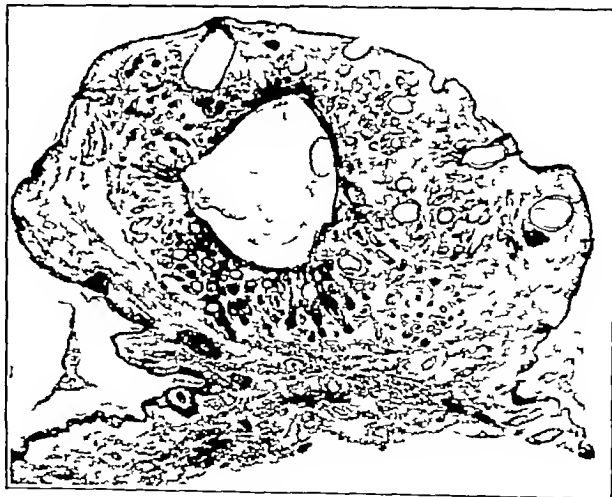


Fig 6—Dermoid cyst multilocular

One small cavernous angioma of the skin was seen in a woman aged 20. There were several, deep purplish red, slightly elevated tumors along the margin of one lower lid which, according to the patient's statement, had been present since birth. Microscopically, the epidermis was normal but the underlying dermis and subcutaneous tissues were occupied by large, thin walled, vascular channels.

Fibroma—A benign tumor composed of connective tissue which is believed to originate in the sheaths or connective tissue elements of peripheral nerves. All five fibromas were located at or near the margin of the lid. They were yellowish white, firm, elevated nodules with smooth surfaces and arose from broad bases.



Fig. 7—Molluscum contagiosum

Some were difficult to differentiate clinically from nevi, sebaceous cysts or early epitheliomas. In the one case of neurofibromatosis multiplex (von Recklinghausen's disease) the nodule was located in the subcutaneous tissue of the lower lid, it was soft and the overlying skin appeared unchanged.

Microscopically the fibromas were composed of masses of dense, more or less avascular connective tissue and collagenous fibers arranged in whorls and cords beneath the epidermis. The neurofibroma was similar in appearance but much more cellular and quite vascular, a few medullated nerves were visible in sections stained according to Held's method.

Dermoid Cyst—A congenital cystic tumor formed by an inclusion of dermal tissue along the line of an embryonic fissure. Such cysts may be extremely simple, having a lining of simple stratified squamous epithelium but no glands or hair follicles and are then classified by Ewing and others as epidermoid cysts. More often



Fig. 8—Malignant melanoma.

dermoid cysts are more complex and contain all the elements of the skin, for example epidermis, dermis, dermal glands and hair follicles and even on rare occasions, lymphoid tissue, muscle, bone and other tissues.

Two dermoid cysts, both of which had been present since birth, were seen. One tumor, an epidermoid cyst, appeared as a hemispherical nodule approximately

6 mm in diameter, located at the medial edge of the upper lid just above the canthus. The skin appeared normal and was movable over the tumor. Microscopic examination showed the tumor to be lined with a thin layer of stratified squamous epithelium but hair follicles and glands were not found. The tumor looked much like a sebaceous cyst but was believed to be a simple dermoid on account of its presence at birth and its location in the region of an embryonic fissure. The other, a more complex cyst, was a pedunculated growth approximately 5 mm in diameter located lateral to the external canthus. Its color was similar to that of the skin, to which it seemed to be attached, and its surface was slightly nodular. It might easily have been confused with papilloma on account of its nodular surface and pedunculation. Under the microscope this tumor proved to be a multilocular dermoid cyst. The overlying epidermis showed some large papillae. In the underlying dermis and subcutaneous tissue were one large cyst and several small daughter cysts, each lined with stratified squamous epithelium surrounded by many hair follicles, some of which opened into the cysts. The cysts appeared to be filled with sebaceous material and other debris. An interlacing connective tissue stroma lay in the area between the cysts.

Molluscum Contagiosum—A contagious disease of the epidermis caused by infection with a specific filtrable virus and characterized by the formation of small nodules in the skin. Two such cases were seen. One occurred in a child showing three nodules on the face, one of which was located in the lower lid. This lesion appeared as a small slightly elevated wax-like nodule composed of white seedlike lobules, it had the characteristic central umbilication. The other lesion occurred in an adult as a single nodule of somewhat similar appearance located at the margin of the lid. The clinical diagnosis here lay between papilloma and nevus, since the lesion was single and was located at the margin of the lid, and umbilication was questionable.

Under the microscope these tumors were composed of masses of hypertrophic, swollen, degenerated epithelial cells. The basal or germinal cells were somewhat enlarged and showed a few mitoses. Just outside the germinal layer the cells were greatly swollen and vacuolated and the nucleus was atrophic and pushed to one side by the cytoplasmic inclusion bodies, which were made up of myriads of minute spherical virus particles or elementary bodies. At the apex of the lesion many of the cells were ruptured and desquamating. There was little or no inflammatory reaction in the adjacent tissues.

Malignant Melanoma—A malignant neoplasm supposedly arising from a nevus. This tumor had been present for three years in an elderly man, beginning as a small subcutaneous nodule in the lower lid. The mass had enlarged slowly for two years but during the past year had grown rapidly. At the time of admission the tumor appeared as a large subcutaneous mass in the temporal portion of the lower lid; it measured approximately 2 by 2 by 1 cm. The growth had infiltrated the tarsus palpebral and bulbar conjunctivae and evidently the sclera since ocular rotations were limited. The overlying skin was stretched and had a bluish sheen but was freely movable over the growth. Following removal microscopic examination showed an unusual neoplasm growing wild in a fibrous tissue stroma. The tumor cells, which were arranged in whorls, nests and strands, were spindle shaped with

oval, deep blue nuclei and fairly abundant cytoplasm. A few mitoses were noted. Parts of the tumor were suggestive of basal cell carcinoma and others had the appearance of sarcoma. Aniline blue stains showed no fibrils. Scattered throughout the tumor was a fine granular pigment, most of which was incorporated in phagocytic cells in the stroma but some of which appeared in the tumor cells. This pigment did not give the iron reaction and was believed to be melanin.

Sweat Gland Adenoma—A tumor that had grown slowly for many years was seen in an elderly man. The growth was located at the margin of the lower lid; it measured 4 by 4 by 6 mm, was attached by a broad base and had a smooth slightly pigmented surface. Clinically it was believed to be a nevus. Under the microscope the tumor was composed of alveoli lined

cell nests were separated by a loose connective tissue stroma. No fat was found in the fibers of the orbicularis muscle.

Granuloma—A small rapidly growing subcutaneous tumor appeared at the temporal side of the lower lid in a young woman. There was no history of injury or any other lead as to the possible cause of this growth. The nodule measured approximately 3 mm in diameter and was not tender to palpation and the overlying skin was not discolored. Microscopic examination revealed a dense connective tissue infiltrate, especially in the perivascular areas, with lymphocytes and an occasional plasma cell.

CONCLUSIONS

In a series of 100 consecutive tumors of the lid which were studied clinically and with the microscope eighty-four were of various benign types and sixteen were malignant.

The benign tumors were classified as follows: papillomas 34, nevi 17, sebaceous cysts 13, fibromas 5, sudoriferous cysts 4, hemangiomas 4, dermoid cysts 2, molluscum contagiosum 2, sweat gland adenoma 1, xanthelasma 1 and granuloma 1. Of the malignant tumors fifteen were carcinomas and one was a malignant melanoma.

It is apparently sometimes difficult or impossible to make an accurate clinical diagnosis. Papilloma, nevus and fibroma and at times early epithelioma are easily confused if they are at all atypical in appearance. Molluscum may be difficult to differentiate, especially if the nodule is located at the margin of the lid. A sebaceous cyst may be confused with fibroma or xanthelasma. Fortunately carcinoma is usually easily diagnosed although, in the early stages, before ulceration it may be difficult to differentiate from a papilloma, nevus or fibroma.

ABSTRACT OF DISCUSSION

DR. ARNOLD KNAPP, New York. The authors have presented an excellent survey of the tumors of the lid and I wish to compliment them on the beautiful histologic pictures. In the case of tumors of the lid a mental picture of the histologic nature of the process is a great help to the proper treatment of the condition. It occurred to me that a report of a carcinoma of the meibomian gland may be in place today. This occurred in a woman aged 59 whom I saw in 1926 with a swelling of the upper lid measuring about an inch by half an inch, definitely in the tarsus with the overlying skin not involved and not tender. The conjunctival surface of the lid was definitely reddened, nodular and bulging into the conjunctival sac and there were no glandular involvements. The tumor was removed from the inside of the lid in the manner in which a tarsectomy is performed. Except for a slight recurrence at the temporal extremity four months later the patient had no further trouble from the lid. The microscopic examination revealed it to be carcinoma. A year later a swelling appeared in the preauricular region of that side. This was removed by a general surgeon and required a second operation about nine months later when radium seeds were implanted. Slowly in the course of the next few years the glandular involvement descended along the side of the face and the side of the neck and ultimately the patient developed symptoms of an abdominal tumor from which she died in 1933. One reason for mentioning this case is that at one stage of its development it would undoubtedly have been taken for a chalazion. I feel that many conditions are operated on which are not chalazias and I am ready to confess that I have made this mistake many times. It proves that a microscopic examination is indicated whenever one sees a chalazion-like tumor which is in any way atypical or which recurs.

DR. ALGERNON B. REESE, New York. For comparison with the authors' group of cases I have listed 100 consecutive tumors removed from the lids at the Eye Institute of New York.



Fig. 9.—Xanthelasma. The xanthoma cells appear black.

with cuboidal epithelium. Here and there the basal cells of the epidermis extended downward in finger-like processes into the tumor. The stroma was composed of loose fibrous tissue with a few blood vessels. There were subepithelial infiltrates of lymphocytes and plasma cells. The surface of the tumor was irregular and a small ulcer had formed in one area.

Xanthelasma—A lipid degeneration of the dermis and subcutaneous tissues which while not a tumor sometimes has the clinical appearance of one. This case as is usual occurred in an elderly woman as bilateral yellow, flat, slightly elevated areas at the nasal side of each lower lid.

Under the microscope the epidermis appeared normal and only a few fat globules were found in the dermis. In the subcutaneous areolar tissue were nests or groups of large, slightly granular single or multinucleated xanthoma cells filled with fat; these cells stained only lightly with hematoxylin and eosin but assumed a deep orange color with sudan III. The

epithelioma 28 (basal cell 21 squamous cell 4 basal-squamous cell 3), papilloma 18, hemangioma 11, nevus 8, sebaceous cyst 6, dermoid cyst 5, sudoriferous cyst 5, granuloma 4, adenoma 3, neurofibroma 3, malignant melanoma 2, xanthoma 2, lymphangioma 1, lymphosarcoma 1, teratoid tumor 1, foreign body reaction 1 traumatic inclusion cyst 1. In this series the epithelioma is the most frequent and it assumes greater importance on the lid than elsewhere on the skin because in the treatment by surgery or irradiation a possible disturbance of function must be taken into consideration. This may be in the nature of a defect of the lid margin which may be not only a cosmetic blemish but may prevent proper protection of the eye. In irradiation the danger of cataract is always present no matter how carefully the eye is shielded. In two thirds of the cases the lower eyelid was affected. Even a higher percentage of epitheliomas occur on the lower lip rather than the upper. The reason usually given for the predilection of an epithelioma for the lower eyelid and lower lip is that these are the areas which have the greater exposure to the actinic effect of the sun. Another possible reason is the more frequent irritation to which these parts are subject. Certainly the lower lid is more frequently and more severely involved by blepharitis. Our cases also show, as do the authors, that the basal cell is about five times more common than the squamous cell epithelioma. This is fortunate because as the authors pointed out the squamous cell type may metastasize especially to the regional lymph nodes whereas the basal cell type does not. The authors include the dermoid cysts in their group of lid tumors but these should perhaps more properly be considered orbital lesions. The heading "granuloma" includes three cases which we call for purposes of identification novocainoma. Sometimes following an injection of procaine hydrochloride into the lids for a surgical procedure there occurs over the site of the injection a lump the center of which is necrotic tissue surrounded by granulation tissue with many foreign body giant cells. Various special stains fail to disclose bacteria or any foreign substance. It is assumed, therefore, that the reaction is due to a chemical change. We have had this lesion occur a number of times always in groups and they cease with the use of a fresher solution of procaine. The xanthomas did not resemble clinically or histologically xanthelasma. They were round fatty tumors near the lid margin occurring in patients aged 8 months and 38 years. The teratoid, or composite tumor was at the base of the nose adjacent to the inner canthus. It was encapsulated and contained cartilage myomatous tissue and fibrous tissue throughout which was irregular epithelial masses which formed acini and epithelial pearls. It is often difficult to state the exact nature of a lid tumor clinically.

The Corpus Luteum—The growing follicle reaches full bloom ordinarily about half way between two menstrual periods, in the case of women who menstruate at the usual four weekly intervals. And then its thinned-out wall breaks allowing the egg to escape this process being designated as ovulation. The liberated ovum now is drawn toward the open mouth of the tube by the action of the current produced in the fluid by the ciliary action of the cells of the tube as has been already explained. Let us for a moment leave the egg at the tubal entrance and see what now happens in the ovary. The follicle having discharged its ovum and fluid remains as a collapsed shell. But instead of shriveling up and disappearing this rises like a phoenix from its ashes beginning now a second period of growth during which it assumes a yellowish carrot-like color. For this reason the new structure is called a yellow body or corpus luteum. It increases steadily in size until just before the next menstrual period and as it grows it like the preceding follicle produces substances which are given off into the blood stream and which bring about important changes in the endometrium. These changes complete the preparation of the uterine mucous membrane for the implantation of the egg if it happens to have been fertilized so that such an egg finds its bed nicely prepared when it reaches the womb. In the case of the corpus luteum as we shall see two substances are thus produced to act upon the womb both being necessary properly to prepare the latter for the expected little visitor—Novak. *Emil The Woman Ask.* the Doctor Baltimore Williams and Wilkins Company 1925.

THE TREATMENT OF CHOREA MINOR BY MEANS OF ELECTROPYREXIA

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AND

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CHICAGO

The therapy of chorea minor, or Sydenham's chorea, has always been empirical and symptomatic. The usual recommendations for treatment have been bed rest, a quiet environment, hydrotherapy and arsenicals especially solution of potassium arsenite, combined with the judicious use of sedatives and hypnotics. Under this regimen the disease, which is self-limiting, usually disappears in from two to six months depending on the severity of the attack and the resistance of the individual. Most neurologists and pediatricians have classified the malady as "rheumatic." While sudden shock, trauma or fright can play a role in bringing on the initial attack, it is generally conceded to be a disease of toxic infectious origin closely allied to rheumatoid infection. Chorea has a definite tendency to recur once

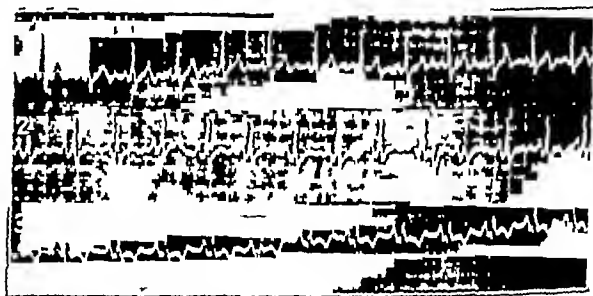


Fig. 1—Tracing in case 17 Aug. 23, 1935, before treatment showing sinus tachycardia. The patient, a girl aged 16, had chorea with rheumatic carditis. The heart rate was 125. T_1 and T_2 are positive. P_2 and I increased. These changes are frequent in rheumatic carditis.

it has attacked an individual and is three as common among females as among males. It is dominantly a disease of childhood and adolescence.

In 1929 Roeder¹ reported having treated a child suffering from chorea with phenyl-ethyl-hydantoin or nirvanol, intending to use the drug as a sedative. The typical nirvanol sickness developed with exanthema and fever. This patient, as well as another treated in the same manner, lost all choreiform movements in a very short time. Following this communication a series of cases successfully treated in a similar manner were reported in this country and abroad.² Gradually the fundamental fact that the fever produced by the drug is the important factor came to be recognized. Sutton³

Read before the Section on Pediatrics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

From the Departments of Neuropsychiatry and Physical Medicine, Northwestern University School of Medicine and the Department of Pediatrics of the University of Illinois College of Medicine and the Le Roy County Hospital.

1. Roeder, F. *Ueber die Anwendung von Schlafmitteln in der kindlichen heilkunde mit besonderer Berücksichtigung des Nirvanols.* Therap. Monatsh. 7:2, 346, 1929.

2. Paynton, F. J., and Schlesinger, R. *Treatment of Chorea by Nirvanol.* Lancet 2:26, 270 (Aug. 10), 1929. Cuthbert, A. *Ueber die Behandlung der kindlichen Chorea Minor.* Monatsschr. f. Kinderh. 12:142, 1929. Pilcher, J. D., and Gerstenberger, H. J. *Treatment of Chorea with Phenyl-Ethyl-Hydantoin.* Am. J. Dis. Child. 10:179, 1934. 1930. Bennett, R. H., and Welch, Samuel. *Nirvanol Treatment of Acute Chorea in Children.* J. Pediatr. 1:203, 206 (Aug.), 1931.

3. Sutton, J. *The Treatment of Chorea by the Sulphonamide.* Feyer, J. A. M. A. 97:229, 331 (Aug. 1), 1933.

Sutton and Dodge⁴ and Bateman⁵ employed typhoid vaccine injections for the purpose of elevating the patient's temperature. Their results were excellent. By the use of typhoid vaccine they were able to avoid the malarial sickness which has the disadvantages that it not only takes about two weeks to develop but also usually causes severe illness and occasionally death. Sutton and Dodge fully appreciated the value of fever per se, for they increased the febrile reactions of their patients by enveloping them in blanket packs after the typhoid vaccine injections. Unfortunately, one death

duced by this modality would recommend its use in a disease often associated with acute and chronic rheumatic carditis. We therefore did not attempt to employ electrical hyperpyrexia in chorea until August 1934, at which time electromagnetic induction by means of high frequency currents became a feasible method for the production of fever.

A preliminary report of the results in the first seven cases of this series was made by Neymann⁶ on April 30, 1935. The treatment of eighteen more cases has since been completed. The choreiform movements of all

Clinical Results of Treatment of Chorea Minor with Electropvrexia

| Case | Sex | Age | Severity | Additional Data | Number of Previous Attacks | Number of Treatments | Treatment Days in Hospital | Number of Months Since Last Treatment | Result |
|---------|-----|-----|----------|--|----------------------------|----------------------|----------------------------|---------------------------------------|---------------------------------------|
| 1 | ♂ | 9 | Moderate | | 3 | 2 | 5 | 20 | A few slight twitches since discharge |
| 2 | ♂ | 9 | Mild | Hemichorea | 0 | 2 | 5 | 19 | No twitches since discharge |
| 3 | ♀ | 11 | Mild | | 0 | 3 | 18 | 8 | No twitches since discharge |
| 4 | ♀ | 11 | Moderate | | 0 | 2 | 10 | 17 | A few slight twitches since discharge |
| 5 | ♀ | 11 | Severe | | 0 | 4 | 30 | 10 | No twitches since discharge |
| 6 | ♀ | 0 | Mild | | 0 | 2 | 7 | 15 | No twitches since discharge |
| 7 | ♀ | 4 | Mild | Chorea developed after scarlatina | 0 | 3 | 17 | 14 | No twitches since discharge |
| 8 | ♂ | 11 | Severe | | 2 | 2 | 21 | 10 | No twitches since discharge |
| 9 | ♀ | 0 | Severe | Aphasic before treatment | 0 | 10 | 30 | 9 | No twitches since discharge |
| 10 | ♀ | 0 | Mild | | 1 | 3 | 9 | 9 | No twitches since discharge |
| 11 | ♀ | 8 | Severe | | 0 | 0 | 21 | 9 | Chorea recurred |
| 12 | ♀ | 14 | Severe | Chorea of seven months duration | Chronic | 2 | 21 | 9 | No twitches since discharge |
| 13 | ♀ | 13 | Severe | | 0 | 4 | 12 | 8 | No twitches since discharge |
| 14 | ♀ | 13 | Moderate | Rheumatic carditis | 2 | 4 | 14 | 8 | No twitches since discharge |
| 15 | ♂ | 7 | Mild | Rheumatic carditis | 0 | 2 | 9 | 8 | No twitches since discharge |
| 16 | ♀ | 8 | Mild | | 0 | 2 | 0 | 8 | No twitches since discharge |
| 17 | ♀ | 10 | Moderate | Rheumatic carditis | 2 | 3 | 9 | 7 | A few slight twitches since discharge |
| 18 | ♂ | 8 | Moderate | Chorea of four years duration | Chronic | 0 | 30 | 6 | No twitches since discharge |
| 19 | ♂ | 9 | Severe | Rheumatic carditis | 1 | 9 | 31 | 5 | Chorea recurred |
| 20 | ♀ | 10 | Mild | | 0 | 0 | 16 | 5 | No twitches since discharge |
| 21 | ♀ | 10 | Mild | Rheumatic carditis | 1 | 2 | 5 | 0 | No twitches since discharge |
| 22 | ♀ | 13 | Severe | | 0 | 5 | 16 | 4 | No twitches since discharge |
| 23 | ♀ | 13 | Severe | Great speech difficulty before treatment | 0 | 5 | 17 | 2 | No twitches since discharge |
| 24 | ♂ | 9 | Mild | Hemichorea rheumatic carditis | 0 | 2 | 6 | 2 | Chorea recurred |
| 25 | ♂ | 7 | Moderate | Rheumatic carditis acute rheumatic fever | 0 | 7 | 23 | 1 | No twitches since discharge |
| Average | | | | | 4 | | 16 | | |

occurred in their series as a result of this procedure. Before Sutton, Mas de Ayala⁶ had employed Malta fever in the treatment of chorea, and as far back as 1923 von Kern⁷ reported favorable results after milk injections. However, he did not attribute his results to the fever produced by the injections.

Although we believed that the treatment of chorea by means of electropvrexia was desirable and had contemplated such treatment shortly after Neymann and Osborne⁸ first introduced this therapy, there were physical factors that made its application impractical at this time. Treatment with penetrating heat, i.e., diathermy or radiothermy, was extremely difficult because of the constant movement of the children afflicted with chorea. Furthermore, the use of external heat seemed inadvisable to us because we did not believe that the high pulse rate and general physical exhaustion pro-

duced by these twenty-five patients ceased after a series of biweekly fever treatments.

For purposes of clinical classification, the group has been divided into severe, moderately severe and mild

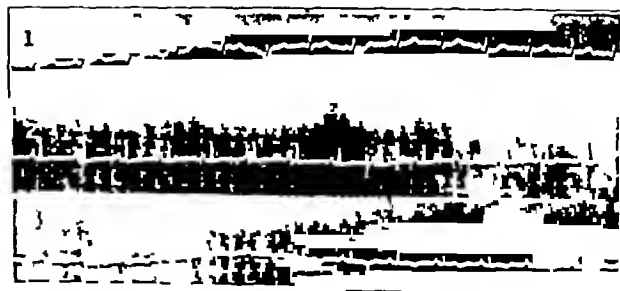


Fig. 2—Sept. 24, 1935, after three treatments. Heart rate 110. T₁ is positive. T₂ slightly positive. A normal electrocardiogram.

types. Nine cases were considered very severe and six moderately severe, ten presented a comparatively mild form of the disease. The average period of hospitalization for all cases was less than sixteen days, and the average number of treatments given was

⁴ Sutton L. P. and Dodge K. The Treatment of Chorea by Induced Fever. *J. Pediatr.* 3: 813-826 (Dec.) 1933.

⁵ Bateman D. Treatment of Sydenham's Chorea. *Brit. M. J.* 1: 1003-1004 (June 10) 1933.

⁶ Mas de Ayala I. Estudio Clínico de la Fiebre Recurrente Española. *Experimental An. de Fac. de med. Montevideo* 15: 544-682 (July-Aug.) 1930.

⁷ von Kern T. Die Behandlung der Chorea Minor mit Milch-Injektionen. *Wien. klin. Wchnschr.* 36: 164-165 (March 1) 1923.

⁸ Neymann C. A. and Osborne S. L. Artificial Fever Produced by High Frequency Currents. Preliminary Report. *Illinois M. J.* 60: 199-203 (Sept.) 1929.

Neymann C. A. and Osborne S. L. The Treatment of Dementia Paralytica with Hyperpyrexia Produced by Diathermy. *J. A. M. A.* 80: 7 (Jan. 3) 1931.

⁹ Neymann C. A. Treatment of Disease by Electropvrexia. *Lancet* 1: 1102-1104 (May 11) 1935. The Treatment of Disease by Means of Electropvrexia. *Proc. Roy. Soc. Med.* 29: 151-161 (Dec.) 1935.

slightly less than four. The longest period of hospitalization was thirty-nine days. This child had a very severe chorea, and ten biweekly treatments were given before all twitchings ceased. These ten treatments were the greatest number administered to any one patient. The shortest period of hospitalization was five days, during which time interval two treatments were given. After treatment was begun, the average number of days

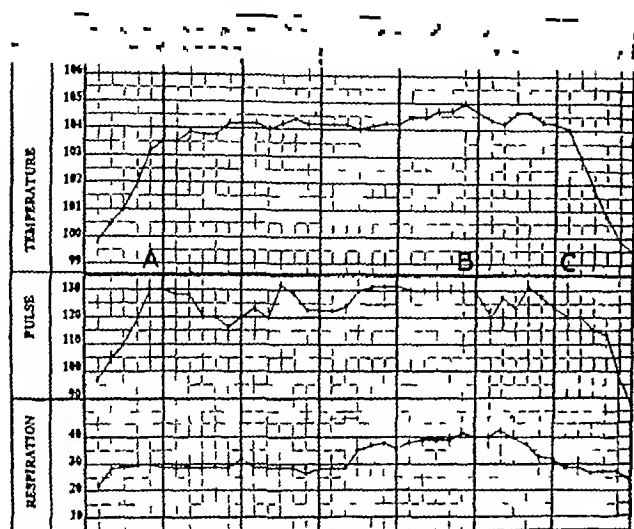


Fig. 3.—Usual fever curve produced by electromagnetic induction for the treatment of Sydenham's chorea. Temperature maintained above 103.5 F for eight hours. Temperature ranges near 104 F. Highest 105 F. Case 24. T. R. Sydenham's chorea, rheumatic carditis, March 12, 1936. Second and last treatment. A, current off; B, patient partially uncovered; C, uncovered.

spent in the hospital by the nine very severe cases was twenty-three, while the mild cases averaged ten. During the period of hospitalization, the child remained in bed without any other medication. The patients were not discharged until all pathologic movements had ceased.

The accompanying table is a survey of our series and the results obtained by treatment. These cases were not selected but were treated as they were admitted to the Cook County Hospital from August 1934 to April 1936. There were nine boys and sixteen girls, varying in age between 4 and 16 years. The tendency of the disease to attack females and young children is shown in the table. The period of observation after treatment now varies between one and twenty months. There have been three recurrences of the disease (cases 11, 19 and 24); one was in a girl and the other two were in boys. Their choreiform movements returned within a few weeks after their discharge from the hospital. Case 19 was probably a nonsuppurative encephalitis rather than a rheumatic chorea and should perhaps not be included in this series. The boy has developed into a behavior problem and institutional care has been advised. None of the other patients have shown a return of their symptoms, though eight of the series had had either chronic chorea or previous attacks of the disease. Hardly enough time has elapsed to make a definite statement except in the first seven cases. Here certainly the disease seems to have been arrested. Two cases (2 and 24) of hemichorea were observed. One patient (case 9) was totally aphasic before treatment was begun, two had a chronic form of the disease and in seven cases the disease was complicated with rheumatic carditis. Only one of these (case 17), however, showed pronounced electrocardiographic changes. Figures 1 and 2

show the electrocardiograph in this case before and after treatment. The improvement after treatment is apparent.

Whenever a child with intercurrent carditis was treated, great care was used not to raise the temperature too high during the first febrile session. In such cases we contented ourselves with a maximum temperature of 39.7 C (103.5 F) lasting two or three hours, during the first treatment period. Three such children complained of difficulty in breathing during the first febrile session. For this reason the treatment was terminated after three hours rather than continued for the usual time. Three days later, treatment was repeated and all these patients finished the course without further difficulty. They were retreated until their twitchings ceased. In our series, just as in that reported by Sutton and Dodge,¹⁰ artificial fever, carefully administered, did not harm patients with rheumatic carditis. We noted a frank clinical improvement after treatment in all the patients with this complication. The fact that we were able to give the usual type of treatment after the initial conservative session and produce the usual type of fever curve seems to us to demonstrate the benign therapeutic action of fever in rheumatic carditis. A typical example of the usual fever curve produced by us in the treatment of uncomplicated chorea is shown in figure 3. The temperature was raised to 39.7 C (103.5 F) as rapidly as possible and maintained between 39.7 C (103.5 F) and 40.6 C (105 F) as a maximum for eight hours.

We ordinarily do not employ temperatures of greater height because in our experience they are unnecessary and some children develop convulsions when a fever above 40.6 C (105 F) is reached. A patient who develops a convulsion during a fever treatment is in potential danger, for the muscle activity in itself may suddenly send the fever to a point at which a heat stroke results. This point is 42.5 C (108.5 F) and above. In case 2 of our series such a convulsion developed during the second treatment when the temperature

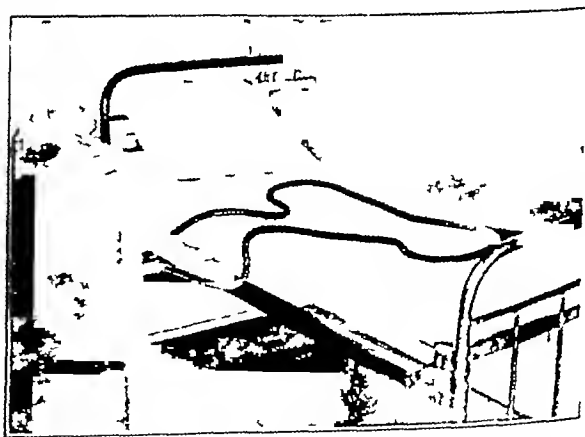


Fig. 4.—Portion of the cable under the treatment bag for producing artificial fever by electromagnetic induction.

reached 41 C (105.8 F). The patient was rapidly cooled by uncovering him and blowing air over his nude body with an electric fan. After this observation we usually kept the temperature below 40.6 C (105 F) and no further complications of this type resulted. Another patient developed a transient albuminuria with

10. Sutton, L. P. and Dodge, K. The Effect of Fever Therapy in Rheumatic Carditis Associated with Chorea. *J. Pediatr.* 6: 494-511 (1935).

hematuria during treatment. The therapy was not interrupted, however, and the urine cleared up promptly. Herpes labialis occurred in about 50 per cent of the children treated. Treatments were given biweekly in most cases, and in one or two instances only once a week. We believe that the latter is not sufficiently frequent, certainly it lengthens the period of hospitalization. Some investigators are now treating their patients three times a week or even every day. Such



Fig 5—Treatment for chorea minor with electromagnetic induction using the treatment bag. The coil carrying the current is here placed on the chest of the patient in the form of a pancake.

active therapy will undoubtedly further shorten the period of hospitalization, but we believe that it places too great a strain on the patient's cardiovascular reserve.

As before stated, electromagnetic induction was the modality employed for inducing fever. This method uses a current oscillating at the rate of approximately fifteen million cycles a second. The current is led through a flexible cable, which is placed above or below the patient. The electromagnetic flux produces eddy currents in the patient's body, depending in intensity on the quantity of electrolytes present in the various tissues. The greatest concentration of electrolytes is found in the blood stream, muscles and internal organs and the least in skin and fat. For this reason the deeper lying tissues are heated more intensely than the superficial fat and skin. Thus we have a method which produces heat internally. This method never produces burns when properly applied.

For the purpose of heat insulation, the patient is placed in a treatment bag similar to that used for outdoor sleeping. The cable carrying the current is formed into a pancake coil and rests over the patient's chest and abdomen or under the patient's back shaped as an elongated loop extending from the shoulder blades to the middle of the calf. With either method, the cable carrying the current is placed outside the bag. About 2½ inches of heat insulating nonelectrolytic material, such as blankets, cloth, kapok, wool or cotton, must be placed between the cable and the patient. After the desired temperature of 39.7 C (103.5 F) is reached, the current is turned off and the temperature usually coasts a degree or a degree and a half Fahrenheit higher. A pyrometer couple or thermocouple connected with a pyrometer may be inserted in the rectum after the current is turned off. This lightens the labor of the personnel. Figures 4 and 5 illustrate the treatment.

If available, an air conditioned cabinet (fig 6) instead of the treatment bag may be used to maintain the temperature during the entire treatment. The advantages of such a cabinet are twofold, the patient may move his extremities freely and may change the position of his entire body within the machine. In treating children, who complain less than adults during electropyrrexia, these advantages are partially outweighed by the cost of the apparatus and the time spent in training necessary personnel. We wish to stress the point that the cabinet is never used to produce fever but only to maintain it. In this cabinet the air saturated with enough water vapor to produce a humidity of from 85 to 95 per cent, is circulated at a rate of about 250 cubic feet a minute. The temperature of the air can be regulated to vary between 35 C (95 F) and 45 C (110 F). This air, with its comparatively low temperature and high humidity circulating at the rate prescribed will maintain any desired febrile level when that degree of temperature once has been attained by means of electromagnetic induction. The atmospheric conditions within such a cabinet can be likened to those encountered in the sweltering tropics preceding a down-pour of rain. These conditions do not produce the high pulse rates described by Benson¹¹ and by Phillips and Shikany¹² caused by the overheating of the surface of the skin. The strain on the cardiovascular reserve is therefore lessened.

Attention to the details of nursing care is essential. The patient is not permitted to have breakfast before the treatment. He is given a cleansing enema before being placed in the bag or cabinet. During treatment fruit juices with lactose added, water and, in case of complaint of hunger, milk may be given. All liquids should have enough salt added to form a saline solution of 0.6 per cent. This will replace at least part of the

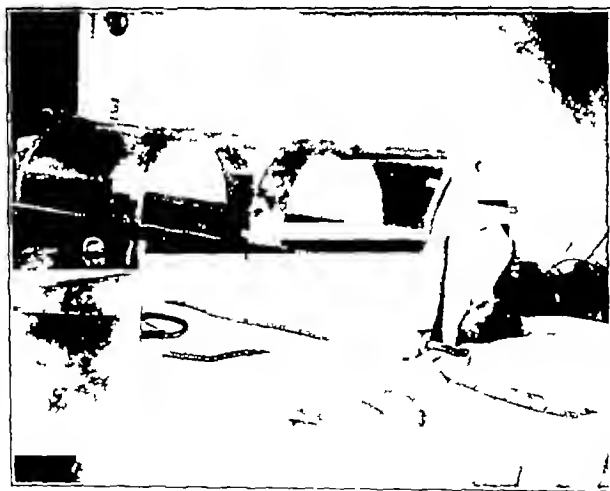


Fig 6—The treatment of chorea minor by means of electromagnetic induction. The patient is placed in an air conditioned cabinet having the temperature of from 105 to 110 F with a humidity of from 85 to 95 per cent. The cabinet is used to maintain the fever after this has been produced by electromagnetic induction.

sodium chloride lost by perspiration. Convulsions, a decrease in respiratory rate to less than 12 per minute, cyanosis or an increase of the heart rate to 160 per minute or more are indications for the immediate cessa-

11 Benson S. Relative Influence of External and Body Temperatures upon the Heart. *Arch Phys Therapy* 15: 303-308 (May) 1934.

12 Phillips K. and Shikany S. The Value of Hyperpyrexia in the Treatment of Bronchial Asthma. *South M J* 28: 801-814 (Sept.) 1935.

tion of treatment. Complaints of pain around the heart and shortness of breath are likewise indications for terminating the session if the patient is one with an intercurrent rheumatic carditis.

Since the preliminary report of Neymann in April 1935, reports on thirty-one other cases of chorea treated by artificial fever produced by physical agents have appeared in the literature.¹³ Twenty-eight of the thirty-one were reported as recovered or greatly improved. About 20 per cent showed a return of choreiform movements. The results herein reported are more satisfactory. All our patients recovered directly after treatment, and only three, or 12 per cent, showed a recurrence of their former symptoms. We believe that this is due to the fact that all treatments were individualized. This was possible because of the ease with which electromagnetic induction could be applied and the fact that the amount of electric current, the heating medium, could be instantly controlled.

SUMMARY

1 Twenty-five cases of chorea were treated by artificial fever produced by electromagnetic induction.

2 In all cases, the choreiform movements ceased promptly.

3 The average period of treatment and hospitalization was sixteen days, an average of four treatments were given each patient.

4 The chorea recurred in three children.

5 Electropyræxia is not contraindicated in rheumatic carditis complicating chorea.

6 In contrast to devices dependent on external heat, electromagnetic induction seems to us to be a superior method for producing therapeutic hyperpyrexia.

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ABSTRACT OF DISCUSSION

DR. MAURICE L. BLATT, Chicago. The criteria of a treatment are dependent on the necessity for its use and on its safety. In this series of cases, its safety was apparently well proved. The complications commonly found in chorea did not appear in increasing numbers, nor were the complications already present aggravated by the institution of hyperpyrexia with electrical induction. The treatment, however, is not a simple one. It is not the type of treatment that one would recommend for the general use of individuals not experienced in the handling of such apparatus. Dr. Neymann's previous experience with hyperpyrexia in the treatment of more chronic diseases, however, warranted our attempting this series of cases. In a general hospital such as the Cook County, the number of days of hospitalization is a factor of considerable economic importance. In our previous series of cases, we found that approximately five to six weeks with nursing care and sedation was the usual period of hospitalization necessary for these patients. In addition, the incidence of endocarditis or rheumatic carditis was a factor of some consequence since many of these patients returned to us at a later date with cardiac decompensation or with acute exacerbation of an endocarditis the primary occurrence of which was recorded during the first choreiform attack. We have examined these cases since their discharge and have found no manifestations of endocarditis not recorded at the time of entrance or the time of discharge from the hospital. It has seemed to us that if we could shorten the course of the disease process associated so frequently with endocarditis we might

cut down the number of cardiac cases that come back to us at a later date. In this series we were able to shorten the period of hospitalization. We did so apparently without harm to any of these patients. We probably prevented the occurrence of a number of cases of rheumatic carditis and to date but two cases of chorea have recurred.

DR. C. A. NEYMAN, Chicago. We believe that our efforts have been worth while because we have had no deaths because if anything, the rheumatic carditis was improved after treatment and not aggravated and because the patients seemed after months of treatment, to be in better general physical condition than one would ordinarily expect especially in the patient who had developed a more or less chronic recurring chorea.

OSTEOMYELITIS OF THE FRONTAL BONE

NOTES ON THREE CASES

H. P. MOSHER, M.D.

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As the title indicates, I am not writing a systematic paper or one that attempts to cover the subject of osteomyelitis of the frontal bone in any way approaching thoroughness. I shall pick and choose perhaps from old habit leaning toward the dramatic, stressing the points from which I have learned something and those which strengthen convictions which have been gradually and somewhat laboriously built up in my mind on this subject during the past five or six years. During this time I have seen, I will not say, the full light but some light.

In two of the cases which I am to comment on large portions of the frontal bone were removed in one piece. One measured 2 by 2½ inches, the other 3 by 2½ inches. It was possible, therefore, to get large sections for histologic study. Before, I have had small pieces taken from known positions in the frontal bone and drew my conclusions as to how far the infection spread from them. The large histologic sections which I am reporting on here, many of them serial sections, made it possible to trace the infection by continuity until it disappeared, and to see the routes by which it traveled. The conclusions stated in my earlier paper have been amply confirmed. I shall present the histologic observations of the new specimens as briefly as possible. From the practical standpoint, they are the most important facts that I have to present.

I was not the operator in any of the cases. In each from time to time I acted as consultant. The operators' names, to use theatrical language, are given in the order of their appearance.

SUMMARY OF CASES

CASE 1 (surgeons, Drs. P. E. Meltzer, R. L. Goodale and H. G. Tobey).—A woman aged 21 received a black eye on the left while wrestling. One week later while riding in an automobile, she noticed a swelling in the middle of the forehead. It became painful ten days later.

On admission to the hospital there was an elliptic swelling in the median line of the forehead which was fluctuant and painful on pressure. The patient's chief symptom was severe headache.

At operation the median skin incision evacuated a large amount of pus from a pocket under the skin. The central

¹³ Desjardins, A. L. and Popp, W. C. Our Experience with Fever Therapy, report of the 5th annual Fever Conference, May 16, 1935, pp. 7-8. Metz, M. H. Some Unusual Cases Treated with Fever Therapy, *ibid.* pp. 101-104. Hefke, H. W. Report of the First Year of Fever Therapy at the Milwaukee Hospital, *ibid.*, pp. 29-30. Wetchler, Samuel. Chorea in Children, *M. Rec.* 142, 30-33 (July) 1935. Schnobel, T. G. and Fetter, J. Fever Therapy in Gonorrheal Arthritis and Chorea, *Ann. Int. Med.* 9, 398-405 (Oct.) 1935.

Read before the Section on Laryngology, Otolaryngology and Rhinology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

This article on account of lack of space is abbreviated in *THE JOURNAL* by the omission of numerous illustrations. The complete article will appear in the Transactions of the Section and in the author's text.

portion of the frontal bone for an area about the size of a 50 cent piece (30 mm) was bare of periosteum and moth eaten. The surrounding bone for 1 inch laterally and up to the hairline appeared normal. The periosteum was intact but when the bone was drilled, pus escaped from the diploe. With the electric drill, an elliptic area of bone measuring $2\frac{1}{2}$ by 2 inches was outlined and removed. The bone was adherent over an extradural abscess, and the dura presented many granulations. There was no evidence of a cerebral abscess.

The patient's convalescence was uneventful. About six weeks later, Dr. Kazanjan did a plastic operation for closure of the flaps. The lower end of the midline incision had to be opened later and wicked for a short time.

Two months after her discharge and four months after her original illness, the patient was readmitted.

The edges of the bone defect showed no osteomyelitis. She now had all the signs of a frontal lobe abscess. The first brain exploration was negative. At the second an abscess was found deep in the left frontal lobe.

The choking of the disks was especially marked, reaching 6 diopters in each eye. The other cardinal sign of increased intracranial pressure, namely, the pressure of the spinal fluid was always high and rose at one time to 600. At this time a re-investigation of the abscess gave no further pus. Tapping of the left ventricle gave neither pus nor fluid. The patient then became thoroughly septic. She had two anginal attacks, a pneumonia of the right upper lobe and a question of a mesenteric infarct.

The blood culture was never positive. The organism from the brain abscess was *Staphylococcus albus*. The white count varied from 13,200 on admission to 9,850. The fields could never be taken satisfactorily.

The autopsy showed multiple abscesses in the right frontal lobe which had not been found. On the left there were no abscesses. The abscess which had been found on the left had been extruded. About three fourths of the left frontal lobe had sloughed away and the right was filled with abscesses.

There was no meningitis.

I interpret this case as one of localizing osteomyelitis which started after trauma. The exposure on the automobile ride probably played a part in hurrying things along. It has been known for a long time that after a Killian frontal sinus operation an automobile ride with the wind shield up is very liable to cause a blow up in the operative wound.

The patient was operated on radically and she made an uneventful recovery except for a slight infection at the lower end of the median incision after the plastic operation. This was found to be due to the fact that the right frontal sinus had not completely filled with granulations. This happening occurred in another case not included in this series. It is of no use, therefore, to do a plastic operation until the sinus cavities are fully obliterated by granulations.

I might add at this point that some years ago I stated it was my belief that the surest way to obliterate a frontal sinus is to remove both the anterior and posterior walls as we have done for the past five years almost as a routine in cases of osteomyelitis originating in a septic frontal sinus. At present there is no sure way of obliterating a frontal sinus. In carrying out this procedure, the floor of the sinus is not removed and only a minimum enlargement of the nasofrontal duct is attempted. The ethmoidal cells are dealt with in the customary way.

The most reassuring thing about the case is that the osteomyelitis was cured at the first operation.

The other points which I wish to comment on are as follows. The large bone removal allowed the opened brain abscess to come to the surface and to slough off. Frontal lobe abscesses when opened I feel, have a tendency to come to the surface more readily than abscesses in other localities.

The removal of a cone of brain tissue down to the abscess by the diathermy knife, as was done in this case and the removal of a part of the abscess capsule by the same method I have found an improvement over older procedures.

The point in the case which bothers me the most is the time of the plastic closure, i.e., six weeks. This seems to me to be too short, especially as there had been some infection in the median incision after the plastic operation. I feel that three months would be a safer time.

In making a trephine opening in the frontal bone either to outline the bone flap or for diagnostic purposes, if pus wells up from the diploe in quantity there is an extradural abscess. There may be an extradural abscess even if there is no pus in the diploe, therefore all diagnostic trephine openings should be carried through both tables of the skull to the dura. Extradural

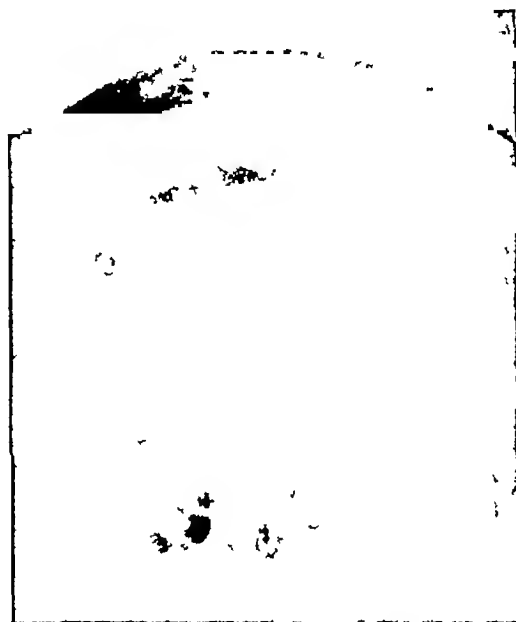


Fig 2 (case 1)—Bone defect on reentry of patient to hospital. There is no evidence of osteomyelitis.

abscesses are so common that one should expect them and look for them, and not consider them as a rare complication.

In this case there was thrombosis of the superior longitudinal sinus. There is every reason why this should happen in osteomyelitis of the frontal bone and I believe that it often occurs without being recognized. I have known it to be present in several other cases. The emboli probably came from the sinus. When a thrombus is present it must greatly increase the septic load of the patient even without thrombi. Unless, however, the clot goes well back and is large enough to cause pressure on the motor areas of the legs which about on each side of the sinus, the classic leg symptoms do not appear. They were not present in this case although the sinus was thrombosed to the torcular.

Incontinence of urine was a prominent symptom during the patient's second hospital stay. This is given by some writers as characteristic of a frontal lobe abscess. Dreams and hallucinations are given as further symptoms. The patient did not have either of these. She did, however, develop a great change in character.

and a marked loss of memory. A change in character also is supposed to be peculiar to frontal lobe abscess. It has been noted, however, in abscess of the other lobes. Dr. Schall had such a case after a cerebellar abscess. A clinging vine type of wife, on returning from the hospital, changed to the exact opposite and proceeded to beat up her husband.

It was learned quite a few years ago in one of Dr. G. H. Tobey's first cases that a bacteriophage dressing keeps the operative wound cleaner than any other. It was being used in this case. After the brain abscess on the left was found, the temperature remained at about 100 for ten days, when there was a sudden rise and the patient's condition became very poor. It so happened that Dr. Lynch, the house officer in charge of the case, was at our regular Friday evening meeting at the medical school, and the patient's condition was reported to him by telephone. One of the papers



Fig. 9 (case 2)—Enlargement of diploetic vein from infection. See figures 7 and 8.

abstracted that evening was the report of a case of osteomyelitis of the skull. It was a long drawn out affair with many complications and many operations. I never read a more dramatic report. A bacteriophage was used intravenously. The patient recovered, and much of the credit of the recovery was given to this procedure. I suggested that the treatment be tried in our case. This was done and the change for the better in the patient's condition seemed almost a miracle. We were actually stunned by the improvement and almost asked one another if the patient was going to get well.

As was stated in the summary there were many complications, a pneumonia, two anginal attacks and a question of a mesenteric thrombosis. During these complications the intravenous use of the bacteriophage was persisted in, seven injections in all being given. Finally it was powerless to combat the general sepsis; the temperature rose again, and the patient died in twelve hours.

CASE 2 (surgeons Drs. V. J. Kelley, P. E. Meltzer, R. L. Goodale and L. A. Schall)—A boy aged 14 ran the whole gamut of the complications that can occur in connection with an infection of the ethmoidal labyrinth and the frontal sinus. He started with an infection of the left frontal sinus and

the ethmoidal labyrinth. This was aggravated by swimming and he entered the hospital with the left eye closed and pushed down and out. There was marked swelling of the left side of the forehead and left temporal region and marked tenderness in the left temporal fossa. A Lynch operation was done on the left frontal sinus, and the left ethmoidal labyrinth was everted. Pus was found in the orbit and in the ethmoidal labyrinth.

The swelling promptly extended to the right frontal sinus and an external operation was done on both frontal sinuses. The bone at the outer angle of the left frontal sinus was found to be necrotic. The patient did poorly.

The roentgenogram showed an extension of the osteomyelitis laterally toward the lower outer angle of the frontal bone and a bone flap measuring 2 by 2 inches was removed at this place.

Because the spinal pressure rose to 700 and there was a beginning choking of the disks, an exploration for a frontal lobe abscess was performed five days after the third operation, and an abscess was found.

About a month later a small fluctuant swelling appeared (1 by 1 cm.) on the forehead an inch beyond the hairline. The roentgenogram showed the presence of osteomyelitis as far as the coronal suture.

At operation a large abscess was found under the local swelling. The bone was necrotic beneath the abscess and pus pulsed through a hole in the bone. A bone flap measuring 2½ by 3 inches was removed. This extended from the old bone edge to just beyond the coronal suture and 1 inch beyond the median line to the right.

The wound was very dirty but cleaned up under treatment with bacteriophage.

In a few days over a month, the patient died. Her second hospital stay was two and a half months. Autopsy revealed osteomyelitis of the frontal bone, meningitis and multiple brain abscesses (frontal lobe).

In this case swimming, I believe, was a decided factor in the extreme infection. Our worst cases of frontal sinus infection and osteomyelitis have followed swimming. We had three such cases in a row.

Another point in connection with this case, a well known point now, is that the roentgenogram was not positive for bone necrosis until nine days after the external swelling appeared.

One usually thinks of osteomyelitis as advancing upward on the front face of the frontal bone instead of extending to the outer angle and progressing from there. In this case however the greatest swelling and tenderness were in the left temporal fossa and a large piece of infected bone was removed from this locality. From a few cases which we have had I have learned to be suspicious of the outer angle of the frontal sinus and of the external angle of the frontal bone. In what I like to call a full operation the bone flap should extend laterally far enough to reach the outer limit of the frontal sinus and at least encroach on the anterior limit of the temporal fossa.

The subcutaneous abscess which was the last complication could be seen to have its origin in a thrombosed diploic vein. It was striking to see how far the infection traveled by way of the vein from the original source of the infection. It was easy to see in the specimen how an abscess originating in this way could extend both inward and outward, causing both a subperiosteal abscess and an extradural abscess.

CASE 3 (surgeons, Drs. M. H. Lurie, F. E. Garland, A. H. Kazanjian, G. H. Poirier, L. E. White and E. B. Lovett)—A woman aged 26 following a cold for ten days had swelling and tenderness of the left frontal region with edema of the forehead. She had one convulsion. The left half of the forehead bone was removed from the upper limit of the edema to the frontal sinus the front wall of which was removed.

Six days later the left ethmoid was excrated. There was pus in the ethmoidal labyrinth. At the first operation there was a rupture in the dura. At the second operation a small abscess was evacuated through the dural tear. Six days later another abscess was found 2 cm below the first one.

The headache and vomiting persisted and eight days later the herniated brain tissue was removed and a large opening was made into the abscess. The recovery from the operation was slow. In the right eye there was 1 diopter of choking of the right disk and three fourths in the left. The choking slowly disappeared.

In the next three months three sequestrums were removed from the right edge of the bone defect. Then the patient had a convulsion and was admitted to the hospital. The next day she had three convulsions. No more convulsions occurred and five days later she was discharged to the neurologic clinic.

About two years later she had ten convulsions, became unconscious and was admitted to the hospital in coma.

On the day after admission she was operated on. An L shaped flap was turned up by following the old incision. At the lower inner angle of the wound a cystic swelling was present. This was opened and found to contain clear fluid which proved to be sterile. Two days later the left frontal lobe was explored for brain abscess. No abscess was found. In four days the patient was rational and in ten days she was up in a wheel chair.

A month later a plastic closure of the wound was attempted. Following this, the center of the flap sloughed.

Again a month later, Dr. Kazanjian performed the second plastic operation transplanting a piece of whole skin to fill the defect.

The patient was discharged April 14 1936.

This young woman must have a charmed life. I have seldom seen a patient as sick as she was get well. In the four years that she has been coming to the hospital, she has been admitted five times and had nine operative procedures. She seemed to specialize in convulsions.

At no time was the pressure of the spinal fluid high, and the choking of the disks was only moderate.

The important point about the case is that the patient had a complication which may occur, but seldom does, in any healed case of osteomyelitis, namely, an arachnoid cyst. This was accompanied by coma and many convulsions. I have known such a cyst to follow a radical mastoid operation, but this is the first time I have seen it in a case of osteomyelitis. The bone removal included only half of the frontal bone. The bone flap evidently was not large enough, because later two small sequestrums and one large one were removed from the left edge of the bone defect. The bone flap should have included the right half of the frontal bone as well as the left.

THE INCISION

Four types of incision have been used to expose the frontal bone, including a U shaped incision with the base down, a U shaped incision with the base up, and a median incision from the hairline to the root of the nose joined by a horizontal incision paralleling each eyebrow. The fourth incision, advocated by von Eicken is a right angular incision with the point of the angle at the external angular process of the frontal bone. I prefer a central incision meeting a horizontal incision above each eyebrow. The main point is to get a thorough exposure of the whole front face of the frontal bone. Timid incisions breed timid surgery.

The U shaped flap which turns down does not give full vision of the wound postoperatively, or full drainage. The U shaped flap which turns up should give better cosmetic results. It does not cover the edges of the bone defect well. I am watching one case in

which this form of flap was used and cannot give a positive opinion about the flap until the case is further along. The question is what will be the fate of the bare bone.

The right angular flap of von Eicken does not appeal to me because it limits the exposure of the frontal bone especially at the opposite external angular process of the frontal bone. One of the things, and I have mentioned it before, which I think that I have learned about these cases of osteomyelitis is to watch the external angular process of both sides.

THE REMOVAL OF THE BONE FLAP

Marking out the bone flap by trephine holes made by an electric burr is the quickest and most craftsman-like method. One worries at first about getting the bone flap free from the superior longitudinal sinus. Experience has shown that slow dissection will readily accomplish this without tearing the sinus.

When, however, the dissection goes hard owing to a marked bowing of the frontal bone and the large size



Fig. 13 (case 3)—Cyst after evacuation and filling with iodized oil.

of the bone flap, if half of the bone flap is sacrificed up to the longitudinal sinus, the periosteal elevator can get a straight shot, the operator can see better what he is doing, and the bone flap can be more easily and safely freed from the sinus.

HISTOLOGIC EXAMINATION OF THE BONE SPECIMENS

In the first specimen the bone was taken adjacent to the original source of infection, namely, the frontal sinus, and its vertical diameter extended some 2 inches from the upper rim of the sinus. The second specimen was taken at a distance from the original source of infection, that is, at the top of the forehead, and consisted of a bone flap measuring $2\frac{1}{2}$ by 3 inches. It was perforated in the center by a necrotic area, which connected superficially with a subperiosteal abscess and internally with an extradural abscess.

In the first specimen, in what might be called the more acute case, the marrow spaces were crowded to overflowing with large and small lymphocytes. The majority of the marrow spaces were markedly infected and many of them contained actual abscesses. There was some fibrous tissue, but it did not predominate. Infected vessels were found making their way to the

surface of the bone, both externally and internally. The infection broke through the inner table more often than the outer table. The current of the infection, so to speak, seemed to be more inward than outward. There was some new bone on the surface of this specimen next to the dura. The inner surface of the new bone was covered with a layer of infected blood clot and in places with infected granulation tissue.

The impression which the bone gave was that the majority of the marrow spaces were acutely infected.

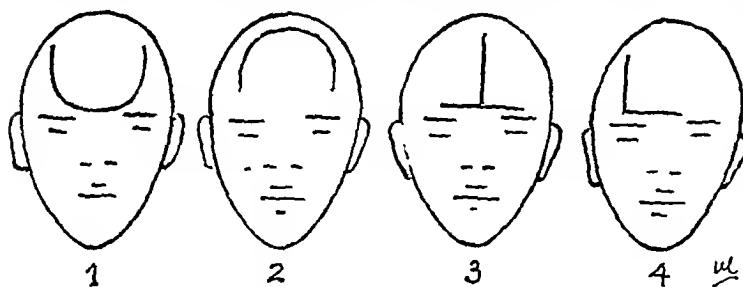


Fig. 14—Various types of flap. The author prefers the third.

as shown by the great increase of the cellular elements, especially the small and large lymphocytes, and the large numbers of polymorphonuclear leukocytes. In this case the osteomyelitis was circumvented and cured by operation.

In the second specimen the bone flap was removed at a distance from the original source of infection after two other bone flaps had been removed and the case had been running a much longer time than the first one. In this second specimen there was actual abscess formation in the marrow spaces near the necrotic area in the center of the bone flap. There were a few scattered abscesses in other parts of the bone, but the predominating picture was that of fibrosis of the marrow spaces.

On the inner surface of the bone flap there was a longer and larger layer of new bone. Through this many infected vessels ran to the dural surface. Again there was an infected blood clot between the dura and the bone, and the vessels in the fibrous tissue that connected the dura and the under surface of the skull were often infected. Again the impression was that the greater current of the infection was inward. The extensive fibrosis of the marrow spaces suggested that the infection for the greater part had been conquered and walled off except along the track of the infected vein which led to the necrotic perforation in the center of the bone flap. Infection was found to extend to the edge of the bone in all directions.

The first specimen, therefore, shows the acute fulminating type of infection and the second shows bone in which the infection had cleared up for the most part and the marrow spaces had been obliterated by fibrous tissue. The main channel by which the infection spread in the second specimen was by way of a diploetic vein.

CONCLUSIONS

It is obvious that I am not reporting these three cases as favorable results because two of the patients died. My purpose in reviewing them is to record a number of facts which I learned from them. Also, reporting the cases gives me an opportunity after a silence of three years to say my say again on the subject of osteomyelitis. Three years, I maintain, is a modest and commendable period of silence. Others of my audience might well imitate me in this respect. In reviewing all the cases which we have had at the infirmary, espe-

cially those of the past five years, our operative results have been progressively better, and better in direct proportion as the operations performed were systematic and radical.

I feel even more strongly than I did in my original paper of three years ago that the edema of the skin of the forehead is a rough guide to the extent of the bone and periosteal infection. Further, as was pointed out in that paper, if there is actual bone necrosis the bone is infected without necrosis for an inch to an inch and a half beyond the necrotic area. Bone necrosis does not occur until seven to ten days after the pitting edema appears, and the x-ray is not positive until necrosis appears. Examination of the bone specimen removed in two of the cases just reported showed that the infection spreads along the inner surface of the bone as well as by the diploic veins. When the infection spreads by way of a diploic vein it may localize at a point far from the original source of infection. When it does so localize, the pus tends to work both inward and outward, giving either a subperiosteal abscess or an extradural abscess or both, with a destruction of the bone between the two. When a case has lasted two or three weeks the operator should expect to find one or both of these conditions.

The histologic examination of my specimens shows in addition that the infection may spread by way of an inner layer of new bone which is formed between the skull and the dura. The small veins which run in the new bone are often infected and there are numerous hemorrhagic clots which also are infected. Further the infection spreads by way of the fibrous tissue which covers the new bone and which binds the inner surface of the skull to the dura.

The operator who is doing his first operation on osteomyelitis of the skull should expect extradural abscesses as a matter of course. In fact, he should expect more than this, he should be on the lookout for a subdural abscess or a brain abscess. The brain abscess, if present, is usually found later or comes later as a complication, but it is always round the corner, and should be watched for even at the first operation.

The more I see of osteomyelitis of the frontal bone, the more I feel that the whole face of the frontal bone should be removed as a routine from the hairline to the eyebrow. Preferably, it should be removed in one piece. However if the patient is in poor condition and there is an area of necrosis, it is justifiable to work from the necrotic area outward, removing the bone for an inch to an inch and a half in all directions from the necrotic area. I believe further that both frontal sinuses should be opened, and the anterior and posterior walls of each sinus removed. I feel strongly that the lateral limit of the bone flap on each side should be at least the outer angle of each frontal sinus or, better, the outer angular process of the frontal bone on each side. The objection to this extensive removal is the deformity. It has been proved that fully 90 per cent of this can be corrected by modern plastic surgery. Therefore the surgeon should not allow himself to be halted by the question of deformity. If he does he will lose most of his cases of osteomyelitis of the skull.



Fig. 16—Drill holes for removing the frontal bone in one piece.

ABSTRACT OF DISCUSSION

DR ERNEST SACHS, St Louis I have had the opportunity of seeing a good many cases of osteomyelitis of the skull in the last twenty-five years, and the one conclusion that I have come to is that the best way of treating them is to be conservative. Drain the superficial abscess and wait for the skull to sequestrate and then remove the sequestrums. I am sorry that I have to disagree with Dr Mosher but in my experience the cases in which large fragments of bone have been removed have been the cases that have ended as a rule disastrously, just as his have. The most common complication of osteomyelitis of the skull is a brain abscess. One of the things about which neurologic surgeons feel very strongly is that in dealing with brain abscesses in the presence of an infected skull, whether it is the mastoid or the frontal region, it is extremely important to drain the abscess through a clean field and not to go through an infected field. I believe the principle of going through an infected area is not sound surgery. One should go through a potentially clean area. That may be an extremely difficult undertaking when an extensive osteomyelitis is present, it may be occasionally even impossible. But if the conservative method is used and healthy areas of bone are not opened but sequestrums are allowed to separate and then removed the field is gradually cleaned up and better results will be obtained.

DR JOHN J SHEA Memphis In the *Laryngoscope* (43 153 [March] 1933) Mosher and Judd presented a valuable contribution on osteomyelitis in which they delineated its pathology. The authors felt that the edema of the skin and the soft tissues of the forehead roughly furnished a practical guide to the extent of the bone infected and the limits necessary to be removed. Today Mosher's paper on the clinical aspect of three cases demands a thorough study of the manuscript in order to learn the many lessons that it contains. Osteomyelitis of the frontal bone is a progressive disease and its surgery must be timely and radical. Formerly it was a fatal condition but with bolder cranial surgery and the utilization of immunization successful cases are constantly being reported. If a census should be taken of this audience many cases never published would be reported. The bacteriology of osteomyelitis of the frontal bones is the same as osteomyelitis of the long bones. This severe complication may follow any operation simple or radical a suppurating sinus or may occur spontaneously with or without trauma. Usually it occurs whenever the diploe has been opened and exposed to an infection against which sufficient immunity has not been established. The diploe of the frontal bone is spacious in the growing skull which explains the rapidity of its spread in young adults. The earlier the osteomyelitis occurs after an operation or injury the more likely is it to be serious and rapid in its destruction. I agree with Dr Mosher that roentgenologic studies are misleading for the pathologic changes are more advanced than revealed in the films. Dr Mosher calls attention to the frequency of extradural abscesses. In two cases presented to the Southern Section of the American Laryngological Rhinological and Otolological Society in 1928, I called attention to the tendency of the infection to travel upward to the site of the anterior fontanel and then extend inward to form an extradural abscess. The operative procedures are carried out with greater ease under local than under general anesthesia.

DR O JASON DIXON, Kansas City, Mo The knowledge that this was a serious disease and that other men before me failed prompted me to try a more or less cowardly procedure. To my surprise I found that by not operating I got better results. I watched these patients go away and come back in a year some of them in two years and under a local anesthetic have a small sequestrum removed. The radical procedure is a very frank admission of the lack of understanding of the true nature of the disease. Not much is known about the pathology of osteomyelitis of the skull. Certainly thrombosis is nature's protective mechanism against the systemic spread of an infection and is not always a fatal or a bad sign. By no means is it an indication of necrosis. Pricking one's finger with a splinter never killed anybody because the splinter was left in. It kills from the onset with the spread of the phlebitis and the reaction that occurs immediately following the onset of the injury. If one does not succumb the foreign body may stay in for weeks or months or years without any harm. Physicians must have the patience to stand by and help the patient a little. I am convinced that it is unfair to criticize anything

about this procedure unless one takes the entire responsibility, and to be a good critic one must be bold enough to go ahead and handle the entire problem. As Dr Sachs so well emphasized, the brain abscess is the major problem. The patient must be viewed as a whole and not through a microscope or a slide or the x-ray film. Fortunately for me I did not diagnose my early cases early because I didn't think about it and I didn't get the x-ray picture. It is just as well not to find out the diagnosis early. Swimming is the chief etiologic factor. I have had so many cases from Pittsburg, Kan., due to swimming in the strippet mines that there must be something to that. Trauma plus infection is the major factor. The physician must have the courage to stand by and support the patient and let him fight his first infection and then to remove the sequestrums as they occur, preferably under local anesthesia.

DR JOSEPH E J KING, New York I favor the opinions expressed by Dr Mosher regarding the complete extirpation of the involved bone in osteomyelitis of the skull. I did not know that the conservative removal of sequestrums was advocated by any one. Drs Mosher, Furstenberg, Naffziger, Fincher and others have reported series of successful results after complete extirpation. I have had about eight such cases at Bellevue Hospital, the Manhattan Eye, Ear and Throat Hospital, and the Jersey City Medical Center. Furstenberg states that regeneration of bone takes place between the dura and the pericranium in about two years and fills the cranial defect so that a cranioplasty is not necessary. Naffziger told me that he has removed a block of involved skull *en masse* and has later reinserted the piece of skull which remains intact and takes well. Before knowing of Naffziger's work I removed a rather large piece of involved bone from the left parieto-occipital region in a case of metastatic osteomyelitis secondary to a lung abscess. As yet the piece has not been reinserted for the reason that a sufficient amount of bone was not removed and the infection extended around the patient's head, requiring more operations. At the present time an enormous amount of bone has been removed but the patient is perfectly well, is up and about the hospital and works in the ward. I am inclined to agree with the speaker who stated that some cases of osteomyelitis of the frontal bone result from certain types of operative procedures done on the frontal sinus. Nevertheless when these cases occur I think the best results will be obtained from complete extirpation of the infected bone. I turn down a scalp flap with all the soft parts, exposing the skull. The portion involved is completely removed and the frontal sinus is cleaned out. Gauze packings wet in diluted solution of sodium hypochlorite or a solution of azochloramid are placed over the dura, and the scalp flap is returned to its position and loosely sutured. Instillation of the solution is done for six days, at which time under tribrom-ethanol anesthesia the gauze is removed and replaced and again taken out on the tenth day. The flap is again returned to its position and sutured an opening being left for packing the frontal sinus. These cases have recovered nicely. I therefore am heartily in accord with the opinions of Drs Mosher, Naffziger and Furstenberg.

DR HARRIS P MOSHER Boston I never expected a neurologic surgeon to agree with me. He is decided in his opinion, and I am decided in mine, and I will let time settle who is right. Dr King has put the idea as I should like to have it put. He does a more extensive operation than I ever dared to do, not any more extensive however, than Furstenberg has done. The latter is one of the foremost of the brain surgeons of this country. His support is all that I ask. I rest my case with this statement. Until we began a systematic and a thorough operation and clung to conservative treatment we had very disappointing results. It is only since we have reversed our steps that we have begun to get results which were in any way satisfactory. They can be better. Some men seem to feel that their results are all that possibly could be desired but I respectfully doubt it.

Canned and Raw Fruits—In canned grapefruit and in canned tomatoes the high vitamin C value is excellently conserved. These therefore, rank along with the raw citrus fruits and their juices among the richest sources of vitamin C. Not far below them in this respect are raw ripe bananas and some varieties of apples.—Sherman, H C. Food and Health New York, Macmillan Company 1934

PERITONITIS DUE TO BILE AND TO LIVER AUTOLYSIS

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AND

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Bile peritonitis is a clinical entity due to the action of escaped bile on the peritoneal surfaces that is probably more common than has been realized. Eliason and McLaughlin¹ report that perforation of the gallbladder occurs in from 1 to 3 per cent of all cases of biliary disease. These figures were based on a study of more than 7,000 cases of gallbladder disease. It has also been recognized² that bile peritonitis may occur in the absence of demonstrable perforation of the biliary system.

Once the importance of this hitherto rarely recognized condition was demonstrated numerous experimental studies on the mechanism of death in bile peritonitis were made. These observations include the work of Horrall and others³ and center chiefly around the postulates that toxic action and anaerobic bacterial invasion are the chief two lethal factors in bile peritonitis. From other data⁴ similarly obtained by experiment, we have advanced the idea that secondary shock (in the sense of decrease in volume of circulating fluid) is one of the most important lethal factors in this condition. We fully recognize that there are substantial differences between experimental and human bile peritonitis. However, since the theories of the previous workers were obtained by experiment, refutation of these theories might come from similar experiments. It is after this that application of the theories to patients can be made.

No attempt will be made at this time to present proof against the toxic or bacterial theories of death in bile peritonitis, but a brief outline will be given of the positive evidences for the role of secondary shock in this condition. The presence of secondary shock is significant because its therapeutic implications are clear.

Dogs under general anesthesia were used in all experiments. The peritonitis was produced by the intraperitoneal injection of usually 5 cc per kilogram of body weight of either 10 per cent bile salt solution or whole gallbladder bile. The animals were then observed until death, a matter of usually five to twenty-three hours later.

The most striking result of the biliary action was a gradual but profound lowering of blood pressure (chart 1) with a markedly lowered bleeding volume. Accom-

panying this fall in blood pressure was a marked concentration of blood in all of thirty-two dogs observed and in three instances the hemoglobin rose to the extreme values of 177, 178 and 190 per cent respectively. Hematocrit determinations were proportionately elevated. Increase in the blood nonprotein nitrogen content was found in agreement with that previously reported by Ziegler and Orr⁵ and others. Haden and Orr⁶ had previously found that autolyzing liver in the abdominal cavity produces no change in the blood chlorides even with a very great increase in the urea and nonprotein nitrogen.

As the peritonitis developed there was an enormous effusion of blood-stained fluid into the peritoneal cavity. This fluid was not a mere transudate but clotted spontaneously and was shown to be chemically similar to blood plasma in total protein, sugar, sodium chloride and nonprotein nitrogen content. For example in one typical experiment the blood plasma protein was 6.3 Gm per hundred cubic centimeters and the fluid protein 5.7 Gm. In twenty-seven experiments the amount of this peritoneal fluid averaged 2.5 per cent of the body weight, which corresponds to 250 cc in a 10 Kg dog and in turn to 33 per cent of the blood volume and to approximately 60 per cent of the plasma volume. It was assumed that this outflow of plasma-like fluid accounts for a large part of the blood concentration with increased hemoglobin percentage and hematocrit reading for the decreased bleeding volume and for the marked fall in blood pressure. Blalock,⁷ Parsons and Phemister⁸ and others have shown that a somewhat similar loss in burns, trauma to an extremity, intestinal manipulation, hemorrhage, plasma pheresis and other conditions is sufficient to cause death. The same evidence indicates its importance in the production of secondary shock and the resultant death in bile peritonitis.

Since the aforementioned work indicated that secondary shock might be an important lethal factor in bile peritonitis, it was thought that it might likewise be significant in death due to intraperitoneal insertion of tissues (so-called tissue autolysis *in vivo*). The clinical importance of tissue autolysis is especially to be considered when ligating large bits of tissue in producing hemostasis in surgical operations.

LITERATURE ON LIVER AUTOLYSIS⁹

Mann⁹ noted that, if in the performance of a hepatectomy a small amount of liver was left in the abdomen, the animal was more apt to die than when the liver was completely removed. Mason and his associates¹⁰ extended the work of Mann. These authors in their first experiments on dogs replaced an excised portion of liver in the same animal and showed that there was a marked decrease in plasma volume. At postmortem examination they found that the peritoneal

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Read before the Section on Pathology and Physiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

1. Eliason E. L. and McLaughlin C. W. Perforation of the Gallbladder. *Ann. Surg.* 99: 914-921 (June) 1934.

2. Clairmont P. and von Haber H. Gallgange Peritonitis ohne Perforation der Gallenwege. *Mitt. a. d. Grenzgebiet d. Med. u. Chir.* 22: 154-158 (1911).

3. Horrall O. H. Experimental Bile Peritonitis and Its Treatment in the Dog. *Arch. Int. Med.* 43: 114-128 (Jan.) 1929. *The Toxicity of Bile*, *Phys. Rev.* 11: 122 (April) 1931. Andrews Edmund. *Renbridge* A. G., and Hrdina Leo. Causation of Bacilli.

4. Doss by Injection of Sterile Liver Extracts or Bile & Obst. 33: 176-181 (Aug.) 1931. Causation of Dogs with Sterile Liver Extract and Bile Salts. *Pr. Med.* 28: 136-137 (Nov.) 1930. Ellis J. C. and Autolysis *in vivo*. *Arch. Surg.* 20: 8-16 (Jan.) 1930.

5. Harkins H. N., Harmon P. H., Hudson Jeanne and Andrews E. Mechanism of Death in Bile Peritonitis. *Proc. Soc. Exper. Biol. & Med.* 32: 691-693 (Feb.) 1935. Harkins H. N., Harmon P. H., and Hudson Jeanne. Lethal Factors in Bile Peritonitis. I. "Surgical Shock," to be published.

5. Ziegler A. M. and Orr T. G. Chemical Changes in the Blood of the Dog in Experimental Bile Peritonitis. *J. Exper. Med.* 53: 865-874 (June) 1931. Haden R. L. and Orr T. G. The Blood Chlorides in Protease Intoxication. *ibid.* 48: 639-645 (Nov.) 1928.

6. Blalock Alfred. Experimental Shock. The Cause of the Low Blood Pressure Produced by Muscle Injury. *Arch. Surg.* 20: 939-949 (June) 1930.

7. Parsons Eloise and Phemister D. B. Hemorrhage and Shock in Traumatized Limbs. *Surg. Gynec. & Obst.* 51: 196 (Aug.) 1930.

8. The term autolysis is applied rather loosely here in accordance with recent usage. As Reeves and Martin (*The Role of Bacteria in Autolysis of Tissue*, *J. Bact.* 31: 191-202 (Feb.) 1936) point out, in most instances the breakdown of liver is accompanied by bacterial decomposition; it hence is not strictly autolysis. The recent articles in *Klump in Tuz. Journal* and others take no account of this fact.

9. Mann F. C. cited by Mason¹⁰.

10. Mason E. C., and Davidson E. C. A Study of Tissue Autolysis *in vivo*. I. Blood Changes. *Physical and Chemical J.* 13: 61-67 (May) 1925.

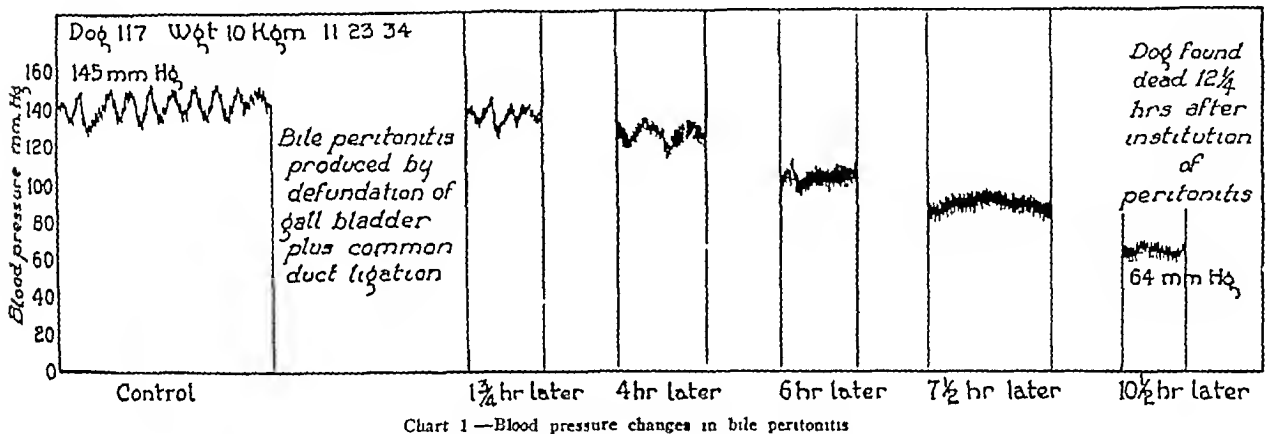
cavity usually contained from 100 to 300 cc of brown fibrin-flecked fluid. This fluid contained a considerable amount of nonprotein nitrogen, but they did not report any analysis for total protein content. When injected intravenously into other animals the abdominal fluid was much less toxic than saline extracts of autolyzed liver.¹¹ These authors¹² also reported that, when the spleen was separated from its blood supply and left free in the peritoneal cavity, death occurred in 50 per cent of the animals studied and was accompanied by an outpouring of fluid into the peritoneal cavity similar to that found in liver autolysis. In general, spleen acted similarly to liver but did not produce death so easily or so soon.

Wangensteen and Waldron¹³ also performed experiments on autolysis of intestine, liver, spleen, muscle and other tissues. After intraperitoneal insertion of these tissues the authors found 300 or 400 cc of sero-sanguineous fluid in the peritoneal cavity. The peritoneal surfaces were reddened and gas was often found. No mention of anaerobic cultures was made. They

substances when permitted to grow in dead liver, and that it is the absorption of these poisons from the peritoneal cavity that causes death in *in vivo* liver autolysis. They furthermore reported that fetal liver, proved sterile by culture, does not produce any toxic effect.

Andrews and his associates¹⁶ performed experiments that differed from those of Dragstedt in one important respect. Whereas the latter had found that sterile autoclaved liver was nontoxic, Andrews reported that if such sterile liver was ground into fine bits it produced an autolytic peritonitis accompanied by gas forming organisms similar to that produced by fresh liver. Andrews also reported that muscle or bile salts would produce a similar fatal peritonitis.

Later work of Mason¹⁷ again called attention to the extensive loss of fluid in these experiments, especially into the peritoneal cavity. The large amount of peritoneal exudate had also been noted by Dragstedt and by Andrews. Mason and his collaborators believed that irritative substances liberated from the autolyzing liver



found that spleen was less lethal than liver, and the animals suffering from the action of spleen could sometimes be kept alive by subcutaneous administration of saline solution.

Dragstedt and his associates¹⁴ began work on autolysis of intestinal loops separated from their blood supply and reported that the *in vivo* autolysis of short isolated sections of intestine that had been sterilized by prolonged drainage into the peritoneal cavity did not produce any serious effect in dogs. When such segments were infected, however, death followed shortly after the occlusion of their blood supply. Ellis and Dragstedt¹⁵ later performed experiments on liver autolysis. They reported that the uncontaminated liver of a normal healthy adult dog regularly contains a gram-positive anaerobic bacillus and concluded that this organism probably forms exceedingly poisonous

cause a chemical peritonitis with increased permeability of the peritoneal surface. This results in passage of both bacteria and fluid into the peritoneal cavity. They further believed that the fluid loss is sufficient to cause circulatory disturbances but that the failure of fluid administration to prolong life was due to the enormous increase in permeability of the abdominal viscera.

Trusler, Reeves and Martin¹⁸ in a series of papers made a special study of the anaerobic bacteria found in experimental liver autolysis and bile peritonitis. These organisms did not produce exotoxins and were similar to those recovered from normal dog liver and muscle. The authors did not classify them as *Clostridium Welchii*. They found that sterile autoclaved liver or bile salts did not cause invasion of the peritoneal cavity by anaerobic organisms if contamination by touching the muscles of the abdominal wall during the process of insertion was avoided. These authors noted that the various incubated preparations of liver and sterile bile salts cause an intense irritation of the peritoneal sur-

11 Mason E. C. and Lemon C. W. Autointoxication and Shock Surg., Gynec. & Obst. 53: 60-64 (July) 1931. Mason E. C. and Davidson, E. C. A Study of Tissue Autolysis in Vivo. II. A Pharmacological Study of the Toxic Material, J. Lab. & Clin. Med. 10: 906-913 (Aug.) 1925. Mason E. C. and Nau C. A. The Causes of Death Due to Liver Autolysis, Surg., Gynec. & Obst. 60: 769-774 (April) 1935.

12 Mason E. C., Davidson, E. C. and Matthew C. W. A Study of Tissue Autolysis in Vivo. III. Observations Using the Spleen. J. Lab. & Clin. Med. 10: 997-999 (Sept.) 1925.

13 Wangenstein O. H. and Waldron G. W. Studies in Intestinal Obstruction. IV. Strangulation Obstruction. A Comparison of the Toxicity of the Intestine and Other Tissues Autolyzed in Vivo and in Vitro, Arch. Surg. 17: 430-439 (Sept.) 1928.

14 Dragstedt L. R., Moorhead J. J. and Burcky T. W. Intestinal Obstruction. An Experimental Study of the Intoxication in Closed Intestinal Loops. J. Exper. Med. 25: 421-439 (March) 1917.

15 Ellis J. C. and Dragstedt, L. R. Effect of Liver Autolysis in Vivo. Proc. Soc. Exper. Biol. & Med. 20: 304-305 (Jan.) 1929.

16 Andrews Edmund and Hrdina Leo. Liver Autolysis in Vivo. Proc. Soc. Exper. Biol. & Med. 27: 987-988 (June) 1930. The Cause of Death in Liver Autolysis. Surg., Gynec. & Obst. 52: 61-66 (Jan.) 1931.

17 Mason E. C. and Lemon C. W. Anhydremia as a Possible Cause of Death in Liver Autolysis. Surg., Gynec. & Obst. 55: 427-431 (Oct.) 1932.

18 Trusler H. M., Reeves J. R., and Martin H. E. Significance of Anaerobic Organisms in Peritonitis Due to Liver Autolysis, Arch. Surg. 30: 371-393 (March) 1935. Trusler, H. M. and Reeves J. R. Significance of Anaerobic Organisms in Peritonitis Due to Liver Autolysis. Bacterial Flora of the Liver and Muscle of Normal Dogs. Arch. Surg. 28: 479-491 (March) 1934.

all but one instance. In two of the animals definite gas was present in the intraperitoneal tissues, and in all instances gram-positive anaerobic bacilli were found on culture. This indicates that both secondary shock and the effects of infection are to be considered as responsible for death in these animals. If, however, as Trusler, Reeves and Martin¹⁸ postulate, the dog's anaerobic organisms produce no exotoxins, it would seem unlikely that the small amount of infection produced by these organisms would cause death while much more extensive infection by definite pathogenic anaerobes in human beings would not do so as quickly. The absorption of toxic products from the decomposed liver is to be considered, therefore, as an additional lethal factor.

EXPERIMENT 3—Peritonitis and death produced by the intraperitoneal insertion of fresh muscle. Fresh muscle obtained sterilely from a dog's thigh was chopped up and ground and then 100 Gm implanted in the peritoneal cavity of each of two animals by the technique of experiment 2-a. Death occurred in nine and twelve hours. There was very little hemoconcentration.

Andrews¹⁶ Although gram-positive anaerobic bacilli were found in both animals that died, no gross signs of infection were present.

EXPERIMENT 5—Peritonitis and death produced by the intraperitoneal insertion of incubated muscle. A quantity of dog muscle was incubated at 37 C with *Bacillus sporogenes* and another quantity with *Clostridium Welchii* for thirty-six hours. They were then autoclaved for twenty minutes at 20 pounds pressure. The resultant semiliquid soupy mash was in each case sterile on culture and 150 Gm of each was placed intraperitoneally in two dogs. The muscle that was incubated with *Bacillus sporogenes* produced marked hemoconcentration and death in seven hours, but only 200 cc. of spontaneously clotting peritoneal fluid (which included the remains of the semiliquid muscle implant). This animal was the only one in the entire series definitely known to have died in convulsions. Necropsy revealed moderate hemorrhages in the peritoneal surfaces, mesenteric glands, duodenum, jejunum and part of the ileum. There were no hemorrhages in the adrenal glands and no edema of the dependent portions of the back. There was slight edema of the lungs. The muscle that had been incubated with *Clostridium Welchii* produced marked hemoconcentration, death in eighteen hours and only 110 cc of nonclotting bloody peri-

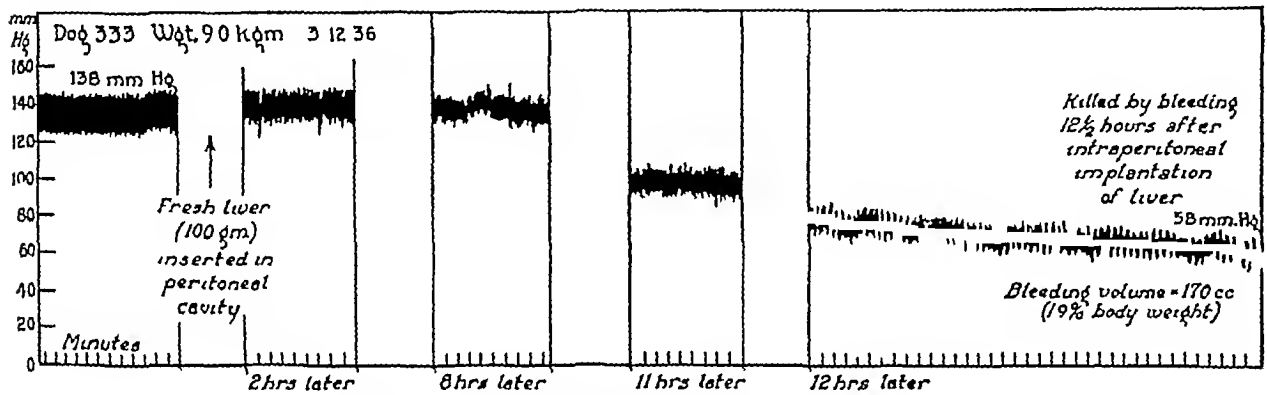


Chart 3—Blood pressure changes in peritonitis due to liver autolysis.

tion and very little fluid found in the peritoneal cavity at necropsy. The spleen was sterilely removed from two dogs and cut and ground. This mash was then implanted into the peritoneal cavity of one of the two splenectomized dogs. This animal (dog 326) died after seven hours with rather marked hemoconcentration (hemoglobin rise from 118 to 158, hematocrit rise from 50 to 69), but with little peritoneal exudate.

This experiment indicates that death may occur in fresh tissue autolysis in the absence of either local fluid loss or of generalized blood concentration. Moon and Kennedy¹⁹ reported concentration of the blood following intraperitoneal insertion of muscle fragments with an increase of almost 3 million in the red count in one instance.

EXPERIMENT 4—Peritonitis produced by the intraperitoneal insertion of autoclaved liver. One hundred grams of autoclaved liver mash was implanted intraperitoneally with similar technique in each of three dogs. Autoclaving was done for twenty minutes at 20 pounds pressure and afterward aerobic and anaerobic cultures showed the liver to be sterile. Hemoconcentration was much slighter than when fresh liver was used, death occurred later (average of thirty hours in two instances, recovery in the third) and there was relatively little peritoneal exudate.

Some other cause of death than local fluid loss was active in these animals. At necropsy there was no gas and the liver was not blown up or markedly discolored as in the typical autolytic peritonitis described by

peritoneal fluid. Necropsy revealed marked hemorrhages in all the peritoneal surfaces, duodenum, adrenals, mesenteric glands and lungs. There was marked edema of the dependent portions of the back.

While the marked hemoconcentration in these two animals indicated a possible plasma loss from the blood stream, there was no proportionate loss into the peritoneal cavity. The only indications of loss elsewhere were the localized hemorrhagic changes and the dependent edema of the second dog. However, it seems quite probable that fluid loss with secondary shock was not the chief factor in the death of these animals. Exotoxins produced by the action of the anaerobic organisms may have been a factor, as stock cultures of known toxin-producing strains were used. This would not necessarily apply to the autolysis or incubation of tissue in the other experiments, for in them the gram-positive anaerobic bacilli were from dog tissues, which according to Trusler and his associates do not produce exotoxins.

EXPERIMENT 6—Subcutaneous implantation of liver with resultant death. Autoclaved liver mash was placed subcutaneously in the axilla and groin of one side of each of three dogs, two of the specimens having been previously incubated for at least six hours. Hemoconcentration was appreciable in only one of the three animals and death occurred after twenty, twenty-three and seven hours respectively. The dorsal and ventral midlines of the animals having been previously marked, bisection was done and the difference in weight of the two sides (corrected for the amount of liver inserted) averaged 23 per cent of the

¹⁹ Moon, V. H. and Kennedy, P. J. Pathology of Shock, Arch Path. 14: 360-371 (Sept.) 1932. Changes in Blood Concentration Incident to Shock. J. Lab. & Clin. Med. 18: 295 (Dec.) 1933.

body weight. However, the dog which died the most rapidly had the smallest amount of local fluid loss and dissection revealed no edema. Necropsy of these animals showed hemorrhagic changes in the adrenals, mesenteric glands and to a less extent in the intestine.

While fluid loss may thus be a factor in death from subcutaneous implantation of liver, it does not seem to occur invariably. This is in marked contradistinction to the effects of subcutaneous bile salt injection, in which death of the experimental animals was almost invariably associated with a marked local fluid loss.

COMMENT

While extensive loss of plasma-like fluid into the peritoneal cavity seems to be a lethal factor of importance in experimental bile peritonitis, the evidence that such is the case in death due to experimental implantation of liver in the peritoneal cavity is not only inconclusive but instead seems to point toward other causes. In experimental bile peritonitis, gram-positive anaerobic bacilli were found in only a small proportion of cases and then usually as either late or postmortem invaders. In peritonitis following liver implantation, on the other hand, such organisms were found in all instances. It is quite possible that these organisms act chiefly in breaking up the liver or other tissue into toxic substances. Such action may be chemical in producing toxic proteose-like substances or may be merely mechanical with disruption of the tissue into finer particles, as the result of the explosive action of the gas. When broken up into such particles the action may be partly that of a local irritant producing some local fluid loss and partly that of a general toxic agent. In addition, some of these substances may give rise to a generalized increased permeability of the vascular system with a generalized loss of circulating blood fluid. It is only by considering these factors working simultaneously that a complete picture of the mechanism of death due to liver implantation can be drawn. At the present time it seems unwise to say that one of these factors is the only element of importance or even the chief instrument of death. These causes may work coordinately in bile peritonitis as well, but in the latter the local irritating effect of the bile produces such a regional outpouring of fluid that the factor of secondary shock outweighs and overshadows the rest. In liver autolysis, on the other hand, the less irritating broken-down liver juices may produce a general toxic action out of proportion to the local fluid loss before the latter has reached dangerous proportions.

While certain of these experiments, especially those on bile peritonitis, indicate that there is such a thing as irritative peritonitis in which local fluid loss may be a lethal factor of importance, the exact cause of death in all instances is not clear. The peritoneal cavity in liver autolysis experiments contains a vicious mixture of irritant, foreign body, bacteria and injured tissues of the host. To say that there is one cause of death in such a case is difficult. At least it is brought to attention that fragments of foreign or devitalized parenchymatous tissues should not be left in patients.

SUMMARY AND CONCLUSIONS

1. At least five possible lethal factors in experimental peritonitis due to bile or to implanted liver may be active, including (a) local irritant action of the foreign substance producing local plasma loss and secondary shock, (b) local damage to body tissues with absorption of toxic products thereby produced, (c)

absorption of toxic products from the foreign substance itself, (d) absorption of exotoxins produced by anaerobic organisms or of toxic products produced by the action of these organisms on the foreign substance present or the body tissues themselves, and (e) action of absorbed products on general vascular permeability furthering secondary shock.

2. The first of these factors, i. e., producing local plasma loss and secondary shock, seems to be of relatively greater importance in bile peritonitis than in peritonitis due to implanted liver. In the treatment of bile peritonitis attention should be directed against the possible presence of secondary shock.

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ABSTRACT OF DISCUSSION

DR. THOMAS G. ORR, Kansas City, Mo. In clinical medicine the important question is whether or not bile in the free peritoneal cavity will cause peritonitis. Some writers have expressed the opinion that bile does little damage to the peritoneum unless infected. Both experimental and clinical observations indicate that the effect of sterile bile within the peritoneal cavity varies directly with the quantity of bile. This was definitely true in a series of experiments on dogs which Dr. A. M. Ziegler and I did a few years ago. After we had incised the gallbladder and drained its contents into the peritoneal cavity several of our animals recovered without any noticeable clinical symptoms. Autopsy revealed that the gallbladder fundus had healed without evidence of any general peritonitis and with only a few adhesions about the immediate vicinity of the gallbladder. This is undoubtedly what happens in patients. During and following operation on the gall tract, especially the common duct, there is frequently soiling of the regional peritoneum without any serious clinical results. On the other hand, in traumatic rupture of the gallbladder or ducts a general bile ascites may be caused which will result in death if not relieved by operation. In such cases the peritoneum shows an inflammatory reaction but no suppuration. Spontaneous rupture of the gallbladder is usually associated with infection and has a very high mortality rate. The experiments reported here today prove conclusively that uninfected bile in the peritoneal cavity of the dog in sufficient quantity will produce death in a very few hours. The rapid lowering of blood pressure, the blood concentration and the marked effusion of fluid into the peritoneal cavity with a high protein content indicate that secondary shock may be a lethal factor. Since human bile is apparently less toxic than dog bile, I am very doubtful whether the shock syndrome plays a very important role as a mortality factor in patients.

DR. EDWARD C. MASON, Oklahoma City. In working on this problem my associates and I have considered it from three different angles. Our first impression was that a toxic substance was liberated from the sectioned liver and we still believe that such is the case. More recently we have published observations which demonstrate that the peripheral portion of the rabbit's liver would remain sterile within the abdominal cavity and undergo aseptic autolysis. Such autolysis was accomplished by pathologic changes especially in the liver and kidneys. The second possible cause of death was introduced by Drs. Ellis and Dragstedt, who called attention to the presence of a Welch-like organism. This organism has been found at autopsy in all our animals dying following section of liver tissue. At present we feel that the function of the organism is only that of intensifying the liberation of toxic substances from the sectioned liver tissue. The organism may be injected intraperitoneally without producing harmful effects, also it may be placed in the abdomen infiltrated in fetal liver without causing death. Recently we have injected the organism intravenously, together with its substrate, without causing harmful effects. The last factor, that of dehydration was considered in our first paper on autolysis and again recently we have tried to keep the animals alive, crowding fluids by mouth stomach tube intravenous salt solution dextrose solution and gum in salt solution. We found that such crowding of fluids caused an

increase in the amount of fluid in the peritoneal cavity following death but failed to prolong the life of the animals. Our results were therefore similar to those subsequently repeated by Blalock, who observed that intravenous administration of fluids in clinical peritonitis was also accomplished by a marked increase in intraperitoneal fluid. We concluded in 1935 that three factors were active in causing the death of our animals and that the chain of events included (a) the toxic material liberated from the sectioned liver, (b) the bacterial action which intensifies the liberation of this toxin, and (c) increased permeability resulting from chemical irritation by the material.

Dr. M. PINSON NEAL, Columbia Mo. The authors did not mention observations on the pancreas. I should like to ask whether interpretations were made on lesions demonstrable grossly or microscopically in that organ. Rewbridge in 1931 recorded an experimental study of bile peritonitis produced by the artificial escape of bile from the pancreatic ducts. In cultures from the peritoneal exudates he found gas-producing organisms. To get away from the bacterial agents, he used sterile bile salt injections and produced the same type of so-called bile peritonitis. Rewbridge in this work found a rather high percentage of his animals showing fat necrosis and concluded that the fat necrosis found in the pancreas, omentum and mesentery was due to some change in the pancreas or pancreatic ducts that permitted the escape of pancreatic juice into the peritoneal cavity. With a co-worker, I have been particularly interested in fat necrosis for a number of years. We have produced experimental fat necrosis by pure lipase obtained from fresh hog's pancreas, liver, and commercial pancreatins. We have also produced it by lipase extracts from vegetable sources, which eliminated trypsin. It would be very valuable if Dr. Harkins and his co-workers have some observation on pancreatic lesions or of fat necrosis to add to their recorded observations.

Dr. H. M. TRUSLER, Indianapolis. I have been interested in the subject for several years and have recognized the fact that these animals die from shock. The results of unpublished blood chemical studies agree with those of the authors and are somewhat more elaborate. There are some interesting things about fresh liver that have not been mentioned. If an adult dog liver is ground in a food chopper with equal parts of physiologic solution of sodium chloride and the gross connective tissues are removed, the emulsion of liver cells that remains may then be injected through an 18 or 20 gage needle. Large amounts of this preparation may be injected into a dog and it will not kill him, even though a rich bacterial flora is present. In other words the fresh liver cell suspension, even in 100 Gm quantities, may be injected intraperitoneally into a normal dog without causing death. The connective tissue from the same liver when injected in a similar fashion is rapidly fatal to the dog. The animal dies in a state of shock and the peritoneal fluid shows a rich growth of the liver organisms. If, however, this fresh liver is autoclaved and finely ground it can then be introduced into the peritoneal cavity, even after deliberate inoculation with the liver organism, and most of the animals will survive. Those which do die may live for a period of ten days. The picture is entirely different from the shock syndrome that has been described by the authors. Certainly autoclaving the liver does something to it so that it is no longer very toxic. The change does not seem to be merely a matter of sterilization. If this liver tissue is incubated for twenty-four hours or more and is then autoclaved, it is extremely toxic and kills the animal in a state of shock even though the peritoneum in this case remains sterile. There are some interesting things about this shock picture. It is more severe and differs considerably from traumatic shock or shock due to hemorrhage. For one thing, there is a tremendous initial rise in blood sugar after this injection and then the blood sugar falls sharply to a very low level, so that the animal at death may have a blood sugar of 50 mg.

Dr. ANTON J. CARLSON, Chicago. I am sorry Dr. Horrall is not here to discuss this paper. He did his work in my laboratory a number of years ago. I wish to congratulate Dr. Harkins and his co-authors on well conceived experiments. So far as I know, the emphasis on the loss of fluid from the blood vessels in bile shock is new. But there are other factors. We know that the bile does not need to be put in the peritoneum

to kill, intravenous injection of bile kills. I am ready to accept the conclusion that where this large amount of fluid is lost it is a contributory factor in death. It is astonishing how much blood a normal dog can lose without dying, without going into shock. Of course, if there are poisons in the system such as anesthetics, bile or other irritants over the whole peritoneum, smaller quantities of blood loss will probably cause death by shock.

Dr. NORMAN E. FREEMAN, Boston. Much has been said concerning the loss of plasma into traumatized regions as the mechanism for the reduction of blood volume in surgical shock. The amount of fluid in the peritoneal cavity in certain of the authors' experiments furnishes an example of such a mechanism. I fully believe that this loss of plasma is of real significance. In addition, the possibility of absorption of toxic substances has been discussed. Ether has also been mentioned as one of the factors that may produce shock. There is an additional factor which I believe may be of some importance in the production of shock in these experiments which has not been brought up. That factor is the afferent stimulation from the chemical trauma to the peritoneal cavity. It is recognized that vasoconstriction is produced by afferent stimulation. Vasoconstriction, if prolonged, may lead to blood concentration and a reduction of blood volume. Possibly the traumatic action of the substances introduced into the peritoneal cavity might have produced sufficient reflex vasoconstriction to be in part responsible for some of the interesting results which the authors have reported.

Dr. HENRY N. HARKINS, Chicago. I mentioned the difference between human and experimental bile peritonitis, the reason for which is partly the marked difference in concentration between gallbladder bile and duct bile. If the bile acts as an irritant, the more concentrated bile undoubtedly is much more irritant. We did all our experiments on bile peritonitis with gallbladder bile taken from a number of other dogs and inserted into one dog, using more than we could get from one single dog. In human beings, even if a fairly large gallbladder ruptures, 50 or 60 cc. very little bladder bile is lost. If after operation there is a leakage from the common duct, such leakage is of the less irritating bile. In our experiments we required at least 2 cc. of gallbladder bile per kilogram to produce death. In an ordinary sized man this corresponds to about 150 cc. Very seldom does that much concentrated bile result from rupture of a gallbladder. Referring to Dr. Mason's statement concerning posture we noticed no special position assumed by the animals at death. Our work differed from that of some previous workers in that instead of leaving the animals alone after injection of bile and finding them dead the next morning, we sat up and watched them as they died. We did not notice any peculiar position at the time of death. Of all the series of dogs, only one dog died in convulsions. Concerning the anaerobic organisms present in these conditions, it is of interest that, while they were found by us at death in every case in which liver was implanted intraperitoneally, they were not found regularly in bile peritonitis. These cultures were taken immediately at death rather than at some indeterminate time later. I wish to point out that both Dr. Trusler and Dr. Mason mentioned some time ago that these conditions may be associated with shock and that this idea is not original with us. The bacteria that Dr. Trusler and his associates isolated from the peritoneal cavity were said by them not to produce exotoxins. In certain animals in which there was not sufficient peritoneal fluid to account for death, very extensive edema of the dependent portions of the body was present and it is possible that the fluid might have gone to these other regions. Dr. Carlson has mentioned that large amounts of blood can be lost from the dog without production of death. In animal experiments, Blalock and others have shown that blood plasma can be lost in much smaller amounts than whole blood, the ratio of the two being about one of plasma to two of whole blood. We have noticed that as the time of death approached even in animals in which the blood pressure had not yet fallen markedly there was a vasoconstriction of the peripheral vessels as denoted by the fact that, when the ears were cut for blood counts, blood was very difficult to obtain. In several instances we had to cut even the femoral artery to obtain sufficient blood for blood counts.

THE CORBUS-FERRY GONOCOCCUS BOUILLON FILTRATE

A CLINICAL STUDY

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ST. LOUIS

The Genito-Urinary Section of the Washington University Outpatient Department has for some time been engaged in a study of the various medicaments and procedures proposed for the most intelligent treatment of gonorrhea and its complications. We have felt that carefully controlled and conscientiously studied clinical research in these cases was quite compatible with and could be carried out without sacrificing unduly the primary function of the clinic, namely, to cure the disease in the simplest, speediest and most economical way possible, as well as to carry out as much of an educational program as we could under the circumstances.

Like most such clinics connected with a teaching institution, we have had to depend on physicians who volunteered their services and time, we have had to combat poverty, ignorance, indifference and general viciousness on the part of the patient, and the attempt

TABLE 1—Acute Gonorrhea

| | Filtrate | No Filtrate |
|------------------------------|--|--|
| Negative complement fixation | 8 cases O K 4 recurrences 1 epididymitis 1 arthritis 1 prostatitis | 5 cases O K 2 recurrences 1 epididymitis 1 acute posterior urethritis 1 persistent infection |
| Positive complement fixation | 6 cases O K 8 recurrences 2 epididymitis 2 prostatitis | 3 cases O K |

to get a sufficient number of carefully observed controlled cases is, and I suppose always will be, the occasion for much discouragement. The tremendous amount of work that must be discarded because of the failure of the patients to return until their case is closed to the complete satisfaction of the investigator has caused many a doctor to give up the problem, which he started in earnest good faith and allowed to drop in disgust because of the apparent complete indifference of the average clinic patient.

We do believe, however, that such a clinic is the place to test out every claim, be it for a vaccine, a new chemical or what not, which has any semblance of decency in either its origin or its rationale, and because of this we have consistently encouraged at least a preliminary trial of various substances advocated in the therapeutics of gonorrhea.

We have been studying the Corbus-Ferry gonococcus bouillon filtrate for a year. That we have kept it up that long is in itself an indication that we felt it had clinical merit. As a matter of fact, we were furnished a considerable amount of the original experimental product four or five years ago, and while no report was made, since we saw no startling benefit from its use at that time, even then there were indications that it or a similar product might eventually lead to something. Accordingly, when the opportunity was again offered to use the newer filtrate we were happy to undertake a series of cases such as is reviewed here.

Dr. Ralph Muckenfuss of the laboratory encouraged us to begin the routine use of the complement fix-

ation test for gonorrhea at the start for two reasons: first, that we might determine, at least for our own information, its general value in gonorrheal work, and second, since we were using an immunologic or antigenic agent as a therapeutic measure, it would not be inappropriate to correlate a study of the antigenic response of the blood in both filtrate and nonfiltrate cases.¹ To date we have almost a thousand blood reports on gonorrheal and nongonorrheal cases, which I intend at some later date to summarize.

During the past year we have started 112 men with acute or chronic gonorrhea² on the filtrate. Fifty-two

TABLE 2—Chronic Gonorrhea

| | Filtrate | No Filtrate |
|------------------------------|---|-------------------------------|
| Negative complement fixation | 9 cases O K 2 prostatitis | 8 cases O K 2 recurrences |
| Positive complement fixation | 1 case O K 5 recurrences 2 epididymitis | 6 cases O K 1 epididymitis |

of them may properly be included in the statistics presented together with thirty control cases. The other sixty filtrate cases and a similar percentage of controls have had to be discarded for one reason or another, mainly because this type of person in a clinic usually has no interest in his troubles past the stage when it is no longer painful to urinate.

The local treatment in both groups consisted of urethral injections of 0.5 per cent solution of strong protein silver twice daily and 10 minims (0.65 cc) of oil of santal by mouth three times a day. The filtrate group received in addition weekly intradermal injections of the filtrate starting with 0.5 or 0.1 cc and increasing 0.1 cc each time until 0.7 cc was reached. Variations of this program were made when indicated according to the manufacturer's directions. Even though I did not give each treatment personally, I assumed complete responsibility for the therapy instituted, so that the two seniors who were doing most of the actual work would be carrying out in the main a routine type of local treatment in both the filtrate

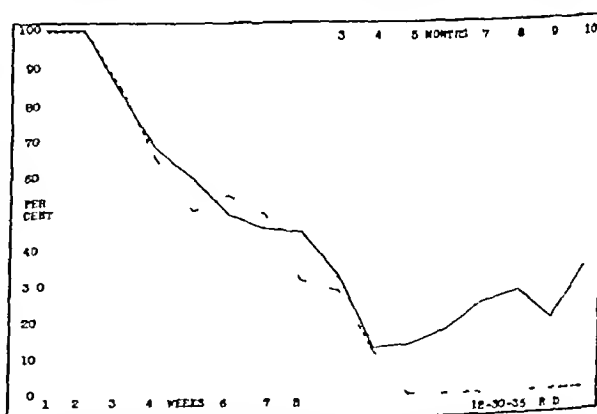


Chart 1—Percentage of positive smears in acute and chronic gonorrhea. Solid line Corbus-Ferry filtrate; broken line no Corbus-Ferry filtrate.

and control groups. The personal equation would therefore be that much more limited and certainly subject to the same errors and limitations in each group.

1. The technic for the complement fixation test follows that described by R. F. Parker (J. Infect. Dis. 55: 88 [July-Aug. 1934]) except for fixation at 37°C for one hour instead of five hours at 5°C.

2. Men with no history of a previous gonorrhea who presented themselves for treatment within six weeks from the onset of their discharge were considered to have acute gonorrhea. Those who had had their disease longer or who gave a history of repeated infections were considered to have chronic gonorrhea.

In the first curve (chart 1), designed to show the behavior of the acute and chronic cases together, with and without the filtrate, the percentage of positive smears obtained on successive weeks and months from each group has been charted. I do not wish to leave the impression that we were able to obtain such smears on every successive week or month in every patient. On the contrary, there are fairly numerous breaks. We have repeatedly recorded positives, for instance, in weeks following a definite positive finding until a definite negative or positive was obtained. In the same manner, negatives have been inserted in blank weeks where negatives preceded and succeeded the interpolated record. I do wish it to be plain, however, that we tried hard to make weekly or monthly smears in each case, so that the interpolations have been relatively few.

I fully appreciate that this type of curve represents but one phase of the case progress, but it is adaptable to representation in chart form and indicative of the course of the disease. A comparison of these curves with clinical progress can be made by referring to the initial differentiation between filtrate and nonfiltrate case in table 3.

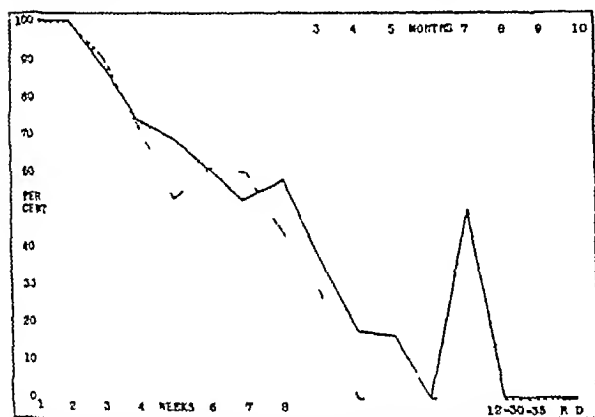


Chart 2—Percentage of positive smears in acute gonorrhea. Solid line, Corbus-Ferry filtrate; broken line, no Corbus-Ferry filtrate.

The second curve (chart 2) contrasts the behavior of the acute gonorrheas only with and without the filtrate in the same manner.

The third curve (chart 3) is a similar comparison of the chronic gonorrheas.

The late rise in both charts 2 and 3 may be explained by an occasional positive smear from recurrence, or possible reinfection, at a time when most of the patients had been dismissed. One or two such positives in a relatively small group of smears creates a relative disproportion in the curve. For instance, in chart 3, six out of eighteen men given the filtrate were still under observation in the eighth month. Of these, two had positive smears and four were negative.

At the same time, if one again refers to table 3, in which a percentage result according to clinical progress is recorded, it will be seen that the somewhat poorer behavior of the filtrate cases in both the acute and chronic gonorrheas is definitely reflected in these curves made from the tabulation of smears.

Tables 1 and 2 show in brief the clinical results obtained in the acute and chronic groups with and without the filtrate, further subdivided according to the behavior of the complement fixation test. An uneventful course from onset to cure is considered "O. K." A complication of any sort made the case "unsatisfac-

tory," even though the clinical course, so far as time element or end results were concerned, proved satisfactory eventually.

The degree of reaction of the complement fixation test is not differentiated in tables 1 and 2. If the individual at no time while he was under observation showed any degree of fixation, he was placed in the

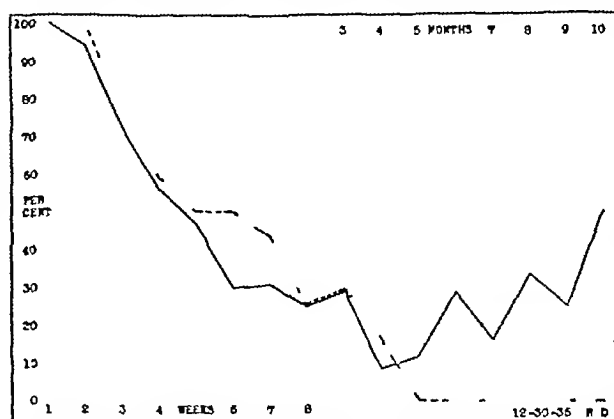


Chart 3—Percentage of positive smears in chronic gonorrhea. Solid line, Corbus-Ferry filtrate; broken line, no Corbus-Ferry filtrate.

negative blood group. On the other hand, any report of from one plus to four plus from the laboratory at any time during his disease caused us to include him in the positive blood group. Needless to say, many individuals never showed anything more than a weak reaction, some stayed strongly positive during their entire observation, and most of those who developed a four plus reaction showed a definite improvement or complete change to negative as treatment and observation continued.

The analysis of the cases (table 3) proved most interesting. If the cases (eighty-two in all) were divided simply into two groups, filtrate or no filtrate, there is an appreciable difference in their clinical performance as evidenced by the percentage figures 46 and 73. Continue this analysis, but separate the acute from the chronic cases, again with and without the filtrate, and the percentage figures obtained give the

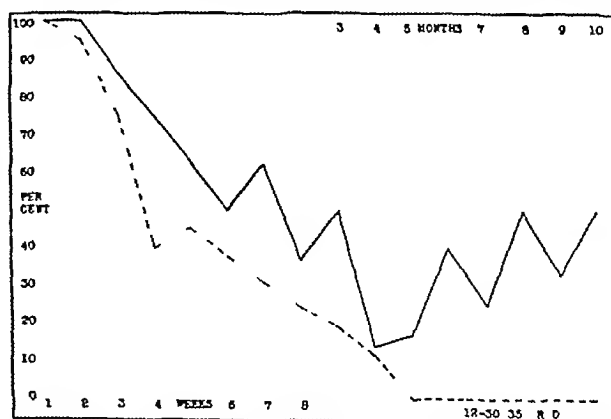


Chart 4—Percentage of positive smears in chronic gonorrhea. Solid line, positive blood group with filtrate; broken line, positive blood group with no filtrate; negative blood group with filtrate, and negative blood group with no filtrate.

impression that it is the acute gonorrheal group placed on the filtrate at the onset of their disease which suffers by comparison with those acute cases in which the filtrate was not administered and the filtrate and nonfiltrate chronic gonorrheas. Even here in the chronic gonorrheas with filtrate the percentage of satisfactory

clinical results (52 per cent) is lower than the general average (nonfiltrate, 73 per cent) or the 82 per cent in the chronic group without filtrate

However, if the group is still further subdivided, so that the acute and chronic groups are considered according to whether or not their bloods were positive or remained consistently negative, again with or without

TABLE 3—Percentages of Satisfactory Clinical Results

| Type of Case | Complement Fixation | No of Cases | Therapy | No of Cases | Percentage O. K. |
|-------------------|---------------------|-------------|-------------|-------------|------------------|
| Acute and chronic | | 82 | Filtrate | 52 | 46 |
| | | | No filtrate | 30 | 73 |
| Acute | | 46 | Filtrate | 33 | 42 |
| | | | No filtrate | 13 | 61 |
| Chronic | | 38 | Filtrate | 19 | 52 |
| | | | No filtrate | 17 | 82 |
| Acute | Positive | 21 | Filtrate | 18 | 83 |
| | | | No filtrate | 3 | 100 |
| | Negative | 25 | Filtrate | 15 | 53 |
| | | | No filtrate | 10 | 50 |
| Chronic | Positive | 15 | Filtrate | 8 | 13 |
| | | | No filtrate | 7 | 88 |
| | Negative | 21 | Filtrate | 11 | 82 |
| | | | No filtrate | 10 | 80 |

the filtrate, it will be noted that in the acute group the results generally were rather unsatisfactory except for the nonfiltrate group with positive blood. The number of individuals that could be included here, however, is too small to justify much consideration.

The most startling discrepancies appear in the chronic group, in which a combination of positive blood and the filtrate therapy gave a very low percentage of good results (13) and in the remaining three groups, one with positive blood and no filtrate, a second with negative blood and filtrate, and the third with negative blood and no filtrate gave us a very high percentage (86, 82 and 80) of clinically satisfactory results.

To see whether this interesting fact with regard to the chronic gonorrheas was substantiated in any other way, I again resorted to a plotted curve in which the cases included in the positive blood filtrate group (13 per cent clinically satisfactory) are plotted against the other three chronic groups, and chart 4 presents what I consider irrefutable evidence of the accuracy of our observations. In this chart the tendency of the patients to retain their positive smears and the erratic nature of the curve due to relapses and complications in the chronic group in which positive bloods had developed and the filtrate had been given is so definite as compared with the smooth course indicated in the remaining chronic cases as to make me believe that the use of the filtrate in a chronic case with positive blood is quite contraindicated.

COMMENT

In the beginning I pointed out that we had as a routine procedure and almost without exception continued the use of the filtrate up to 0.7 cc. It is quite possible that, as Dr. Corbus has pointed out, this represented an overdosage for some of the individuals under study. We were, however, on the look out constantly for skin reactions which would indicate that we were approaching or had reached the limit of injection and did not knowingly exceed this amount at any time. Moreover, I am quite sure that we did not in any case see the acute local exacerbation that has been described by Dr. Corbus and others.

It is not within the province of this paper to undertake a discussion of the immunologic or serologic properties of the Corbus-Ferry gonococcus bouillon filtrate. To me, clinically, it has specific properties that may

produce a good or bad result, depending on the type of case or perhaps the manner in which it is used therapeutically. Furthermore, I am unable to correlate our results with the reported good results obtained in gonorrheal arthritis, in which the complement fixation is nearly always positive. We have not seen enough arthritis of this sort to be able to report any results. It seems to me, however, that a possible explanation for some of our results may lie in this possibility, i. e., that the filtrate serves to break down the natural walling off and sterilizing process which the body contrives against further invasion by the gonococcus much as tuberculin does in certain types of tuberculosis.

SUMMARY

A series of both acute and chronic cases of gonorrhea from an outpatient clinic, in which the Corbus-Ferry gonococcus bouillon filtrate was used in a routine manner were compared with a control group. In both instances the same local treatment and general hygienic measures were instituted. Complement fixation tests were made repeatedly in all cases.

The results would indicate that acute gonorrheas do not do as well with the filtrate as without, that the poorest results with the filtrate are obtained in chronic gonorrhea with a positive gonococcus complement fixation, and that the best results are obtained in chronic gonorrhea with a consistently negative complement fixation test.

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THE PRESERVATION AND CONCENTRATION OF HUMAN SERUMS FOR CLINICAL USE

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During convalescence from many infectious diseases the blood contains antibodies that are capable of conferring passive immunity. Transfer of convalescent human blood, plasma or serum to a susceptible recipient before or during exposure or in the incubation period of a number of diseases may give either complete protection or attenuation. In a smaller number of infections, therapeutic benefit may also be anticipated from convalescent human serum. The difficulty of obtaining such serum in sufficient amounts, however, and its cost must necessarily impose limitations on its use.

Healthy adults afford a second and less limited source of human serum the value of which lies chiefly in the prevention and less frequently the treatment of the infectious diseases of childhood. The passive immunity that is transmitted transplacentally from the mother to the new-born infant is lost during the first year of life. Acquisition of active immunity occurs slowly and reaches its maximum only in early adult life.¹ During the years of childhood humoral immunity

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1. For detailed discussion of this process and of the relative roles in it of infection and of physiologic maturation refer to: Topley W. W. C. *An Outline of Immunity*. Baltimore: Williams & Co. 1933 or Baumgartner Leopold. *The Relationship of Age to Immunological Reactions*. Yale J. Biol. & Med. 40:5 (March) 1935.

is in general low and may be augmented at critical times of exposure or definite infection by the serum of properly chosen healthy adults

Donors artificially immunized against a given infectious agent are a third possible source of human serum. Thus far utilization of this source has been chiefly in the relatively small number of cases treated by specific immunotransfusion. A number of experiments with specifically immunized donors are in progress now, however, and this method may well find much wider application in the future.

Human serums afford a means of prophylaxis against certain diseases for which animal serums are not obtainable, for instance, measles, chickenpox and mumps. With reference to other diseases the choice of human versus animal serum is determined largely by practical considerations of availability and potency. In the treatment of such severe and acute diseases as diphtheria, meningococcal meningitis and type I lobar pneumonia or in the prophylaxis of tetanus, horse antisera of high potency are clearly the agents of choice.

In the management of streptococcal infections, on the other hand, there is definite competition between human and horse serums, and the present trend is toward the use of human serum. The considerations involved are complex. Hemolytic streptococci are both toxigenic and invasive, and the ideal therapeutic agent should contain both antitoxic and antibacterial antibodies. The problem of obtaining the required antibacterial properties is rendered exceedingly difficult by the fact that there are at least twenty-seven known serologic types of streptococci among the human pathogens² and that a given disease such as scarlet fever may be caused by any one of a considerable number of these types. Streptococcus horse serums of adequate polyvalence in antibacterial properties have yet to be prepared. On the other hand, there is much evidence of the presence of specific antistreptococcus antibodies in the serums of human beings convalescent from streptococcal disease.³ In our judgment, therefore, the best expedient at the moment available for obtaining antibacterial serums of adequate polyvalence against hemolytic streptococci is the use of large pools of serum from scarlet fever convalescents or from healthy Dick-negative normal adult donors. Such theoretical considerations find some practical substantiation from the favorable results with pooled human serums reported by Weaver,⁴ Meader,⁵ Hoyne, Levinson and Thalhimer,⁶ McGuinness, Stokes and Mudd,⁷ and others in the prevention and treatment of scarlet fever and its complications, and in the treatment of other hemolytic

streptococcus infections.⁸ With regard to antitoxic properties, properly prepared horse serums are undoubtedly of far higher potency.⁹ Yet this advantage is outweighed in the minds of many clinicians by the disadvantages of serum sickness and the possibility of anaphylactic accidents with the use of horse serum.

Methods for the preservation of serum with a minimum of deterioration have been evolving for nearly half a century. Desiccation¹⁰ was an early method of definite value. More recently work¹¹ has indicated desiccation in vacuo from the frozen state to be the best method at present known. Procedure and apparatus for desiccation in vacuo from the frozen state have been fully described in a recent publication.¹² Briefly, the serum or other biologic material to be preserved is distributed with sterile precautions into glass containers. These are immersed in a bath of Dry-Ice in a commercial solvent (Methyl Cellosolve) at a temperature of approximately -75°C . The containers of the frozen serum are attached to a manifold which leads through a condenser to a vacuum pump. The condenser is kept at -75°C with a bath of Dry-Ice in the same solvent. The whole system is rapidly evacuated and held at a pressure below 0.05 mm of mercury by the vacuum pump. Water vapor evaporates from the frozen serum to be trapped as ice in the condenser, the rate of evaporation is sufficient to keep the serum frozen throughout the process of desiccation. The containers are sealed without breaking the original vacuum. Storage for prolonged periods should be at refrigerator temperature. The light porous residue of serum solids quickly and completely dissolves in distilled water to regenerate a serum the potency of which is not detectably different from the original serum. This procedure has been termed the "lyophile" process.¹²

The rates of deterioration of lyophile serums under various conditions are at present under investigation. Sufficient data are available, however, to show conclusively that potency is much better preserved in this than in liquid form. Striking examples have been published by Eagle, Strauss and Steiner¹³ and by Boerner and Lukens,¹⁴ who have shown that lyophile guinea-pig complement at refrigerator temperatures undergoes no detectable deterioration for ten months and has definite advantages over liquid complement for the Wassermann laboratory. Pooled human adult serum, lyophile

2 Griffith F. The Serological Classification of Streptococcus Pyogenes. *J Hyg* 34: 542 (Jan.) 1935.

3 Lyons Champ and Ward H. K. Studies on the Hemolytic Streptococcus of Human Origin. II. Observations on the Protective Mechanism Against the Virulent Variants. *J Exper Med* 61: 531 (April) 1935. Hare R. The Production of Bacteriotropins for Haemolytic Streptococci by Patients Infected with That Organism. *J Path & Bact* 35: 701 (Sept.) 1935.

4 Weaver G. H. The Treatment of Scarlet Fever with Immune Human Serum. *J Infect Dis* 22: 210 (March) 1918.

5 Meader F. M. Scarlet Fever Prophylaxis. Use of Blood Serum from Persons Who Have Recovered from Scarlet Fever. *J A M A* 84: 622 (March 1) 1930.

6 Hoyne A. L., Levinson S. O. and Thalhimer, William. Convalescent Scarlet Fever Serum. Its Prophylactic and Therapeutic Value. A Review of 2875 Cases. *J A M A* 105: 783 (Sept 7) 1935.

7 McGuinness A. C., Stokes J. Jr. and Mudd, Stuart. The Clinical Uses of Human Serums Preserved by the Lyophile Process to be published.

8 Thalhimer, William and Levinson S. O. Pooled Convalescent Scarlet Fever Serum. Treatment of Diverse Streptococcal Infections. *J A M A* 105: 864 (Sept 14) 1935.

9 Rhoads P. S. and Gaul B. M. Convalescent Scarlet Fever Serum and Commercial Antitoxin. *J A M A* 102: 2005 (June 16) 1934.

10 Martin C. A Simple and Rapid Method of Desiccation and Keeping Substances Sterile During the Process. *J Path & Bact* 3: 507 1895. Rosenau M. J. The Immunity Unit for Standardizing Diphtheria Antitoxin. *Bull 21 Hyg Lab Washington D C* 1905.

11 (a) Shackell L. F. An Improved Method of Desiccation with Some Applications to Biological Problems. *Am J Physiol* 24: 325 (June) 1909. (b) Sawyer W. A., Lloyd W. D. M., and Kitchen S. F. The Preservation of Yellow Fever Virus. *J Exper Med* 50: 1 (July) 1929. (c) Elser W. J., Thomas R. A. and Steffen G. I. The Desiccation of Sera and Other Biological Products (Including Micro-Organisms) in the Frozen State with the Preservation of the Original Qualities of Products so Treated. *J Immunol* 28: 433 (June) 1935. (d) Reichel J., Masucci P. and Boyer J. Personal communication to the authors. (e) Flösdorf E. W., and Mudd Stuart. Procedure and Apparatus for Preservation in "Lyophile" Form of Serum and Other Biological Substances. *J Immunol* 28: 389 (Nov.) 1935.

12 Although here used in a somewhat special sense the term "lyophile" is not new but is widely used in colloid chemistry to denote the affinity of a colloid for the liquid in which it is dispersed. The serum proteins preserved by this method maintain their original affinity in this respect, and in consequence they exhibit a remarkably rapid rate of dissolution.

13 Eagle Harry, Strauss, Henry and Steiner Rudolf. Use in Wassermann Reaction of Uniform and Stable Dehydrated Complement, *Am J Clin Path* 5: 173 (May) 1935.

14 Boerner F. and Lukens M. The Advantages of Vacuum Dried Complement for Use in the Routine Wassermann Reaction. *Am J M Sc* 102: 272 (Aug.) 1936.

processed and kept at icebox temperature for seventeen months, has been effectual in prophylaxis against measles and in the reversal of positive Dick tests. Lyophile convalescent measles and mumps serums after one year of storage at icebox temperatures have also been effectual in prophylaxis against these diseases.

Lyophile serum may be restored to liquid form by the addition of distilled water to one-half or even to one-fourth the original volume. This concentration is of considerable practical advantage, particularly in the routine intramuscular administration of the serum to children, since less painful injections of smaller volumes of liquid are thus made possible.

The Philadelphia Serum Exchange was established at the Children's Hospital of Philadelphia in the spring of 1934. Its purposes were to make available in and about Philadelphia human serums of known value, to investigate the usefulness of such serums in lyophile form, and to explore the possibilities of new or unrecognized values of human serums made possible by current advances in immunology and explicitly by the lyophile process. Because of our preoccupation with the application of the lyophile process, practically all serums distributed from the exchange have been in this form.¹⁵

The methods used for the collection of serums have been somewhat similar to those employed by other large serum centers such as have existed for some time in Detroit and Chicago. The cooperation of the Department of Public Health of Philadelphia has made it possible to approach through their own physicians patients discharged from the Municipal Hospital for Contagious Diseases and from the Philadelphia General Hospital. After permission of the family physician has been secured, these individuals are invited in person or by mail to act as donors and are offered a small fee for their blood. Healthy adults for pooled adult serum are secured through the social service department of the Children's Hospital. It has been practicable to bleed a healthy adult to the extent of 200 cc. about once a month. A careful history is taken of all donors, especially with reference to previous infectious disease. The donors are bled at the Children's Hospital or, when this is impracticable, in their homes.

The blood is collected in 400 cc. pyrex centrifuge bottles. Fitted on these bottles is a two-holed rubber stopper through which pass two glass tubes, one 2 inches and the other 3 inches long. To the 2-inch tube is attached a piece of rubber tubing 18 inches long, this tube contains a cotton plug and to its end is attached a hard rubber mouthpiece for suction. To the 3 inch glass tube is attached an 18 inch rubber tube, to the other end of which is fitted a "Luer-lock" adapter. A 2 inch No. 18 gage needle will give an adequate flow of blood when aided by the reduced pressure caused by the mouth suction and causes the donors little pain.

At the end of the bleeding the suction is stopped, the tourniquet is released about twenty seconds later and the needle is then withdrawn. Enough blood may then be milked from the tube to which the needle is attached for the performance of the Wassermann or Kahn test. After the bleeding, the rubber stopper with the bleeding and suction tubes attached is removed from the

bottle. The neck of the bottle is flamed and then closed with a solid rubber stopper, which is sterile. In order to give added protection a piece of sterile lead foil is then placed over the solid stopper and pressed down close to the side of the bottle. A number of bleeding outfits, i. e., the perforated stopper with rubber tubing attached, and centrifuge bottles, are kept on hand and are put up and autoclaved in packets.

The blood after collection in centrifuge bottles is stored over night in the refrigerator. The clot is then "rimmed," the bottle centrifuged and the serum removed with sterile precautions. This is best done by aspiration with negative pressure in a dust-free room. The serum so obtained containing erythrocytes is recentrifuged, and aspiration is repeated without disturbing the red cell sediment. The serum is not mixed with serum from other donors for pooling until a negative Kahn report has been received and until a sterility test has shown the absence of gross contamination and of pathogenic bacteria.

The work of pooling and processing was done at the beginning in the department of bacteriology but for the past two years has been conducted at the Mulford Laboratories of Sharp & Dohme through the courtesy of the director, Dr. John Reichel, and Mr. John S. Zinsser, president of Sharp & Dohme. The serum obtained on any given day is transferred to pyrex bottles and rapidly frozen in a bath of Dry-Ice in Methyl Cellosolve. The frozen serum is stored in a refrigerating vault at from -12 to -15 C until serum from thirty to ninety donors has accumulated. All is then thawed, mixed and filtered through a Berkefeld W filter.¹⁶ The filtered serum is distributed sterily into the final containers and there frozen and lyophile processed. Sterility tests are conducted on the filtered serum in accordance with the requirements of the National Institute of Health, and the serum is not released until sterility has been demonstrated.

The lyophile containers are stored in an icebox at the Children's Hospital until required by physicians. A second distribution center has been maintained at the Abington Memorial Hospital by Dr. John Eiman. The serum is regenerated for use by injection of sterile distilled water into the container. Since the serum contains no chemical bacteriostatic agent, the regenerated serum should not be allowed to stand for longer than an hour before administration. The redissolved serum is given by intramuscular injection.

The lyophile human serum prepared by this routine and regenerated appears turbid.¹⁷ Examination under the darkfield microscope reveals that this turbidity is due to aggregated and coalesced lipid droplets.¹⁸ To avoid any possible danger of capillary embolism due to these lipid aggregates, lyophile serum has not been administered intravenously in the work recorded in a paper to be published.

Lyophile human serum four times concentrated has however been used by Hughes, Mudd and Strecker.¹⁹

16 The filters are tested by forcing air through the immersed and thoroughly wetted filter (Mudd, Stuart, and Rivers, T. M. Filtrable Viruses, Baltimore: Williams & Wilkins, 1928). Those used allow air bubbles to pass when air pressure reaches 14 pounds per square inch.

17 In this respect human lyophile serum differs from lyophile horse serum, which regenerates to form a clear or only slightly opalescent solution. Other biochemical differences in the lipids of human and horse serum have been noted (Theorell, H. Studien über die Plasmalipide des Blutes, Biochem. Ztschr. 223, 1, 1930).

18 The microscopic appearance resembles that of aggregated and coalesced chylomicrons as shown by Ludlum, Taft and Nugent. The Chylomicron Emulsion, J. Phys. Chem. 35, 269 (Jan.) 1931.

19 Hughes, J., Mudd, Stuart and Strecker, E. A. Reduction of Increased Intracranial Pressure by Concentrated Human Lyophile Serum. Tr. Am. Neurol. Soc., 62d meeting, June 1936. Arch. Neurol. & Psychiat. to be published.

15 A more economical practice in other human serum centers would doubtless be to use lyophile serum only for storage or shipping of serum in excess of current requirements or when concentration is important thus saving the cost of lyophile processing.

and by McGuinness and Stokes²⁰ for the purpose of reducing cerebrospinal fluid pressure, and for this purpose the serum must be given intravenously. To prepare lyophile human serum for intravenous use the foregoing routine is modified. The pooled serum in large volumes is processed without filtration and is then regenerated. The turbid regenerated serum is clarified by passage under two atmospheres of air pressure through a Berkefeld V filter (such a filter testing at about 6 pounds). This clarified serum is then refiltered to ensure sterility through a Berkefeld W (14 pounds) candle and is distributed into final containers and again lyophile processed.²¹ The volume of serum filtered should be as large as practicable in proportion to the size of the filters, in order to minimize losses by adsorption and occlusion in the filters. This doubly filtered, doubly processed serum redissolves to a clear or opalescent solution in as little as one-fourth its original volume of distilled water, and on intravenous administration has the desired clinical effect of reduction of cerebrospinal fluid pressure and increase of arterial blood pressure.¹⁹

Serum for therapy in scarlatina has been and could be prepared for intravenous administration should the advantage of the intravenous route justify the expense of processing and double filtering. It is perhaps worth pointing out that the procedure outlined for preparing lyophile serum for intravenous use does not require low temperature cold storage facilities. The serum is first processed in a container of the size required for the bleedings of that day. It may then be stored in an ordinary refrigerator until required or until sufficient for a large pool has accumulated. The serum is then regenerated, clarified and refiltered and may be used intravenously or intramuscularly in the liquid form or distributed into individual containers and lyophile processed for later use.

Mention may be made of the precautions against accidental transfer of syphilis in this use of human serum. Only serums from Kahn-negative donors are used. The serum is Berkefeld filtered. Finally one of us (H. E.) has shown that *Spirochaeta pallida* does not survive lyophile processing. Rabbit chancres were emulsified, shown to be infectious for rabbits, and lyophile processed, the residue was reemulsified and injected intratesticularly into six new rabbits. These rabbits showed no signs of syphilis, and after a year four survivors were found to be susceptible to the same strain of *Spirochaeta pallida*. There has therefore been a triple safeguard against accidental transmission of syphilis.

The extremely favorable clinical results in prophylaxis and therapy obtained with lyophile serums will be reported in a later paper.⁷

SUMMARY

The clinical usefulness of human serums has been considerably broadened by the development of methods for their preservation and concentration. Convalescent serum may be collected at times of epidemic prevalence and held until needed. Donors may be specifically immunized and their serum harvested for later use. Pooling on a large scale, for the purpose of augmenting polyvalence is facilitated.

²⁰ In cases of hydrocephalus in babies intravenous injections with refiltered lyophile serum concentrated four times have been made. The resulting reduction of intracranial pressure may be of value in certain cases of the communicating type of hydrocephalus.

²¹ The idea of clarifying the turbid serum and reprocessing was adopted from the procedure of Elser, Thomas and Steffen.^{11c}

The most distinctive advantages of the procedures outlined possibly are in increasing the practicability of the use of serum of healthy adult donors. Such adult serum collected in large pools and properly preserved is proving extremely effective in the prophylaxis of infectious diseases of childhood.

Concentration has the general advantage of reducing the volume of serum to be injected. A special use of four times concentrated human serum in reducing cerebrospinal fluid pressure is set forth in another paper.¹⁹

THE CLINICAL INVESTIGATION OF AN IMPROVED CRYSTALLINE INSULIN

PRELIMINARY REPORT

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AND

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Clinicians have long felt the need for a slower and more prolonged action of insulin in diabetic patients to simulate the normally functioning pancreas in maintaining a more constant level of blood sugar. The rapidity with which insulin is absorbed and the short duration of its action often produce marked fluctuations in the blood sugar during the twenty-four hour period. Various modes of insulin administration have been tried, as well as various insulin compounds.

This study deals with the observations in the clinical use of an improved crystalline insulin as to its rate of absorption and its duration of effect in diabetic patients.

The material used was a solution of improved crystalline insulin developed by Dr. Melville Sahyun of Detroit.¹ A solution of the improved crystalline insulin cannot be distinguished in appearance from that of regular insulin. Our supply of this preparation was kept at room temperature for four months, with no decrease in potency. In this we confirm Dr. Sahyun's observations. Over a period of four months no untoward reactions, either local or general, were noted following the injection of the product, nor did any patient note any increase of discomfort over regular insulin.

TYPE OF PATIENTS

This series consisted of twenty-two cases admitted to the surgical diabetic service in the Cook County Hospital and three admitted to the medical service for diabetic management. Of the patients in the surgical service, there were fifteen with complaints which did not complicate their diabetic management, namely, four had arteriosclerotic feet, three had practically healed ulcers on the legs or feet, three had simple fractures, three had cataracts, one slight inflammation of a toe, and one a surgical operation, a perineorrhaphy, two and a half weeks previous to our study of her case. The remaining seven surgical cases presented disorders complicating the diabetic management: three presented

From the Diabetic Service, Cook County Hospital.

¹ From a personal communication received from Dr. Melville Sahyun. We have the following information: "The improved crystalline insulin is dissolved in dilute hydrochloric acid and made up to 40 units per 1 cc. in 0.1 per cent trisresol and 1.6 per cent glycerol and sterilized in the usual manner. Trisresol is added as a preservative and glycerol to render the solution isotonic. Such or similar substances are added to all preparations of crystalline insulin on the market. Dilutions of this improved crystalline insulin have been subjected to 40°C. for seven months. No loss in potency was observed at the end of that period."

gangrene of a foot, two an infection of the stump following amputation, one multiple furuncles, and one an occipital carbuncle

Ages varied from 26 to 74, ten were males and fifteen were females

PROCEDURES

Blood sugar tests were made by the micromethod of Folin, the samples being drawn at 7 30 and 11 a m and at 2, 5 and 10 30 p m Daily twenty-four hour urine specimens on each patient were tested qualita-

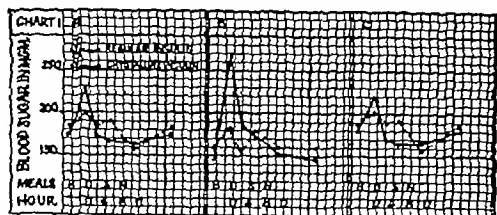


Chart 1—A an average of all the blood sugars in a group of eleven patients on each type of insulin B an average of all the blood sugars of two patients receiving one dose of insulin daily C an average of all the blood sugars of the remaining nine patients, those receiving two doses of insulin a day Note the slower absorption of the improved crystalline insulin and its prolonged action resulting in lower fasting morning blood sugars

tively for sugar with Haines' solution, and, if positive, the percentage of sugar was determined by Benedict's method

The diet of each patient remained as nearly constant as possible throughout the course of blood sugar study on that patient Diets were standardized as shown in table 1 Breakfast was served at 8 a m, dinner at 11 30 a m and supper at 4 30 p m In addition, 100 Gm of a 9 per cent fruit was left at the bedside to be eaten about 8 p m Thus there was a more stringent test on both types of insulin by having a liberal allotment of carbohydrate for the evening meal and further by giving the patient 9 Gm of carbohydrate

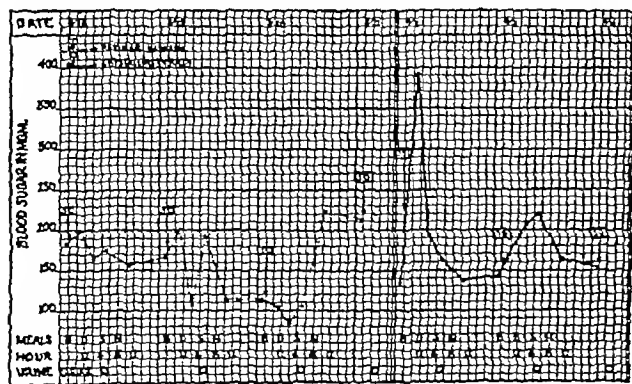


Chart 2—One of the patients included in chart 1 B She was 74 years of age and was known to have had diabetes for five years. She was admitted January 7 with a fractured femur Recovery was uneventful She was on diet 3 Her chart shows the slower absorption of the crystalline insulin

at bedtime, tending to raise the blood sugar level at 10 30 p m and the next morning Insulin was administered from five to fifteen minutes before the meals

Two experiments were made on two groups of patients The first was to compare the relative efficacy of regular insulin and improved crystalline insulin The second was to observe the effect of replacing multiple daily doses of regular insulin with a single large dose of crystalline insulin

EXPERIMENT ONE

To compare the relative efficacy of the two types of insulin, curves were plotted for eleven patients already stabilized on regular insulin These patients were subsequently stabilized on equal doses of crystalline insulin administered at the same hours, their diets remaining unchanged, and further determinations were made The eleven patients were not selected but were taken in order of admission and included conditions complicating and not complicating their diabetic management, nine were on two doses of insulin a day and two were on one dose They were on either diet 2 or diet 4, as explained in table 1

The series included a total of 280 blood sugars, 164 with the patients on regular insulin of various pharmaceutical companies and 116 on improved crystalline insulin There was, however, such variability of the daily blood sugar curve in so many cases even though uncomplicated and regardless of the type of insulin used, whether regular or crystalline, that comparisons of single days' curves, or even the curves of several days, on any one patient might not result in accurate conclusions Apparently there are factors other than

TABLE 1—Standardized Diets

| Diet No | Carbohydrate | Protein | Fat | Percentage of Carbohydrate Allotted to | | | | Calories |
|---------|--------------|---------|-----|--|--------|--------|--------|----------|
| | | | | Breakfast | Dinner | Supper | Hourly | |
| 2 | 120 | 62 | 80 | 34 | 19 | 30 | 8 | 1,500 |
| 3 | 140 | 72 | 88 | 34.5 | 26 | 33 | 6.5 | 1,600 |
| 4 | 160 | 76 | 84 | 30 | 30 | 29 | 6 | 1,700 |
| 6 | 180 | 70 | 84 | 27 | 32 | 30 | 5 | 1,800 |
| 7 | 220 | 87 | 95 | 29 | 32 | 30 | 4 | 2,000 |

TABLE 2—Blood Sugar

| | Hours | | | | |
|--------------------------|----------|--------|-------|-------|-----------|
| | 7 30 a m | 11 a m | 2 p m | 5 p m | 10 30 p m |
| Regular insulin | | | | | |
| Number of determinations | 42 | 31 | 31 | 31 | 29 |
| Average blood sugar | 182 | 109 | 153 | 100 | 150 |
| Crystalline insulin | | | | | |
| Number of determinations | 28 | 20 | 21 | 21 | 21 |
| Average blood sugar | 176 | 220 | 173 | 163 | 164 |

diet and insulin that vary the blood sugar, such as sympathetic nervous disturbances, the functions and dysfunctions of other endocrine glands, alimentary absorption, and infection Thus the daily curve on any one patient might remain fairly constant for several days and be followed by a radically different curve presumably owing to one or more of these intercurrent factors For this reason it was assumed that an average of all the blood sugar levels at each of the five times during the day of all eleven patients while on each kind of insulin should show the activity of that preparation better than one or two individual curves

Potency—An average of all the blood sugars with patients on regular insulin was 182.6, on improved insulin 182.2 This fact, plus the ability to keep patients aglycosuric, proves the new insulin to be equally efficient Since the two types of insulin are equally potent, any differences in their action can be attributed to differences in their rates of absorption

Insulin Reactions—During the entire course of this investigation only five instances of insulin reactions were noted, in none of which did the patient ever

become comatose. One patient was subject to very frequent reactions with regular insulin, coma striking him almost immediately and before he would have time to summon aid or take any carbohydrate, prodromal symptoms were entirely absent. On crystalline insulin this patient had two reactions, one following his omission of the evening nourishment. In neither case did he lose consciousness, but his tongue felt so thick that his speech was unintelligible, although he was able to summon nurses and ask for some sugar. This appar-

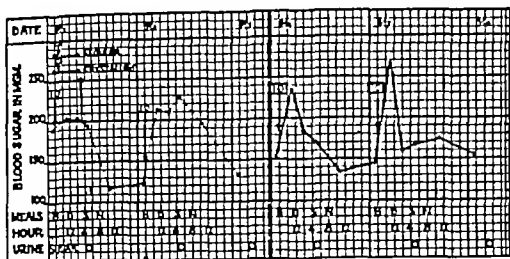


Chart 3—One of the patients included in chart 1 B. Note the fairly level blood sugar maintained by the crystalline insulin after its period of delayed absorption. This patient was a Negress aged 55 who was on diet 4. She was known to have had diabetes for several years and had been attending the diabetic clinic. She had arteriosclerosis of the legs and feet.

ently slow onset of hypoglycemia with crystalline insulin allows the patient ample time to ingest carbohydrate to forestall further reduction in the blood sugar level and thus prevent coma. None of the patients, except the one just mentioned, required any treatment for the hypoglycemia, the reactions being so mild as to cause very little discomfort.

Delayed Absorption—Chart 1 A, showing the blood sugar averages from table 2, clearly demonstrates the slower absorption of crystalline insulin, a dose given immediately before breakfast is not absorbed quickly enough to lower the blood sugar by 11 a. m. But after this sharp rise due to delayed absorption the blood sugar for the remainder of the day is maintained at a fairly constant level.

Chart 1 B is the average blood sugar curve in two uncomplicated cases on one dose of regular insulin for two or three days, then on the same dose of crystalline insulin for a like period. A much lower fasting, as well as a much higher 11 a. m. blood sugar while on crystalline insulin, is again apparent.

Chart 1 C, the average curve of the remaining nine cases, those receiving two doses of insulin a day, at breakfast and at supper, also showed the slower absorption of crystalline insulin by an increase of the blood sugar from 7:30 to 11 a. m. and from 5 to 10:30 p. m.

Delayed absorption is likewise shown in chart 2.

Duration of Effect—Chart 1 shows that the effect of regular insulin is worn off by 2 p. m. and thereafter the blood sugar rises until 5 p. m. The new insulin is still active, as evidenced by a lowering of the blood sugar during this period. While with regular insulin (chart 1 B) the blood sugar dropped 20 mg% from 5 to 10:30 p. m., it dropped 25 mg% with crystalline insulin, again, during the night, while the blood sugar remained level with regular insulin, there was a further drop of 5 mg% with crystalline insulin.

In chart 1 C, as pointed out in the section on delayed absorption, the 5 p. m. dose of regular insulin brought

an immediate drop in blood sugar, the new insulin, because of its slow absorption, allowed a slight rise. Since the carbohydrate content of breakfast and supper are approximately equal, this rise undoubtedly would have been much higher, paralleling the 11 a. m. rise, had not the breakfast dose of crystalline insulin still been active. Despite the fact that the 10:30 p. m. average was slightly higher with crystalline than with regular insulin, the prolonged action of the former caused a lower 7:30 a. m. blood sugar.

Level Blood Sugar Curves—The ability of improved crystalline insulin to maintain a more nearly constant blood sugar level after the period of initial delay in absorption was demonstrated in chart 1 A. It is also shown in chart 3 of a patient who was given only 10 units of insulin each morning, the amount necessary to prevent glycosuria. In accordance with hospital routine, this dose was given with the breakfast. Had it

TABLE 3—Rate of Absorption

| Slow Absorption | | Fast Absorption | |
|-----------------|-----------------------|-----------------|------------------|
| Number of Cases | Complication | Number of Cases | Complication |
| 5 | Arteriosclerotic feet | 2 | Gangrene of feet |
| 2 | Medial cases | 2 | Infected stumps |
| 1 | Postpericarditis | 2 | Carbuncle |
| 3 | Simple fracture | | |
| 3 | Cataracts | | |

been given an hour earlier, the sharp rise at 11 a. m. would have been avoided and a more level blood sugar curve maintained throughout the day. But since we were using an entirely new type of insulin and had no previous clinical experience with it to guide us in its use, we confined our studies to its effect on the blood sugar under constant conditions and not to its possibilities in producing the ideal level blood sugar curve.

Rate of Absorption—The rate of absorption seems to be very dependent on some factor in the body, possibly the pH . In this series of cases those who showed quick absorption of the morning dose of crystalline insulin as evidenced by a blood sugar lower at 11 a. m. than at 7:30 a. m. were grouped together. Another group was made up of those whose blood sugar rose in

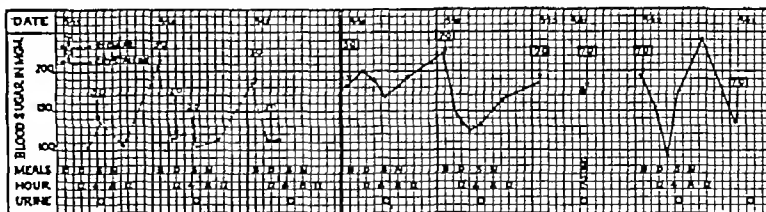


Chart 4—A woman aged 45 had had a painless ulcer on the right heel six months before admission. She was known to have had diabetes for eight years and was on diet 2. There was an immediate larger drop in blood sugar following 30 units of regular insulin than following 70 units of crystalline insulin.

spite of the dose of crystalline insulin at 8 a. m. The average daily dose and the average single dose of insulin in the two groups were the same. These two groups arranged as in table 3 clearly show that those whose response was rapid are the ones having an active and severe infection, while those showing slower absorption were the uncomplicated diabetic cases.

This observation was made on patients receiving small or moderate doses of insulin, not over 40 units per dose. Even with much larger doses of the new insulin there was an 11 a. m. rise in 33 per cent of the determinations in uncomplicated cases. The immediate

drop in the remaining determinations probably was due to the prolonged action of the preceding large dose

Further studies of the effect of complications on the rate of absorption, with frequent determinations of the carbon dioxide combining power of the blood as an index of acidosis and of the rate of sedimentation of erythrocytes as an index of the severity of infection, might prove illuminating

EXPERIMENT TWO

Five patients receiving two or three doses a day of regular insulin, totaling from 30 to 80 units, were put

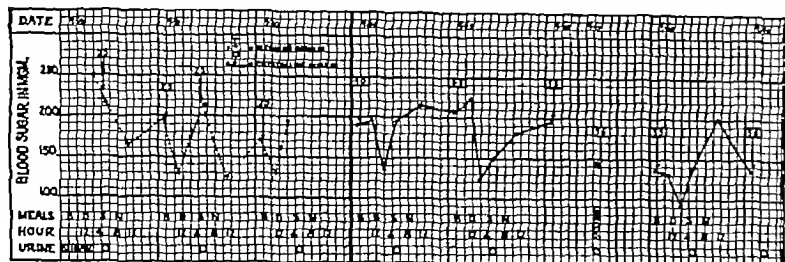


Chart 5—A woman aged 54 had a small ulcer on the right leg which healed with out difficulty. On diet 4 she showed adequate control of her blood sugar and no glycosuria on one daily dose of crystalline insulin

on a single large dose of crystalline insulin. These patients had complaints not complicating their diabetic management. There was no dietary change during the experiment.

The substitution of crystalline insulin for regular insulin caused no loss of control of blood sugar and consequently no glycosuria. We did not find it necessary to give supplementary doses of regular insulin to maintain this stability.

The resulting curves confirmed the observations noted in the average curves. The charts of patients receiving the three largest dosages of insulin are worthy of analysis.

Charts 4, 5 and 6 show the curves of patients receiving 50, 60 and 80 units of regular insulin daily in divided doses. Delayed absorption of crystalline insulin is shown by the fact that small doses of regular insulin produced a larger drop in blood sugar from 7:30 to 11 a.m. each day than was produced by doses of crystalline insulin from two to three times as large. In fact, following the crystalline insulin there was often the rise at noon, as noted in the average curves. With crystalline insulin there was a universal drop in the blood sugar from 11 a.m. to 2 p.m. which was not present when regular insulin was administered, even with a noon dose, as in chart 4. Thus crystalline insulin is slower in absorption; the peak of its action not being reached till six hours after injection, i.e., about 2 p.m.

While the blood sugar at 10:30 p.m. with one daily dose of crystalline insulin is often high, owing to the liberal carbohydrate content of the evening meal, to the nourishment taken at 8 p.m. and to the slow absorption of the insulin, there is usually a large drop in the blood sugar over night, whereas with regular insulin there is an invariable rise even with a supper dose. The constancy of this difference in the two preparations is striking. The regular insulin in cases of moderate or severe diabetes does not remain effective over night,

while the nocturnal effect of crystalline insulin in lowering the blood sugar is marked. Apparently a single dose of crystalline insulin shows prolonged action for twenty-four hours or more.

It is noteworthy that there was not a single insulin reaction nor any discomfort to the patient following the administration of daily large doses of crystalline insulin. Even though the patient in chart 6 had a fasting blood sugar of only 103 mg. on the morning of May 8, he was given 60 units of crystalline insulin without any symptoms of hypoglycemia. At no time was there glycosuria.

The convenience and decreased discomfort accompanying a single daily dose of crystalline insulin in preference to multiple doses of regular insulin are highly acceptable to diabetic patients. The use of crystalline insulin in this respect merits further clinical study.

SUMMARY

The improved crystalline insulin used in this investigation was perfectly stable at room temperature.

The data obtained in comparing regular and crystalline insulins show them to be equally potent, as demonstrated by the daily average of all blood sugars.

An average of 280 blood sugar readings in complicated and uncomplicated diabetes shows slower absorption and more prolonged action of improved insulin.

Severe infections or an acidosis seems to favor a more rapid absorption of crystalline insulin.

Delayed absorption prevents insulin reactions following the injection of large doses of improved insulin, even when the fasting blood sugar is low.

The single morning dose apparently remains in effect during the succeeding night, as shown by the lowering of the blood sugar between 10:30 p.m. and 7:30 a.m.

One daily, large dose of crystalline insulin may adequately control the blood sugar of patients requiring two or more doses of regular insulin daily and maintain the patients aglycosuric.

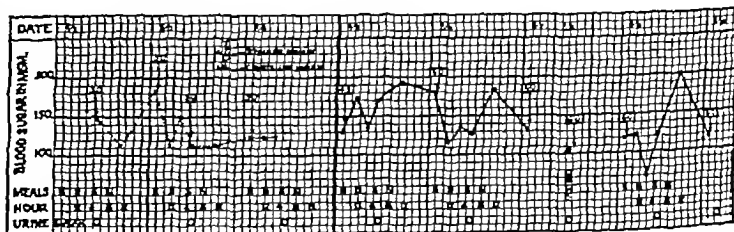


Chart 6—A man aged 65 had had diabetes for six years. A small ulcer on the plantar surface of the right foot healed quickly. Even though his fasting blood sugar on May 8 was only 103 he had no insulin reaction following a dose of 60 units of the crystalline insulin. This patient was on diet 2.

Our work was a comparative study and no attempt was made to improve the blood sugar curve with crystalline insulin.

The improved crystalline insulin is worthy of further clinical study.

Cook County Hospital—4458 Madison Street

Chewing the Food—Such rules as that each mouthful should be chewed a given number of times are too arbitrary to be permanently helpful. A more rational rule is that each mouthful should be chewed until swallowing is entirely unobscured.—Sherman H. C. Food and Health New York, Macmillan Company, 1934

Clinical Notes, Suggestions and New Instruments

MYELOPHTHISIC ANEMIA IN A CASE OF CARCINOMA OF THE STOMACH

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AND

B. D. ROSENAK, M.D., INDIANAPOLIS

This report of a patient having carcinoma of the stomach with an unusual form of anemia has been prompted by a report of two similar cases made recently by Dr. Theodore R. Waugh.¹

Clinicians are familiar with the usual picture of anemia due to gastric carcinoma. The vast majority of cases demonstrate the typical picture of so-called secondary anemia due to chronic blood loss. The factor of impaired nutrition enters into the production of minor degrees of anemia in those cases before actual loss of blood begins. It is thought that in cases in which there is an actual achylia gastrica this factor also plays an important role in disturbing the normal hematopoiesis. In most cases in which there is a more or less severe degree of anemia in cancer of the stomach, the etiologic factor of most importance is the chronic loss of blood from the ulcerated surface of the lesion itself. The degree of metastasis, according to Crohn,² has nothing to do with the severity of the anemia unless bone marrow metastases have occurred, as in the case herewith reported. However, Eusterman and Balfour³ point out that there is a correlation between the degree of anemia and the extent of involvement of the stomach, and consequently the blood picture has some value as a prognostic sign. The severity of this type of anemia in cancer of the stomach varies greatly. The red blood cells may number 2,000,000 or less, but most cases at the time of diagnosis will be found to show a red cell count of from 3,500,000 to 4,000,000, and a hemoglobin of 40 to 70 per cent. The color index is always below 1 in this type of anemia. There is no feature of this blood picture to enable differentiation from the anemia due to chronic blood loss from any other cause.

A less common blood picture in cancer of the stomach is that which closely resembles Addisonian anemia. This condition has been seen on a number of occasions in the past few years and always has aroused considerable debate as to diagnosis. In most of these instances in which a macrocytic anemia with a high color index is found, certain clinical features of the case will point the way to the correct diagnosis. Often the hematologic studies alone will not suffice, and only a thorough study of gastric contents, with determination of enzymes and a careful roentgen examination of the stomach, will reveal that such a case of anemia is due to or accompanied by carcinoma of the stomach. In several instances we have had such cases on liver therapy and obtained excellent reticulocyte response. In one case, seen three years ago not only were the blood picture and reticulocyte response present but the patient also presented the clinical picture of posterolateral sclerosis. At present, three years after a sleeve resection of an adenocarcinoma of the stomach, he is apparently well and maintains a satisfactory blood picture on iron alone. It is never possible under such circumstances to feel absolutely certain that a single individual does not have both lesions. Nor can one dismiss the thought that the carcinoma has played some part in destroying the intrinsic gastric hematopoietic factor and is, in fact, the etiologic background for what is essentially a true pernicious anemia.

A third and much less common form of anemia engages our attention at present—so-called myelophthisic anemia, a severe grade of hemolytic anemia occurring in diseases which destroy the bone marrow. Metastatic carcinoma is an occasional cause of this type of anemia. Cancer of the breast, thyroid and prostate are most apt to metastasize to bone, but not infrequently this occurs in cancer of the stomach. For some

unaccountable reason, bone marrow metastases may occur without producing this bizarre blood change, but when it does occur there should be no difficulty in classifying it. The significant morphologic changes in the blood include a marked diminution of red blood cells, correspondingly low hemoglobin content, marked anisocytosis and poikilocytosis, and a high percentage of polychromatophilic cells and nucleated forms. Myelocytes are frequently found in the circulating blood. Thus in these cases a very rapid destruction of blood cells, particularly the red cells, occurs and there is a marked increase in the number of immature cells present in the circulating blood. Waugh found an increased red cell fragility in his cases and felt that this factor played some part in their rapid destruction. The fragility test in the case herein presented was entirely normal. The mechanism of the destruction of the erythrocytes in these cases is unknown. Waugh states that a "toxin" produced by the cancer cells may be the hemolytic factor. The logical explanation for the abundance of young cells in the blood is that a compensatory stimulation of the uninvolved areas of bone marrow occurs. This may be due to mechanical or chemical irritation of the marrow neighboring the metastatic nodules. Pepper and Farley⁴ state that in the terminal stages of this type of anemia an actual aplasia of bone marrow occurs with an absolute cessation of hematopoietic activity. It is not often that an individual lives until such bone marrow destruction extends sufficiently to produce an absolute aplasia. However, it is conceivable that a considerable degree of aplasia of bone marrow may be produced in cases of widespread carcinomatosis. It seems reasonable, therefore, that an aplastic element might also play a part in the picture of myelophthisic anemia, in that destruction of marrow occurs out of proportion to compensatory activity of uninvolved hematopoietic tissue.

Another feature of the present case which may or may not support the foregoing theory is the terminal disappearance of platelets from the circulating blood. This may be due to a failure of formation or to a rapid destruction of these elements by the same toxin that destroys the red blood cells.

REPORT OF CASE

A white man, aged 38, a plumber, first consulted his physician Nov. 24, 1935, when he complained of mild backache, weakness and fever. At this time he was sent to bed and treated for influenza. However, he did not respond to treatment, continued to lose weight, became weaker, and developed dyspnea. He was seen in consultation in his home December 24, one month after the onset of his illness. He was found to be cachectic, profoundly weak, very short of breath, and definitely flushed.

Physical examination revealed his temperature to be 101 F and there were signs of fluid in the left side of the chest. Examination of the abdomen disclosed nothing. The patient did not appear to be profoundly anemic. At this time the diagnosis of tuberculosis and possibly tuberculous pleurisy was made, and he was sent to a hospital.

At the time of the initial visit, no significant data concerning family illnesses could be ascertained, and the patient stated that his health had been excellent until the onset of the current illness.

When admitted to the hospital, he was found to be mildly jaundiced and his spleen was definitely palpable. There were no gastro intestinal symptoms. The nails and mucosae appeared very pale, but his skin did not show a marked anemia. His pulse was 140, respiration 30, and temperature 100.

Laboratory examinations on the day of admission showed the urine to be entirely normal and the Wassermann and Kahn reactions to be negative. A roentgen examination of the chest revealed a general increase in density of both bases, a small amount of fluid in the left base, and an area of increased density in the right lower lobe, which latter the roentgenologist stated had the appearance of a small metastatic nodule but which he said was probably due to an area of exudation. In this instance, caution prevented the making of a brilliant roentgen diagnosis.

There was very little response following two transfusions of 500 cc of citrated blood. Several blood counts were made, but the one made December 28 is representative hemoglobin

1 Waugh T R. Hemolytic Anemias in Carcinomatosis of the Bone Marrow. *Am J M Sc* 191 160 169 (Feb.) 1936

2 Crohn B B. Affections of the Stomach. Philadelphia W B Saunders Company 1927

3 Eusterman G B and Balfour D C. The Stomach and Duodenum. Philadelphia W B Saunders Company 1935

4 Pepper, O H P, and Farley D L. Practical Hematology. 4th Edition. Philadelphia W B Saunders Company 1933

28 per cent, or 421 Gm, erythrocytes 1,690,000, anisocytosis marked, poikilocytosis marked, nucleated cells frequent, polychromatophilia marked, reticulocytes 11 per cent, leukocytes 6,000, polymorphonuclears 6 per cent, small lymphocytes 17 per cent, large lymphocytes 26 per cent, staff cells 33 per cent, basophils 3 per cent, metamyelocytes 10 per cent, myelocytes 3 per cent, monocytes 2 per cent, platelets too few to count, color index 0.82, coagulation time 10 minutes, bleeding time 45 seconds, fragility of red cells on initial hemolysis 0.44 per cent sodium chloride, on complete hemolysis 0.34 per cent sodium chloride. Clot retraction occurred within twelve hours. Red cell sedimentation was 0.1 mm per minute (normal, according to the method of Rourke and Ernste). The van den Bergh test gave a delayed positive reaction, indirect positive reaction. Quantitative serum bilirubin was 0.5 mg. Blood cultures were negative.

As stated before, the patient did not respond to blood transfusions but declined very rapidly and died on the fifth day after admission to the hospital.

Autopsy showed an adenocarcinoma of the stomach situated on the posterior wall near the lesser curvature. The lesion was 6 cm in diameter and protruded about 1 cm into the lumen. The surface of this lesion was not eroded or ulcerated. The nodes along the lesser curvature and those throughout the mesentery as well as those following the aorta and its branches were markedly enlarged and firm. The liver was enlarged and was studded with metastatic nodules. The spleen was enlarged but was not involved in the metastatic process. The left adrenal gland showed numerous firm nodules throughout. The lower lobes of both lungs contained microscopic areas of carcinomatous infiltration. There were very few areas that might have been large enough to cast the shadow seen on the x-ray films. Unavoidable circumstances made it impossible to obtain bone marrow specimens, but such sections would only have added corroborative information to this case, which completely demonstrates the myelophthytic type of anemia in a patient with rapidly metastasizing carcinoma arising in the stomach.

SUMMARY

There are two common forms of anemia seen in cancer of the stomach. One of these is a simple form of secondary anemia due to chronic blood loss and undernutrition, the other is one that bears much similarity to true pernicious anemia.

A case of carcinoma of the stomach presented a rare form of anemia due to metastatic involvement of bone marrow. The mechanism of this so-called myelophthytic anemia is not definitely understood but presents elements of rapid destruction of red blood cells, a compensatory stimulation of hematopoietic activity, and probably some degree of aplasia.

226 Hume Mansur Building

RECTAL STRICTURE COMPLICATING DELIVERY

REPORT OF A FATAL CASE

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A review of the recent literature fails to reveal any articles dealing with the problem of rectal stricture complicating delivery, yet the great mass of rectal disorders that the average physician meets in general practice should warrant giving a severe rectal stricture the respect that is its due in regard to pregnancy and the delivery of that pregnancy. We feel that the presence of rectal stricture in the pregnant patient should be regarded with grave apprehension.

The principal point in the relation which the presence of a stricture might have on the delivery of the pregnancy depends entirely on the degree of the stricture. A history of constipation over a long period of time associated with the presence of "pencil sized" stools should warn the obstetrician of impending difficulty. Small strictures or "bands" in which there is no decrease in the size of the stools or in which there is no decrease in the size of the rectal canal are of no consequence and may be disregarded. But when there is a definite thickening of the rectal wall and particularly of the rectovaginal septum a complete study of the condition should be made preferably before the onset of labor.

REPORT OF CASE

S. V., a white woman, aged 19, admitted to the labor room in active labor, dated the onset at about twenty hours before admission with rupture of the membranes thirty minutes before admission. The past history was essentially negative except for the presence of "rectal trouble" for several years. She had had no antepartum care, owing principally to the fact that she had never menstruated. She stated that she was not cognizant of being pregnant. On examination she was found to be in very active labor and her general condition did not appear to be good. External pelvic measurements were within normal limits, no internal measurements were taken. Routine rectal examination revealed a very tight rectal stricture which would admit the index finger with the greatest difficulty for a distance of about 1 inch (2.5 cm). There was involvement of the entire wall of the rectum, extending as far as the finger could reach. There was a definite thickening of the rectovaginal septum. Internal hemorrhoids protruded with each labor pain. The fetus was in the left occipito anterior position with fetal heart tones well heard in the left lower quadrant of the abdomen. Approximately three and one-half hours after admission the fetal head was crowning, but the patient seemed to be making little if any progress. She was prepared for delivery. Tucker-McLean forceps were applied and a medio-lateral episiotomy done, there was marked bleeding from the incision as the result of the unexpected large size of the vulvar varicosities. Strong traction with the forceps failed to bring the head any farther down. Version and extraction was then decided on as the most advisable procedure. Except for some difficulty in replacing the head the version was comparatively easy, but after the delivery of the chin the obstruction was sufficient to stop the extraction. With a great deal of traction the head was finally delivered rather suddenly. The child was a normal full-term living male weighing 6 pounds 7¼ ounces (3,062 Gm). The episiotomy was repaired in spite of the patient's semishocked condition, and she was transferred to the ward when it was thought safe. She reacted only once from the shock and died approximately five and one-half hours after delivery.

Postmortem examination revealed a moderate amount of thick dirty brown fluid with a fecal odor in the pelvis and dependent portion of the upper part of the abdomen. In the rectovaginal excavation there was a transverse laceration through the pelvic peritoneum and underlying anterior wall of the rectum with a direct communication of the lumen of the latter into the peritoneal cavity. There was a stricture of the rectum two phalanges above the anus with a considerable narrowing of the lumen of the remaining portion of the rectum, 8.4 cm above the anus was a laceration of the anterior and lateral portions of the upper part of the rectum, with an opening communicating directly with the peritoneal cavity. The mucosa of the rectum and sigmoid colon was irregularly scarred and covered with scattered deep purple hemorrhagic areas. The wall was moderately indurated and the lumen definitely narrowed. A diagnosis of chronic ulcerative colitis and sigmoid diverticulitis was made.

It was apparent from the clinical history, physical examination, difficulty in delivery, and the postmortem examination that the direct cause of death in this case was the presence of a severe rectal stricture. The method of handling the delivery would have undoubtedly been cesarean section, with probable sterilization, had it been realized beforehand that the dystocia offered by the rectum could have been so great. We feel that in this type of case a section is definitely indicated and that if the diagnosis is made prior to the onset of labor a great deal of danger may be averted.

SUMMARY

1 In a fatal case of rectal stricture complicating delivery the dystocia caused by long-standing chronic ulcerative colitis was sufficient to cause rupture of the rectum with delivery of the head.

2 Cesarean section is indicated in cases of severe rectal stricture.

3 The history of "rectal trouble" should be studied thoroughly during the antepartum care of the pregnant woman.

620 South Twentieth Street

Special Article

THE IMPORTANCE AND ADVANTAGES OF PRESCRIPTION WRITING IN MEDICAL PRACTICE

E FULLERTON COOK, PH M

Chairman of the Committee of Revision of the Pharmacopeia
of the United States

PHILADELPHIA

This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U S Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION—Ed

In connection with the Eleventh Revision of the United States Pharmacopeia, containing the new official *materia medica*, a series of articles are appearing in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. The authors have been asked to express their opinions, without bias or influence, concerning the most effective treatment of certain diseases. Although their attention has been called to the official list of medicinal substances, they will be free to disregard these agents if in the interests of efficacious therapy other drugs should be mentioned. Any remedies that come to light through these writings can then be considered and investigated with the view of possible inclusion in the Pharmacopeia through "interim revisions."

THE SELECTION OF U S P MEDICINES

The therapeutic agents included in the latest Pharmacopeia were selected by a subcommittee consisting of eighteen physicians and five pharmacists. The physicians were those named by the medical members of the U S Pharmacopeial Convention, primarily for their special qualifications for deciding the scope of the U S P so far as it represented therapeutic agents. The pharmacists contributed information concerning the extent of use of substances but were specially responsible for pharmaceutically necessary items such as were needed to manufacture or test the quality of the official medicines.

The principle governing the selection of medicines was exclusively that of therapeutic merit, as demonstrated through biologic and clinical experience. At the time of selection, even such questions as their status with respect to trademark or patent control were not to be considered. That the new Pharmacopeia might adequately represent the best therapeutic agents known to modern medicine, the former official list was carefully reviewed and about 100 substances eliminated as obsolete or unnecessary. Then all outstanding items in the newer *materia medica* were studied and fifty-four therapeutic agents were added to the official list.

THE U S P CONTAINS MOSTLY SINGLE THERAPEUTIC SUBSTANCES—NOT COMBINATIONS

Another guiding principle influenced the selection of the U S P XI titles. This was a theoretical ideal which the committee has maintained, namely, that only simple or basic substances or at least only concentrates of these, and no polypharmaceutical mixture, should receive Pharmacopeial recognition. This is based on the teaching that the physician should be free to exercise skill and judgment in the selection and combining of each

medicine, that it may exactly meet the needs of his individual patient. It also affords an opportunity to the physician to employ one drug of known physiologic activity, if he so wishes, or to combine with it an adjunct or such adjuncts as he believes desirable.

A PRESCRIPTION SHOULD BE DISTINCTIVE

While the ideal of medical practice is to use a single therapeutic agent of known physiologic value, it is often advisable to employ a suitable vehicle and to vary this so that the medicine may be distinctive. This applies to all forms of medication, such as liquids, powders, capsules and ointments. A pleasant flavor, an odor that suggests something other than a medicine, an added color are all legitimate enhancements to a prescription and make the medicine less likely to be duplicated. Those who deal with the sick are conscious of the influence of suggestion, a belief in the physician and his treatment is a powerful influence for relief and cure.

ADVANTAGE OF COOPERATION BETWEEN THE PHYSICIAN AND THE PHARMACIST

If the physician in practice is unfamiliar with suitable flavors, colors and vehicles, he has a tendency to order ready made preparations rather than to write a prescription containing the ingredients desired. Other factors that sometimes lead to "ordering" in place of "prescribing" are complexity of the pharmaceutical problem involved or lack of information as to dosage, solubility, chemical reactions and other factors.

In these strictly pharmaceutical problems the skilled pharmacist can often help the physician. He can also supply information concerning manufactured medicines, and cooperation with a competent pharmacist will frequently prove beneficial to the patient.

The intensive training of the physician and the elaborate machinery for preparing, standardizing, checking and distributing medicinal substances are all animated by the needs of a patient. To meet this situation there comes the physician, skilled in diagnosis, familiar with the most effective methods of treatment and having at his command a knowledge of the action of medicinal substances and knowing when they are indicated. But his medical skill frequently cannot function effectively if there are not available the carefully prepared and standardized ingredients for his prescriptions, already produced by expert pharmacists, chemists, bacteriologists or biologists, and made available through the pharmacist in the hospital or the community.

IMPORTANCE OF THE SCIENTIFICALLY CONTROLLED MANUFACTURING LABORATORY

In the background there must stand today the manufacturing laboratories, with efficient equipment and rigid control over every step of manufacture. These must produce standard inorganic and organic chemicals such as ether, potassium iodide and sodium salicylate, complex synthetics such as arsphenamine, biologicals such as diphtheria antitoxin and rabies vaccine, biologically standardized pharmaceuticals, including preparations of digitalis and pituitary, sterile products for parenteral administration and the hundreds of other needed chemicals and pharmaceuticals.

The trained pharmacist serves as a liaison officer in the hospital, the medical center and the community. His specialized knowledge concerning the available medicines should be of inestimable value to the physician in both the selection of medicines and their combination.

THE PRESCRIPTION FOR THE INDIVIDUAL

The prescription written for the individual patient is an important link in a perfected service. An original prescription shows evidence of professional skill and is not a product with which the patient is already familiar through its display in the type of medicine store where no professional knowledge is present and where such standards must necessarily be low.

The latter situation is worthy of serious consideration, for the patient is likely to question the justification for a doctor's fee when it results in what may appear to be a "patent medicine" type of treatment. Physicians are also realizing that the patient is almost certain to recount his or her experience when talking to friends, perhaps to the discredit of the doctor. Even the naming of such trademarked medicines under these circumstances often leads those who hear the discussion to buy the same medicine to relieve self-diagnosed symptoms. The alarming increase in the use of hypnotics, without medical advice, illustrates this danger.

The use of abbreviated official titles written into a prescription and with a "non rep" order controls the situation, while the suggestion to "buy it at the drug store" opens wide the door to self medication.

OFFICIAL MEDICINES NOW LARGELY USED

In proposing the use of official medicines on prescriptions it is not being suggested to physicians that they seriously modify the present-day custom of most doctors. In a scientifically conducted survey of the actual ingredients used by physicians in their prescriptions during 1931-1932, a study covering typical communities throughout the United States and including 121,294 prescriptions, Gathercoal¹ reported that 65.19 per cent of the ingredients in these prescriptions were official in the U. S. P. X, 7.92 per cent were in the National Formulary, 16.05 per cent were proprietary specialties and 10.84 per cent were unofficial items. About the same time the author of this paper found by a study of the catalogues of physicians' supply houses that a preponderant proportion of the ingredients used in their formulas were official in the U. S. P.

The Pharmacopeia of the United States was founded by physicians in 1820 as a therapeutic guide to the profession. It has endeavored to maintain that position for more than a hundred years. Its preparations were the basis for the teaching of therapeutics in medical schools for almost a century and now they constitute the large majority of those therapeutic agents recommended by the American Medical Association in *Useful Drugs* as a present-day therapeutic guide for medical schools.

PHYSICIANS AND THE PHARMACOPEIA

The Pharmacopeia invites the physicians of the country to assist in maintaining it as a reliable guide to the medical profession in the field of therapeutics. If items now official are unreliable they should be deleted, as important new remedies are developed these should find a place in the Pharmacopeia by "interim revision."

It is believed that, with a study of the ingredients official in the new Pharmacopeia especially when supplemented by the National Formulary tablets, ampules and elixirs of U. S. P. drugs, including such preparations as Elixirs of the Bromides, of Barbitals, Phenobarbital and Aninopyrine respectively, and the

Sprays and Jelly of Ephedrine, physicians will find a wide range of medicines for practically every therapeutic need.

OFFICIAL MEDICINES IN HOSPITAL TREATMENT

Emphasis should also be placed on the restriction of routine hospital treatment to official medicines whenever possible, since this has been demonstrated to be a policy which is scientifically and economically sound.

PRESCRIPTION WRITING BY HOSPITAL INTERNS

This program for the hospital has within it another possibility of far-reaching significance. It is realized that the medical student has little opportunity in his crowded curriculum to become familiar with official titles or even to gain practice in prescription writing. Insufficient information and training in these two fields as well as the use of certain types of hospital formularies and lack of cooperation between the house and visiting medical staffs help to explain the failure to write more prescriptions for official medicines. This is being recognized by a number of hospitals, and both medical and surgical interns are being given regular training in the use of official medicines and in prescription writing. The appreciative response, where this course has been well conducted, is gratifying and is apparently justifying itself by the increased efficiency and ability of the younger physicians having this added training. The medical staffs of many hospitals have developed their own "formulary" as an aid in the efficient and economic use of medicines within the hospital. The prescriptions in such a "formulary" should never be given by numbers, as this practice has led to both carelessness and mistakes. In the compiling of such a "formulary" the official titles of drugs, chemicals or preparations, or their official abbreviations, should be used so that the younger physicians on the staff may become increasingly familiar with these established medicines.

THE PRICE OF A PRESCRIPTION

The price of a prescription is no small item for consideration in the total cost of medical care. It should be the basis for a complete understanding and must be established on a sound and economically correct foundation.

It is proper that the patient should pay for the medicine and that it should not come out of the physician's fee, for that is not economically sound and leads to numerous abuses. Many physicians today are being persuaded to start the practice of office dispensing. There are conditions in which this is justified, as in a country district where there are no prescription filling facilities, but that it introduces the possibility of many complications must be conceded, and most physicians return to prescription writing as soon as financial pressure is relieved.

However, to return to the price to be charged for the prescription when the pharmacist is called on to utilize his professional skill and equipment in supplying the medicine ordered by the physician or when he has prepared the medicines beforehand in his laboratory, using his training and equipment, there is justification for including a reasonable professional fee in the price to be charged the patient.

THE REFILLING OF PRESCRIPTIONS AND THE GIVING OF COPIES

An argument sometimes advanced against the writing of prescriptions is based on the belief that the patient often continues the use of the medicine long after it

¹ Gathercoal, E. N. The Prescription Ingredient Survey published by the American Pharmaceutical Association.

was intended by the physician by having the original prescription refilled and by even giving copies of the prescription to friends

If a physician prefers that the prescription shall not be refilled except on his order, it is the common practice to add to the prescription the abbreviation "non rep" and this injunction will be honored by the pharmacist

This "non rep" order should never be printed on a prescription blank. It has a different significance when written on the prescription by the physician. The pharmacist can assist by attaching a special label to the filled prescription indicating that it is nonrefillable. In such cases "a copy" of the ingredients should not be placed on the package

SUMMARY

The welfare of the patient is often aided by the administration of a properly selected medicine. A distinctive prescription, written for the needs of a specific patient and using official drugs or preparations whenever these are available, is desirable.

The skilled professional pharmacist can often be helpful in the selection and combination of medicines.

The judicious use of the "non rep" order on prescriptions and the employment of official titles will assist in the control of objectionable self medication.

Forty-Third Street and Woodland Avenue

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER Secretary

MODEL J DIATHERMY AND COAGULATOR ACCEPTABLE

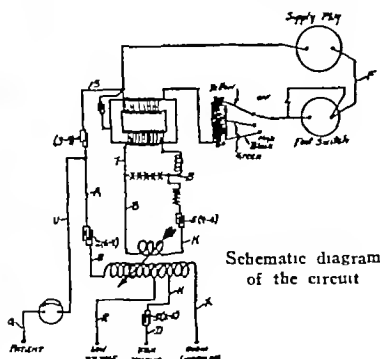
Manufacturer The Liebel-Flarsheim Company, Cincinnati

This machine is recommended by the manufacturer for medical and surgical diathermy. The unit is mounted in a cabinet of walnut finish and is equipped with three voltage taps low, high and medium. The unit weighs about 60 pounds.

At the request of the Council the manufacturer submitted data concerning tests of the machine for power input and out-



Model J
diathermy and
coagulator



put and for its spark gap and transformer temperature rise. The results recorded in the data were in agreement with the observations of the Council's investigator and were in conformity with the standards for diathermy machines previously established by the Council.

The unit was tested for seven months in a clinic acceptable to the Council and the investigator reported that the machine coagulates desiccates and fulgurates satisfactorily and develops sufficient heat for use in medical diathermy.

In view of the favorable report, the Council voted to include the Model J Diathermy and Coagulator in its list of accepted apparatus.

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT
PAUL NICHOLAS LEECH Secretary

SMALLPOX VACCINE (From Chick Chorio-Allantoic Membrane)-LILLY

Eli Lilly & Co requested Council consideration of its smallpox vaccine made by using chick chorio-allantoic membrane instead of the usual calf lymph. The firm supplied the following statement of the method of preparation:

Chick embryos of about fourteen days are used. After sterilizing the surface of the eggshell a minute opening is drilled and the chorio-allantoic membrane inoculated with sterile seed vaccine virus from a syringe the needle of which is introduced through the shell puncture. The opening is sealed with paraffin and the inoculated egg returned to the incubator. After an incubation period of seventy-two to ninety-six hours the chorio-allantoic membrane is exposed, harvested and tested for sterility. Only sterile membranes are used in the preparation of the vaccine. These are pooled into a sterile container and a 50 per cent glycerin diluent added. Grinding to a very fine homogeneous emulsion is effected by a high speed electric grinder. Sterility safety and potency tests are run. After filling the vaccine into capillary tubes sterility and potency are checked.

The firm holds that this method of preparation eliminates the hazard of bacterial contamination and gives an improved preparation of uniform potency, diminished virulence and immunizing quality at least as high as that of the vaccine prepared from calf lymph.

In support of the claim of equal potency with that of calf lymph the firm presented the following comparative chart of potencies of the finished product as filled into the capillary tubes and placed on the market:

Comparative Filling Potency Chick Embryo and Calf Smallpox Vaccine

| Item and Lot Number | 1 100 | 1 1 000 | 1 3 000 | 1 10 000 |
|---------------------|-------|---------|---------|----------|
| Chick Vaccine | | | | |
| No. 922716 | 5+ | 3+ | 1+ | 1+ |
| No. 922715 | 5+ | 4+ | 3+ | 3+ |
| No. 922713 | 5+ | 4+ | 2+ | 2+ |
| No. 922714 | 5+ | 4+ | 2+ | 2+ |
| No. 922712 | 5+ | 3+ | 2+ | 1+ |
| Calf Vaccine | | | | |
| No. 913966-2 | 4+ | 3+ | Not run | 2+ |
| No. 913966-3 | 4+ | 3+ | Not run | 1+ |
| No. 916388-1 | 4+ | 4+ | Not run | 2+ |
| No. 916388-2 | 4+ | 3+ | Not run | 2+ |
| No. 918191-1 | 4+ | 4+ | Not run | 2+ |
| No. 902731-4 | 4+ | 4+ | Not run | 3+ |

As evidence for the clinical effectiveness of the product, the firm presented the following reports of its use by Drs. Frank D. Ryder and Carl J. Lund of Minnesota, who have kindly given permission for their use in this preliminary report.

SMALLPOX VACCINATION Grand Island Public School System November 1935

| | |
|---------------------------------|-------------|
| Number Vaccinated | 3 356 |
| Elementary Schools | 1,968 |
| Junior and Senior I Students | 1 388 |
| | 3 356 3 356 |
| Reactions | |
| Positive takes entire system | 2 492 |
| Negative—no takes entire system | 864 |
| | 3 356 |

| | |
|--|-------|
| The percentage of positive reactions in elementary schools (up to 7th grade) | 91.3% |
| Immune reactions same age group | 1.9% |
| Inherited immunity—no reactions | 6.8% |
| In Junior and Senior High Schools (7th grade to 12th grade incl.) the percentage of positive reactions | 50.1% |
| Immune reactions same age group (students who had been vaccinated within seven years and those who had had smallpox) | 49.9% |

Dr. Lund reported as follows:

It may be of interest to know that I recently vaccinated 118 pupils in our local grade and high school.

I used your chick chorio-allantoic membrane smallpox vaccine and had 100% takes on those who had primary vaccinations.

I used the multiple pressure method (40-50 pressures).

The Council considered the evidence offered for Smallpox Vaccine (from Chick Chorio-Allantoic Membrane)-Lilly to be favorable but insufficient as yet to justify its acceptance for inclusion in New and Nonofficial Remedies. The Council therefore postponed consideration of the product to await the development of further confirmatory evidence of its value.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 19, 1936

SELENIUM POISONING IN THE UNITED STATES

Selenium poisoning, formerly called "alkali disease," has been discussed before in our editorial columns.¹ It was first recognized in 1857 by Madison² on the Missouri River in what is now Gregory County, S. D., among a squadron of horses. Mayo³ reported its occurrence in certain sections of Kansas in 1890-1891, and the Wyoming Agricultural Experiment Station observed it in horses in Carbon County, Wyo., in 1893. Peters⁴ in 1897 and 1904 announced its occurrence among cattle, horses, pigs and chickens in Boyd County, Neb., and Lipp⁵ described it in South Dakota in 1921. In 1928 Kurt W. Franke of the South Dakota State College of Agriculture at Brookings learned that animals consuming vegetation growing on particular areas developed "alkali disease." He found that grain which had been grown on "alkalied" farms and fed to white rats was very toxic and he attributed the injurious effects to a definite toxic constituent or group of constituents. In 1931 Henry G. Knight of the Bureau of Chemistry and Soils, United States Department of Agriculture, suggested that traces of selenium absorbed by plants from the soil might be responsible. Analysis of a sample of toxic wheat by W. O. Robinson revealed a content of from 10 to 12 parts per million of selenium. These important discoveries have stimulated much investigation, especially by the Bureaus of Chemistry and Soils, Plant Industry and Home Economics of the Department of Agriculture at Washington and the agricultural experiment stations of South Dakota and Wyoming. The evidence obtained definitely incriminates selenium and indicates that the so-called alkali disease of live stock may be due to traces of selenium in indigenous grains and forage.

1 Selenium Problem editorial J. A. M. A. 104:50 (Jan. 5) 1935.
2 Madison T. C. Sanitary Report—Fort Randall in Coolidge R. H. Statistical Report on the Sickness and Mortality in the Army of the United States January 1855 to January 1860 36th U. S. Cong. fir. 1. 1860 Senate Ex. Doc. 52:37 1860.
3 Mayo N. S. Bull. 24 Kansas Agricultural Experiment Station 1891.
4 Peters A. T. Nebraska Agricultural Experiment Station Annual Report 17:13 1904.
5 Lipp C. C. Ohio University Veterinary Alumni Quarterly 10:54 1922.

Selenium, with an atomic weight of 78.9, is a relatively rare allotropic element having many of the physical and chemical properties of sulfur and tellurium. It is widespread in the earth's crust, occurring in small quantities in the combined and free state, mostly associated with native sulfur, sulfate or metallic iron. It combines with many elements, such as oxygen, hydrogen, fluorine, chlorine and bromine, and most metals. Its chief commercial usefulness lies in the glass, copper, steel, ceramic and photographic industries and in the process of vulcanizing rubber and insuring noninflammability to electric cords.

The "alkali" disease is prevalent in the North Central Great Plains of the United States, causing losses among cattle, horses, pigs, sheep and chickens as the result of the ingestion of selenium-bearing vegetation growing on arid or semiarid grazing lands and farms. Cereal-producing areas are involved, for the most part certain regions in South Dakota and Wyoming, and it is thought that North Dakota, Kansas, Montana, Nebraska, Colorado and New Mexico may be affected.

The Cretaceous and Eocene geologic formations, deposited about 120 million and 60 million years ago, are the selenium-bearing strata in this section of the country, particularly the Pierre formation, where from traces to 100 parts per million of selenium have been found. Soils derived from such strata and vegetation growing on such soils contain selenium in varying quantities. The total area of soils concerned is enormous, but not all the vegetation growing on them is toxic. Byers⁶ believes that seleniferous areas exist in at least four continents. If leaching has not occurred, all soils derived from pyritiferous parent materials contain selenium. However, water in these toxic areas contains the element only in traces. The investigations of the United States Bureau of Agriculture and of the South Dakota State College of Agriculture have revealed the presence of selenium in foods in the "alkalied" areas, such as milk, eggs, corn, wheat, barley, rye, string beans, lettuce, cabbage and turnip leaves in amounts varying from 0.3 to 150 parts per million of selenium, data which indicate the gravity of this problem, at least locally.

The toxicity of selenium compounds toward bacterial, plant and animal life varies with the ionic state. Selenite is more toxic than selenate, and reduced selenium is almost nontoxic. Selenium and arsenic possess similar toxic effects. Selenium is readily absorbed but is rapidly reduced by all life. The toxicity of vegetation depends on its selenium content, and the absorptive power of plant life for selenium depends on the degree of rainfall, leaching, weathering, composition of the soil, the geological outcrop on which the plant material grows, the species of plant, and the amount of available sulfur or sulfate in the soil. Any soil containing more than 0.5 part per million of selenium and

6 Byers H. G. Selenium Occurrence in Certain Soils in the United States with a Discussion of Related Topics. Technical Bull. 483 U. S. Dept. Agriculture August 1935.

any vegetation containing 5 parts per million is potentially dangerous⁷. As shown by the studies of Franke,⁷ in the plant the selenium toxicant exists in the protein fraction in an unknown organic combination and may be removed by mercury bichloride precipitation.

Whether animals are fed with inorganic selenium compounds or with the natural plant toxicant, the pathologic and symptomatic features resemble closely those encountered among animals in the toxic areas. Necrosis and regeneration of the hepatic parenchyma with extensive periportal fibrosis and resulting cirrhosis combined with hemorrhages and secondary inflammatory reaction in the liver and kidneys are the primary pathologic features. Reduced selenium is found in the liver and spleen, and compounds of selenium are found in all tissues, secretions and excretions. Cattle, horses, sheep and pigs show erosions of the ends of the weight-bearing bones, with hoof abnormalities that considerably impair locomotion. Malaise, anorexia, stunted growth, loss of body hair, loss of weight, emaciation, impairment of reproductive power and severe anemia develop, to be followed by exhaustion, toxemia and death. The poisoning may be acute, in which case it is called blind staggers. Chickens show a decided impairment of fertility, if the eggs hatch the young do not live long, and monstrosities occur among them frequently. It is significant that Franke succeeded in producing similar monstrosities in chicks by the injection of selenium salts into fertile eggs. The symptoms encountered experimentally in the guinea-pig and the white rat do not essentially differ from those in other animals.

Even if removed from the toxic range and fed wholesome forage, selenized cattle do not usually recover their normal health. The stunting of growth in calves is distinct and continued, and in cattle the damage to the kidneys and liver seems to be permanent. Franke noted that rats fed on toxic grains for as short a period as ten days showed a lack of recovery, growth disturbances and typical pathologic changes even when fed a control diet for 165 days.

An evaluation of soil treatment with sulfates is indicated especially in the light of the work of Hurd-Karrer,⁸ who observed that an adequate sulfur content of the soil may reduce the toxic influence of selenium.

"Alkali disease" is essentially an agricultural and veterinary problem of local concern. The danger to public health seems to be relatively slight, owing to the low content of selenium in the great portion of commercial crops and the high dilution of toxic grains in the general market. So far human selenium poisoning has not been reported in the toxic areas, but because of occurrence among various kinds of animals there is no reason to believe that man is immune. This aspect of the problem is now under investigation.

EPIDEMIC AMEBIC DYSENTERY

Studies of the Chicago outbreak of epidemic amebic dysentery of 1933 are now accumulated in a special bulletin¹ issued by the United States Public Health Service. The epidemiology, which constituted one of the most important aspects of the general situation, is reported in considerable detail. This epidemic was the first recognized water-borne outbreak and the only known extensive epidemic of this disease in a civilian population. Approximately 8,500,000 out of town visitors came to Chicago during the period of the epidemic, with resulting congestion of the downtown hotels and public eating places. Two large neighboring downtown hotels having to some extent a common water supply were chiefly involved. During the epidemic period approximately 160,000 persons had contact with these hotels. During the year from June 1, 1933, to June 30, 1934, an obviously incomplete total of 1,409 cases were brought to light. More than two thirds of those infected were out of town visitors to the city. The active onset of symptoms generally occurred after the visitors had returned to their homes, hence amebic dysentery so acquired was reported from more than 400 cities scattered in forty-three states, the territory of Hawaii and three Canadian provinces. The average interval between exposure and report of illness to the Chicago board of health was three months, the long delay being due to various factors. There was no evidence that any active focus existed other than that of the two hotels, but in one of the hotels the general incidence of infection was higher than in the other. Except at the beginning and end of the epidemic period, from June 1 to Dec. 31, 1933, infections were being spread almost continuously but with marked variation in the risk of exposure at different times. In general, the more prolonged the exposure at the hotel, the greater was the hazard of infection. Ten per cent of those apparently infected within the hotels gave no record of eating at either of the two hotels, and almost all of these stated specifically that they did not eat in the hotel at which they stayed. All, however, presumably drank water there. The age, occupation and socio-economic status of the hotel guests infected corresponded with those of visitors to these two hotels. Evidence was not found of variations in sex susceptibility. The incidence of carriers among employees of the two hotels was respectively 37.8 and 47.4 per cent. Repeated examinations of employees indicated that infestations with *Endamoeba histolytica* were taking place during the epidemic. Vigorous measures directed to the prevention of the spread of infection by carriers among food handlers were ineffective. The opinion was reached that the principal if not the sole means of spread of this epidemic was through water polluted in one of the hotels. A contributing factor, however, was the progressively increasing number of carriers among

⁷ Franke, K. W. and others. Monstrosities Produced by the Injection of Selenium Salts into Hen's Eggs. *Anat. Rec.* 65: 118 (April) 1936.

⁸ Hurd-Karrer, Annie M. Inhibition of Selenium Injury to Wheat Plants by Sulfur. *Science* 78: 560 (Dec. 15) 1933.

¹ Epidemic Amebic Dysentery. The Chicago Outbreak of 1933. Bull. 166. National Institute of Health. U. S. Treasury Department. Public Health Service. Washington, D. C. 1936.

employees and probably among guests who remained for longer than the average stay

Study of the engineering features of the epidemic was particularly productive of results. Thus, it was found that pressure variations in the different parts of a hotel plumbing system are more marked than is customary in a city street distribution system, because of the height of the building, hence hazards from lack of pressure or negative pressure are more liable to occur inside the building than outside. Two major sanitary defects were found, namely, cross-connections between sewer 2 and the condensers and a sewer leak round a wooden plug over the cooled water tank in the same hotel. Several important points were brought out in the investigation. Regulations for building cross-connections, in order to be enforced, must be backed by an adequate and experienced inspection force, there is great need for education of engineers, architects, designers, equipment manufacturers, installation artisans and operating personnel having to do with water supply, drainage and the sewage disposal systems of large buildings relative to the hazards of cross-connections, the secondary use of water in an institution may involve potential hazards of pollution, and therefore any secondary system should be kept entirely separate from the main water supply system. The installation of new or additional plumbing fixtures in a building without providing for the extra load on the drainage system may cause serious flooding of the sewers. Sewers operated under pressure require special construction, especially of joints, to prevent leakage. Plumbing defects of any character should be promptly and effectively repaired. Water storage tanks should be effectively covered.

The clinical aspects of the epidemic also were studied, as far as allowed by the wide geographic distribution. That the disease is not exclusively a tropical disease has been effectively impressed by the outbreak. It is therefore a clinical entity that must be considered in differential diagnosis in all regions. Not alone may epidemic cases be encountered, but endemic infections have been found to be more widespread than generally supposed. It may simulate a variety of clinical conditions, such as colitis, appendicitis, malignant conditions of the colon and surgical conditions involving the rectum. Specific therapy proved to be remarkably effective in the epidemic cases, but nonspecific measures were usually disappointing and surgical intervention often disastrous.

The thoroughness of the investigation of this widespread epidemic furnishes a notable example of what should be done in preventive medicine. It can scarcely be doubted that, had the knowledge existed and had such knowledge been put into effect prior to the disaster of 1933, more than a thousand serious illnesses would have been prevented. It is certainly important that the engineering and sanitary information gleaned from this epidemic be applied immediately in order to prevent a similar epidemic from arising whenever conditions of

unusual crowding occur. The engineering and inspection laws relative to big buildings should be revised if necessary and immediately enforced not only in Chicago but in all cities in which such conditions might possibly arise.

Current Comment

RADIO HEALTH DRAMAS RESUMED

Beginning October 13, the American Medical Association and the National Broadcasting Company resume the health dramatizations broadcast during 1935-1936 under the title *Your Health*. The first program will be broadcast October 13 and will be the thirty-second nation-wide dramatized program broadcast by the American Medical Association. Details as to the time of day, the stations to which the program will be available, and the topics will be found under Association News in this issue of *THE JOURNAL*. These dramatized radio programs have been described in the *American Medical Association Bulletin*.¹ The dramatic technic has met with the approval of the profession and of the public. Mail from our audiences did not cease with the termination of the first series of dramatized broadcasts in May. Throughout the summer letters have continued to come referring to programs given several months prior to the date of the letter and requesting information supplementing the broadcast. This evidence that the dramatized technic not only interests at the time but makes a lasting impression justifies continuance of this more expensive and more difficult technic in preference to the didactic talk. The presentation of dramatized radio programs in cooperation with the National Broadcasting Company is an instance of how the radio networks are prepared to cooperate in educational broadcasting. Physicians do not always see eye to eye with the radio in matters of advertising and with relation to restrictions on discussion of some medical topics. The cooperation of the radio in educational programs of this kind is an evidence of willingness to grant expensive radio time and network facilities in the public interest. It should lead to a better mutual understanding between the medical profession and the radio industry, which will be helpful in the solution of their mutual problems. Putting a radio program on the air is only the first step. The radio as an advertising medium is valuable, but it does not stand alone. Neither does it stand alone as an educational medium. The radio must be supplemented with other forms of publicity. The program *Your Health* will be delivered to the Red network and the Pacific network of the National Broadcasting Company and will be available to approximately sixty stations. These stations may take it or leave it. The local decision may often be influenced by evidence of a local demand. The local medical societies have an opportunity to aid in popularizing the program by calling attention of their patients to it, both individually and collectively, through newspaper announcements and other means that may suggest themselves.

¹ Bauer, W. W. *Dramatizing the Health Message*. A. M. A. D.C. 30:97 (Oct.) 1935. *Evaluating Health Dramatizations*. Ibid. 31:114 (May) 1936.

in the local situation. An attractive announcement card which may be hung in the office of the physician is in preparation and will be sent gratis on receipt of a postcard or letter addressed to the Bureau of Health and Public Instruction, American Medical Association, 535 North Dearborn Street, Chicago. The greatest measure of success for this educational project can be achieved only through the highest degree of cooperation between the American Medical Association and local medical societies and auxiliaries.

Association News

RADIO BROADCASTS

Health Dramas to be Resumed October 13

The American Medical Association and the National Broadcasting Company present the second series of dramatized health broadcasts under the title *Your Health*, beginning October 13. The first broadcast in the new series will be the thirty second dramatized cooperative broadcast under the title *Your Health*. The theme for 1936-1937 will differ slightly from the topic in the first series which was "medical emergencies and how they are met." The new series will be built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve the American people in sickness and in health."

The program will be on the Red network and Pacific network of the National Broadcasting Company. The following stations are those to which the program is available:

New England States

WEEI—Boston
WTIC—Hartford
WJAR—Providence
WTAG—Worcester
WCSH—Portland Me

Middle Atlantic States

WEAF—New York
KYW—Philadelphia
WCAE—Pittsburgh
WGY—Schenectady
WBEN—Buffalo

West North Central States

KSD—St. Louis
WHO—Des Moines
WOW—Omaha
WDAF—Kansas City
KSTP—Minneapolis St. Paul
WEBC—Duluth Superior
WDAY—Fargo
KFYR—Bismarck

East North Central States

WTAM—Cleveland
WLW—Cincinnati
WSAI—Cincinnati
WCKY—Cincinnati
WWJ—Detroit
WMAQ—Chicago
WTMJ—Milwaukee
WIBA—Madison
WHIO—Dayton
WIRE—Indianapolis
WOOD—Grand Rapids

West South Central States

WSMB—New Orleans
KVOO—Tulsa
WKY—Oklahoma City
WFAA—Dallas, Fort Worth
WBAP—Dallas, Fort Worth
KTHS—Hot Springs
KTBS—Shreveport
KPRC—Houston
WOAI—San Antonio

South Atlantic States

WFBR—Baltimore
WRC—Washington
WRVA—Richmond
WTAR—Norfolk
WFBC—Greenville S. C.
WCSG—Charleston S. C.
WSOC—Charlotte
WPTF—Raleigh
WWNC—Asheville
WIS—Columbia
WJAX—Jacksonville
WFLA—Tampa
WSUN—Tampa
WIOD—Miami
WSB—Atlanta

East South Central States

WAVE—Louisville
WSM—Nashville
WMC—Memphis
WAPI—Birmingham
WJD—Jackson

Mountain States

KTR—Phoenix
KGIR—Butte
KGHL—Billings
KOA—Denver
KDYL—Salt Lake City

Pacific States

KPO—San Francisco
KFI—Los Angeles
KGW—Portland Ore.
KOMO—Seattle
KHQ—Spokane

Canada

CRCT—Toronto
CFCF—Montreal

Hawaii

KGU—Honolulu

be induced to broadcast the program if it receives evidences of local interest. The committee on education or other appropriate committee of the local medical society might take this matter up with the station management and tender cooperation in giving the program local publicity.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each weekly issue of *THE JOURNAL*. The topics and speakers for October are as follows:

October 13 What to Do for Blind Children W. W. Bauer, M.D.
October 20 Arthritis Morris Fishbein, M.D.
October 27 Help for the Deafened W. W. Bauer, M.D.

The time of the broadcast is Tuesday afternoon at 5 o'clock eastern standard time (4 o'clock central time, 3 o'clock mountain time, 2 o'clock Pacific time).

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

The Prevalence of Poliomyelitis—A total of 335 cases of poliomyelitis with twenty-five deaths has been reported in Alabama between January 1 and September 11, according to the state department of health. The incidence has been heaviest in Jefferson County with seventy-one cases. Next in order are Lauderdale with forty-seven cases, Morgan with thirty-eight, Colbert, twenty-eight, Franklin, twenty, Cullman, eighteen, Limestone, sixteen, Lawrence, twelve, Madison, eleven, Blount, eight, and Marengo and Marshall, five each. Scattered cases of one or two each appear in other counties. In twenty of the sixty-seven counties of the state no cases of the disease have been reported, they are Chambers, Lee, Macon, Russell, Barbour, Henry, Houston, Coffee, Covington, Crenshaw, Butler, Wilcox, Monroe, Conecuh, Washington, Clarke, Choctaw, Sumter, Greene and Perry. The opening of rural schools was postponed in northern Alabama, eastern Mississippi and southwest Georgia, the New York *Times* reported September 4 with the tentative date of opening set at September 21. The *Times* also reported, September 10, that during the preceding week 183 cases were recorded throughout the country, Illinois leading with thirty cases and California being second with twenty-five. There were twenty cases in New York.

ARIZONA

Memorial to Dr. Harlow Brooks—The first "Harlow Brooks Memorial Navajo Clinical Conference" was held at Sage Memorial Hospital, Ganado, August 31-September 1. The speakers included Drs. Fred H. Albee, New York, Milo K. Tedstrom, Santa Ana, Calif., William W. Peter, Fort Defiance, medical director of the Navajo service, Joseph Madison Greer, Phoenix, Albert G. Jenner, Milwaukee, Edwin Forrest Boyd, Los Angeles, and Clarence E. Yount, Prescott, moving pictures made by Dr. Joseph B. De Lee, Chicago, Edgar A. Doll, Ph.D., Vineland, N. J., and Dr. Julius S. Weingart, Des Moines, Iowa, were also shown. The conference, to be held annually, is named in honor of the late Dr. Harlow Brooks, New York, who was interested in the work of the Sage Memorial Hospital. Ganado is in the heart of the Navajo reservation.

CALIFORNIA

Personal—Dr. Joseph Pomeroy Widney, member of the class of 1866 of Toland Medical College (now the University of California Medical School) San Francisco, is the subject of a biography now being distributed throughout the state. Dr. Widney, now 95 years of age, was one of the founders and early presidents and first dean of the University of Southern California. The biography was first published in *California and Western Medicine*.

Society News—The San Francisco County Medical Society was addressed, September 15, by Chauncey D. Leake, Ph.D., on "Recent Advances in Industrial Toxicology" and Floyd DeEds, Ph.D., U. S. Department of Agriculture, on "Toxicity of Spray Residues." This was a joint meeting with the section

It should be noted that a station may take the program or not. If a station included in the list is not broadcasting the program *Your Health*, it is possible that the management may

on industrial medicine — At a recent meeting of the San Bernardino County Medical Society the Friedman test in the abnormal states of pregnancy and in early chorionepithelioma were discussed by Drs George D Maner and Edmond M Lazard, both of Los Angeles — The Los Angeles Cancer Society was addressed September 3, by Dr Edwin I Bartlett, San Francisco, on "Cancer of the Breast, with a Five Year Follow-Up of Over 100 Cases and a Discussion on Treatment with Ultimate Results"

CONNECTICUT

New State Epidemiologist—Dr Paul H Brown, for six years health officer of East Haven has been appointed epidemiologist to the state department of health, newspapers report. He will be succeeded by Dr Robert M Taylor now coroner's physician. The change was effective September 1

Summering Physicians Barred from Practice—Physicians licensed and residing in other states but maintaining summer homes in Connecticut cannot care for patients in Connecticut, according to an opinion filed August 3 with the state department of health by Attorney General Edward J Daly. In his opinion, the attorney general said according to newspaper reports "Under the provisions of Section 1121C, cumulative supplement, general statutes of 1935 no such physician can obtain a certificate of registration to practice medicine and surgery in the state inasmuch as he can not be said to permanently reside in this state"

GEORGIA

Dr Hoke Resigns at Warm Springs—Dr Michael Hoke, since 1931 surgeon-in-chief of the Georgia Warm Springs Foundation, Warm Springs has resigned to engage in practice in Atlanta. Dr Hoke graduated from the University of Virginia Department of Medicine, Charlottesville, in 1895. Dr Charles E Irwin, assistant to Dr Hoke, has been named surgeon-in-chief. He is 36 years old and a graduate of Emory University College of Medicine, Atlanta

Dr Fischer Honored—Dr Luther C Fischer, Atlanta, was honored at a birthday dinner given by the staff of the Crawford W Long Memorial Hospital, of which he is president and treasurer. A sterling silver vase was presented to him. Speakers included Drs Odom O Fanning who made the presentation speech, Walter B Emery and Rufus T Dorsey. Dr Fischer in 1925 established the L C Fischer prizes to be awarded through the Fulton County Medical Society, two prizes of \$100 each have been available every year since that time

ILLINOIS

Personal—Dr Hal E Freeman, Willard Mo has been appointed a member of the student health service University of Illinois Urbana — Dr Philip McGinnis has been appointed health officer of Joliet township succeeding Dr Londus Brannon, who resigned after three years' service

Clinical Conference—Physicians of western Illinois will be guests of the McDonough County Medical Society at a clinical conference in Macomb, September 24. Dr Robert S Berghoff, Chicago, will conduct a heart clinic in the afternoon, and ten patients will be presented by local physicians for examination and demonstration. In addition Dr Berghoff will speak on common diseases of the heart, Dr Joseph E F Laibe Chicago on hematuria, and Dr William J Pickett, Chicago, thyroid surgery

Meeting of Bacteriologists—The Society of Illinois Bacteriologists will meet at the Urbana-Lincoln Hotel Urbana September 26. Speakers will include

Ralph E Noble B.S. Chicago Status of Bacteriologic Water Analysis
C A Brandy Urbana Observations on Egg Propagation of Filtrable Viruses
Martin J Prucha Ph.D. Urbana, Sterilization Disinfection Bactericidal and Bacteriostatic
Arthur M Buswell Ph.D. Urbana Anaerobic Fermentations Yielding Combustible Gases
Dr Ernst A Prilman Chicago A Report on the Second International Congress for Microbiology London England 1936

Society News—The McLean County Medical Society was addressed September 10 by Drs Gladys R. H. Dick Evanston on scarlet fever Rosco G Leland director Bureau of Medical Economics American Medical Association economics and the ethics of medicine and William H Holmes Chicago clinical aspects of nephritis — Dr Franklin E Walton St. Louis spoke before the Vermilion County Medical Society September 1 on "Diagnosis and Management of Biliary Tract Diseases" — At a meeting of the St. Clair County Medical Society in Belleville September 2 Dr Vincel Rogers Deakin, St. Louis spoke on Pylitis of Pregnancy. Dr Frank G Norbury Jacksonville addressed the East St. Louis meeting

September 3, on "Neuropsychiatry in General Practice." — Dr William B Serbin, Chicago, addressed the Coles Cumberland County Medical Society, September 10, on "Toxemias of Pregnancy"

CHICAGO

Dr Braasch Will Give Belfield Lecture—Dr William F Braasch, professor of urology, University of Minnesota Graduate School of Medicine, Minneapolis Rochester, will deliver the eighth annual William T Belfield Lecture of the Chicago Urological Society, October 29. His subject will be "Unilateral Chronic Pyelonephritis"

Lectures on Cancer—The cancer research committee of the Chicago Woman's Club announces its annual lectures on cancer, with the following speakers

Dr Max Cutler, October 22 Cause and Cure of Cancer
Dr Harold E Robertson October 29 Rochester, Minn. Scientific Aspects of Cancer
Dr Frank L Rector, Evanston November 5 Cancer A Public Health Problem
Miss Edna Foley, superintendent Visiting Nurse Association Nursing Care of Cancer Patients in Chicago
Dr William W Bauer director Bureau of Health and Public Instruction American Medical Association November 12 Importance of Popular Education on Cancer and Approved Methods of Carrying on Such Education

INDIANA

Personal—Dr Robert A Staff, for three years a member of the staff of the Indiana State Sanatorium Rockville, has been appointed medical superintendent of the Smith Esteb Memorial Hospital, Richmond, succeeding Dr Joseph W Strayer, who resigned to accept a similar position at the William Ross Sanatorium, Lafayette

New Clinical Building at University—Contracts have been awarded for a new clinical building at the Indiana University School of Medicine, Indianapolis and construction is expected to begin soon, according to the state medical journal. The total cost of the building will be about \$550,000, of which the federal government will pay 45 per cent as a PWA project the remainder will be paid by the university through a bond issue. The building, five stories high, will be situated immediately north of the Robert W Long Hospital

IOWA

Graduate Courses—The Iowa State Medical Society will offer graduate courses in Davenport, Waverly, Sheldon, Oska loosa

The first course, devoted to cancer, September 17, and is sponsored by the First, Second and Sixth Councilor Districts, but physicians from other districts are invited to attend, it will be given on Thursdays. The course in general therapeutics and diagnosis given at Davenport will be conducted on Tuesdays the opening lecture was September 15. Meetings at Sheldon will be held on Mondays, beginning September 21 and continuing through November 9. The course on cancer will be presented by the following

Dr Richard H Jaffé Chicago Morbid Anatomy and Physiology of Malignant Tumors
Dr Elexious T Bell Minneapolis Present Status of Cancer Knowledge
Dr Loyd Davis Chicago Malignant Neoplasms of the Nervous System
Dr Gordon B New Rochester Minn Malignant Tumors of the Head
Dr Arthur U Desjardins Rochester Evaluation of Radiologic Diagnosis and Treatment
Dr Owen H Wangenstein Minneapolis Cancer of the Esophagus Stomach and Small Intestine
Dr Erwin R Schmidt Madison Wis Sarcomas
Dr Ruben Nomland Iowa City Cancer of the Skin
Dr Claude F Dixon Rochester Cancer of the Colon and Rectum

Therapeutics and diagnosis will be treated by the following speakers

Dr Samuel A Levine Boston (tentative), Modern Cardiac Therapy
Dr William S Middleton Madison Wis The Barbiturates in the Treatment of Disease
Dr Howard L Beye Iowa City Principles Involved in the Treatment of Fractures
Dr Rollin T Woodyatt, Chicago Diet in the Treatment of Disease
Dr John S Lundy Rochester Evaluation of Intravenous Therapy
Dr Paul A O'Leary Rochester Treatment of Syphilis
Dr Philip S Hench Rochester Diagnosis and Treatment of Arthritis
Dr Percival Bailey Chicago Diagnosis and Treatment of Common Neurologic Lesions Found in General Practice
Dr Warren T Vaughan Richmond Va Evaluation of the Present Knowledge of Allergy
Edward A Doisy Ph.D. St. Louis (tentative) Present Status of Endocrine Therapy
Dr Henry W Meyerding Rochester Fractures
Dr Maurice C Howard Omaha Diagnosis and Treatment of the Anemias
Dr John A Berghoff Omaha Diagnosis and Treatment of Common Skin Disorders
Dr Byrl R Kirklin Rochester Roentgenologic Diagnosis
Dr Norman M Keith Rochester Use and Abuse of Diuretics
Dr Oscar H Plant Iowa City Recent Advances in Therapeutics
Dr Russell M Wilder Rochester Modern Treatment of Diabetes
Dr Everett D Plass Iowa City The Ovarian Hormones in Obstetrics and Gynecology

KANSAS

Health at Kansas City—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 5, indicate that the highest mortality rate (184) appears for Kansas City and for the group of cities as a whole, 96. The mortality rate for Kansas City for the corresponding period last year was 111 and for the group of cities, 94. The annual rate for eighty-six cities for the thirty-six weeks of 1936 was 124 as against a rate of 116 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

KENTUCKY

State Medical Meeting at Paducah, October 5-8—The annual meeting of the Kentucky State Medical Association will be held in Paducah, October 5-8, with headquarters at the Irvin Cobb Hotel. The speakers will include

- Dr Emmet F Horine, Louisville. An Evaluation of Heart Sound Records from a Clinical Standpoint
- Dr Finis M Travis, Frankfort. Treatment of the Different Types of Edema.
- Dr Henry W Cave, New York. Recent Trends in the Surgical Management of Biliary Tract Disease.
- Dr Irvin Abell, Louisville. Relation of Surgery to Diabetes.
- Dr Carlisle R. Petty, Lynch. Management of an Epidemic of Cerebrospinal Meningitis in an Industrial Community.
- Dr Oscar O Miller, Louisville. Pulmonary Abscess and Its Treatment.
- Dr William Barnett Owen, Louisville. Consideration of Complicated Fractures of the Femur.
- Dr Francis M Sherman, Owensboro. Interpretation of Gastric Pain.

Dr John H J Upham, Columbus, Ohio, President-Elect of the American Medical Association will be the speaker at a public meeting Tuesday evening, October 6. The annual oration in surgery will be delivered by Dr DeLou P Hall, Louisville, on "Joshua B Flint, First Professor of Surgery, University of Louisville 1837" and the oration in medicine by Dr John Harvey, Lexington, on "Our Duty to the Art and Science of Medicine." There will be round table discussions Tuesday and Wednesday afternoons on surgery, obstetrics, pediatrics, general medicine, otolaryngology, ophthalmology and psychiatry. A symposium on obstetrics and pediatrics will be presented by Drs Russell E Kinsey, Williamstown, Joseph T Molony, Covington, Orion Leon Higdon, Paducah, Richard G Elliott II, Lexington, and Harry S Andrews, Louisville. At the annual dinner Wednesday evening, Drs James E Paulin, Atlanta, Ga., and Albert M Mitchell, Terre Haute, Ind., will be the guest speakers.

MARYLAND

Illness from Custard Pastries—During the latter part of August twelve persons in Baltimore were ill from eating custard filled doughnuts. Prompt reporting of the outbreak and immediate investigation by the city health department prevented other cases developing. The custard used was made at about 2 a m and allowed to cool in the baking room for about three hours without refrigeration. The doughnuts were then filled with it and offered for sale at about 9 o'clock. Each of the persons made ill by the custard ate from one to three of the pastries bought at about that time and before 11 o'clock each victim was seized with intense pain in the abdomen, vomiting and prostration. The time of onset and the symptoms were almost identical in all the patients, none of whom gave a history of having eaten any additional food or of drinking any beverage, *Baltimore Health News* reported.

MASSACHUSETTS

New Chairman of Medical Board—Dr Francis R Mahony, Lowell, for many years a member of the Massachusetts Board of Registration in Medicine, was elected chairman of the board at a meeting August 28. He succeeds Dr Charles P Sylvester, who resigned on account of ill health.

Society News—The Pentucket Association of Physicians was addressed September 10 by Dr Donald Munro, Boston, on "Responsibility of the General Practitioner in Relation to Common Neurosurgical Conditions", Dr Arthur W Allen, Boston, will discuss "Diseases of the Peripheral Vascular System" before the society, October 8—Drs Richard H Miller and Cadis Phipps, Boston, will address the Worcester District Medical Society in Milford, September 23 on peptic ulcer.

Sir Frederick Hopkins to Give Dunham Lectures—Sir Frederick Gowland Hopkins, professor of biochemistry, University of Cambridge, will lecture at the Harvard Medical

School, Boston, on "The Significance of Catalysis in Biology". The lectures, under the Edward K Dunham Lectureship for the Promotion of the Medical Sciences, will be presented October 6 on "The Catalytic Equipment of Micro Organisms" and October 8 on "The Nature of Biocatalytic Systems in General".

MICHIGAN

Personal—George I Forster, PhD, professor of biology at Olivet College, Olivet, has been appointed bacteriologist to the state department of health. He will be on leave of absence from the college for a year—Dr Edward J Witt, St Joseph, was made an emeritus member of the Cass and Berrien county medical societies at a meeting August 19. Dr Witt is retiring from active practice and plans to leave the city.

New Laboratory Building—A new laboratory building for the state department of health is under construction four miles north of Lansing. A WPA project, the original appropriation for the building was \$111,518 but an additional 10 per cent has been allowed by the government to make up for increases in labor costs. All departments of laboratory work will be carried on in the new structure. C C Young, PhD, Lansing, is in charge of the state department laboratory.

State Medical Meeting at Detroit, September 21-24—The seventy-first annual meeting of the Michigan State Medical Society will be held at the Book-Cadillac Hotel, Detroit, September 21-24, under the presidency of Dr Grover C Penberthy. The guest speakers will include

- Dr Charles Gordon Heyd, New York. Vice President American Medical Association Society and Organized Medicine.
- Dr Dean Lewis, Baltimore. Hormones in Relation to Tumor Growth.
- Dr Cecil S O'Brien, Iowa City. Ocular Symptoms and Signs of Brain Tumor.
- Dr Isidore Friesner, New York. Otolaryngology (round table).
- Dr Fred Wise, New York. Skin Diseases in Their Relation to Disturbances of Other Organs.
- Dr George Herrmann, Galveston, Texas. Further Studies of the Mechanism of Action and of the Relative Effectiveness of the Newer Diuretics.
- Dr Emil Novak, Baltimore. Pseudomalignant and Precancerous Lesions of the Uterus.
- Dr Richard Cannon Eley, Boston. The Control of Measles.
- Dr Albert L Brown, Cincinnati. Treatment of Ocular Inflammations with Increased Intra Ocular Typhoid Antibody Concentration.
- Dr Byrl R Kirklin, Rochester, Minn. Differential Diagnosis of Benign from Malignant Ulcerative Lesions of the Stomach.

There will be symposiums on certain complications of pregnancy, carcinoma of the lung and fractures. Dr Lewis will conduct a special demonstration in traumatic surgery. President's Night will be observed Wednesday evening, September 23, when Dr Penberthy will deliver his presidential address and Dr Henry E Perry, Newberry, will be inducted into the presidency. The Andrew P Biddle Oration will be delivered on this occasion by Dr George W Crile, Cleveland, his subject will be "Comparative Anatomy and Pathologic Physiology of the Adrenal-Sympathetic Complex Relating to the Genesis and Surgical Treatment of Essential Hypertension".

MINNESOTA

Personal—Dr Hobart A Reimann, Minneapolis, associate professor of medicine, University of Minnesota Medical School, was guest of honor at a farewell dinner, August 20. Dr Reimann has been named Magee professor of medicine at Jefferson Medical College, Philadelphia.

MISSOURI

Society News—At a meeting of the South Central Counties Medical Society in Houston, August 6, speakers were Drs Duff S Allen and Carliss Malone Stroud, St. Louis, on differential diagnosis of acute abdominal conditions and allergy respectively. Dr Allen also discussed goiter. The Cass County Medical Society was addressed June 11 among others, by Dr Lotus V Murray, Pleasant Hill, on "Chronic Endocervicitis".

NEVADA

State Medical Meeting—The thirty-third annual meeting of the Nevada State Medical Association will be held in Reno, September 25-26, with headquarters at the Golden Hotel and under the presidency of Dr Richard O Schofield, Boulder City. Speakers on the program will be

- Dr Harold M F Behrman, San Francisco. Modern Concepts in Therapy of Cardiac Diseases.
- Dr Eugene S Kilgore, San Francisco. Some of the Surgeons Circulatory Problems.
- Dr Charles F McEnskey, Los Angeles. Anesthetic Agents and Methods.
- Dr Albert R Da Costa, Reno. Problems in Anesthesia.
- Dr George Warren Pierce, San Francisco. Treatment of Burns and Reconstruction Surgery After Burns.
- Dr Horace C Pitkin, San Francisco. Low Back Pain.
- Dr William W Washburn, San Francisco. When Should Peptic Ulcer Be Treated Surgically?
- Dr John W Chinn, San Francisco. Surgery of the Colon.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug 5, 1936

International Congress of Microbiology

At the second International Congress of Microbiology, held in London, more than thirty countries were represented. In his opening address the president, Professor Ledingham, said that the congress was due to the efforts of the Health Section of the League of Nations to reconstitute international scientific meetings, which were interrupted by the World War. They were really a continuation of the congresses of hygiene and demography, the last of which was held at Washington in 1913. But the extraordinary development of bacteriology and microbiology had rendered some subdivision necessary. At the previous congress they worshipped at the shrine of Pasteur. Now they went further back and engraved on their badges Antony van Leeuwenhoek (1632-1723) the Dutch microscopist, who first made a drawing of bacteria.

The congress was divided into eight sections: general biology of micro-organisms, virus diseases in animals and plants, bacteria and fungi, economic bacteriology, medical, veterinary and agricultural zoology and parasitology, serology and immunochemistry, microbiologic chemistry, and specific immunization. The number of papers read reached the extraordinary total of 400.

VIRUSES

The subject of viruses was discussed for two days. Dr A. R. Dochez and others from New York described researches showing the presence of a filtrable virus in the upper respiratory tract of persons suffering from the common cold and influenza. They had demonstrated the activity of this virus by experimentally producing similar diseases in chimpanzees and in human volunteers. Not the typical picture of influenza but one more resembling the common cold was produced.

Dr G. H. Eagles brought forward evidence in favor of a virus cause for rheumatoid arthritis and rheumatic fever. Pericardial and pleural exudates from cases of rheumatic fever and joint fluids and synovial membrane from acute and subacute rheumatoid arthritis yielded suspensions of bodies which in stained preparation and by darkfield examination, were indistinguishable from bodies demonstrable in similar suspensions from recognized virus infections.

CONTROL OF WHOOPING COUGH AND DIPHTHERIA BY SPECIFIC IMMUNIZING REAGENTS

Dr W. H. Park described an investigation in New York to determine the prophylactic value of pertussis vaccine. Though the incidence of pertussis was low among unvaccinated children, a marked reduction was produced by vaccination with from 65 to 88 million bacilli. Professor Madsen of Denmark said that figures from an isolated community, such as the Faroe Islands indicated the value of prophylactic vaccination, especially in decreased severity of the disease. Danish clinicians also agreed that a vaccine used in the first two weeks of the disease had a beneficial effect. Dr Park said that the fall in the incidence of diphtheria following immunization of the population left no doubt as to its efficacy. He had found alum-precipitated toxoid preferably in two or three doses, the best antigen. The duration of the immunity appeared to be long and the few reactions encountered were not severe. Dr R. A. O'Brien of London said that immunization had protected nurses against grave infections when tending severe cases of diphtheria.

VIRUSES AND NEW GROWTHS

Dr Peyton Rous of New York suggested that an association of viruses with cells was responsible for some neoplastic diseases. A tumor of the frog and numerous diseases of the

domestic fowl had proved to be due to viruses. As to mammals the wild rabbits of the Middle West of America frequently had skin papillomas caused by a virus, which in domestic rabbits produced vigorous growths, often metastasizing and on the brink of malignancy. All tumor phenomena could be explained in terms of what was known of viruses, yet it did not follow that the generality of tumors were actually caused by them.

THE MICROBIOLOGY OF CANNED FOODS

Prof F. W. Tanner of Urbana, Ill., said that refrigeration did not destroy micro-organisms but only inhibited their activities. Foods subjected to quick freezing were perishable and should be kept frozen until ready for preparation for the table, if the development of food poisoning organisms was to be prevented. Some 10 per cent of canned meat products and 24 per cent of canned corn and over 50 per cent of canned pineapple harbored viable micro-organisms. The conditions that allowed them to survive should be studied. For ten years factory-canned food had not caused botulism in America, but home-canned foods continued to take their toll each year.

THE MECHANISM OF VIRUS IMMUNITY

Prof J. C. G. Ledingham of London opened the discussion. He said that killed viruses conferred only the most trivial and ephemeral protection, though this might be a subsequent basis for reinforcement by the living virus. Dr E. W. Schultz of Los Angeles stated that it had been established that the virus of poliomyelitis entered the central nervous system by the olfactory nerve. Serum prophylaxis and vaccines had not been proved to be effective, but recent observations indicated that temporary protection might be afforded by previous treatment of the nasal mucous membrane with chemical agents, which tended to diminish the permeability of the olfactory portal. Dr G. W. M. Findlay of London said that more than 1,000 persons had been immunized against yellow fever by injections of immune serum and living virus. Serum from immunized horses produced reactions in from 10 to 15 per cent of cases but human serum produced no serious reactions. Since immunization had been developed, no case of yellow fever had occurred among those exposed to laboratory infections.

Control of the Drug Traffic

A report of the measures taken by the British government to deal with the traffic in dangerous drugs has been issued. It describes the working of the system of control which has been established in this country, in accordance with the Hague and Geneva international conventions over the trade in these drugs, and the action taken in cooperation with other governments to suppress illicit traffic. Narcotic addiction is not prevalent in Great Britain. The total number of known addicts at the end of the year was about 700, of whom about 120 were physicians. In 90 per cent of the cases morphine was the drug of addiction, in 5 per cent cocaine and in 5 per cent diacetyl morphine. In all cases the drug was obtained through legitimate channels. In general the system of import certificates and export authorizations for the control of opium and other dangerous drugs has worked satisfactorily, though in a few cases difficulty has arisen owing to the use of languages other than the official ones of the League of Nations. The sale, prescription and dispensing of dangerous drugs in this country are under stringent regulations. A physician who violates them may have his right to purchase or prescribe such drugs withdrawn.

Safety in Coal Mines

The Royal Commission on Safety in Coal Mines has heard some important evidence as the result of the organized research that has taken place. It has been shown that coal dust can of itself produce explosions, which can be prevented or suppressed by stone dust. In regard to firedamp, Prof R. A. Wheeler stressed the need for research in order to ascertain

details of the characteristics of the elements that constituted danger. Ignition was not instantaneous but occurred after a measurable interval, during which a series of chemical reactions, leading eventually to the production of flame, took place. Firedamp was remarkable for the long duration of the so called lag on ignition. If the nature of the reactions that took place, particularly the primary reaction, could be identified, means of rendering ineffective some of the sources of ignition in a coal mine might be devised. The lag could be considerably delayed by the presence in the air of an inhibitor, the most effective yet discovered being iodine vapor. The dangers of explosions caused by shot firing at the coal face depended on the conditions in which it was used. The safest was to use an 8 ounce charge firmly secured by efficient stemming, which could be of moist clay and coarse sand. It did not seem possible to cause ignition of firedamp by a blown-out shot of a permitted explosive, provided the shot hole was stemmed. The danger of an over-charged shot could be considerably reduced and perhaps removed by the use of a sheathed explosive, in which the explosive was surrounded by a thin layer of sodium bicarbonate. With regard to mine rescue work, a gas mask that protected against carbon monoxide had been devised and could be made available for quick use, even by untrained men.

Sir Alfred Keogh

Sir Alfred Keogh, late director general of the army medical service, has died at the age of 79 years. An Irishman, he graduated from Queen's College, Galway. In 1880 he entered the medical corps of the army and passed through his training course with distinction. His promotion was rapid and he early showed a talent for administration, which afterward made him famous. He earned great distinction in the South African War and in 1902 became deputy director general and in 1905 director general of the army medical service. He was progressive and saw the importance of cooperation with the civil medical profession, especially in times of emergency, and he effectively organized this. When the great war broke out he had retired from the army. His experience and abilities were too great to be dispensed with in that supreme emergency. He was recalled and appointed director general in association with the then director general Sir Arthur Sloggett, who proceeded to France, while Keogh was at the war office at home. In collaboration with the leading consultants he organized hospitals for the wounded soldiers all over the country on a scale that had never before been necessary. He was a man of extraordinarily rapid decision, appearing to know instinctively the proper course, and a great judge of the capacities of men who worked under him. He thus became the greatest medical administrator the army has known.

PARIS

(From Our Regular Correspondent)

Aug 8, 1936

Compulsory Retirement of Physicians at Age of 65

The lower house of the French congress, the "Chambre des députés," corresponds to the House of Representatives in the United States. At the June 5 session of the Chambre des députés a bill was introduced by Mr. Pomaret which was entitled "Proposition of Law tending to the immediate and steady employment of the youth of France." An examination of the bill reveals that it is not as innocent in its objectives as would appear from the title. It is directed at all members of the liberal professions, including physicians so that diplomas will be rendered null and void whenever the holder has reached the age of 65 years, thus leaving room at the top for the intellectual youths who cannot secure a place even at the bottom of the ladder at the present time in France. Article 3 of the proposed law states that "no one can practice even without pay, after the age of 65 years, as a lawyer, physician, veterinary,

dentist, druggist, architect, surveyor, engineer, accountant, or as an executive in any commercial pursuit." No reference is made to the compulsory retirement at the age of 65 of a politician or those in the diplomatic service. This law should go into effect Jan 1, 1939, it being understood that no pension can be given by the government to compensate those who are forced to retire.

In an editorial in the July 19 *Concours médical*, Noir states that although this proposed law had been spoken of, it seemed so unusual that it appeared to have germinated in the brain of some dreamer and need not be taken seriously. Alas, the bill had been introduced and hence called for vigilance on the part of organized medicine. A year ago the Medical Students' Association of France denounced such a proposition because it felt the injustice of compelling every physician to retire without a pension at 65, when the majority were unable to do so. Nine tenths of the intellectual youth here are sons or daughters of those at whom the law is directed. These young people know that in the majority of cases their parents are obliged to work beyond the age of 65 in order to pay for the education of the children until the latter are self supporting. Unless the parents have inherited money, relatively few, and this is especially true of physicians, have accumulated sufficient funds to live on the rest of their lives at the age of 65. Why those who occupy municipal, state or governmental positions should be exempted is not clear. Many physicians at the age of 65 have reached the acme of their career. Their experience, acquired during many years of study and practical application of their knowledge, is too valuable to the community to be thus thrown into the discard. The proposed law has aroused such antagonism on the part not only of members of the professions enumerated but of the people at large that there is little likelihood of its ever coming to a vote. The younger intellectuals are as opposed to it as those whom it is supposed to push aside to make room for them.

Fifth French Gynecologic Congress

This year's congress of French gynecologists was held at Paris, May 18-21. The honorary president was Professor Alfieri of Milan and the presiding officer was Professor Dartigues of Paris. The subject chosen for discussion was "Sterility in the Female," five papers being read.

Charles Champy of Paris presented the first of these, on "Physiology of Fecundation and Nidation (Fixation) of the Ovum." In the discussion of this paper, Claude Béchère of Paris stated that the integrity of spermatozoa is rarely a cause of sterility and that it was necessary to take into consideration the physiologic role of the male adnexa and the cervix uteri, and the indispensable integrity of the tubal mucosa.

Turpault of Paris called attention to the acidity of the vaginal secretion, to the corpus luteum and the integrity of the endocervical glands.

Jean Seguy of Paris read a paper on "Etiology and Clinical Aspects of Sterility." In the discussion Cova of Turin believed that one was inclined to exaggerate the role assumed by vaginal acidity. Frigidity on the part of the female, which is often associated with ovarian dysfunction, may be responsible for the sterility. For Turpault the function of the liver, the hydrogen ion concentration of the blood, syphilis and intestinal infection play an important part. Gaiffani of Rome considers the existence of tuberculosis during infancy and childhood worthy of serious consideration. Vanverts of Lille maintained that fecundation may take place even when lack of development, displacements (uterine), tumors (uterine and ovarian) and stenoses exist. Many women remain sterile for from five to fifteen years and become pregnant after all hopes have been abandoned wherefore one ought to be guarded as to prognosis. Cotte of Lyons thought that trichomonas infections do not prevent fecun-

dation Mechanical causes, except tubal occlusion, are less important than biologic disturbances, vaginal acidity, altered cervical secretion and changes in the endometrium Labhardt of Basle maintains that the widespread use of contraceptive methods is responsible for endometritis and salpingitis by rendering it more difficult for the ovum to become fixed. He had observed a larger number of extra-uterine pregnancies in his service since contraceptive methods had been employed.

Douay of Paris was of the opinion that male causes play a far less important part than those in the female. After having employed insufflation for determining the patency of the tubes, he has resumed the use of iodized oil.

A third paper on "Medical and Surgical Treatment of Sterility," was read by André Chahier of Lyons. Obliterated tubes can be rendered permeable by insufflation or injection of iodized oil as well as by numerous plastic operations. In sterility of ovarian origin, the treatment of obesity and syphilis are especially indicated. About half of the cases of sterility are curable, but the others often resist all therapy. In the discussion, Cotte of Lyons preferred resection of the presacral nerve for vaginism. Electrocoagulation, according to the method of Filhos, is best for cervicitis and insufflation to render the tubes permeable. In genital hyperexcitability, presacral nerve resection is often combined with partial resection of the ovaries. Mongie of Bordeaux emphasized the necessity of alkalization of the vaginal medium.

The last paper was by Favreau of Lille on "Thermal and Physical Therapeutic Methods." The merits of each of the many thermal stations in France were taken up. High frequency treatment should never be undertaken unless a definite indication existed. Claude Beclère, in the discussion stated that in the majority of cases a cervicitis was accompanied by lesions in the tubes and ovaries, for which reason a diathermy and thermal resort treatment was necessary as a preliminary measure.

BERLIN

(From Our Regular Correspondent)

July 21, 1936

Convention of the German Roentgen Society

This year's convention of the German roentgenologists was held at Wiesbaden in April, the first session was held in conjunction with the internists, the joint meeting representing the final session of the latter group. Kalk, clinician, and Knothe, roentgenologist, submitted their respective papers on "Inflammatory Diseases of the Colon." Kalk said that treatment of a single section of the intestinal tract was most unsatisfactory since the local alterations are often only secondary or, conversely, may be followed by modifications in other organs. He pointed out the efficacy in colitis gravis of alternative anaphylaxis treatment with horse serum and plenty of vitamins. He cautioned against enemas of various kinds. Kalk considers true colica mucosa a neurosis of the secretory nerves.

In the roentgenologic paper, Knothe reviewed the progress of diagnostic methods. Roentgen examination must be competently carried out and each of a number of details must be observed. The roentgenologic picture in the three stages of colitis is sufficiently characteristic. Of particular importance is the determination of the seat and the extent of the pathologic changes. Tuberculosis too is plainly recognizable. Not infrequently there exists a considerable discrepancy between the clinical picture and the roentgenologic appearances.

Alexander of Agra next submitted a paper on the "Diagnosis of Tuberculous Cavities." There are important differences between the round cavities which originate from an early infiltrate in the pulmonary tissue of normal elasticity and the thick walled tertiary cavities and their accompanying symptoms (pleural induration atelectasis). Chaoul of Berlin roentgen-

ologist of the Sauerbruch clinic, demonstrated how by means of tomograms the large bronchi can be given an isolated representation. By separation of the lung roentgenograms into a series that portrays various sectional layers the number, situation, shape and size of tuberculous cavities can be established.

The third paper, "Short Wave Therapy in Internal Medicine," was delivered by Schliephake of Giessen, who discussed the results of research on the distribution of short wave energy in homogeneous and layered mediums. The depth and intensity of the effect is dependent on the wavelength, on the size of the electrodes and on their distance from the body surface. The heat effect from short wave therapy is of trivial and distinctly secondary importance when compared to that of long wave diathermy. Methods for accurate measurement of function and determination of dosage have yet to be evolved. Short wave therapy will be indicated principally in suppurating infections (such as furuncles, carbuncle, abscesses and gynecologic inflammations), rheumatic arthritic disorders and certain circulatory disturbances. For the last named a weak energy is indicated, but for rheumatic joints considerable energy should be used. Numerous astonishing successes in cases of pulmonary abscess have been authenticated. Schliephake holds faulty dosage responsible for lack of success in inflammatory diseases. Too weak energy will be ineffective whereas overdosing will tend to break down the leukocytic bulwark of defense. Knowledge of this sort is essential if short wave therapy is to be successfully carried out. Injudicious application has unfortunately tended to give the method a bad name.

Holthusen of Hamburg submitted a report on "Prevention of Injuries from Roentgen Rays." Among possible harmful after-effects may be mentioned changes in the connective tissues, diminished reproductive function and increased susceptibility to infection in various tissues. Just as it is impossible to estimate the size of the dosage that will destroy a tumor, so it is likewise impossible to delimit the severity of ill effects incurred by the treatment. The critical region in Coutard and radium irradiation lies between two and one-half and six erythema doses, or between 4,500 and 11,000 roentgens. The cause of this latitude of efficacy is to be found in the vast variation of individual sensitivity rather than in the fluctuations of dosage. The total dosage for single areas of tissue, especially with regard to the overlapping of the ray cones, is to be considered a possible source of injury. The circumstances may also be complicated by the combined use of radium and roentgen irradiation. It has been assumed for some time that the musculature and the glandular functions are particularly sensitive. Permanent epilation by roentgen rays is contraindicated as too hazardous. Particular caution should be exercised when persons in the growing stage are subjected to the rays.

Of the technical papers, that of Ziedses des Plantes of Utrecht on "Seroscopy" is particularly worthy of mention. Seroscopy is a roentgenographic procedure which makes it possible, by means of numerous exposures, to examine an endless series of consecutive parallel planes. Thanks to this ingenious device, the object, a skull for example pictures of which are taken from various angles, may be examined according to layers, as it were, just as a preparation may be microscopically studied by turning of the micrometer screw.

In his discussion of "Artificial Radioactivity" von Bothe of Heidelberg considered the risk involved in the use of neutron rays, the formation of gamma radiation of 2,000 kilovolts by the absorption of neutrons in water, and the production of artificial radioactivity by means of artificial transformation of the elements. The neutron rays appear to be extremely powerful from a biologic standpoint rats can be killed by them. This type of irradiation possesses double the hardness of gamma irradiation.

New Regulations for the Insurance Physicians

Several new regulations or decisions have been made recently with regard to the activities of the sick insurance physicians.

The proper authorities have decided that physicians of both sexes by virtue of admission to the insurance practice are to be considered fundamentally as equals. A woman physician must not be superseded by men physicians merely because of her sex. Women insurance holders, on the other hand, cannot demand that medical attention be administered them by women physicians. And if female patients can no longer demand treatment by physicians of their own sex, neither have the male patients any particular right to demand that men physicians attend them.

The insurance practice can now be engaged in only as the physician's principal professional activity. For example, a physician regularly employed outside the insurance practice and the duties of whose post take up most of his time cannot, in addition, serve as an insurance physician.

If a physician should perpetrate an illegal abortion, such an offense should be considered grounds for the revocation of his insurance practice license.

A further decree issued by the director of the Berlin office of the Insurance Physicians' League may be mentioned. It has to do with the question of the consulting room. The members of the insurance societies, it seems, have been increasingly vociferous in their complaints that many physicians maintain separate waiting rooms for private patients and for insurance patients. This arrangement had caused the insured to feel that they were being treated as an underprivileged group and had aroused unrest among them. Discrimination of this sort with regard to patients is contrary to the spirit of National Socialism. Hence the present decree prohibits the maintenance of the separate waiting rooms and, in addition, forbids any separation of consulting hour periods along the same lines.

Jubilee Celebration at Heidelberg

In the last days of June and the first days of July, Heidelberg University celebrated its 550th anniversary with great pomp and circumstance. For some time previously, this jubilee had been discussed in both the German and the foreign press. Twenty countries sent delegations. The United States sent representatives of eighteen universities. Harvard University accepted the invitation and invited the German universities to send their representatives to the Harvard anniversary celebration in September. Heidelberg was richly caparisoned for the reception of its guests, among whom were many of the university alumni from all parts of the world, former American ambassador Shurman was present. The German civil authorities, the army and the National Socialist party were abundantly represented. At a great reception sponsored by the national government, the minister of public instruction, Dr. Goebbels, delivered an address of welcome, in which he said that the endeavor of the entire German people should be to achieve that openmindedness toward life and enjoyment of life for which Heidelberg had always stood. The Heidelberg rector, Professor Groh, a jurist, said that the government took this opportunity to demonstrate the devotion of the new Germany to the task of universal civilization and its sponsorship of high intellectual achievement in all fields of learning, on all fronts of the most peaceful struggle in the world. He declared that at no period of its long history had German scholarship been so liberally aided as in this, our new National Socialist Germany. We feel it as a supreme good fortune, he continued, that the ancient antagonism between politics and learning is no longer an issue. These statements may be compared with the recent statement of the bishop of Durham with reference to the dismissal of faculty members by German universities. He said that "in this evil process Heidelberg stands

in the forefront" (Herbert Dunelm, Bishop of Durham, Auckland Castle, the *Times* [London] Feb. 4, 1936, p. 13). The festival was rendered impressive by the foreign professors in academic garb, who offered their felicitations with the most disparate tokens of friendship. Professor Bohle of South Africa, for example, extended additional greetings from the foreign organization of the National Socialist party and the rector of the University of Canton, China presented a silken banner on which was embroidered a swastika. A different note was sounded by the Swiss jurist Professor Siegwart, who represented the three German-speaking and the three French-speaking universities of Switzerland and whose home city, Freiburg, stands on a linguistic divide. Switzerland, he said, offers an example of the peaceful and untrammelled cooperation of two cultures.

Rust, the national minister of higher education, sought to elucidate the attitude of the National Socialist state toward the universities and toward learning in general. National Socialism has not come to make regulations for higher education or to rob learning of its independent character. Learning is both free and dependent in equal measure, free in its methods of treating reality, dependent on the life of the people. Rust further told how individual branches of learning had been structurally renovated on the basis of the popular *weltanschauung*. Fears have been expressed that National Socialism has placed learning in the degraded position of handmaid to the political power. These politico-academic activities are the expression of a dominant principle of the National Socialist movement. The movement has a mission to restore to the German people a belief in their substance and this work must not be jeopardized by any unworthy tolerance of what is inimical to renascent national self confidence. For this reason those unteachable enemies of Germany's reascent, the Marxist gainsayers of national principle, have been banished from public life. National Socialism contends that a learning devoid of certain preconceptions and ethical foundations would be practically impossible. Rust then emphasized the union of human beings according to community of race and tradition. Learning can be systematic only if based on a living *weltanschauung*. *Weltanschauung* is a fertile ground. The German state of 1933 would never have become great without it. It suffuses life with a new wisdom, but it does not supplant learning. National Socialism has not come to make regulations for learning or to rob learning of its freedom, it has come to provide learning with a new foundation. The academician who talks politics will not be tolerated. True academic autonomy and freedom exist when learning is a spiritual force, at one with the living energies of the people and obedient to the law of truth.

The rector of Heidelberg University, Professor Groh, was promoted by the upper führer of the storm troops to the rank of *sturmführer* (a title which would roughly correspond to that of "colonel" in the regular army). This promotion took place a few days after the close of the jubilee festivities. The façade of the new university building at Heidelberg, on which had previously appeared the inscription "To the Living Spirit" together with a sculptured Pallas Athena, bore instead on the occasion of the jubilee the inscription "To the German Spirit" together with a bronze eagle. Pallas Athena, a confidence-inspiring symbol of truth to Heidelberg students of an earlier day, has been relegated to the rear of the building. The celebration was the occasion for the conferring of forty-three honorary degrees. The following residents of the United States received honorary doctoral degrees from various faculties of Heidelberg University from the Faculty of Philosophy, Prof. Dr. Kirsopp Lake of Harvard University, from the Faculty of Medicine, Prof. Hamilton Laughlin of Cold Spring Harbor, N. Y., eugenist of the Carnegie Institution, from the Faculty

of Jurisprudence, Dr (honoris causa) Ferdinand Thun of Reading, Pa. The Faculty of Jurisprudence bestowed a like degree on William May Garland of Los Angeles for his sponsorship of peaceful competitions between the nations (the Olympic games). The doctor's degree was further conferred on Prof. Reginald Aldworth Daly of Harvard by the Faculty of Natural Science and Mathematics. Henry K. Janssen of Reading, Pa., was similarly honored by the Faculty of Political Science and Economics.

SWITZERLAND

(From Our Regular Correspondent)

June 20, 1936

Humanitarian Enterprises

Switzerland possesses, among other humanitarian enterprises, three great welfare organizations: Pro Juventute, Pro Senectute and Pro Infirmis. The names of these organizations imply their functions. They enjoy the sponsorship of the federal government as well as of the public. This year the Swiss minister of foreign affairs, Federal Councilor Motta, has taken a special interest in the activity of the Pro Infirmis organization, which concerns itself with aid to the indigent infirm. In Switzerland around 200,000 (5 per cent) of the population present some somatic or psychic abnormality. Included in this number are the blind, the deaf, the hard of hearing, the maimed, the decrepit, the feeble-minded and persons presenting any other type of impaired development. By circularizing the public with specially illustrated post cards, the organization was able during the year 1935 to collect the sum of 270,000 francs.

Several recent medical reports on this type of welfare activity are of interest. Professor Schlittler of Basel, for example, announces that the Basel School for the Hard of Hearing, enlarged until it now constitutes an eight-grade school, has in the course of the last twenty years provided a regular schooling for a vast number of children whose hearing is defective and has trained these children to become self-confident and efficient human beings. Similar schools are to be found in Zurich, Bern, Lucerne and other cities. For country school children whose hearing is impaired, a special service has been set up by which their transfer to one of the urban schools for the hard of hearing is effected and it is seen to that these children are suitably lodged while in the city in question. In the last six years more than eighty children from rural communities have been transferred to the urban schools for the hard of hearing and in some cases the Pro Infirmis association has assisted financially in this work.

In Zurich there has existed since 1933 a special kindergarten for children afflicted with deaf-mutism or other defects of hearing. After two years of experimentation, Professor Nager, otologist, of Zurich, reports that these children have made remarkable progress. It was amply demonstrated that instruction of the children should begin precisely at that stage of development which is characterized by an especially lively instinct of imitation and in which normally a child feels an urgent need for conversation and for an understanding of his surroundings. Whereas according to earlier educational methods this period was allowed to remain unutilized in the teaching of the deaf, this period is now filled by preschool instruction and infinitely better results can now be anticipated. At the same time the Zurich kindergarten serves as an observation center wherein the etiology of defective speech development in the children may be traced. In the course of a physician's consulting hours such investigations can obviously yield only approximate data, but at the kindergarten a child easily becomes adjusted to the environment and remains under the constant observation of specialists. The parents too can here become conversant with the educational procedures especially adapted to children with deaf-mutism or seriously impaired hearing.

The children of the kindergarten have become lively and happy in this environment, whereas previously many of them had been excluded from normal contacts and play within their own family circles and been forced to remain apart. In Geneva a similar kindergarten has been in existence for several years. According to investigations undertaken there, 3 years is likewise considered the optimal age at which a child should be admitted to the institution.

The Migration of Virus Along Peripheral Nerves

A recent discussion of the migration of virus along the peripheral nerves by Robert Doerr, professor of hygiene at Basel, contained some observations that are of fundamental importance. It is widely assumed that certain types of virus travel by their centripetal migration in the axis cylinders while tetanus toxin on the other hand may be passively assisted by fluid currents in the perineural spaces of the central nervous system. A critical analysis of the literature leads one to conclude that the two alternatives ("active growth or passive transport" and "axis cylinder or perineural lymph spaces") do not exhaust all the possibilities. Doerr describes observations that seem to substantiate this hypothesis. The point of departure is the establishment of the velocity of migration of the virus of herpes in the trigeminal tract leading from the rabbit's cornea to the brain by estimating the minimal interval of time at which the virus is demonstrable in two successive points of the tract (gasserian ganglion and sensory trigeminal nucleus on the inoculated side). There resulted surprisingly few values that were not in accord with the concept of an ordinary progress of the infectious process, which moreover spread centripetally with absolute constancy and in even tempo. The establishment of a concentration of virus in the passage as well as the fact that the migratory process remains completely latent functionally and frequently exhibits no histologic changes speaks further against an "ascending infection." Moreover, Magrassi has been able to show that that strain of herpes which develops no encephalitis filters through the trigeminal tract, reaches the brain and quickly produces a cerebral immunity. Implanted directly into the brain, the "nonencephalitic pathogenic" strains develop, however, a maximal capability of infection whence the conclusion follows that the "scheneninfektion" (track infection) must be directed by a special mechanism. This may be satisfactorily explained either by an ordinary infection of the nerves or by a purely passive transport of virus. The phenomenon of "opposing manners of infection" observed by Magrassi allows itself to be evaluated in the same sense. When rabbits were subjected first to peripheral and then, after an interval, to intracerebral inoculations with encephalitogenic strains the "scheneninfektion" and the direct cerebral infection canceled each other. The animals thus survived both interventions without exhibiting any symptoms, whereas any single one of the two infections inevitably was fatal. The results of experiments with intravascular injections of the virus of herpes make it necessary to alter the prevalent concept of more fixed and more highly differentiated special neurotropisms. According to the vessel selected, either a primary myelitis or a primary encephalitis can be produced. The nerve conduction theory of tetanus toxin (H. H. Meyer) can now be supported by a new argument (the dynamic activation of the toxically induced local tetanus). Since the detection of toxin in the ischiatic nervous tract succeeds only when the circumstances offer conclusive proof of the positive condition a passive transport by currents in the perineural lymph spaces must be concluded. According to H. H. Meyer's theory it is necessary to bring into consideration other toxins (diphtheria, botulinus, Shiga) in order to answer the question of what properties an agent must possess in order to be absorbed and conducted by the nerves.

VIENNA

(From Our Regular Correspondent)

July 7, 1936

Causes of Death Among the Viennese

The Federal Bureau of Statistics has at last made public complete statistics on the causes of the deaths that occurred in Vienna during 1933 and 1934. Diseases of the heart and vascular system occupy first place (male patients 17.2 per cent, female patients 20.5 per cent), the next ranking cause was malignant tumors (male patients 12.3 per cent, female 14.5 per cent). Third place is occupied for males by tuberculosis (9.6 per cent), for females by pneumonia (8.3 per cent), conversely, in fourth place is pneumonia with 8.3 per cent among males and tuberculosis with 7.9 per cent among females. The incidence of fatalities from different causes and the relative endangerment of the populace by various diseases have been computed per hundred thousand of population. According to this report virtually all diseases underwent a decrease. The death rate from cardiac and vascular disorders has sunk from 234.4 to 231.3 per hundred thousand of population. On the same basis the mortality from tuberculosis has declined among males from 141.5 to 128.5, among females from 100.7 to 93.4. The decline in the number of suicides, from 59.3 to 53.9 per hundred thousand among males and from 25.2 to 24.3 among females, is gratifying. Only fatalities from malignant tumors showed an increase among males from 157.3 to 164.1 per hundred thousand. The following detailed data can be quoted. The 24,808 fatalities recorded in 1933 were apportioned according to cause as follows: infectious diseases 3,658 (including 2,337 deaths from tuberculosis of the respiratory tract), cancer 3,998, diabetes 402, diseases of the blood 248, diseases of the nerves and of the organs of sense 2,485, diseases of the circulation 5,661 (of which 4,376 were from organic heart disease), diseases of the organs of respiration 2,724 (of which 1,971 were from pneumonia and costal pleurisy), diseases of the digestive system 1,504, diseases of the genito-urinary system 746, deaths occasioned by pregnancy and the puerperium 113. In addition, 391 children died in the first year of life and 686 persons succumbed to the infirmities of age. There were also a number of violent deaths, 1,235 of which were suicides.

Has the Patient a Right to His Case Record?

An interesting decision recently handed down by the Supreme Court of Judicature marks another pronouncement on the physician-patient relationship. A male patient had been admitted to a private sanatorium for treatment for an intoxication caused by a hypnotic. The treatment had been successful but the patient decided to institute a personal injury suit against the manufacturer of the drug in question. To strengthen his allegations, he wished to make use of the clinical history of his illness and requested the attending physician to furnish him this record. When the doctor and the sanatorium denied his request the man brought legal action against both, demanding the delivery of the record. The defense contended that the histories of patients are in the nature of an attending physician's private notations, intended solely for his personal use, that such records should never be accessible to a patient and that, furthermore, if the plaintiff wished to sue the pharmaceutical concern he could have the members of the sanatorium staff subpoenaed as medical witnesses. But the legal duty of professional secrecy the defense concluded, prohibits the surrender of a case record by a physician.

The medical experts who testified in this case were of the opinion that case records were to be regarded as a physician's personal property and that under no circumstances should a patient be permitted access to them and, further, that a universally recognized principle of professional ethics forbids the physician to furnish a patient full information on the latter's

physical condition if such intelligence might upset the patient's mental equilibrium. It must therefore remain within the discretion of the physician whether he wishes to supply a patient with the case history.

On the basis of this expert opinion the Supreme Court dismissed the suit. The decision specifically stated that a patient has no right to demand access to the record of his case if the physician considers the divulgence of the data therein contained contraindicated for psychological reasons. There exists accordingly no legal avenue by which the plaintiff may become acquainted with the etiology and clinical course of his malady. In case action is brought against a pharmaceutical manufacturer, the court itself may impound medical records for its own guidance in the formulation of a judgment, but the relinquishment of a medical record cannot be legally claimed by private persons, and the plaintiffs in the present or in any similar case are to be regarded as such.

The New Electropathologic Institute

The Electropathologic Museum, previously housed at the Institute of Forensic Medicine, has been moved to new quarters in the former Garrison Hospital. The institute was founded thirty-five years ago by Prof. Stephan Jellinek and still remains under his direction. As it is the only establishment of the kind in the entire world, engineers and physicians of every nationality throng there to study problems in the field of electropathology. The museum contains many exhibits of unusual and unique interest, for example, a valuable historical collection on electricity. Among the activities of the institute may be mentioned recent research on prevention of electrical accidents, on improvements in industrial safety and on kindred problems.

Among other exhibits lodged in two great halls are a special collection of material illustrative of the effects of lightning, sections on protection against electricity, the application of electricity to military science, electromedical apparatus and electropathology in everyday life. In addition there are the laboratories and a lecture hall. The institute has become particularly important in recent years for its work on those forensic problems which have been created by the daily use of electrical appliances. In the school conducted by Professor Jellinek at this institute a number of the most eminent research scholars in the field have received their training.

RIO DE JANEIRO

(From Our Regular Correspondent)

July 15, 1936

Immunotransfusion

Dr. Cruz Lima, director of the blood transfusion center in Rio de Janeiro, in a recent lecture reviewed the work of Wright and his school on immunotransfusion. The speaker differentiates three types of immunotransfusion: true immunotransfusion (conferring immunity), prophylactic transfusion (conferring protection) and allergic transfusion (transmitting allergy). The speaker reported the results of the three different types of transfusion in a group of eighty patients suffering from infections. Immunotransfusion was given to fifty-eight, simple transfusion to fourteen and both types of transfusion to eight. Recovery took place in twenty-seven patients out of the group of fifty-eight who were treated by immunotransfusion, the condition did not change in one and there were thirty deaths (51 per cent). Recovery took place in two patients in a group of fourteen who were treated by simple transfusion, the condition did not change in one and eleven patients died (78 per cent). In the group of eight patients who received both types of transfusion, four recovered and four died (50 per cent). The results point to the advantage of using immunotransfusion in infections. A comparison of the effects of immunotransfusion in different infections gives the

following results In twenty-five cases of streptococcic infections complicated by septicemia there were nine recoveries and sixteen deaths, in twelve cases of staphylococcic infections there were six recoveries and six deaths, in sixteen cases of infections of unknown origin, especially from pyogenic bacteria, there were eleven recoveries and five deaths In all cases of myocardial involvement there was a fatal outcome, which shows the importance of early suppression of the focus of infection In seven cases of typhoid treated by immunotransfusion there were two recoveries and five deaths Transfusion in these cases was performed in desperately grave cases In the group of thirty-two patients who died after having received immunotransfusion, ten patients (29 per cent) were given transfusion in the last twenty-four hours before death It is advisable to perform immunotransfusion early in the development of infections, in sufficient dose (from 400 to 500 cc) and repeat it at least every forty-eight hours By the speaker's observations it seems that immunotransfusion is contraindicated in cases of latent tuberculosis, which seems to enter on activity by immunotransfusion

Congress of Orthopedics

The First Brazilian Congress of Orthopedics and Traumatology met July 1-3, in São Paulo There was a large attendance of Brazilian orthopedic surgeons Those who met previously at the reunion of the Orthopedic Regional Society of Rio de Janeiro were also present Prof Vittorio Putti, guest of honor of the congress and of the government, delivered his first lecture at the inaugural session, on orthopedic surgery in contemporaneous medicine Dr Barros Lima, professor of the Faculty of Medicine of Recife and president of the Orthopedic Society of the northern region of Brazil, spoke on tuberculosis of the bones Dr Resende Puech described his technic of anterior tibiotarsal arthrodesis, with bone implantation, in treatment of paralytic calcaneus foot

Maternity Hospital for Tuberculous Women

Festivities were held by the Associação de Socorros aos Tuberculosos on occasion of the opening of the Plácido Barbosa pavilion for the care of pregnant tuberculous women The pavilion is part of a maternity hospital which is in construction and which is in connection with the São Sebastião Hospital The institution covers a need in the care of tuberculous women that previously had not been given the attention it deserves

Marriages

ARTHUR ALLAN HUMPHREY, Battle Creek Mich to Miss Frances Adelaide Whalen of Fort Wayne, Ind., September 2

CHARLES SALTZMAN, Loch Sheldrake, N Y to Miss Frances Selma Heller of Brookline, Mass recently

ARTHUR STRAUSS, Long Branch N J to Miss Winifred Armstrong of Rumson, in New York, July 30

REYNOLD ERSKINE CHURCH, New York to Miss Mary Eltinge Ostrander of White Plains June 25

ERLAND MYLES STANDISH Wethersfield, Conn, to Dr HILDA C CROSBY of Hartford, June 25

ROBERT MAYES SEAWRIGHT to Miss Margaret Alsobrook, both of Bolton Miss, July 24

LOUIS BLACK LEE, Tiltonville, Ohio, to Miss Blanche Allen of Washington, D C., July 4

DONALD MARION CALDWELL, Irvington, N J to Miss Mabel Wood of New York, July 6

CLYDE HOBSON FOSHEE, Madisonville, Ky to Miss Isabel Board of Louisville June 6

HARVEY M FRY, Rush Pa., to Miss Ruth H Payne of Montrose, July 24

ABRAHAM H BARRIS to Miss Sadie Furman both of New York, July 4

DAVID WILLIAM FRY to Miss Wilma Buehler, both of Peoria Ill., June 20

Deaths

Clarence King ☉ Cincinnati Medical College of Ohio, Cincinnati, 1901, member of the American Academy of Ophthalmology and Oto-Laryngology and the American Ophthalmological Society, fellow of the American College of Surgeons, professor of ophthalmology, University of Cincinnati College of Medicine, served during the World War, director of the ophthalmic service, Children's Hospital, attending surgeon to the Cincinnati General Hospital and director of the outdoor clinic, ophthalmologist to the Christ Hospital, at various times served on the staffs of the Ophthalmic Hospital Good Samaritan Hospital and Deaconess Hospital was active in the establishment of the laboratory of ophthalmic pathology at the Christian R Holmes Hospital aged 57, died August 15, while swimming at Grape Bay, Hamilton, Bermuda.

Frank Richard Oastler ☉ New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York 1894, professor of clinical gynecology at his alma mater, attending gynecologist to the Lenox Hill Hospital, consulting gynecologist and obstetrician to the Lincoln Hospital, consulting surgeon to St Luke's Home for Aged Women consulting gynecologist to St. Luke's Hospital Newburgh, fellow of the American College of Surgeons, aged 65, died, August 2, in Glacier National Park, Mont., of coronary occlusion

William McDonald Jr, ☉ Marion, Mass Columbia University College of Physicians and Surgeons, New York 1899, at one time clinical instructor in neurology at Yale University School of Medicine, New Haven, Conn, served during the World War, at various times on the staffs of the Butler Hospital and Rhode Island hospitals, Providence, R I, Sayles Memorial Hospital, Pawtucket, R. I., and the New Haven (Conn) Hospital, aged 63, died, August 1

Ira Dean Loree ☉ Ann Arbor, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901, member of the American Urological Association fellow of the American College of Surgeons, assistant in surgery at his alma mater from 1901 to 1907 and associate professor of surgery from 1907 to 1920, for many years on the staff of St Joseph's Mercy Hospital, aged 67, died suddenly, August 10, at his home in Barton Hills

Edward John Riley ☉ New York, Albany (N Y) Medical College, 1908, assistant clinical professor of medicine, New York University College of Medicine, served during the World War, for many years police surgeon aged 51, consulting physician to St Ann's Maternity and St Elizabeth's hospitals, New York, and St Joseph's Hospital, Yonkers, N Y attending physician to St. Vincent's Hospital, where he died, August 3

Robert Kendig Rewalt ☉ Williamsport Pa University of Pennsylvania Department of Medicine, Philadelphia 1908, past president of the Lycoming County Medical Society, member of the American Academy of Pediatrics served during the World War, for many years chief of the pediatric service and member of the board of managers of the Williamsport Hospital, aged 49, died, July 27, of cerebral hemorrhage.

George Joseph Hauer, New Orleans Tulane University of Louisiana Medical Department, New Orleans, 1912 member of the Louisiana State Medical Society member of the Southeastern Surgical Congress, fellow of the American College of Surgeons served during the World War, on the staff of the Touro Infirmary and French Hospital aged 46, died suddenly June 2 of chronic nephritis and myocarditis

Alfred Benedictus T Lippert, Sidney, Ohio Miami Medical College, Cincinnati 1896 member of the Ohio State Medical Association for many years a medical missionary in West Africa, formerly director of the child hygiene division of the state department of health at Columbus health commissioner of Shelby County aged 61, died July 1 in Rochester Minn. of carcinoma of the stomach

Aloysius James Larkin ☉ Chicago Rush Medical College Chicago 1916, associate in radiology at Northwestern University Medical School aged 47, author of a book called Radium in General Practice at various times on the staffs of St Francis Hospital Evanston Ill University Cook County Evangelical, Edgewater and Wesley Memorial hospitals where he died August 20 of coronary occlusion

Thomas Scott Ragland, ☉ Gilmer Texas, Vanderbilt University School of Medicine, Nashville Tenn. 1894 past president and secretary of the Upshur County Medical Society formerly county health officer for many years bank president

medical superintendent of the Ragland Clinic-Hospital, aged 64, died, June 19, as the result of injuries received in an automobile accident

John Milton Walker * Kansas City Mo., Tulane University of Louisiana School of Medicine, New Orleans, 1913, member of the Associated Anesthetists of the United States and Canada, served during the World War, on the staffs of St. Joseph Hospital and the Trinity Lutheran Hospital aged 45, died, June 11, of lobar pneumonia

O Grant Harrington * Niagara Falls N. Y., University of Buffalo School of Medicine 1895, past president of the Niagara Falls Academy of Medicine at one time coroner of Lewis County N. Y., member of the staffs of the Mount St. Mary's and Memorial hospitals, aged 69, died, June 1 in Lowville, of coronary thrombosis

William Charles Vickers, Abbeville Ala., Tulane University of Louisiana Medical Department New Orleans 1908 member of the Medical Association of the State of Alabama past president of the Henry County Medical Society veteran of the Spanish-American War, formerly county physician aged 53, died, June 7

Charles Benjamin Sprague, Troy N. Y., University of Vermont College of Medicine, Burlington 1898 member of the Medical Society of the State of New York, formerly a county coroner aged 64 for many years on the staff of the Leonard Hospital, where he died, June 7, of chronic nephritis and myocarditis

Thomas Verner Moore * San Jose Calif., John A. Creighton Medical College, Omaha 1911, fellow of the American College of Surgeons, served during the World War on the surgical staff of the San Jose Hospital and O'Connor Sanitarium, aged 52, died, June 6, of adenocarcinoma of the stomach

Charles Sumner Hamilton * Columbus, Ohio, Columbus Medical College, 1887, emeritus professor of surgery, Ohio State University College of Medicine served during the World War aged 72, on the staffs of the Children's Hospital and Mount Carmel Hospital where he died, June 26 of heart disease.

William Louis Hartman, Highland Park Mich., Hahnemann Medical College and Hospital, Chicago 1887, fellow of the American College of Surgeons, medical director of the New York Central Lines aged 68 on the staff of the Grace Hospital, Detroit, where he died, June 1 of cardio-renal disease.

George Willis Robinson * New Orleans, Tulane University of Louisiana School of Medicine New Orleans 1932 assistant clinical professor of ophthalmology at the Louisiana State University Medical Center on the staff of the Charity Hospital, aged 28, was drowned, July 19, at Grand Isle La

Frank Bryant Horner, Campbellsburg Ind., University of Louisville (Ky.) Medical Department 1913, member of the Indiana State Medical Association formerly county coroner aged 51, died, June 6 in the Pennington General Hospital, London, Ky., of injuries received in an automobile accident

James Henry Thorpe * Owensboro Ky., Barnes Medical College, St. Louis, 1899 past president of the Daviess County Medical Society, member of the staff of the Owensboro City Hospital, consultant surgeon to the Mary Kendall Home, aged 60, died, June 6, of carcinoma of the stomach

Lucien Luttrell Miner * Los Angeles, Columbia University College of Physicians and Surgeons, New York 1904 fellow of the American College of Surgeons at various times on the staffs of the Hospital of the Good Samaritan and Hollywood Hospital, aged 57 died, June 5 of heart disease

Bernays Kennedy, Indianapolis, Medical College of Indiana, Indianapolis, 1893, served during the World War, at one time associate professor of gynecology Indiana University School of Medicine, aged 63, died, June 29 in Duluth Minn. of diabetes mellitus and coronary sclerosis

Vernon Champney Stewart * Woburn Mass., Columbia University College of Physicians and Surgeons New York 1904, formerly medical examiner for the Woburn district, on the staff of the Charles Choate Memorial Hospital, aged 56 died June 20, in New Ipswich, N. H.

Daniel W. McMillan, Pensacola Fla., Tulane University of Louisiana School of Medicine New Orleans 1893 member of the Florida Medical Association served during the World War aged 67 died August 4 in a local hospital following an operation for appendicitis

William Wadsworth Stirlen, Muscatine Iowa, Keokuk Medical College College of Physicians and Surgeons, 1905

member of the Iowa State Medical Society aged 55, on the staff of the Benjamin Hershey Memorial Hospital, where he died, June 9, of septic endocarditis

Thomas James Glenn, Cincinnati, Medical College of Ohio, Cincinnati, 1908, member of the Ohio State Medical Association aged 52, on the staff of the Good Samaritan Hospital, where he died June 27, of septicemia and subacute endocarditis

Abram Harvey Van Riper, Nutley N. J., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1878 at one time postmaster, aged 82 died June 26, in St. Mary's Hospital, Passaic, of pulmonary embolism

George Eugene Ober * Bridgeport, Conn., University of Vermont College of Medicine Burlington, 1890, past president of the board of health aged 73 died June 11, in a local hospital of perforated duodenal ulcer and general peritonitis

Elmer Lee Ruble * Kansas City, Mo., University Medical College of Kansas City, 1905 served during the World War member of the staffs of the Wesley Hospital and St. Mary's Hospital, aged 55, died, June 1, of heart disease

Austin James Kemp, Miami Fla., University of Nashville (Tenn.) Medical Department 1903, member of the Florida Medical Association, served during the World War, aged 56, was found dead, June 8, of heart disease

Justin Gideon Hayes, Williamsburg Mass., University of the City of New York Medical Department, 1881, member of the Massachusetts Medical Society aged 86, died, June 18, in the Cooley Dickinson Hospital, Northampton

Omer Hamilton McDonald, Remus, Mich., Starling Medical College, Columbus, 1903, member of the Michigan State Medical Society, aged 66, died, June 12, in the Kelsey Hospital, Lakeview, of chronic myocarditis

George Gove Kelly, Hingham, Mass., Hahnemann Medical College and Hospital, Chicago, 1908, at one time on the staff of the Boston State Hospital, aged 62 died, June 27 in the Springfield (Mass.) Hospital

George B. C. Elliott, Millvale Pa., Western Reserve University Medical Department Cleveland, 1889, member of the Medical Society of the State of Pennsylvania, aged 72 died, June 22, of cerebral hemorrhage.

Humphrey H. Bate, Castalian Springs, Tenn., University of Nashville Medical Department, 1897, member of the Tennessee State Medical Association veteran of the Spanish-American War, aged 61, died June 12

Dudley Leavitt Stokes * Rochester, N. H., Dartmouth Medical School, Hanover, 1889 formerly city and county physician, at one time on the staff of the Frisbie Memorial Hospital, aged 70, died, June 25

Victor Frank Carey, Downsville, La., Tulane University of Louisiana Medical Department, New Orleans, 1910 member of the Louisiana State Medical Society, aged 50, died, June 24, in a hospital at Monroe.

Nathaniel Frutkow * Chicago, University of Kansas School of Medicine Kansas City Kan. 1914 aged 46 member of the staff of the Henrotin Hospital, where he died, July 20, of streptococcal meningitis

Hugh Edward Prather * Hickman, Ky., University of Louisville Medical Department, 1901 served during the World War, formerly county health officer, aged 58, died, June 1, of a ruptured gallbladder

William Eugene Russell, Hico Texas, Vanderbilt University School of Medicine, Nashville, Tenn. 1900, aged 71 died June 11, in a hospital at Waco, following an operation for intestinal obstruction

Matthew E. McManes, Piqua Ohio, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1898, aged 60 died suddenly, June 6, of cerebral hemorrhage.

Abel J. Sands * Choctaw, Okla., College of Physicians and Surgeons, Keokuk, Iowa 1889, veteran of the Spanish American War formerly member of the state legislature aged 69 died, June 16

Hugo Louis Heitefuss * Wilmington, Del., Long Island College Hospital, Brooklyn, 1928, on the staffs of St. Francis and Delaware hospitals, aged 32, died suddenly June 29 of coronary thrombosis

Robert F. Price, Terre Haute, Ind., Medical College of Ohio Cincinnati, 1886 member of the Indiana State Medical Association aged 76 died June 27, of coronary embolism and chronic myocarditis

Gilbert Miller ☉ New York, University and Bellevue Hospital Medical College, 1908, on the staffs of the *Lyng-in* Hospital and the Jewish Memorial Hospital, aged 49 died suddenly, June 3

Albert Gustaf Lundgren, Mattapan, Mass., Boston University School of Medicine 1933, served during the World War, aged 44 died, June 28, in the Barnstable County Sanatorium, Pocasset

Washington Pierce Glover, Atlanta, Ga., Bellevue Hospital Medical College, New York, 1876, Civil War veteran, aged 83 died, June 20, of acute dilatation of the heart and arteriosclerosis

Kathalyn Voorhis, Worcester, Mass., Tufts College Medical School, Boston 1916, member of the Massachusetts Medical Society, aged 50, died, June 19, in the Harvard Private Hospital

Jacob Kendell, Covington, Ohio, Miami Medical College, Cincinnati, 1869, formerly bank president, for many years member of the school board and city council, aged 89, died June 8

Edmond Dawson Standly ☉ Brookfield Mo., University Medical College of Kansas City, 1897, served during the World War, aged 64, died, June 16, of carcinoma of the bladder

J H Linzy, Comanche, Okla. (registered in Oklahoma by the state board of health under the Act of 1908), member of the Oklahoma State Medical Association, aged 76 died in June

Bernard Charles Kelly, Carroll Iowa, Hahnemann Medical College and Hospital, Chicago, 1887, aged 75, on the staff of St. Anthony Hospital, where he died, June 11 of carcinoma

John Franklin Cave, Kansas City Mo., Western Eclectic College of Medicine and Surgery, Kansas City, 1908, aged 63 died June 21, of coronary embolism and chronic myocarditis

William Bright March, San Jose, Calif., Eclectic Medical Institute, Cincinnati 1884, member of the California Medical Association, aged 76 died, June 23, of cerebral hemorrhage

Frank John, McKeesport, Pa., Eclectic Medical Institute Cincinnati 1882, Baltimore Medical College, 1894, aged 87 died June 13, of arteriosclerosis and chronic myocarditis

Ernest L Griffith ☉ Clifton Forge Va., University of Maryland School of Medicine, Baltimore, 1907, served during the World War, aged 51 died suddenly, June 21

William D Lewis, Beckley, W Va., University of Louisville (Ky.) Medical Department, 1912, served during the World War, aged 49 died June 10, in a local hospital

Jacob La Porte ☉ Chicago, Illinois Medical College Chicago, 1907, aged 55, died August 22 in the Edgewater Hospital, of cerebral hemorrhage and hypertension

Elmer E Mosher, Greenwich, N Y., Hahnemann Medical College and Hospital of Philadelphia, 1885, aged 75, died June 24, of diabetes mellitus and acute nephritis

Spencer P McNairn, Burleson, Texas, Memphis (Tenn.) Hospital Medical College, 1899, member of the State Medical Association of Texas, aged 66, died June 17

Thomas Pollard Darracott, Tunstall, Va., Medical College of Virginia, Richmond 1885, member of the Medical Society of Virginia, aged 77, died, June 26

Charles Melville Harrington, Chicago, Chicago Homeopathic Medical College, 1899, aged 64, died August 17, of chronic nephritis and cerebral hemorrhage

Orrin Philander Joslin, Carthage N Y., University and Bellevue Hospital Medical College, New York, 1899, aged 59, died June 11, of cerebral hemorrhage

Arthur M Ruhl ☉ Edmond, Okla., Kansas City Homeopathic Medical College 1900, aged 60 died June 27 in a hospital at Oklahoma City, of pneumonia

Charles Newton Gartin ☉ Chicago, Bennett Medical College, Chicago 1912, aged 46, was drowned while swimming in Lake Michigan at Gary, Ind. June 14

Daniel Lawrence Moore, Nahunta Ga., Atlanta Medical College 1894, member of the Medical Association of Georgia, aged 62 died June 23 of angina pectoris

Granville Storey Ramsay, Collins Miss., Emory University School of Medicine Atlanta Ga. 1923, aged 37 died May 27 in the Methodist Hospital Hattiesburg

Samuel Ekenborg Latta, Stockton Calif., Rush Medical College, Chicago 1884, member of the California Medical Association, aged 74 died June 13

Moses I DeVorkin, Los Angeles (licensed in Missouri in 1891), formerly a practitioner in St. Louis, aged 73 died suddenly, June 6, of heart disease

Robert Michael Hillary, Aurora, Ont., Canada, Trinity Medical College, Toronto, 1890, aged 73, died June 1 in the Christie Street Hospital, Toronto

John Ross Beiter ☉ Canton Ohio, Western Reserve University Medical Department, Cleveland, 1907, aged 56, died, June 30, of coronary thrombosis

Rollin Jones Goss, Wilder, Vt., Baltimore Medical College, 1896, aged 65 died, June 26, of coronary thrombosis, arteriosclerosis and hypertension

John B Lichtenwallner, Omaha, University of Pennsylvania Department of Medicine Philadelphia, 1882, aged 76 died, June 25 of chronic myocarditis

Frank A Stahl ☉ Chicago, Rush Medical College Chicago 1887, at one time instructor in obstetrics at his alma mater, aged 73, died, June 10

Thomas D Miller, Aurora, Mo., Missouri Medical College, St. Louis 1898, aged 69, died June 8 in St. Louis of carcinoma of the stomach

Charles McConnell, Hogsburg N Y., University of the City of New York Medical Department, 1881, died June 15, of coronary thrombosis

Horace B Dean, Horseheads, N Y., Hering Medical College, Chicago, 1910, aged 63, died, June 4, of cerebral hemorrhage and pneumonia

Joseph Allen Graham, Long Beach, Calif., Queen's University Faculty of Medicine, Kingston, Ont., Canada 1904, aged 58, died, June 18

Franklin Eliada Way, Talmo Kan., Kansas City (Mo.) Medical College, 1895, aged 68, died, June 18 of arteriosclerosis and myocarditis

Louis Montrose Coon, Denison Iowa, St. Louis College of Physicians and Surgeons, 1898, aged 70, died, June 13, of myocarditis

David Ellis Miller ☉ Monett Mo., Kentucky School of Medicine, Louisville, 1897, aged 69 died, June 23, of cerebral hemorrhage

William M Cawhern, Atlanta, Ga., Atlanta College of Physicians and Surgeons, 1899, aged 69, died, June 24 of erysipelas

Edwin E Lamb, Ellwood City, Pa., Cleveland University of Medicine and Surgery, 1897, aged 66, hanged himself, June 11

Jacob Francis Hahn, Donnellson, Ill., University of Illinois College of Medicine, Chicago, 1936, aged 31 died June 13

Thomas Riggs Steagall, Tacoma, Wash., Kentucky School of Medicine, Louisville, 1897, aged 73, died suddenly June 3

Charles Leson Landfair, Bluffton Ind. (licensed in Indiana in 1897), aged 71, died June 11, of influenza and chronic cystitis

Thomas F Hudson, Houston Texas, Louisville (Ky.) Medical College, 1894, aged 76, died June 3, of cerebral hemorrhage

Oscar Alcander Kennedy, Tremont, Miss., Memphis (Tenn.) Hospital Medical College, 1894, aged 65 died June 20

George La Grange Coleman, San Leandro Calif., Cooper Medical College San Francisco, 1903, aged 56 died June 27

Judson L Lamb, Burbank Calif., University of Wooster Medical Department Cleveland 1880, aged 88 died June 27

John Isaac Allison, Bloomington Springs Tenn. (licensed in Tennessee in 1889) aged 72 died June 21, of nephritis

Herman Lodowick Crary, Crown City, Ohio, Starling Medical College Columbus 1904, aged 58 died June 10

Hans P Hanson, Beresford S D., John A Creighton Medical College, Omaha 1896, aged 89 died in June

Charles B Hunt, New Castle, Pa., Baltimore Medical College 1891, aged 69, died June 14 of embolism

Albert Frank Allen, Los Angeles, College of Physicians and Surgeons, Chicago 1885, aged 74 died June 12

Jean Sarah Hahl, Clarence N Y., University of Buffalo School of Medicine 1936, aged 23 died June 1

Leslie Alvey Beard, Polo III, Chicago Medical College 1889, aged 76 died June 26 of heart disease.

Correspondence

"POOLED CONVALESCENT HUMAN SERUM IN POLIOMYELITIS"

To the Editor —It is the duty of every practicing physician to offer hope and comfort to the family of a patient who is ill with poliomyelitis. Your recent editorial (*THE JOURNAL*, August 8, p. 432) offers such consolation particularly with respect to serotherapy. Yet certain evidence obtained from recent epidemics makes the value of convalescent serum as a therapeutic measure in the acute stage of poliomyelitis extremely doubtful. One has only to recall that until recently serum was employed in the paralytic stage of poliomyelitis with apparent efficacy. More careful workers later were led to the opinion that certain indicators of the value of serum in cases of paralysis were unreliable, for paralyzed patients were usually past the acute stage of their disease. The drop in temperature or the apparent arrest of paralysis following the administration of serum was often seen also in patients who had received no serum.

The same uncertainty holds true in appraising serum used in the preparalytic, or what is termed the meningitic, stage of the disease. During the 1931 epidemic (Fischer A. E. Human Convalescent Serum in the Treatment of Preparalytic Poliomyelitis, *Am J Dis Child* 48:481 [Sept.] 1934), although 477 cases were treated and over a hundred control cases were studied, no decision could be reached. It was definitely shown, however, that in many cases diagnosed in the meningitic stage and untreated, paralysis never occurred. Had the same patients received a serum one would have been led to the conclusion that recovery was due to the treatment.

Another opportunity to study the question again presented itself last summer when an epidemic occurred in New York City. Of the 685 patients with poliomyelitis admitted to the Willard Parker Hospital, 282 had no paralysis on admission. Only fifty-seven of these 282, or 20 per cent, ever developed any paralysis and none of these died. There were therefore, four chances in five that paralysis would not develop in a case seen in the 'preparalytic' or meningitic phase. No serums or transfusions of any kind were employed. It was not possible to determine how many of the paralyzed patients had a 'preparalytic' phase. Some of them no doubt did. All the deaths (eighteen) that occurred were of patients who were already paralyzed on admission to the hospital, in other words, those in whom the virus nerve cell union had already taken place.

In the light of the experience of the 1935 epidemic then, it can be said that if the diagnosis of the disease was made in the meningitic stage the case offered a good prognosis. A careful analysis of the available data in other recent outbreaks likewise bears out the same contention. In the 1934 California epidemic there were large numbers of preparalytic cases and consequently a low mortality (*Am J Pub Health* 24:1204 [Dec.] 1934). In Denmark in 1934 less than 20 per cent of the patients developed paralysis (Jensen, C. The 1934 Epidemic of Poliomyelitis in Denmark. Preliminary Report of the Epidemiological and Clinical Features and Convalescent Serum Therapy, *Proc Roy Soc Med* 28:1107 [June] 1935). The two epidemics were both mild, as evidenced by the low mortality. They were comparable in other respects (age distribution, communicability, and so on).

It may be argued that the foregoing statements hold only for convalescent serums and not for so-called normal pooled adult serums which are said often to exceed convalescent serums in their ability to neutralize the virus of poliomyelitis. Unfortunately, the method used to test the virucidal substance in serum is a very crude one. Because of the many variables in the performance of the monkey serum neutralization test,

one must accept with caution statements that certain serums are more potent than others. Indeed, one cannot even be certain that real "antibody," which may be of help in the human disease, is present in the circulating blood for since serums from poliomyelitis convalescents often do not possess neutralizing power, may it not be that one is dealing with tissue immunity in that disease rather than humoral immunity? There is no evidence which justifies placing any therapeutic value on any serum in the treatment of poliomyelitis at the present time.

ALFRED E. FISCHER, M.D., New York

MEASURING PRESSURE OF BILE DUCTS

To the Editor —I was very much interested in the communication from Dr. Harry Koster and Dr. Arthur Shapiro in the August 1 issue of *THE JOURNAL* relative to the method they used in studying the pressure within the common bile duct. Our failure to read their article is attributable to the fact that it was hidden in their paper, which was entitled "On the Rate of Secretion of Bile."

In discussing with physicist Charles Sheard the question of intraductal pressure, I obtained permission to quote him as follows: "The intraductal pressure, as has been pointed out by Koster, Shapiro and Lerner, should include, in addition to the reading of the manometer attached to the T-tube, the equivalent vertical height from the point of entrance of the tube in the abdomen to the end of the common duct. In the report of the investigations on pressure in the common bile duct by McGowan, Butsch and Walters, it is definitely stated that all measurements of pressure were made from the abdominal wall. The data which they present are concerned with changes in pressures and, by reason of the omission of the equivalent pressure from the abdominal wall to the end of the duct, are not to be regarded as measurements of total pressure. Throughout the paper emphasis is laid on rise (or change) of pressure subsequent to the administration of certain drugs."

Dr. Sheard's statement should clarify the situation.

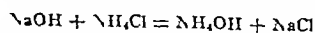
WALTER WALTERS, M.D., Rochester, Minn.

TREATMENT OF ACID BURNS OF THE EYE

To the Editor —In *THE JOURNAL*, August 8, appeared a communication from Dr. W. D. Hubbard of Flint, Mich. He treats all acid burns with large quantities of water. In most instances I concur with this treatment as the first measure. However, there is one exception to this first treatment in the case of concentrated sulfuric acid. This acid should be wiped off first, if possible, and then large quantities of water used. Concentrated sulfuric acid does not burn much until water is applied.

Caustics or alkalis burn the cornea of the eye, hair and horny tissues on contact while the conjunctiva burns more slowly. The burning and penetrating action of the caustic or alkali leaves a layer of coagulated albumin above it. In experiments on guinea-pigs I have found that water does not penetrate this coagulated albumin and hence does not neutralize nor dilute the caustic or alkali.

My work has shown that ammonium chloride in a 1 or 2 per cent solution neutralizes the caustic or alkali and does not produce heat in its chemical action because both are salts.



The ammonium chloride solution also penetrates the coagulated albumin and neutralizes the caustic or alkali within the tissues faster than anything else that I have tried.

Experimental work has shown also that the 1 or 2 per cent solution was as strong as I dared use in the eye, for stronger solutions produced exfoliation of the epithelium of the cornea. I flush the eye with a 1 per cent solution of ammonium chloride every fifteen minutes for two hours, then every half hour for three hours and then every hour for twelve hours.

Since using ammonium chloride for caustic or alkali burns I have had few blind eyes. Under this care they clear up faster.

Of course, if this treatment is not started soon enough a great deal of destruction will have taken place, and after the neutralization the resulting ulcer must be treated in the usual way.

SHERWIN LIVINGSTON HASELTINE, M.D.,
Elizabeth, N. J.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

MODERATE INDULGENCE IN ALCOHOL

To the Editor—What is the best opinion today as to what constitutes temperate use of alcoholic beverages? What quantity of alcohol in the form of spirit or wines may be imbibed daily without deleterious effect by the average individual? How many ounces of alcohol can the average individual utilize daily as heat and energy? May it be assumed that the harmful effects result from the amounts taken above the utilization point? Please recommend a small readable textbook on the subject.

JOHN HOWELL WEST, M.D., Easton, Pa.

ANSWER—Perhaps the best definition of what constitutes a temperate use of alcoholic beverages is the amount that can be taken by the individual without obvious deleterious effect. Because individuals differ so much to begin with, and because the amount of alcohol tolerated by the habituated person is so different from that which can be taken by the abstainer, it is impossible to say what can be taken safely by the average person. As every one knows, there are thousands of men and women who are made dizzy and uncomfortable by two cocktails, and then again there are persons who can drink a quart of whisky in an evening without showing any sign of alcoholism.

It is hard to say also how much alcohol the average person can safely utilize as food. As Mitchell has shown in his excellent analysis of this phase of the subject, the energy of alcohol is to a large extent available to the body. When added to a complete diet, alcohol induces a greater retention of nitrogen as well as of fat. As compared with a similar supplement of sugar, the energy of an alcoholic supplement is only about three-fourths as available, probably because of a greater specific dynamic effect. Its growth promoting power is definitely less than that of sugar. These conclusions were based on experiments on rats.

Careful studies of the absorption of alcohol and the rate of its disappearance from the blood are described in Mellanby's report to the Medical Research Committee of Great Britain. Because alcohol is excreted so slowly from the blood, the effects of repeated small doses are likely to be the same as those of one large dose. In order to avoid intoxication from repeated small doses, the interval between the drinks must be at least three hours. The effects on the brain of drinking much dilute alcohol can be the same as those of taking a small amount of the concentrated drug. The degree of intoxication seems to be related to the amount of alcohol in the blood and probably to its rate of accumulation in the body.

Water taken with alcohol was found to stimulate its absorption and to cause a more rapid and intense intoxication, but also a quicker recovery. Milk taken with alcohol seemed to be the most effective food in inhibiting intoxication.

It is not yet clear why some persons can tolerate more alcohol than others. Cushing quotes Pringsheim, who showed that part of the greater tolerance of the habituated person is due to an increased ability of the tissues to oxidize the drug. In addition the sensitivity of the brain must be altered, because Sweisheimer found that a given concentration of alcohol in the blood induces greater intoxication in an abstainer than in a habitual drinker. Some students of the subject believe that the tolerant

person absorbs less of the alcohol. It may be also that in tolerant persons the liver is able to handle a greater amount of the drug in a given time.

That the oxidative demands of the muscles play an important part in removing alcohol from the circulation was shown in the case of a physician whose boat capsized far out in an exceedingly cold lake. When he reached land, suffering terribly from the cold and shivering violently, friends wrapped him up and gave him a pint of whisky. To his surprise this man, who was practically an abstainer and always very sensitive to alcohol, experienced almost no psychic effect from the overdose of whisky. Apparently his quivering muscles utilized the stuff very rapidly.

Some discussion of individual differences in tolerance for alcohol is to be found beginning on page 263 of the excellent report by Miles on alcohol and human efficiency, based on a large amount of research work done in the Laboratory of Nutrition of the Carnegie Institution.

It can hardly be assumed that the harmful effects of alcohol result from amounts taken above the utilization point, because the studies of Miles and others show that even in small, easily oxidizable doses, alcohol depresses and interferes with mental efficiency. If in many persons it seems to increase efficiency and to stimulate, it is only because it removes inhibitions and anesthetizes to fatigue. Scientific students of the subject agree on this point.

It is hard to recommend a small readable textbook unless one knows whether the reader desires scientific information or material for sermons. A good example of a handbook for sermonizers is "A Syllabus in Alcohol Education" by Bertha Palmer, published by the National Women's Christian Temperance Union. There one learns among other things that "beer drinkers are apt to become the most un-human and beast-like of drink addicts." Beer makes its drinkers "filthy, lazy and shapeless." E. H. Williams' "Alcohol Hygiene and Legislation" published by the Goodhue Company is not quite so uplifting.

Unpalatable to uplifters but decidedly worth reading are Raymond Pearl's statistical proofs that the moderate use of alcohol does not shorten life. See the *American Mercury* 1: 213 (Feb.) 1924, also *International Clinics* 3: 27 (Sept.) 1928.

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- Miles, Walter R. *Alcohol and Human Efficiency: Experiments with Moderate Quantities and Dilute Solution of Ethyl Alcohol on Human Subjects*. Publication 333, Carnegie Institution of Washington, 31: 265-275 (March) 1924.
- Cushny, Arthur F. *A Text Book of Pharmacology and Therapeutics*, ed. 10, revised by C. W. Edmunds and J. A. Gunn. Philadelphia, Lea & Febiger, 1934, Alcohol, pp. 184-209.
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PSORIASIS

To the Editor—I have a stubborn case of psoriasis. The patient strenuously objects to ointments. Is there any medication for subcutaneous, intramuscular or intravenous use that can give this man relief? What is the latest treatment? Please omit name.

M. D., Pennsylvania.

ANSWER.—Various agents and methods apart from local treatment of the lesions have been used in the management of psoriasis. In most instances these agents are used in addition to local treatment although relief may sometimes be obtained without the aid of local therapy.

The use of salicin 1 Gm. in 1 ounce (30 cc.) of peppermint water three times daily, calcium with or without vitamin D, and thyroid by mouth is of value. The restriction of protein and of fat in the diet is also recommended. The subcutaneous injection of sodium cacodylate or the intramuscular injection of 10 cc. of blood (autohemotherapy) every five to seven days may clear up the lesions. The intramuscular injection of suspension of the patient's own scales, finely ground in alcohol, in a dose of from 1 to 4 cc. at three or four day intervals has been employed by Campbell and Frost (*Arch. Dermat. & Syph.* 22: 685 [Oct.] 1930). The emulsion consists approximately of 0.2 Gm. of psoriatic scales in 20 cc. of pure alcohol. Sodium salicylate, by intravenous injection in a 20 per cent sterile

solution at two or three dry intervals, the dose then gradually increased from 0.5 to 3 Gm, may be employed. Typhoid vaccine intravenously to produce a moderate fever reaction is also effective in some cases. Roentgen irradiation of the thymus has been used with favorable results in a group of cases treated by O. H. and H. R. Forster (*Arch Dermat & Syph* 4:639 [Nov.] 1921). The use of sodium thiosulfate, intravenously from 0.3 to 1 Gm, dissolved in 10 cc of water, given at three to seven day intervals, is also of value. General ultraviolet exposures are of particular value in the cases in which there are summer remissions.

All these methods have been employed with variable results in psoriasis. Because of the capricious response of this disease to treatment it is difficult to make a definite recommendation regarding any single agent. The general condition of the patient, and one's experience with, and the availability of a special agent used in treatment should dictate its choice. On the whole conservatism in therapy in a disease that tends to recur is the procedure of choice.

VASOMOTOR INDEX OF EXTREMITIES

To the Editor—I would appreciate your informing me of the technique in determining the vasomotor index of the extremities. We have an electrical thermometer and I have been baring the patient's extremities to the room air for thirty minutes and then recording the temperatures of each toe (solar surface) of both feet and next in order the sole dorsum, internal malleolus, external malleolus, midleg internally and midleg externally of each extremity. The oral temperature and the room temperature are then recorded. The eleven points recorded on the right and on the left are then averaged for later comparison after the intravenous injection of typhoid vaccine has been given and the patient has reached the maximal degree of oral temperature response. The legs are again bared for thirty minutes and the same procedure is carried out as before. This procedure was adopted empirically as I have never had definite instructions. What about the points I have selected to make temperature takings and getting the average for my calculation? What about the necessary preparations before beginning such as baring the legs? Please give the formula for the vasomotor index and what the normal index should be. Finally also inform me what allowance to make for difference in room temperature.

GEORGE W. SURIVER, M.D. Charleston, W. Va.

ANSWER—The ideal circumstances for determination of the vasomotor index are as follows. All medication and treatment that might influence the temperature of the skin should be discontinued the day before the test. The patient should have no fever. Smoking is prohibited. The patient should be at rest in the recumbent position in a quiet environment. The room temperature should be constant at about 72° F. and the extremities should be protected from drafts of air by a sheet placed over a cradle. The end of the compartment thus made should be open at the end near the foot of the bed.

A thermocouple junction is fixed with adhesive tape to the pulp of the distal phalanx of each of two or more digits of each extremity to be studied. Temperatures are determined every ten or fifteen minutes until they are fairly constant. Fever is then induced artificially by the intravenous injection of typhoid vaccine. For the purposes of this test a fever of from 101° to 102° F. is superior to higher temperatures. Temperatures of the skin and mouth are determined every thirty minutes until the mouth temperature is maximum. The maximum increase in the skin temperature of a particular digit minus the increase in mouth temperature at that time gives a figure which, when divided by the increase in the mouth temperature used in the first calculation, is the vasomotor index for that digit, or the increase in skin temperature due to vasodilatation for each degree of increase in the mouth temperature. It is not necessary from a clinical standpoint to determine the temperature of points other than those indicated. It is fallacious to use the mean of the increases in temperatures of various digits. Available vasodilatation for each individual digit should be determined by the test, and this is overlooked when an average of all the increases in skin temperature is used. There is no exact normal vasomotor index, in any specific instance it should exceed 2 degrees if fitness of the patient for sympathectomy is accepted. It is assumed that the correspondent's use of the vasomotor index is for determining available vasodilatation. Other information is important, such as the maximum temperature of the digits and the increase in their temperature as a consequence of fever. All three results of the study should be considered together.

Less ideal circumstances for determination of the vasomotor index are fluctuating room temperature and a noisy environment, both interfere with near basal determinations. Increasing or decreasing temperatures of the room cause an increase and a decrease, respectively, in the temperature of the skin of the digits. Argument and excitement likewise influence the temperature of the skin of the extremities.

MECHANISM OF LEUKOCYTOSIS

To the Editor—1 When a drug or any other substance when injected intravenously incites a leukocytosis does this leukocytosis result in an immunity producing reaction or coincide with such a healing effect? Or is this only an artificial effect that not necessarily produces healing? 2 When the injection of a substance intravenously incites a leukocytosis is there always or as a rule a period of leukopenia followed by an increase in the number of leukocytes? How long will the period of increased number of leukocytes persist? Or is this period subject to a considerable variation according to the substance or substances injected? 3 When a leukocytosis is induced in this way is there a decrease in the number of degenerative forms in the peripheral neutrophils so that there is a corresponding decrease in Rosenthal's degeneration index? Is this effect lasting? 4 Is the leukocytosis that is induced subject to repeated inductions so that daily or other frequent intravenous injections may be given until a high degree of leukocytosis is obtained or maintained? 5 Meranze Mendell and Meranze (*Am J M Sc* 189:639 [May] 1935) mention their use of a Jenner Giemsa stain during their study of the degenerating forms of the peripheral neutrophils. Is this stain superior to the much used Wright's stain to demonstrate the cytoplasmic changes? In what way? Will you please give me the technic in the use of this stain and the formula, if it is different from the Giemsa stain? 6 When it is desired to give sodium nucleate intramuscular injections to induce leukocytosis what dosage and strength of solution are given? How often? Is any distressing reaction incited by this solution? Please do not publish name or address.

M. D., Montana

ANSWER—1 The leukocytosis of neutrophilic type produced by intravenous injections provides a true increased delivery of these elements from the bone marrow, and if the functional need for these cells exists a more effective defense reaction should result. The cellular reaction is, of course, no measure of humoral immunity and may occur quite independently.

2 A transitory leukopenia frequently precedes the leukocytosis regardless of the nature of the material injected. According to the experiments of Doan, Zervas, Warren and Ames (*J Exper Med* 47:403 [March] 1928) this is due to an injury to the circulating granulocytes, which then sequester in the splenic parenchyma. Removal of the spleen decreases the degree and duration of the leukopenic period in rabbits. The degree and duration of leukocytosis vary markedly with the substance and dosage administered. It has been observed to persist for seventy-two hours or longer in rabbits after 1 Gm. of sodium nucleate or after 50,000,000 killed typhoid organisms, the high point (frequently 100,000) being reached at the end of twenty-four hours.

3 A leukocytosis, however induced, may be shown to reflect the bone marrow delivery of new cells through the "shift to the left" in the Arneth-Schilling index, which always occurs and persists until after an equilibrium has again been reestablished.

4 Nucleotide has been injected daily over a period as long as 116 days in rabbits with a maintained elevation in the leukocyte level throughout the observation with marked generalized marrow hyperplasia and the development of ectopic myeloid foci in kidney and spleen (Doan, C. A. The Neutropenic State, *THE JOURNAL*, July 16, 1932, p. 194). The mesenchymal tissues must have the ability to respond to stimuli, of course, in order to elicit a granulocytosis. In some clinical states, toxic or other inhibitory or destructive agents may neutralize both natural and introduced stimuli or render them ineffective.

5 The Giemsa counterstain used in conjunction with the Jenner or Wright blood stain is important in more sharply emphasizing differences in the degree of basophilia in the cytoplasm of all white blood cells. The degree of cytoplasmic basophilia is one measure of the youth of the cells in both granulocyte and lymphocyte series, and important interpretations may be based on this criterion when taken in conjunction with the character and number of granules (toxic granulations), nuclear chromatin changes, and vacuolization. Carry out the usual Wright's staining technic then dilute the saturated solution Giemsa stain 15 drops in 10 cc of distilled water and float the cover slip upside down in a watch glass containing the stain for six minutes, wash, dry and mount.

6 Sodium nucleate may be given in 0.5 to 1 Gm doses in sterile distilled water, 10 cc. intramuscularly. Adenine nucleotide may be given in comparable dosage. The pentnucleotides are prepared and available in sterile ampules, 0.7 Gm in 10 cc solution (Smith, Klein and French, Philadelphia) for intramuscular use. In properly selected and diagnosed patients, if the patient is acutely ill, this dosage should be administered every eight hours until the granulocytes are well represented in the peripheral blood again. Such dosage may be further diluted in 50 cc. of sterile saline solution and given slowly into the vein (from twenty-five to thirty minutes for 50 cc.) Alternate intramuscular and intravenous medication every eight hours is sometimes desirable. Usually no constitutional or local reaction is noted. Rarely dyspnea and substernal pain may occur from twenty to thirty minutes following the injection. No serious or fatal reactions have been reported.

NEUROLOGIC COMPLICATIONS OF DIABETES

To the Editor—A woman aged 60 was suffering from diabetes for two years. She treated herself for quite a while with some quack medicine which apparently consisted of a kind of yeast. She saw a physician five or six months ago who gave her insulin and prescribed a diabetic diet in rather general terms. The diabetes was not controlled and the patient was living mainly on cabbage and other vegetables. She came under my care by the beginning of last June. Her heart was decompensated. She had an aortic systolic murmur, aortic configuration of the heart, some broadening and density of the aorta and an aortic knob. The pulse was 96, the blood pressure 190 systolic, 90 diastolic. The specific gravity of the urine varied from 1.012 to 1.018, albumin was 0.5 per cent, sugar +++ and acetone present. The blood sugar was 300, the urea nitrogen 27. She complained about some pain in both legs and weakness of the knees. The diet was adjusted. She is now getting 1850 calories, 25 per cent above maintenance. The urine is free of sugar and acetone but still contains albumin. The last blood sugar was 176, urea nitrogen 15, carbon dioxide combining power 53, volumes per cent. The pulse rate is 78, the blood pressure is 160/90 and the heart is compensated. In short, diabetic heart and kidney conditions are under control. There is, however, an increasing weakness of the legs with torturing cramps and pains particularly during the night. The circulation in the legs is sufficient. The patellar and ankle jerks are abolished and the flexors of the legs markedly weakened. The Babinski reflex is negative. Romberg's sign is present. There is impairment of the sense of vibration. The gait is ataxic. A neurologist agrees with me that all the symptoms of a subacute combined degeneration are present. There are no signs of pernicious anemia, however. Acidity after test breakfast was free hydrochloric acid 32 combined 12, total 82. Blood examination revealed 4,500,000 red cells without pathologic forms, hemoglobin 80 per cent, color index 0.9, leukocytes 10,000 with a slight shift to the left, monocytes 6 per cent, eosinophils 6 per cent, basophils 2 per cent. The patient has a slight cystitis which may account for the white blood picture. She is getting 50 units of insulin, digitalis in maintenance doses, a preparation of vitamins A, B and D to combat any deficiency, and sedatives. Diathermy helped a little but could not be continued as the patient left the hospital. How can one explain the changes in the cord? The patient claims that her pain started when she was put on insulin. Are insulin reactions of this kind possible? What can be done for the improvement of her condition? Please omit name.

M. D. New York

ANSWER—Insulin prevents rather than causes neurologic complications in the course of diabetes if it is used with discretion. In the differential diagnosis of this case, must one not consider a diabetic neuritis as possible? Surely one would like to exclude any circulatory deficiency in the extremities with the use of the oscillogram, prove that hypoglycemia is absent, and investigate the possibility of syphilis of the central nervous system or a tumor of the spinal cord.

While constantly alert for new evidence as to etiology, treatment would proceed on the basis of neuritis as responsible in whole or in part for most of the symptoms. The indication therefore would be to treat the diabetes energetically, being sure to take pains that hypoglycemia is avoided and that on the other hand, a liberal supply of food is furnished. The diet would contain fruit and vegetables in abundance, yeast concentrate or some other source of vitamin B, cod liver oil on the ground that possibly more vitamins are indicated than have been furnished and despite the result of the blood examination one might even use liver extract with benefit. Finally, physical therapy might be employed depending chiefly on heat and using exercise with caution. Fractures of the spine and tumors of the spinal cord are rare complications in diabetes; the commoner complication is neuritis.

EFFECTS OF EXERCISE ON BLOOD PRESSURE

To the Editor—What is the normal effect of exercise on the diastolic and systolic blood pressure? Please omit name.

M. D. Michigan

ANSWER—The normal effects of exercise on the arterial tension vary with the type, duration and intensity of the exertion. Brief and moderate exertion, such as climbing a short flight of steps slowly or bending to the floor from twelve to fifteen times, causes a rise in both the systolic and the diastolic tension and an acceleration of the cardiac rate. The rise is about 10 to 20 mm. systolic and 5 to 10 mm. diastolic with considerable variation in either direction. In normal individuals the pulse and blood pressure return to preexertion levels well within two minutes. This type of response is used as a criterion of circulatory fitness but the interpretation must include consideration of other factors such as the muscular condition of the patient, the age and the emotional state. Thomas Addis (*Blood Pressure and Pulse Rate Reactions*, *Arch. Int. Med.* 30:240 [Aug.] 1922) studied the circulatory responses to exertion of 300 normal persons and found that the increase in both pulse rate and pulse pressure varied directly with the amount of work. The rise of the systolic tension is greater than that of the diastolic, with an increase in the cardiac output and therefore an elevated pulse pressure. In this normal

circulatory response the pulse acceleration and deceleration are both more prompt than the changes in the arterial tension, the latter lags behind both in rising and in falling with rest. Exhausting, violent and excessive exertion may result in a fall in the diastolic level, which may be followed by depression of the systolic pressure if the heart has been overtaxed and collapse impends.

It has been shown (Scott, V. T. *Study of Effects of Daily Exercise on Pulse and Arterial Pressure*, *Mil. Surgeon* 55:334 [Sept.] 1924) that the institution of regular exercise in poorly trained persons such as military drilling with new recruits results in a gradual fall in the diastolic pressure but that there is no essential variation in the systolic tension.

The arterial tension is so labile and is affected by so many variables such as emotional stresses, environmental temperature, digestion and mental activity (mental work in contrast to emotional activity), that one must be very cautious in interpreting the significance of moderate fluctuations.

DIFFERENTIAL DIAGNOSIS OF ABDOMINAL PAIN

To the Editor—A man, aged 40, weight 165 pounds (75 Kg), height 5 feet 9 inches (175 cm) has been admitted to the hospital twice for severe attacks of epigastric pain and nausea. The pain was localized 1 or 2 inches above the umbilicus with some radiation to the right. Rigidity was present during these attacks which lasted about twelve hours with subsidence in one or two days. Two years previously the patient had symptoms and signs suggestive of acute appendicitis but the appendix on removal proved to be normal both grossly and microscopically. The patient continues to complain of a constant mild deep seated tenderness about 2 inches above McBurney's point. Mild tenderness in the localized area just above the umbilicus persists. During one of the acute attacks the patient's temperature remained around 101° F. for eighteen hours. The leukocyte count was 13,000 and the systolic blood pressure dropped about 15 mm. The rest of the physical examination and history is not significant. Laboratory examinations included the following: The Graham-Cole test was negative. A flat plate of the abdomen during one of these attacks showed a small amount of gas in the small bowel loop suggestive of stasis. The stomach and duodenum were normal under the fluoroscope. An intravenous pyelogram was negative. Roentgenograms of the long bones and skull were negative. Urinalysis and blood sugars were repeatedly negative. A differential blood count was repeatedly normal. An electrocardiogram taken after one of these acute attacks showed only a moderate left axis deviation. Blood and spinal fluid Wassermann reactions and colloidal gold curves are negative. Blood urea, erythrocyte sedimentation rate and dextrose tolerance curves are normal. Blood phosphorus (serum) determinations gave values of 4.4 and 4.2 mg. per hundred cubic centimeters. Five determinations of the blood calcium gave values ranging from 12 to 15 mg. per hundred cubic centimeters. Quantitative determination of plasma proteins gave the following values: fibrinogen 0.4 Gm. per 10,000 plasma, globulin 2 Gm. per 10,000 plasma, albumin 4.8 Gm. per 10,000 plasma, total 7.2 Gm. per 10,000 plasma. Kidney dilution concentration and phenolsulfonphthalein tests gave normal results. The bromsulphalein liver function test showed no dye present after half an hour (normal response). On a diet of 0.5 Gm. of calcium daily the average daily calcium excretion was 0.31 Gm. This was about twice that excreted by a control convalescent herniotomy patient of the same age and approximately same type of stature and physical condition. The blood cholesterol was 240 and 290 mg. per hundred cubic centimeters on two separate determinations. The basal metabolism was -1. Serum bilirubin determinations gave values of 0.23 and 0.28 mg. per hundred cubic centimeters. Any suggestions or references to the literature will be appreciated.

INTERN, Minnesota

ANSWER—Several conditions suggest themselves some of which are apparently ruled out. It is fairly well assured that in the continued absence of red blood corpuscles in the urine renal calculus is ruled out, and by the pyelogram that ureteral obstruction does not exist. This however is not absolute and further examination of the urine passed immediately after an attack is advisable especially in view of the high blood calcium. Marked tenderness in the right upper quadrant can speak for biliary tract disease especially in the presence of the temperature elevation and leukocytosis. It may be possible to obtain a plate during one of these attacks taken with low milliamperage and a long exposure that will show a distended gallbladder. Allergic disease of the gallbladder must be considered seriously. An inquiry into a family history of allergy is obtained in half or more of all cases. Other disturbances as urticaria, canker sores and intermittent bowel distress or diarrhea should be looked for. It is much more difficult to prove the possibility of pancreatitis. Recent reports in the literature point to the increased frequency of this condition with or without pancreatic calculi. Occasionally a glycosuria may occur. The blood sugar need not be elevated. There need be no evidences of biliary tract involvement. An enlarged duodenal loop visualized with a barium sulfate meal is suggestive of enlargement of the head of the pancreas. In the presence of a negative dextrose tolerance test the probability of pancreatic involvement is lessened but not entirely absent. A final suggestion is that of the possibility of terminal ileitis. While not probable from the

data submitted, its presence can be determined by watching the progress of a barium sulfate meal at three, six and nine hour intervals and noting the caliber and the regularity of the wall of the terminal ileum

DEATH FROM SULFUR DIOXIDE

To the Editor—I am interested in finding the cause of death in a person exposed to sulfur dioxide. In a book by Henderson and Haggard entitled *Noxious Gases and the Principles of Respiration Influencing Their Action* page 120 it is stated that consequently it frequently happens that a man who appears to be only slightly affected is allowed or told to make some movement such as sitting up in bed so that a physician may listen to roles in his lungs and as the result of this slight exertion he falls back dead. Please explain to me the exact pathology and the cause of death suggested in this statement. I do not have access to this book at the present time. When sulfur dioxide is breathed I understand that the local effect is due to the irritating action of sulfuric and sulfurous acids and that these acids do not cause any general systemic effect. I understand further that the salts of these acids sulfates and sulfites are absorbed into the blood stream and do cause a general systemic effect which may prove fatal by means of paralyzing certain nerve centers (H. Klonka experimenting on frogs with sulfur dioxide as reported by Mellor in 1930). The use of sulfates as a food preservative is now illegal. Why? Please omit name.

M D New York.

ANSWER—The quotation from Henderson and Haggard's book is taken from a paragraph which reads as follows: "As the edema progresses, the diffusion of carbon dioxide is interfered with to an increasing extent. The pressure of carbon dioxide in the arterial blood rises, probably the blood alkali also decreases, while anoxemia becomes more and more intense, and all three conditions contribute to the intense air hunger. The more marked symptoms depend upon the excessive pressure of carbon dioxide in the arterial blood but the more serious damage results from the deficiency of oxygen. The asphyxia of lung edema arising from irritant gases, therefore, is more dangerous than the superficial signs indicate. Consequently it frequently happens that a man who appears to be only slightly affected is allowed, or told, to make some movement, such as sitting up in bed so that a physician may listen to the rales in his lungs, and as the result of this slight exertion he falls back dead. This is probably the failure of an overworked and asphyxiated heart." It seems reasonable to accept the last statement in this quotation as adequate explanation of the cause of death under the circumstances.

An objection to the use of sulfites (not sulfates) for a food preservative, especially meat products seems to be that owing to the fresh color thus given meat products, various forms of adulteration may be favored.

PARESTHESIAS

To the Editor—Would you kindly suggest the diagnostic possibilities in the following case? A man aged 40 previously healthy and not addicted to alcohol and with no history of contact with lead or other toxic metals noticed ten days ago that his feet felt as though his shoes were filled with sand. A couple of days later he noticed a numb feeling which has gradually spread upward from the feet the upper limits remaining stationary now for several days to the groin in front and about to the level of the first or second lumbar spine behind. In addition to this feeling of numbness he has the sensation of his socks being crumpled up and a certain amount of subjective stiffness in the knees. There is no pain and no objective sensory loss whatever and he continues his work as a blacksmith without trouble. The reflexes are normal there is no ataxia and no weakness. The blood picture is normal and the Kahn reaction is negative. He is decidedly not the neurotic or hysterical type of individual.

J B STOLL M D Clay Center Kan

ANSWER—From the history, the man has paresthesias of both lower extremities consisting of tingling, numbness and sensations of heaviness. There are two systems, when affected which may cause such paresthesias. One is the peripheral vascular system and the other is the nervous system especially the roots and peripheral nerves of the lumbosacral region (in this case). It is suggested that vascular disease be ruled out by palpation of dorsalis pedis and popliteal pulsations, that histamine be injected intracutaneously for the development of a wheal and that postural studies be made with the extremities hanging in the dependent position and then elevated to the recumbent position. It is further suggested that the patient be reexamined daily for new signs and symptoms indicating involvement of the peripheral nerves roots or spinal cord. A careful manometric and serologic study of the spinal fluid should be made in order to rule out spinal block. It is impossible to give any definite opinion as to what actual entity is causing the symptoms from the description. There are many diseases that may cause this symptom complex and until more signs and symptoms develop one will not be able to

make a definite conclusion. At times paresthesias of this kind may disappear just as insidiously as they came on. When paresthesias are confined to the external lateral surface of the thighs the condition is known as *meralgia paraesthetica*. It is possible that this patient may have a subacute atypical arthritis of both knees.

POSSIBLE INFECTION FROM POORLY LAUNDERED LINENS

To the Editor—Referring to the interesting paper, *Scabies Among the Well to Do* (THE JOURNAL February 29) by Dr J H Stokes I would be glad if the following considerations would find a place in one of your next editions. An important role in the dangers of hotel and traveling life in this country is played by the general habit or better said by the general neglect not to boil used bed linen and towels in industrial laundries as well as in private homes. That is done as a routine on the other side but not in the elsewhere so far advanced hygienic United States of America. Here linen is never boiled only washed and ironed. The consequence is reinfestation of the traveling public by apparently clean bed linen and towels as Dr Stokes proved in his paper. I think it would be a good job for the profession or for public health authorities to exercise some pressure on the laundry industry and some influence on the general public always to boil used linen for a sufficient time before ironing it. Plain washing even with addition of some disinfecting lotions and ironing will never give sure protection against later contamination with some transmissible infection.

LEOPOLD SCHWARZ M D Richfield Springs N Y

ANSWER—In general there are wide differences in laundering, ranging from the use of the mangle on linens without washing to the use of disinfectants so destructive, temperatures and washing methods so high and vigorous that the life of the linens to say nothing of any possible contained parasites, is materially shortened. The elevation of linens in the process of washing to the boiling temperature in the presence of a mild alkali would be a desirable universal practice. It is probable that the fungi alone which survive less thoroughgoing laundry handling are responsible for the transmission of fungous infections. We know of no systematic study that covers this point. As far as the acarus of scabies is concerned the adult would not survive laundering in the ordinary steam laundry washer plus the hot mangle. It seems probable that the blanket is responsible for more trouble than the linen. A laundry in Philadelphia has recently circularized the physicians of the city with an abstract from a study of the bacteriology of pillows which suggests that they can become accumulating grounds for pyogens of various types. Clothing made of silk or wool which is brought into direct contact with the skins of susceptible persons can apparently carry pyogenic infections. This is an element of some importance in acnes of the back shoulders and chest in young women and in athletes ("sweater acne").

It might be that bed linen not subjected to boiling might serve as a source of occasional infection of susceptible persons with pyogenic organisms. Here again, however a more systematic investigation would be needed as a basis for any recommendations.

MAZOPLASIA OF BREAST

To the Editor—I have a puzzling case that has been diagnosed by a number of specialists in pathology and tissue diseases. No diagnosis pointed to cancer but various names were given as a diagnosis the latest was chronic periductal mammary fibrosis. In short the history duration is approximately three years beginning with pain in the breasts in a woman aged 38. The menstrual history is negative with the significant fact that for one or two days during the periods the pain in the breasts becomes less severe. In the last five years both breasts have enlarged and become firm with a diffuse thickening with no palpable tumor masses. There are a few slightly thickened and enlarged nodes in the left axilla. In the last six months the pain in the breasts has been almost constant. There was some serous discharge from the nipples but lately there has been no discharge whatever. Roentgen examination shows no tumor masses. The blood sugar is normal and Wassermann tests are constantly 3 plus with extensive antisyphilitic therapy. The pain in the breasts has continued despite the antisyphilitic treatments. The patient's weight has remained constant and physical examination and pelvic examination are entirely normal. Can you give me any clues as to treatment for the relief of discomfort and what the future for the patient may contain? Please omit name.

M D, New York

ANSWER—The patient is probably suffering from mazoplasia. This is a condition in which there is a hyperplasia of the connective tissue and epithelium of the mammary glands and represents an overactivity of these elements when normally they should be at rest. This condition is undoubtedly related to some disturbance in endocrine function, the exact nature of which is not fully understood. In some cases particularly those in which there is a short and scanty menstrual period the administration of one of the estrogens either by mouth or preferably by hypodermic injection may lead to relief of pain.

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AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY Philadelphia, June. Sec Dr C Guy Lane 416 Marlboro St. Boston

AMERICAN BOARD OF INTERNAL MEDICINE Written examination will be held simultaneously in different centers of the United States and Canada in December. *Practical or clinical examination* will be given in St Louis in April. Chairman Dr Walter L Biering 406 Sixth Ave Des Moines

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov 7 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY New York, Sept 26 Sec Dr John Green 3720 Washington Blvd St. Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan 9 Sec Dr Fremont A Chandler 180 N Michigan Ave Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York, Sept 25 26 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS San Francisco Oct 22 24 Baltimore and Cincinnati in November Sec. Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York, Dec 29 30 Application must be sent to the Secretary before Oct 30 Sec Dr Walter Freeman 1028 Connecticut Ave. Washington D C

AMERICAN BOARD OF RADIOLOGY Cleveland Sept 25 27 Sec Dr Byrd R Kirkin Mayo Clinic Rochester Minn

AMERICAN BOARD OF UROLOGY Chicago Dec 4 6 Sec Dr Gilbert J Thomas 1009 Nicollet Ave Minneapolis

Maine July Examination

Dr Adam P Leighton, secretary, Maine Board of Registration of Medicine reports the written examination held in Augusta, July 7-8 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-six candidates were examined, all of whom passed. Two physicians were licensed by reciprocity after an oral examination. The following schools were represented:

| School | PASSED | Year Grad | Per Cent |
|--|--------|-----------|----------|
| University of Louisville School of Medicine | (1897) | 77 | 77 |
| University of Maryland School of Medicine and College of Physicians and Surgeons | (1936) | 84 | |
| Boston University School of Medicine | (1936) | 82 | |
| Harvard University Medical School | (1915) | 80 | |
| (1933) 83 (1934) 81 (1935) 80 (1936) 81 | | | |
| Tufts College Medical School | (1934) | 71 | |
| 86 (1935) 76, 82 5 (1936) 77 4 82 83 83 3 | | | |
| University of Michigan Homeopathic Medical School | (1917) | 78 | |
| Columbia Univ College of Physicians and Surgeons | (1919) | 75.3 | |
| Long Island College of Medicine | (1935) | 83 | |
| Hahnemann Medical Col and Hosp of Philadelphia | (1935) | 82 | |
| McGill University Faculty of Medicine | (1935) | 84 | |
| 87 (1936) 82 | | | |
| University of Montreal Faculty of Medicine | (1936) | 81 | |
| University of Dublin School of Physic Trinity College | (1935) | 88 | |
| Universite de Geneve Faculte de Medecine | (1935) | 80 | |

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|--|-------------------------|-----------|------------------|
| Northwestern University Medical School | (1935) | | Illinois |
| Medical College of Virginia | (1924) | | Virginia |

* Verification of graduation in process

Virginia June Examination

Dr J W Preston, secretary, Virginia State Board of Medical Examiners, reports the written examination held in Richmond, June 18-20, 1936. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. One hundred and three candidates were examined all of whom passed. The following schools were represented:

| School | PASSED | Year Grad | Per Cent |
|---|--------------------|-----------|----------|
| Howard University College of Medicine | (1935) 80 80 81 83 | | |
| Harvard University Medical School | (1935) | 83 | |
| Jefferson Medical College of Philadelphia | (1936) | 85 | |
| Medical College of Virginia | (1931) | 89 | |
| (1936) 79 79 80 81 81 81 82 82 82 83 83 83 | | | |
| 83 83 83 84 84 84 84 84 85 85 85 85 85 | | | |
| 85 85 85 85 86 86 86 86 86 86 87 87 87 87 | | | |
| 88 88 88 88 88 89 | | | |
| University of Virginia Department of Medicine | (1935) | 77 | |
| (1936) 75 76 76 77 78 78 78 79 79 79 80 80 | | | |
| 80 80 81 81 82 82 82 82 82 82 82 83 83 | | | |
| 84 85 85 85 85 85 86 86 86 86 86 86 86 87 | | | |
| 87 87 87 88 88 88 90 | | | |
| University of Toronto Faculty of Medicine | (1934) | 80 | |
| Universitat Leipzig Medizinische Fakultät | (1934) | 86 | |

Seventeen physicians were licensed by reciprocity and 5 physicians were licensed by endorsement from January 6 through August 6. The following schools were represented:

| School | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|---|-------------------------|-----------|------------------|
| George Washington University School of Medicine | (1927) | | |
| (1932) District of Columbia | | | |
| Emory University School of Medicine | (1929) (1934) | | Georgia |
| Indiana University School of Medicine | (1935) | | Indiana |

| | | |
|--|----------|-------------|
| State University of Iowa College of Medicine | (1930) | Iowa |
| University of Louisville Medical Department | (1920) | Kentucky |
| Tulane University of Louisiana School of Medicine | (1935) | Louisiana |
| University of Maryland School of Medicine and College of Physicians and Surgeons | (1928) | W Virginia |
| Harvard University Medical School | (1914) | Mass |
| University of Michigan Medical School | (1934) | Michigan |
| University of Tennessee College of Medicine | (1913 2) | Tennessee |
| Baylor University College of Medicine | (1927) | Texas |
| Medical College of Virginia (1899) | (1934) | California |
| University of Virginia Department of Medicine | (1931) | Maryland |
| Licensure by Endorsement | | |
| School | Year | Endorsement |
| College of Medical Evangelists | (1933) | N B M Ex |
| Johns Hopkins University School of Medicine | (1930) | N B M Ex |
| Harvard University Medical School | (1911) | N B M Ex |
| Columbia Univ. College of Physicians and Surgeons | (1928) | N B M Ex |
| University of Virginia Department of Medicine | (1906) | U S Nav |
| Verification of graduation in process | | |

Book Notices

Social Security in the United States. An Analysis and Appraisal of the Federal Social Security Act. By Paul H. Douglas, Professor of Economics, The University of Chicago. Cloth. Price \$3. Pp 384. New York & London: Whittlesey House, McCraw Hill Book Company, Inc. 1936.

In the opinion of the author, the federal social security act was, at the time of its enactment, the most important statute passed under the present national administration but full of weaknesses, strikingly incomplete, and merely a first step, which must soon be followed by others. The criteria by which he measures the act and prescribes for its shortcomings, he does not state. "Social security" is neither defined nor described. As to the optimum of social security for which the people may reasonably strive, he expresses no opinion. The limit below which social security cannot safely fall is not stated. How far it is safe to go in attempting to establish social security for some classes of the people, with necessary incidental impairment of the rights and privileges of others, the author does not say. In the absence of an understanding between the author and his readers concerning such matters as these his appraisal of the act loses much of its value. It becomes merely the author's unsupported dictum.

So far as can be judged from his book the author is strongly in favor of the concentration of more authority in the federal government, if not under the present constitution or by evading its intent, then by amending it. Under the enlarged social security scheme proposed by the author the states might easily become nothing more than vassals of the federal government. The federal government, if unable to dominate by direct constitutional authority, would control through its taxing power mulcting the people of the several states of any amount of money the central government might desire and distributing the money thus collected as subsidies, bonuses or bribes to compel or induce the subservient states to do its bidding. The social security act is already replete with federal requirements to which a state must subject itself and its people before it can obtain from the federal treasury money appropriated under authority of the act previously exacted by the federal government of the people of the states. The author however would go further and have the federal Social Security Board given power to see that adequate old age pensions are paid by the several states but how the board is to determine in each case the adequacy or inadequacy of an old age pension, and the nature of the "power" with which the board is to be vested in order to enable it to compel compliance with its mandates, the author does not say. The author would have the federal administrative authorities "vested with the power to lay down minimum standards for the government of the several states in the selection, tenure and promotion of those state and local officials charged with the administration of various sections of the social security act, a civil service ideal that the federal government seems not yet to have attained after many years of striving even in the management of its own affairs.

If, however, the author would have Congress augment the authority of federal officials over the governments of the several states, he is apparently willing to pay the price and would add largely to the appropriations that the social security act now authorizes Congress to make, returning to the people of the several states as subsidies, bonuses or bribes for good

behavior some or all of the money collected through federal levies, direct or indirect, previously imposed on those very same people. Federal subventions for old age pensions should be increased, the author says, from \$15 a month to at least \$20 a month. The social security board should be given "a considerable sum of money to grant as outright aid for pensions to states which are particularly poor." The federal government should pay at least a portion of the costs of the unearned annuities of the older workers, now authorized by the social security act, and not saddle such costs on the younger workers. There the author's consideration for the younger workers seems to end, for he proposes that the social security act be so amended as to allow aged annuitants to continue their employment in industry while receiving their annuities and he would thus limit opportunities for the younger generation as it reaches an employable age. Additional federal funds should be obtained, according to the author, for aiding states with high unemployment rates to maintain minimum benefits and to provide benefits for workers who migrate from state to state. If the constitutionality of the present federal system of old age insurance is upheld, the existing federal-state tax offset system of unemployment insurance, if the author is to have his way, would be transformed into a strictly federal system. If the constitutionality of both the federal system of old age insurance and the federal-state tax offset system of unemployment insurance is denied, the author suggests that the federal government may still establish a federal-state system of unemployment insurance through a 100 per cent grant-in-aid to the states, to induce them to maintain unemployment insurance in accordance with standards presumably dictated and enforced by the federal government. The author would have the present federal grants in behalf of mothers' pensions increased so as to meet one half of the total cost, instead of one third as at present.

A system of health insurance is proposed which the author believes 'will provide a more even distribution of the costs of medical care and also a cash benefit to compensate in part for the loss of earnings.' Health insurance, he believes, will sweep a much larger proportion of the population into the ranks of paying patients than is at present the case, and despite the opposition of the official leaders of the medical profession it would be of real economic benefit to the rank and file of practitioners, but he submits nothing to show the relation of costs to benefits, primary and ultimate. Whether he would have the states made to comply with the federal will with respect to health insurance through subsidies, bonuses and bribes, or brought under federal control through a federal-state tax rebate system or, as the author proposes with respect to old age pensions and state administrative service, simply empower the social security board to make the state do what the board may determine with respect to the matter, the author does not state.

There would be no difficulty, if the author's views are correct, in meeting the large increase in the expenses of the federal government necessary to carry into effect his suggestions for a larger participation in his extended social security scheme, for he has a ready formula whereby the increase may be met.

Nothing will be gained however [he says] if these funds are then derived from taxes on consumption. In order that these costs may be borne with the least sacrifice they should be met from taxes on excess profits and on the upper brackets of personal incomes. For the workers are already severely burdened both by the present system of financing social insurance and by the numerous state sales taxes.

But if we are to provide real social security for the employed population, according to the author, it is not enough to insure against the interruptions of working class incomes, it is necessary also to raise the levels of those incomes 'to an adequate amount.' Fortunately, the author has a simple formula for accomplishing this end, stated as follows:

The best way of meeting this situation as long as we retain the capitalistic system is to increase the level of wages itself. This can be done by an increase in the technical efficiency of industry by a greater growth in the quantity of capital than of labor with a consequent increase in the marginal productivity of the latter and also by a decrease in the power of monopolies and of all impediments in the way of price competition which cause labor to be paid less than its net social productive value.

If the author has devised any method by which this system of raising necessary funds can be successfully applied to capital, industry or labor, his services should be in great demand.

The author is probably at his worst when he discusses the legal aspects of the social security act. His direct statement that the constitutionality of the Sheppard-Towner Maternity and Infancy Act was upheld by the Supreme Court in the case of *Massachusetts v. Mellon*, 262 U. S. 447, 43 Sup. Ct. 597, is directly contrary to the fact, and when the author implies that a phrase used in that opinion is "a direct and positive affirmation of the constitutionality of federal aid," he ignores the purport of the decision as a whole. Incidentally, when, in support of the Sheppard-Towner Maternity and Infancy Act and impliedly of federal subsidies generally, he cites figures that the reader who is not technically informed may construe as evidence of benefit derived from the act named and ignores a vast mass of figures to the contrary, he lays himself open to a charge of special pleading. When he implies that our written constitution is so inflexible as to "confine us to the straitjacket of narrow powers" and to force "those who are seeking to adapt the activities of the government to the needs of the times" to resort to political contrivances and legal fictions, he does so either in ignorance of the provisions of the constitution or ignoring them, for the constitution requires nothing of any one except compliance to its agreed terms, which make ample provision for amending the instrument in an honest and open and above board way, as and when circumstances render it expedient to do so. If "those who are seeking to adapt the activities of the government to the needs of the times" will present their views to the people through the orderly process laid down by the constitution, the people themselves will determine whether any such adaptation as is proposed is in the public interest.

This book contains an admirable historical analysis of the federal social security act. As an appraisal of the act and as a proposal for its future enlargement, however, it must be looked on primarily as propaganda unsupported by adequate evidence.

Kurzwellentherapie Von Dr. Josef Kowarschik, Primararzt und Vorstand des Institutes für Physikalische Therapie im Krankenhaus der Stadt Wien. Paper. Price 9.60 marks. Pp. 140 with 147 illustrations. Vienna: Julius Springer 1936.

This monograph should prove of value to physicians interested in such a controversial field as short wave diathermy. The first two chapters are devoted exclusively to the physics of high frequency currents and the apparatus. Many physicians find physics an uninteresting topic or too much involved in higher mathematics for a thorough appreciation. However, Kowarschik has the happy faculty of dealing with this subject in a clear and simple way. His points are clarified by the use of simple analogies. The technic of application is well outlined and illustrated in the third chapter. For those physicians new to this field of therapy, this chapter should prove of real value. One should be warned however against such unfortunate statements as that the farther the electrodes are from the body the greater will be the depth of heating. Again the impression is given that one can measure the dosage delivered to the patient. At present this is not possible. The suggestion that ten minutes' treatment may prove efficient would hardly seem warranted. It is refreshing to find the author stating that as yet no special wavelength has been found for specific diseases which corroborates the observations of many English and American workers. Kowarschik stresses the need for good apparatus in giving general body treatments and states that wavelengths of from 12 to 30 meters serve this purpose best. He suggests the use of some absorbent material to prevent the accumulation of moisture on the skin surface, which is frequently the cause of most electrical burns. It is interesting to note that, in addition to the usual pad (condenser) type of electrode application, Kowarschik advocates the use of the coil electrode, which is quite similar to the method popularized in this country by the inductive type of heating. He gives a few technics that will be new to many physicians in this country.

The fourth chapter is given over to the biologic action of short waves. This is the weak spot of the book. Experiments *in vitro* are cited the accuracy of which is not doubted which have been repeated in this country many times. These experiments have been used to show that certain wavelengths have selective heating effect. That these phantom model experiments cannot be carried over in *in vivo* experiments has been shown by many workers in various countries. The author states that colloidal suspensions can be selectively heated. This is true but can be explained by the so-called point heating of Esau. Few

research workers in this country are willing to accept the theory of the killing of bacteria in human tissues by such a mechanism. He states that it is difficult to prove any specific electrical effect. All the physiologic effects cited are readily explainable as the effort of the body to eliminate heat that is generated in the tissues. The author states that certain wavelengths have a greater effect on the bacteria than do others. This again is a statement that would not seem to hold in the light of the work of other workers. He does state, however, that nothing very definite has been established, owing to the variable nature of the different bacteria. That short waves have a decided action on neoplasms of human beings is a statement that cannot be accepted without demanding some definite evidence, certainly none seems to be forthcoming. The chapter closes with an excellent warning about the danger of burns, both superficial and deep. The author does not give the impression that burns are not possible with this therapy, as so many physicians have been led to believe. The fifth chapter gives a list of diseases that are amenable to short wave therapy and here the author is rather optimistic.

The monograph is well written, clear, concise and well illustrated. If one is familiar with the entire literature of short wave therapy he is well fortified against misinterpretation of the experimental material presented. The novice, on the other hand, would do well to familiarize himself well with current literature to avoid the many pitfalls presented in the fourth chapter.

The Next Hundred Years: The Unfinished Business of Science. By C. C. Furnas. Associate Professor of Chemical Engineering, Yale University. Cloth. Price \$3. Pp. 434. Baltimore: Williams & Wilkins Company 1936.

In this volume an author with a fine sense of satire indicates the way in which science has failed to meet its responsibilities and obligations. As might be expected, a man without medical training is likely to be a little weak in his approach to the medical problem, as, indeed, he is weak in his approach to the problems of other fields of science where he has had insufficient training. He is inclined to believe in compulsory sickness insurance or even socialized medicine as the solution to the problem of medical distribution and medical care for all the people, and it is apparent that his reading in these matters is exceedingly limited and that the limitations have been still further restricted to the literature conferred on him by propagandists. Nevertheless, the book is exceedingly well written and most provocative and stimulating in relationship to the paths which research must follow in the future.

The Adopted Child. By Eleanor Garrigue-Gallagher. Cloth. Price \$2.50. Pp. 291. New York: Reynal & Hitchcock, Inc. 1936.

This is a dispassionate yet warmly human discussion of the problems of the adopted child and the adoptive parents. The author considers both with unusual understanding not forgetting the interest of society in the correct solution of the problems involved in the placing of children who for one reason or another, usually illegitimacy, cannot be kept with their own parents. She has no illusions about the very real disadvantages suffered by the child born out of wedlock and she regards with scorn the sentimentality involved in deleting the record of illegitimacy from the official certificate of birth. She differs sharply with many of the practices now current in the placing of children especially the granting of power to make and enforce rules to so-called state boards of control. She considers that two states at least, in which social progress by legislation has been greatly extolled, have achieved nothing but the ineptitude of entrenched bureaucracy. She condemns particularly the three month nursing rule under which unmarried mothers must nurse their babies for three months, thus postponing placement to no good purpose. On the other hand she is not wholly convinced that everything which goes under the name of social work by voluntary agencies is necessarily as valuable as its sponsors would like to make it appear. She is bold enough to declare her belief that social workers are not omniscient and should not be so regarded even by themselves. Yet she demands good social case work for the placement of babies meanwhile announcing the heretical—in this day and age—dictum that intelligence and experience automatically qualify a volunteer worker without the necessity for elaborate academic training. Knowing intimately the problems involved

in adoption, viewing them sensibly and realistically, she has the courage to express her views without compromise. The book is a valuable contribution and should be welcomed by adoptive parents, either actual or prospective, by open minded social workers and legislators, and by physicians and nurses. The medical chapters are excellent. There is a detailed description of the technique at the famous Evanston nursery. The Cradle, both social and medical technique being well explained. Appendices describe the procedure of adoption in Illinois in some detail, in the other states in briefer form, and in other countries. This is a book to inform and to stimulate thought, and it will be a hard hearted reader who will not be moved by some of its passages.

Traité d'urologie. Par C. Marion, professeur de clinique urologique à la Faculté de médecine de Paris. In two volumes. Third edition. Cloth. Price 220 francs per vol. Pp 687 680 1232 with 608 illustrations. Paris: Masson & Cie 1935.

In general this treatise on urology is quite complete and will be found valuable both as a text and as a reference book. The two volumes contain sections on anatomy, examination, symptomatology, urethroscopy and cystoscopy, pathology and treatment, urologic formulas and operative technique. The arrangement of the material is unusual and is not without merit. The various lesions are considered under the heading of general and etiologic factors, symptomatology, pathology with diagnosis and treatment. The surgical treatment is considered last in a separate chapter comprising about 20 per cent of the contents. It is an excellent outline of the subject and reflects the unusual surgical knowledge of the author. The clinical consideration of surgical diseases of the kidney occupies a much larger proportion of the volume than is usually found in similar publications. While various items are stressed which do not usually appear in the average American or English books on urology, this different point of view will be found most valuable. The pages devoted to laboratory diagnosis and tuberculosis are especially recommended. The urethroscopic and cystoscopic colored plates are unusually complete. To those who are accustomed to using the old French calibration the new calibration in which the graduations are by $\frac{1}{16}$ mm. is confusing. There are several objections which could be raised from the American urologist's standpoint. Vesiculography is described as done only by vasotomy, and pneumopyelography is recommended in calculous disease. More serious is the reservation of intravenous urography for only those cases in which ureteral catheterization is impossible, rather than its routine employment preliminary to cystoscopy as we are accustomed to use it. The great effect of dehydration as a cause of postoperative anuria is not mentioned. The malignant nature of bladder papillomas is not stressed even though the similar tumor of the renal pelvis is considered malignant and nephroureterectomy is advised. On transurethral prostatic resection there is an inadequate section—four pages—which coincides with the statement in the text that "resection does not greatly increase the possibilities of cure of prostatic hypertrophy". Similarly there is no mention of resection under discussion of malignancy of the prostate gland and suprapubic operation is advised. The technique of nephrolithotomy is much more carefully described than that of pyelolithotomy even though the latter is recommended. The section on the care of hypospadias and cryptorchidism is poor, as modern operations are not described. The ketogenic diet is found among the urologic formulas where it probably belongs. There is appended a quite complete index. Altogether it is an excellent treatise on the subject of urology and should merit careful consideration and frequent reference.

The Undaunted. By Alan Hart. Cloth. Price \$2.50. Pp 310. New York: W. W. Norton & Company, Inc. 1936.

This is the second novel by a far western physician to be published by the present publisher. It circulates around the thesis that present medicine and medical practice are wasteful, that the physician who would engage in research has a difficult time and that life in general is no bed of roses. Nevertheless, it gives a better picture of the medical scene than most medical novels and for that very reason is likely to be read with interest by many physicians. The author has not, however, developed as yet the ability to tell a story, and that ability is the prime requisite for success in the production of a novel.

From a Surgeon's Journal 1915-1918. By Harvey Cushing. Cloth. Price \$5. Pp 534 with 35 illustrations. Boston: Little Brown & Company 1936.

Much of this volume has already been published in the *Atlantic Monthly*, where it attracted wide attention. The place of Harvey Cushing as a man of letters in the field of medicine is well established. No one doubts his ability to observe and to write brilliantly of what he sees. His war diary, as assembled in this volume, has been culled from a vast amount of material in order to make a book readable by physicians and laymen alike. No doubt there have been removed sections dealing with the horrible and disgusting as well as other sections dealing with the detail of medical and surgical procedure during the war. The result is a volume which is exceedingly readable and which in general maintains interest. Reviewers who have already commented on this volume seem to have been disturbed most by the failure of Dr. Cushing to discuss from a philosopher's point of view the evils and the horrors of war. They forget, no doubt, that the surgeon during war is confronted with a task which leaves little opportunity for philosophy or soliloquy. He must repair the shattered bodies that come to him in order to get them back to the front as soon as possible. Should he pause to disturb himself with reflection on the performance, he would not be qualified to continue in that performance. As a scientific observer Dr. Cushing has concerned himself primarily with presenting an accurate picture of his own work. His eminence in the medical profession and his skill in his chosen field are such that his opportunities for association with the great and the near-great in all the warring nations were exceptional. This is apparent in his book and gives it added interest. It is inconceivable that any surgeon, regardless of how little he may read in general, could fail to be interested by this superb volume.

Treatment of Fractures in General Practice. By W. H. Ogilvie, M.D., M.Ch., F.R.C.S. Volumes I and II. Second edition. Cloth. Price 2s. 6d. per vol. Pp 108 109 180 with 37 illustrations. London: John Bale Sons & Danielsson Ltd. 1936.

These two pocket-size books contain a large amount of material that has been crystallized for the general practitioner. An attempt has been made to give the practical outline of fracture treatment in the confines of 180 pages. The author has included his own experience and the accepted practices on the continent, including the teaching of Böhler of Vienna. In volume I the general principles of fracture treatment are outlined and the treatment of fractures of the upper extremities and shoulder girdle is given. The author believes that the periosteum is a fibrous limiting membrane, carrying nourishment to the surface layers of bone, and, during the growth period, firmly adherent to the superficial osteoblasts. He does not believe that periosteum itself is osteogenic. Volume II includes fractures of the lower extremities and pelvis. An illustration of the Watson Jones modification of the Smith-Petersen pin does not rightly belong in a book of this small size. It is regrettable that the author did not include a description of the Leadbetter method of closed reduction of fracture of the neck of the femur. The illustrations are highly diagrammatic, which adds to their teaching value. The little books furnish interesting reading, most of which is authoritative and should be helpful.

Great Doctors of the Nineteenth Century. By Sir William Hale White, K.B.E., M.D., LL.D., Consulting Physician to Guy's Hospital. Cloth. Price \$5. 15s. Pp 325. Baltimore: William Wood & Company 1935.

The title of this book is hardly accurate, since it is concerned not with all great doctors of the nineteenth century but specifically with seventeen prominent British physicians and surgeons. It begins with Edward Jenner and includes as well Sir Astley Paston Cooper, Sir Charles Bell, Richard Bright, Marshall Hall, Thomas Addison, William Stokes, Sir James Young Simpson, Sir James Paget, Sir William Bowman, Sir John Simon, Sir William Withey Gull, Sir Samuel Wilks, Lord Lister, John Hughlings Jackson, Sir Patrick Manson and Sir Donald Ross. The biographies are nicely written, sharp, illustrated with anecdotes and indicative of the contributions to science which made their subjects eminent. Among the best of the biographies is that dealing with Sir James Young Simpson, but all of them are more than worthy the time of any physician interested in medical history.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts Hodgkin's Disease Attributed to Trauma—The employee, during the course of employment, received a blow on the side or back of his neck. Thereafter he complained that his neck and throat hurt him and his neck appeared to be swollen. About seven months after the injury, the employee died from Hodgkin's disease and his widow applied for compensation under the workmen's compensation act of Kentucky. The industrial board dismissed the application and, after the circuit court had affirmed the action of the commission, the claimant appealed to the Court of Appeals of Kentucky.

A chiropractor who treated the employee for a period of two weeks shortly after the injury testified that he found an enlargement of the cervical glands and that the left half of the thyroid gland was much swollen. He testified that a bruise could have caused the swelling of the glands but that he had made no diagnosis. When asked if the patient was suffering from Hodgkin's disease, he replied "Yes sir, forerunners" [sic]. During the last month of his life the employee was under the treatment of a physician who testified that the symptoms he found were difficult breathing, temperature between 101 and 102 degrees, a considerable lump on the left side of the neck with some swelling on the other side, and that the cervical lymph nodes were involved. He testified that the cause of death was Hodgkin's disease and that from the history he obtained he could trace the disease only to the blow received by the employee on his neck. Three other physicians, described by the court as being qualified from experience and training to speak on the subject, testified that there is no relation between Hodgkin's disease and traumatic injury.

In denying the application for compensation, said the Court of Appeals, the compensation board found as a matter of fact that the employee died as the result of Hodgkin's disease, which had no relation to the blow the employee received on his neck. With this finding the court agreed and affirmed the judgment of the circuit court for the employer—*Hale v State Highway Commission (Ky)* 91 S IV (2d) 23.

Malpractice Death from Asphyxiation Attributed to Negligent Administration of Anesthetic—The defendant, a physician, administered the anesthetic during an operation performed on Mrs. Beulah Forbis. The patient died on the operating table and the husband and daughter of the deceased sued the defendant, claiming that the patient died from asphyxiation as the result of his negligent administration of the anesthetic. The superior court, Los Angeles county, gave judgment for the plaintiffs and the defendant appealed to the district court of appeal, second district, division 1, where judgment of the trial court was reversed (45 P (2d) 215, abstracted, THE JOURNAL, Dec. 28, 1935, p. 2182). The case then came before the Supreme Court of California on appeal.

According to the evidence said the Supreme Court, after the operation was performed and the operating surgeon was closing the incision, he requested a deeper anesthesia. The anesthetic used was ethylene gas, carbon dioxide gas, ether and oxygen. The defendant anesthetist, at the time of the request for deeper anesthesia noticed that the oxygen in the tank was being depleted. He ordered a fresh supply. It took about five minutes to connect up the new tank, and when this had been completed, the patient was dead. The nurse who assisted in the operation testified that the defendant continued to administer the anesthetic while the oxygen supply was being replenished and that the anesthetic mask was held on the patient's face by the defendant during that time. An osteopath, testifying for the plaintiffs, stated in answer to a hypothetical question that the deceased died of asphyxiation resulting from the administration of ethylene gas without oxygen. The medical testimony was in agreement that the breathing of ethylene gas without oxygen for a few minutes would probably be fatal. The defendant contended that the patient died from heart failure

and that he did not hold the mask tightly over the patient's face during the period of the change of oxygen tanks, but kept his finger under the mask, raising it slightly so that the patient could breathe. Medical experts testified for the defendant that the patient's symptoms, particularly a drop in blood pressure prior to cessation of respiration, indicated death from heart failure and that the symptoms of asphyxiation were not present.

Although the weight of expert medical opinion for the defendant, said the Supreme Court, was greater than that for the plaintiffs, there was sufficient direct evidence supporting the plaintiffs' theory of the cause of death to justify a submission of the case to the jury. In the absence of prejudicial error committed by the trial court, the jury's verdict is binding. The opinion of an expert witness, continued the court, does not become valueless by reason of the omission from a hypothetical question of some disputed facts. "The question may be framed upon any theory of the questioning party which can be deduced from the evidence, and the statement may assume any facts, within the limits of the evidence, upon which the opinion of the expert is desired. It may omit any facts not deemed by the questioner material to the inquiry." *Treadwell v Nickel* 194 Calif 243, 228 P 25.

The court, finding no prejudicial error in the record, affirmed the judgment of the superior court for the plaintiffs—*Forbis v Holzman (Calif)* 55 P (2d) 201.

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine, Boston, Oct. 20-22 Dr Franklin P Lowry 313 Washington St. Newton Mass. Secretary
- American Academy of Ophthalmology and Otolaryngology New York Sept. 26-Oct. 3 Dr William P Wherry 107 South 17th St. Omaha Executive Secretary
- American Association of Industrial Physicians and Surgeons Atlantic City, N. J. Oct. 5-6 Dr Volney S Cheney Armour and Co Union Stock Yards Chicago Secretary
- American Association of Railway Surgeons Chicago Nov. 5-7 Dr Daniel B Moss 547 West Jackson Blvd. Chicago Secretary
- American Clinical and Climatological Association Richmond Va. Oct. 19-21 Dr Francis M Rackemann, 263 Beacon St. Boston Secretary
- American College of Surgeons, Philadelphia Oct. 19-23 Dr George W Crile 40 East Erie St. Chicago Chairman Board of Regents
- American Hospital Association Cleveland Sept. 28-Oct. 2 Dr Bert W Caldwell 18 East Division St. Chicago Executive Secretary
- American Public Health Association New Orleans Oct. 20-23 Dr Reginald M Atwater 50 West 50th St. New York, Executive Secretary
- American Roentgen Ray Society Cleveland Sept. 29-Oct. 2 Dr Eugene P Pendergrass 3400 Spruce St. Philadelphia Secretary
- Associated Anesthetists of the United States and Canada Philadelphia Oct. 19-23 Dr F H McMechan 318 Hotel Westlake Rocky River Ohio Secretary
- Association of American Medical Colleges, Atlanta Ga. Oct. 26-28 Dr Fred C Zapffe 5 South Wabash Ave. Chicago Secretary
- Association of Military Surgeons of the United States Detroit Oct. 29-31 Dr H L Gilchrist Army Medical Museum Washington D C Secretary
- Central Association of Obstetricians and Gynecologists Detroit Oct. 15-17 Dr Ralph A Reis 104 South Michigan Blvd. Chicago Secretary
- Delaware Medical Society of Rehoboth Oct. 12-14 Dr William H Speer 917 Washington St. Wilmington Secretary
- Indiana State Medical Association South Bend Oct. 6-8 Mr Thomas A Hendricks 23 East Ohio St. Indianapolis Executive Secretary
- Inter State Postgraduate Medical Association of North America St. Paul Oct. 12-16 Dr W B Peck 27 East Stephenson St. Freeport Ill. Managing Director
- Kansas City Southwest Clinical Society, Kansas City Mo. Oct. 5-8 Dr J V Bell 1103 Grand Ave. Kansas City Mo. Secretary
- Kentucky State Medical Association Paducah Oct. 8-8 Dr Arthur T McCormack, 832 W. Main St. Louisville Secretary
- Michigan State Medical Society Detroit, Sept. 21-24 Dr C T Ekelund 38 West Huron St. Pontiac Secretary
- Mississippi Valley Conference on Tuberculosis Peoria Ill. Sept. 24-26 Mr A W Jones 613 Locust Street St. Louis Secretary
- Mississippi Valley Medical Society Burlington Iowa Sept. 30-Oct. 2 Dr Harold Swanberg 510 Maine St. Quincy Ill. Secretary
- Nevada State Medical Association Reno Sept. 25-26 Dr Horace J Brown 20 North Virginia St. Reno Secretary
- Ohio State Medical Association Cleveland Oct. 7-9 Mr C S Nelson 79 East State St. Columbus Executive Secretary
- Omaha Mid West Clinical Society Omaha Oct. 26-30 Dr J D McCarthy 107 South 17th St. Omaha Secretary
- Oregon State Medical Society The Dalles Oct. 8-10 Dr Morris L Bridgeman 1020 S.W. Taylor St. Portland Secretary
- Pennsylvania Medical Society of the State of Pittsburgh Oct. 5-8 Dr Walter F Donaldson 500 Penn Ave. Pittsburgh Secretary
- Texas Medical Society of Texas Louisiana and Arkansas Longview Texas Oct. 26-27 Dr John M Ellis Mt Pleasant Texas Secretary
- Virginia Medical Society of Staunton Oct. 13-15 Miss Agnes A Edwards 1290 East Clay St. Richmond Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American J Obstetrics and Gynecology, St. Louis

32 1 182 (July) 1936

- *Histopathology and Treatment of Vaginitis. I Histopathology. II Biochemical Approach in Treatment. F. L. Adair and H. C. Hesselstine. Chicago—p. 1.
- Hydrogen Ion Concentration of Human Vaginal Discharge. F. W. Oberst and E. D. Plass. Iowa City—p. 22.
- *Study of 308 Cases of Placenta Praevia. F. C. Irving. Boston—p. 36.
- Fracture of Femoral Neck Following Irradiation. R. G. Dalby. H. W. Jacob. Pittsburgh and A. F. Miller. Ann Arbor. Mich—p. 50.
- Regional Anesthesia in Conduct of Labor. A. T. Walker. Honolulu. Hawaii—p. 60.
- Antepartum Fetal Death. D. A. Horner. Chicago—p. 67.
- Further Improvement in Pelvimetric Roentgenography. J. B. Jacobs. Washington D. C.—p. 76.
- Primary Cancer of Fallopian Tubes. Report of Three Cases. Summary of Cases Omitted from Nurnberger's Report (1931) and Those Recorded to 1935. M. R. Robinson. New York—p. 84.
- Progesterone Treatment for Dysmenorrhea. C. A. Elden and K. M. Wilson. Rochester. N. Y.—p. 91.
- Use of Paraldehyde Analgesia in Labor Including Studies of Effect on Uterine Contraction. S. F. Moore Jr. and R. A. McCurdy. Cleveland—p. 97.
- *Quantitative Friedman Test in Hydatidiform Mole and Vomiting of Pregnancy. Preliminary Report. F. J. Schoeneck. Syracuse. N. Y.—p. 104.
- Use of Progesterone in Combating Habitual Abortion. H. F. Kane. Washington D. C.—p. 110.
- Intramuscular Injection of Vitamins A and D Concentrates During Pregnancy. Preliminary Report. B. B. Finkelstone. J. H. Howard and M. Paris. Bridgeport. Conn.—p. 113.
- Factors Affecting Incidence of Puerperal Morbidity with Especial Reference to Effects of Vaginal and Rectal Examinations Performed During Labor. H. J. Gegerson. A. A. Gegerson and S. L. Penner. New York—p. 118.
- *New Concept of Senile Vaginitis. J. W. Simpson and K. E. Mason. Nashville. Tenn.—p. 125.
- Evaluation of Hypophyseal Factor in Interpretation of Endometrial Changes. J. W. Simpson. E. T. Ellison. Doris Phelps and J. C. Burch. Nashville. Tenn.—p. 129.
- Effects of Progestin on After Pains. Preliminary Report. S. Lubin and F. J. Clarke. Brooklyn—p. 134.
- Results of Treatment in Placenta Praevia. Based on Study of 283 Cases from the Jewish Hospital of Brooklyn. J. Ronsheim. Brooklyn—p. 139.
- Polyceritis of Pregnancy. Report of Four Cases. A. W. Bingham. East Orange. N. J.—p. 144.
- Endometriosis During Final Month of Pregnancy. Marked Decidual Reaction About Endometriosis Nodules in Peritoneal Fat. H. J. Olson and G. H. Hansmann. Milwaukee—p. 148.
- Forty Nine Pound Retroperitoneal Cystic Fibroid. H. E. Lindeman. New York—p. 151.
- Abdominal Pregnancy at Term with Delivery of Normal Living Child. E. B. Woods. Augusta. Ga.—p. 155.
- Diabetes Complicating Pregnancy. C. H. III. Newark. N. J.—p. 157.
- New and Efficient Method of Infant Circumcision. D. A. Calhoun. Troy. N. Y.—p. 159.
- Decidua Polyposa with Abnormal Adhesions. J. Lebovitz. Woodside. N. Y.—p. 160.
- Myxofibrosarcoma of Ovary. C. H. Hixson. Washington D. C.—p. 162.
- Abdominal Aneurysm. F. H. Falls. Chicago—p. 164.
- Metastatic Carcinoma to Ovary from Vocal Cord. J. D. Kirsbaum. Chicago—p. 165.
- Interstitial Pregnancy. A. E. Kanter. Chicago—p. 167.

Histopathology and Treatment of Vaginitis—Adair and Hesselstine have cured vaginal trichomoniasis and senile vaginitis with lactose (95 per cent) and citric acid (5 per cent) therapy. Focal infections have been treated simultaneously. Although recurrences have developed there have been no failures as yet. Generally, vaginal trichomoniasis and senile vaginitis respond slowly to treatment. The maximal period of treatment and observation was ten months in one instance while the minimum was two months. Some recurrence of vaginal trichomoniasis and probably some exacerbations are

due to reinfection and reinfestation from sexual partners. The principle of this type of therapy is to supply directly nutritive substances which are necessary for a normal vaginal flora. This nutritive material may be supplied indirectly as a result of hormone stimulation after the menopause. The histopathologic pictures obtained by biopsy from the vaginal wall in trichomoniasis, mycoses and senile vaginitis are not distinguishable. Biopsies from the vagina have revealed that even though the clinical appearance and smears are normal, inflammation may continue to exist in the epithelial and subepithelial layer for varying periods. The microscopic examination indicates an increased number of glycogenic granules in the epithelial cells of the treated cases, the deposition of which may be a factor in producing the beneficial effects of this treatment. The excellent results may be from the creation of conditions that favor the development of a normal vaginal flora or from factors that permit or stimulate normal epithelial growths, or a combination of the two.

Study of Placenta Praevia—Irving discusses the 308 cases of placenta praevia that were seen from 1916 to 1935, among 28,391 deliveries in the inpatient service of the Boston Lying-In Hospital. The actual delivery of these 308 patients was conducted by eighty-five visiting and resident obstetricians, the latter always under supervision. A general analysis of the various types of treatment used in the entire series shows that they may be classified as (1) expectant, consisting of simple rupture of the membranes, or normal or operative delivery at full dilatation, (2) cesarean section, (3) Braxton Hicks version, (4) the Voorhees bag, and (5) accouchement force. A study of the cases shows a decrease in maternal mortality from 11.6 to 2 per cent, and a decrease in net fetal mortality from 47 to 20.3 per cent. In clean cases in which the infant is alive, normal and of an estimated weight of more than 4 pounds, cesarean section offers about an 85 per cent chance of securing a living child, with a risk to the mother not exceeding 5 per cent. In clean cases in which the infant is dead, deformed or less than 4 pounds in estimated weight, Braxton Hicks version may be performed by the trained obstetrician at no greater risk to the mother than cesarean section. In clean cases of marginal placenta praevia, simple rupture of the membranes deserves an extended trial. It is safe for the mother and apparently less injurious to the child than has been supposed. In infected cases, cesarean section followed by hysterectomy is the operation of choice regardless of the condition of the child.

Quantitative Friedman Test in Hydatidiform Mole—Schoeneck tried to determine the minimal amounts of urine, at various stages of pregnancy, required to produce positive Friedman reactions. With such normal standards established, a quantitative Friedman test is made available. Nonpregnant does weighing at least 1,500 Gm and between 16 and 18 weeks of age were used. All animals were of the same or similar breeds and were obtained from the same source. Fractional intravenous injections of known pregnancy urines were made in dilutions of 0.025, 0.05, 0.1, 0.5, 1 and 3 cc., and so on. From two to six rabbits were used for each test. The animals were laparotomized forty-eight hours after the injections. Corpora haemorrhagica or fresh corpora lutea were the criteria for a positive reaction. In general, the smallest amounts gave positive reactions between the sixth and tenth weeks of pregnancy. Sixty-seven quantitative determinations were made on forty-one known pregnant patients. The smallest amount of urine that gave a positive reaction in normal pregnancy was 0.05 cc. The maximal amounts varied between 3 and 5 cc. The results of the quantitative test in four cases of hydatidiform mole and one of chorionepithelioma are given. A wide variation (between 0.0063 and 5 cc.) is noted in the mole cases. Two cases of hydatidiform mole showing marked hyperexcretion of the substance responsible for the reaction exhibited typical textbook specimens of hydatidiform mole, i. e., grapelike masses of vesicles whereas in the other two instances the specimens were made up principally of fibrous tissue with comparatively few vesicles. The composite results of eighty-four quantitative tests on fifty-six pregnant patients show that the group in which nausea and vomiting were absent required more urine to produce positive results than did the groups

in which these symptoms were present. The contrast is especially marked between the nausea and vomiting group and that including the pernicious vomiting cases. In the pernicious vomiting cases, as the symptoms abated, the amount of urine required to produce a positive reaction increased. While there is insufficient evidence to advance a hormone explanation of the cause of vomiting of pregnancy, the evidence seems important enough to warrant continued investigation.

Senile Vaginitis—Simpson and Mason offer evidence that, in thirty cases of senile vaginitis observed an increased intake of vitamin A, in the form of cod liver oil or halibut liver oil, proved unusually effective in producing rapid relief of the symptoms and in gross and histologic repair of the vaginal lining. They attribute these effects to the beneficial action of vitamin A in restoring to a normal healthy state the vaginal epithelium suffering from a chronic low grade deficiency of this vitamin.

American Journal of Psychiatry, New York

92: 1247-1484 (May) 1936

- The Relationship Between Body Build and Serum Lipoids and Discussion of These Qualities as Pseudophobic and Leptophobic Factors in Structure of Personality* E F Gildea, E Kahn and Evelyn R Man New Haven Conn.—p 1247
- The Cult of Curability Its Rise and Decline* A Page from Psychiatric History A Deutsch Philadelphia—p 1261
- Antiretentional Therapy in Conditions Ascribed to Intracranial Liquid Accumulation* E Földes New York—p 1281
- Psychic Stresses and Culture Patterns* A I Hallowell Philadelphia—p 1291
- Overlapping Symptoms in Catatonic Excitement and Manic Excitement* C A Bonner and Grace H Kent, Hathorne Mass.—p 1311
- Hematoporphyrin Treatment of Melancholia and Endogenous Depression* J Huehnerfeld Telgte, W Germany—p 1323
- Concerning Schizophrenia and Manic Depressive Psychosis Associated with Pregnancy and Childbirth* G M Davidson Ward's Island N Y—p 1331
- Suicide Among Civilized and Primitive Races* G Zilboorg New York—p 1347
- Some Points of Comparison and Contrast Between Treatment of Functional Disorders by Apache Shamans and Modern Psychiatric Practice* M E Opler New York—p 1371
- Study of Alcoholism in Men* J H Wall White Plains N Y—p 1389
- Study of Case of Cyclic Psychic Disturbances Associated with Menstruation* W A Horwitz and M M Harris New York—p 1403
- Infantile Amaurotic Family Idiocy Megalocephaly and Cerebellar Atrophy* A T Steegmann and L J Karnosh Cleveland—p 1413
- Value of Insulin Treatment in Undernourished Psychiatric Patients* A E Bennett and E V Semrad Omaha—p 1425
- Treatment of Convulsions in Children* M G Peterman Milwaukee—p 1433
- Comparison of Weights of Brain Liver Heart Spleen and Kidneys of Epileptic and Schizophrenic Patients* M Moore and W G Lennox—p 1439

Am. J. Roentgenol & Rad Therapy, Springfield, Ill

36: 1-144 (July) 1936

- Biologic Effects and Therapeutic Possibilities of Neutrons* G L Locher Swarthmore Pa.—p 1
- Roentgenologic Criterion of Dermoid Cyst* D B Phenister W B Steen and J C Volderauer Chicago—p 14
- Congenital Cysts of Lung from Roentgenologic Viewpoint* B R Kirklin Rochester Minn.—p 19
- Bronchography as Aid in Interpretation of Roentgen Shadows Caused by Pleuropulmonary Changes in Tuberculosis* B P Potter and J Pagliughi Secaucus N J—p 30
- Survey of Bone and Joint Tuberculosis in Detroit Municipal Sanatoria* C C Birkelo and F J Jarzynka Detroit—p 44
- Cholecystocolic Fistula Case Report* J P Medelman St Paul—p 52
- Treatment of Subacromial Bursitis by Roentgen Irradiation* I Lattman Washington D C—p 55
- Lung Changes Subsequent to Irradiation in Cancer of Breast* E E Downs Philadelphia—p 61
- Sterilization in Carcinoma of Breast* E G Smith Cleveland—p 65
- Treatment of Cancer of Bladder by Divided Doses of Roentgen Rays at Long Distances* R S Ferguson New York—p 73
- Radio-sensitivity of Cells of Mammary Gland* C W Turner and E T Gomez Columbia Mo.—p 79
- Dosimetry in Radiation Therapy* I Gamma Ray Measurements in Roentgens O Glaser Cleveland and L Kovner Chicago—p 94

Treatment of Subacromial Bursitis by Roentgen Irradiation—Lattman states that subacromial bursitis was first described by Codman in 1906. After discussing the etiology, the pathologic anatomy and the symptoms he gives a tabular report of twenty cases in which roentgen therapy was employed. As a rule, he applied 350 roentgens with the following factors: 200 kilovolts filter consisting of 0.25 mm of copper 50 cm.

distance, fields of 15 by 15 cm on the anterior or posterior side of the shoulder. The author asserts that the results obtained with this treatment justify the belief that roentgen therapy will relieve pain and restore function more rapidly than other methods of treatment. He treated many other cases with equally good results, but only in the twenty reported here has he been able to follow up the patients for a period ranging from one to five years.

Sterilization in Carcinoma of Breast—According to Smith, it is well known that there is a definite relationship between the activity of the ovary and the histology and physiology of the breast. He cites a number of cases of carcinoma of the breast in which sterilization was brought about by applying from 600 to 1,200 roentgens anteriorly and also posteriorly to the pelvis. He found that certain cases of carcinoma of the breast in young women show marked improvement after irradiation of the ovaries with a sterilizing dose of roentgen rays. Improvement may be evidenced by disappearance of metastatic nodules in the skin, shrinkage of glands showing metastatic involvement, a better blood picture, change of the osteolytic type of bone lesion to the osteosclerotic type, alleviation of pain and a subjective feeling of general good health. No conclusions can be drawn at present on any effect roentgen irradiation of the ovaries may have on the time interval of appearance of metastases after irradiation. Only one of the patients has shown more than slight menopausal symptoms. At present the author has no reason to believe that sterilization prolongs the duration of life in these patients. His observation leads him to believe, however, that the course in sterilized patients is fairly good, terminating in a relatively sudden decline whereas the course in unsterilized patients is a steady painful decline during which the patient is unable to live her usual life. Although no such comparable evidence of hormone influence has been shown to exist in other malignant conditions, experimentation in this direction deserves more attention and should be carried out. He believes that all women with carcinoma of the breast who have not reached the menopause should receive ovarian irradiation.

Roentgen Treatment of Cancer of Bladder—Ferguson reports a series of forty-eight cases of tumor of the bladder treated by divided doses of roentgen rays at long distances. He began the treatment with a technic previously used: 200 kilovolts, 0.5 mm of copper 1 mm of aluminum 70 cm target skin distance, 300 roentgens daily to each of two portals. With this technic it is possible to deliver to the pelvis from 2,000 to 2,700 roentgens through each of four portals. However this total was seldom realized in the early cases owing to rectal mucositis and rectal and bladder tenesmus. The technic was gradually changed. At present it is as follows: 200 kilovolts, Thoraeus filter (equivalent of 1.62 mm of copper) 100 cm target skin distance and 100 roentgens daily to each of two opposite portals. Four skin fields are used the remaining two being treated on alternate days. With this technic totals of from 3,000 to 4,000 roentgens per field may be easily reached, thereby delivering a total of from 12,000 to 16,000 roentgens to the four skin portals. From these factors it was estimated that a bladder tumor at the average depth of 10 cm. in the body would receive from 10 to 13 threshold erythema doses, respectively from 3,000 to 4,000 roentgens delivered to each of four skin fields provided the four beams actually converged in the bladder. In summarizing the effects obtained with this treatment, the author says that of thirty-six cases all verified by biopsy and subsequently observed cystoscopically there were twenty complete regressions, with the appearance of a new tumor in but one of these cases. In the cases in which regression was incomplete subsequent treatment was much simplified and usually consisted in fulguration and radon implantation in the base of the remaining tumor or tumors through the cystoscope. Treatment by this technic can be carried to a total of from 3,000 to 4,000 roentgens to each of four portals without marked constitutional effect and with very little local irritation to the skin bladder and rectum. The rate of primary regression reported in this series of tumors of the bladder exceeds that observed with any previous form of irradiation with which the author is familiar.

American Journal of Surgery, New York

33:1 170 (July) 1936

- *Racial Trends of the Negro and White in Certain Surgical Diseases
U Maes and Elizabeth M McFetridge New Orleans—p 5
- *Two Stage Amputation for Diabetic Gangrene of Leg L T Crossan
Philadelphia—p 18
- Idiopathic Benign Hypertrophic Pyloritis (Billroth Hypertrophy) F
Cunha San Francisco—p 21
- Traumatic Subdural Hematoma W D Abbott Des Moines Iowa
—p 32
- Thymic Death and Meteorological Environment S A Levinson Chi-
cago—p 36
- Differential Diagnosis of Hyperthyroidism J C McClintock Albany
N Y—p 49
- Apparatus for Treatment of Fractured Os Calcis V Carabba New
York—p 53
- Acute Arterial Occlusions of Extremities C de Takats Chicago—p 60
- Role of Fibrous Tissue in Hernia Repair with Special Reference to
Injection Therapy A P Stoner Des Moines Iowa—p 68
- Management of Ruptured Appendix Analysis of Fifty Consecutive
Cases J M Higgins Bolham Chattanooga Tenn—p 73
- Neoplasms Primary in Diverticula of Urinary Bladder Report of Five
Cases C C Higgins Cleveland—p 78
- Fracture of Spine S Kleinberg New York—p 85

Racial Trends in Certain Surgical Diseases—Maes and McFetridge believe that the Negro has an apparent racial immunity to certain infections, chiefly of the streptococcal variety, to certain forms of inalignant growths chiefly of the superficial variety, and to biliary and urinary lithiasis. He is less likely to develop such diseases as appendicitis, cholecystitis and peptic ulcer but more apt to exhibit them in a graver form than does the white man. He is peculiarly susceptible to respiratory infections, and even in such diseases as emphysema in which the incidence is low the mortality is prone to be high. The inescapable conclusion is that as the Negro loses his immunity to the so-called acquired diseases or diseases of civilization, he tends to exhibit them in a virulent form, and that the virulence is aggravated always by his mode of life, his disregard of inaugural symptoms and his pernicious habit of self medication. The records of the Charity Hospital clearly prove that the Negro responds to certain diseases in a different fashion from the white man and usually in a more disastrous fashion. Every analysis of statistics from this institution ought to be made on the double basis of the Negro and white hospital population, for the surgeon who operates on Negroes especially for acute or grave diseases, most of the time begins his work with a very heavy handicap.

Two Stage Amputation for Diabetic Gangrene of Leg—Crossan declares that formal amputation for diabetic gangrene is fundamentally wrong. It involves, in the making of the flaps, dissection of one layer of tissue from another at the expense of some blood supply. The greatest assurance for the life of the patient can be secured by the guillotine or Einschnitt operation. This does not mean the modified flap operation, leaving the stump open, for that provides only for some drainage in case of infection; it does not exclude damage to circulation nor does it give the maximum amount of drainage. All the tissues should be cut at one level and preferably it should be done in the leg about two handbreadths below the tibial tubercle. Performed in this fashion there is little disturbance of the blood supply and small chance of gangrene, provided a tourniquet is not used. Also the stump is wide open and without recesses, with a minimum of devitalized tissue, in fact, it has everything that discourages supuration. Secondary operation will be necessary to give a serviceable stump. This the author usually does after several weeks or when bacteria counts of the wound show only two or three in a field. Between operations the wound is dressed at weekly intervals with cod liver oil until clean enough to start bacterial counts, then dressings are done every other day. The secondary operation might take any form the surgeon may choose. A Carden or even a Stokes Gritti operation may be done with safety for the removal of the foot and portions of the leg has permitted the development of a good collateral circulation. Removal of the foot and leg also provides a more rapid circuit of blood and a better nourishment of the tissues.

Thymic Death and Meteorological Environment—In view of the absence of any macroscopic and microscopic changes to account for unexpected death, and in the presence of an enlarged thymus and spleen, hyperplasia of the lymph glands

with prominent Peyer's patches, associated with hemorrhage in Peyer's patches and intestinal tract, the diagnosis of "status thymicolymphaticus" was made. This diagnosis Levinson has employed in the unexpected deaths, particularly in infants and children, when they were referred to the coroner's office, and when a necropsy presented evidence indicating thymic death. Pathologic anatomic proof for death cannot always be demonstrated. The absolute proof of the cause of death might be a functional disturbance associated with altered biochemical changes, disturbed pathologic-physiologic alteration, or constitutional variability markedly disturbed by extrinsic agents, such as physical and meteorological climates. Status thymicolymphaticus is a constitutional type. Sudden death here might occur when an unusual meteorological situation might require prompt physiologic adjustment. In view of the meteorological associations here determined the emphasis that Paltouf placed on the fact that an anatomic change is not necessarily involved in sudden death of 'status lymphaticus' finds its logical explanation in death due to a sudden chemical and endocrine upset of the type that Petersen has determined as common with meteorological changes. In a period of four years there were twenty-eight deaths in infants and children on whom a necropsy was performed and a diagnosis of status thymicolymphaticus was made. In 1932 the death certificates from the Chicago health department were investigated and indicated nineteen deaths from status lymphaticus. In order to correlate the association of the adrenal with the thymus in reference to 'sudden death, fifteen cases of Addison's disease are compared with thymic deaths for the year 1932 and the meteorological theory is supported in that death in Addison's disease also occurs when adrenal inadequacy would be manifest most acutely.

Am J Syphilis, Gonorrhea and Ven Dis, St Louis

20:347-466 (July) 1936 Part I

- Diagnosis of Gonococcal Infections by Cultural Method Alice D Leahy and C M Carpenter Rochester N Y—p 347
- *Abnormalities of Micturition Due to Syphilis of Nervous System O R Langworthy J E Dees and L G Lewis Baltimore—p 364
- Distant Thrombophlebitis Following Neocarphenamine Injection E B Tauber and L Goldman Cincinnati—p 382
- Medical and Surgical Aspects of Charcot Joints S H Epstein Boston—p 386
- *Relationship of Colitis and Proctitis to Lymphopathia Venerea J Goodman New York—p 394
- Intolerance to Tryparsamide A G Schoch Dallas Texas—p 409
- Cardiovascular Syphilis with Special Reference to Its Practical Management W H Goeckerman and L F A Wilhelm Los Angeles—p 412
- Granuloma of Prostate Possibly Due to Syphilis E L Keyes New York—p 418
- Syphilis of Spinal Cord N W Winkelman Philadelphia—p 421

Abnormalities of Micturition Due to Neurosyphilis—Langworthy and his collaborators review bladder abnormalities characteristic of tabes dorsalis. They deal with the neurophysiology of the disturbances that are dependent on damage to the posterior sacral nerve roots. The vesical symptoms of which these patients complain are typical for this particular type of abnormality. Loss of sensation may be demonstrated in the vesical wall. Graphic records of vesical filling show a low resting intravesical pressure and a large volume. No waves of vesical contraction occur during filling. A case of vesical crises is described. Typical changes in the urethra and bladder can be seen with a cystoscope. Injury to other portions of the nervous system due to syphilis gives records of vesical filling typical of the anatomic lesion.

Relationship of Colitis and Proctitis to Lymphopathia Venerea—Goodman reports that, in a series of twenty unselected cases of proctitis and/or colitis without rectal stricture, seven gave positive Frei reactions. He describes the necroptic aspects of one of these cases. Four additional cases with rectal stricture as well as colitis were also found to show positive Frei reactions. The case histories of these eleven patients are given. Two of the patients with stricture were treated with malaria. One patient with stricture and an active amebic dysentery gave a history of draining inguinal sinuses twenty-four years before. One patient with rectal stricture showed an apparent spread of the infection to pelvic viscera, colon, kidney and colostomy opening. The frequency of secondary anemia in patients with rectal and colonic lesions of lymphopathia venerea is pointed out. The evidence for the presence

of the virus in the bowel lesions is reviewed. The necessity for considering lymphopathia venerea in the differential diagnosis of chronic nonspecific ulcerative colitis is emphasized.

Archives of Pathology, Chicago

22 1138 (July) 1936

- Effect on Monkeys of Small Doses of Concentrated Preparation of Viosterol E. V. Cowdry and G. H. Scott St. Louis—p. 1
Morphology of Prostatic Corpora Amylacea and Calculi R. A. Moore New York—p. 24
Chemical Composition of Prostatic Corpora Amylacea and Calculi R. A. Moore and R. F. Hanzel Cleveland—p. 41
*Protective Action of Sulfhydryl Against Carcinogenesis Induced with 1,2,5,6-Di-benzanthracene S. P. Reimann and Edith M. Hall Philadelphia—p. 55
Bronchopulmonary Moniliasis Its Relation to Obscure Chronic Pulmonary Infection K. Ikeda St. Paul—p. 62
Experimental Siderosis. III Spectroscopic Studies of Iron Containing Pigment E. Lorenz and V. Menkin Boston—p. 82
*Caisson Disease Histologic Study of Late Lesions. B. W. Lichtenstein and H. Zeitlin Chicago—p. 86
Importance of Allergy and Immunity Due to Ghon Tubercle in Pathogenesis of Experimental Pulmonary Tuberculosis B. J. Clawson Minneapolis—p. 99

Protective Action of Sulfhydryl Against Induced Carcinogenesis—The carcinogenic agent 1,2,5,6-di-benzanthracene and a substance containing the proliferation-stimulating group sulfhydryl parathuocresol, were applied by Reimann and Hall to the skin of mice in various combinations. The incidence of cutaneous tumor was reduced by the action of sulfhydryl. Irritation played no part in the protection. Evidence is adduced to support the following propositions: Stimulation of the rate of cell proliferation alone does not lead to neoplasia, carcinogenesis is caused by damage to the potencies of differentiation and organization, this damage must be transmitted by a cell capable of division or by somatic mutation, when a cell reaches a certain degree of differentiation it can no longer divide and the damage to the potencies of differentiation and organization must occur before potency is determined, at least in cutaneous cells. The previously enunciated definition of tumor is strengthened.

Caisson Disease—Lichtenstein and Zeitlin point out that paraplegia is only one of the signs observed in men with caisson disease on their return to normal atmospheric pressure. Among the many names used to designate this condition ('dyer's palsy,' 'bends,' 'compressed air illness' and 'caisson disease') the term 'aeropathy,' suggested by Erdman, is most appropriate, for it signifies the underlying pathogenic factor of the various symptoms incurred in caisson work and in occupations associated with similar hazards. Pleomorphic as the symptoms of caisson disease are, paraplegia is the most striking. Most of the contributions to the pathology of caisson disease in general and to that of the spinal cord involvement in particular have pertained to cases in which the disease was relatively acute. This contribution deals with the changes in the spinal cord of a man who had had the disease for twenty-five years. The authors give the clinical history of this patient and describe the results of the necropsy. The changes outlined can be summed up as ascending and descending degeneration of the spinal cord secondary to a severe destructive lesion of its thoracic portion. The cause of the central nerve lesions in caisson disease is usually considered to be embolism of minute blood vessels which causes degeneration of all the constituent nerve elements. The authors say that Bassoe classified cases of caisson disease in its late manifestations into three groups: (1) cases in which the spinal symptoms predominate so-called caisson myelitis, (2) cases in which there is permanent involvement of the joints and (3) cases in which there is permanent involvement of the ears. They admit that the common occurrence of spastic paraplegia in caisson disease can be explained by the changes in the spinal cord but they stress that these changes certainly were not inflammatory, in the nature of a myelitis but degenerative. In answer to the question as to what causes this degeneration they give their version of the pathogenesis of caisson disease. They state that in chronic combined degeneration of the cord due to aeropathy the thoracic portion of the spinal cord is the site of prevalent involvement and of this the white matter is much more affected than the gray. The old scars resulting from the embolic

occlusion of the capillary blood vessels are exclusively ectodermal and characterized pathologically as anisomorphous gliosis. This condition is best differentiated histologically from multiple sclerosis by detailed study of the areas adjacent to the scars and of those of normal remote regions.

California and Western Medicine, San Francisco

45 1112 (July) 1936

- Sleep Disorders in Clinical Practice F. G. Ebaugh Denver—p. 5
Present Status of Renal Sympathectomy T. E. Gibson San Francisco—p. 10
Ocular Syphilis Its Treatment H. Barkan San Francisco—p. 13
*Tumors on Spinal Cord Their Diagnosis Analysis of Fifty-nine Cases O. W. Jones Jr. and H. C. Naffziger San Francisco—p. 17
Pituitary Growth Factor Some Clinical Considerations E. K. Shelton Santa Barbara—p. 20
Gunshot Wounds of Abdomen R. W. Binkley and E. R. Cole Selma—p. 26
Poisoning Poisonous Spiders Experimental Investigation in Control of Black Widow Spider (*Latrodectus Mactans*) E. Bogen and R. N. Loomis Olive View—p. 31
Urinary Extravasation J. C. Negley Los Angeles—p. 38
Sarcoïd F. G. Novy Jr. Oakland—p. 41
Liver and Carbohydrate Metabolism D. R. Drury Los Angeles—p. 45
Caudal and Transsacral Anesthesia C. M. Johnson San Francisco—p. 48
*Ruptured Appendix in Children Its Management C. J. Baumgartner Los Angeles—p. 51
Latent Syphilis W. H. Goeckerman Los Angeles—p. 55

Tumors on Spinal Cord—Jones and Naffziger report that, regardless of the location of the tumor, pain was the most common and usually the initial symptom in their series of fifty-nine cases. It often was present for years before neurologic signs appeared. The pain often simulated that of other disorders, and the patients complained of rheumatism, neuritis, sciatica, lumbago, sacro-iliac strain and abdominal symptoms. In the early stages the pain was invariably localized. In most instances it later developed into a combination of localized and radiating pain. The so-called hour-glass type of tumors have an intraspinal portion connected by a small neck with an extra spinal enlargement. The connection occurred most frequently through an intervertebral foramen but occasionally through an interlaminar space. It is generally accepted that hour-glass tumors are rare, yet there were fifteen such cases in this series. The most important complaint in this group was localized pain. Palpation of the extraspinal portion of the tumor was possible in the cervical region and occasionally in the thoracic and lumbar regions. Roentgenograms of the spine proved extremely valuable. The differential diagnosis between intramedullary tumors and extramedullary intradural tumors is difficult. However, in the extramedullary tumors there was usually a clear-cut history of gradually increasing compression of the spinal cord. In these cases the sensory level was almost always sharply demarcated and tended to be more pronounced in the distal part of the lower extremities than in the higher segments corresponding to the level of the lesion. In the intramedullary tumors the reverse was true, that is, the maximum sensory loss corresponded to the segments of the cord immediately involved while the sensory alteration in the distal parts of the extremities was not so marked. In addition, in an intramedullary growth sensation tended to fade off above the level of the tumor in a more or less indefinite fashion. Involvement of the conus medullaris by an intramedullary or an extramedullary tumor led, in all instances, to early involvement of the sphincters and varying degrees of impotence. Of the fourteen tumors occurring in the region of the cauda equina four pathologic types deserve mention: (1) neurofibroma, (2) dislocated nucleus pulposus (chordoma), (3) epidermoid, and (4) large soft dural endothelioma. The simplest differential diagnostic test is compression of the jugular and cervical veins. The frequency with which tumors of the conus medullaris and cauda equina simulate orthopedic disorders warrants the recommendation that this test be employed in a routine way in orthopedic examinations in which localized or radicular pain is present. The patient is placed in a comfortable position and when free from pain compression of the cervical veins is made as in the Queckenstedt test. As the intracranial and intraspinal pressure above the level of the block is raised the characteristic pain may be produced if the tumor is capable of being displaced sufficiently to cause traction on or irritation of a nerve root. Although most commonly the pain is reproduced by compression of the jugular and other cervical veins, in certain instances (depending presumably on the direction in which the tumor

dislocates most readily) such pain may be experienced only on sudden release of the jugular compression. Though radicular pain is commoner in cases of tumor of the cauda equina, the value of the test is by no means limited to tumors of this region but has proved of differential value in lesions of various pathologic types involving the cervical and thoracic portions of the spinal cord.

Ruptured Appendix in Children—Brumgartner maintains that the high incidence of 55 per cent of perforated appendices in children is due almost entirely to delay. He stresses that the medical profession should repeatedly remind the public of the possible danger of appendicitis in any ordinary so called stomach ache in children and persistently warn against the promiscuous use of laxatives before appendicitis has been definitely ruled out. The frequent association of nasal colds, sore throats and middle ear infections is particularly misleading, and parents as well as physicians must realize that their presence with an abdominal pain does not necessarily rule out appendicitis. The use of the continuous dextrose drip in conjunction with the indwelling nasal catheter has been a distinct advance in the postoperative care of these children not only in that it provides greater comfort but also in that normal body chemistry is restored and toxins relieved in the quickest possible manner.

Florida Medical Association Journal, Jacksonville

23 160 (July) 1936

- Introduction to Medical Economics II G C Tillman Gainesville—p 11
Cost of Medical Education II L Pearson Miami—p 13
Medical Relations Under Workmen's Compensation O O Feaster St. Petersburg—p 15
Health Insurance C D Christ Orlando—p 18
Contract Practice T H Bates Lake City—p 20
Plans for Payment of Medical Care W H Spiers Orlando—p 23
Health Insurance in England E. Jelks Jacksonville—p 26
Health Insurance in Various Parts of the World T M Palmer Jacksonville—p 28
Defects in Medical Insurance J S Tuberville Century—p 31
Synopsis and Critical Analysis of Sick Insurance and Cost of Medical Care J R Wells Daytona Beach—p 33
Layman's Responsibility in Control of Cancer II C Dozier Ocala—p 36
Mechanics of Circulation J R Wells Daytona Beach—p 38

Indiana State Medical Assn Journal, Indianapolis

29 311 362 (July) 1936

- Endocrine Relationship to Etiology of Cancer N K Forster Hammond—p 311
Jaundice Its Significance and Implications J H P Gauss Indianapolis—p 316
Rupture of Sartorius Case Report M F Poland Bloomington—p 319
Bone Sarcoma R B Acker South Bend—p 320
Obstetrics in Rural Communities A E Burkhardt and B A Burkhardt, Tipton—p 326
Medicolegal Problems Arising Out of Injury to the Person E R Smith Indianapolis—p 328

Journal of Nervous and Mental Disease, New York

54 1124 (July) 1936

- Reflections on Euthanasia A A Brill New York—p 1
Neurologic Abnormalities Produced by Electricity O R Langworthy Baltimore—p 13
Psychopathology and Treatment of Parkinsonian Syndrome and Other Postencephalitic Sequels W Marshall Appleton Wis—p 27
Mechanism of Malaria Cure in General Paralysis G M Davidson Ward's Island N Y—p 46
Dynamics of Group Psychotherapy and Its Application L. Wender Hastings-on Hudson N Y—p 54
Paralysis of Third Cranial Nerve Due to Spontaneous Hemorrhage within the Nerve in Lateral Intracranial Course E S Gurdjian and L J Bailey Detroit—p 61

Treatment of the Parkinsonian Syndrome—Marshall endeavored to treat nine cases of postencephalitic sequels with psychotherapy, relaxation and reeducation, with the cooperation of physical and occupational therapy. Psychotherapy was the chief agent in the treatment of these cases. Relaxation and reeducation were very important adjuncts. The realization that patients with the parkinsonian syndrome experience regarding their inability to perform the most simple associated movements throws them into mental conflicts. The retroversion from a highly integrated individual into one of the merest basic functioning is the basis of the emotional upset seen in the disease. In constructing the chain of events that lead to this clinical picture, it is of primary importance to recognize that the pathologic picture is quite a definite entity. Sections

of the brain show damage in the subcortical areas. These areas have to do with associated movements. The deprivation of the associated movements in a patient is the basis for the psychoneurotic symptoms, which Haskovec thinks are caused by a subcortical, morbid process. These symptoms are an outgrowth of the inability to coordinate and are on the same basis as a frustration, exemplified by speech defects and behavior problems. Prior to his disease the patient has held a definite position in his own society. However, when he finds himself an invalid, from the point of view of having lost his ability to perform the most simple actions of life, he receives a tremendous psychic shock. The patient realizes his predicament and must cope with these difficulties in some manner. He tries to cover up these defects. This seems to be the basis for the entrance of the so called psychoneurotic symptoms which these patients show. The patient believes himself to be a cripple, is told that he probably will always be so by the profession and consequently adapts a fitting psychology by beginning to believe earnestly that he cannot overcome his handicaps. Nearly all of the author's patients agreed that they have experienced such a mental attitude. The first step was to establish a "rapport" with the patient. The next step was to effect this by relaxing the contracted parts. Then the process of reeducation or conditioning was tried, that is attempting to supply new habits for the old ones. The psychic factor was of vast importance here, as the patients at first experienced a feeling that they could not execute the exercises because of their physical incapacities. Continued reassurance and effort on the part of the attendant, went far in bringing about success in most cases. It was well to convince the patient that the treatment was not a physical impossibility, accomplished by presenting an improved patient to him, at the same time having the former relate how he was prior to treatment. This greatly helped to encourage the patient undergoing treatment and certainly aided in building up his morale. It assisted in bringing about enthusiasm. The patients responded to the method of treatment in such a manner as to warrant further observation and study by other clinicians before any definite statement of encouragement can be given. The author believes that the mental catharsis which most of the patients experienced was responsible for the improvement obtained.

Journal of Urology, Baltimore

36 198 (July) 1936

- Reduplication of Renal Pelvis and Ureter H S Everett Baltimore—p 1
Pyelo Ureterocystitis Cystica Case A Strachstein New York—p 22
Treatment of Contracted Bladder with Controlled Tidal Irrigation J J Longacre Cincinnati—p 25
Spontaneous Rupture of Bladder Associated with Stricture of Urethra J A Lazarus and A A Rosenthal New York—p 34
Transurethral Resection of Large Prostate Review of 200 Cases in Which 25 Gm or More of Tissue Was Removed G J Thompson and H Buchtel Rochester Minn—p 43
Treatment of Urinary Lithiasis J C Kimbrough Fort Sam Houston Texas—p 57
Experiences with Segmental Peridural Anesthesia in Urology F L Senger and J J Botton Brooklyn—p 71
Pentothal Sodium Anesthesia in Urologic Practice R M Tovell and G J Thompson Rochester Minn—p 81
Advances in Field of Cystometry Due to Clinical Studies with Sphincterometer IV Studies in Bladder Function Preliminary Report I Simons New York—p 88

Laryngoscope, St. Louis

46 493 568 (July) 1936

- Antrum Operation Describing Method Affording Permanent Adequate Drainage Where Cure of Empyema is Essential E C Sewall San Francisco—p 493
Complications of Acute Sinusitis with Especial Reference to Bacteremias J L Goldman New York—p 500
Sphenoiditis with Meningitic Symptoms R Kramer and M L Som New York—p 507
Reparative Processes in Labyrinth Secondary to Meningococcus Meningitis Report of Case J G Druss New York—p 515
Unusually Early Pleuropulmonary Suppuration in Sinus Thrombosis Case Report H Rosenwasser New York—p 519
Audiometry and Prescribing of Hearing Aids I H Jones and V O Knudsen Los Angeles—p 523
Periosteal Flap in Performance of Mastoidectomy H E Knolly Omaha—p 537
Nonmalignant Neoplasms of Larynx G R Brighton and S Daly New York—p 541
Congenital Stenosis of Larynx G H O Kane New York—p 550
Demonstration of New Type of Tracheotomy Tube—Mikell Tracheotomy Tube J S Mikell New York—p 555
New Nasal and Aural Applicators for Heat Therapy C K Gale New York—p 557

Michigan State M Society Journal, Lansing

35 433-490 (July) 1936

- Problems and Trends in Medical Education R B Allen Detroit —p 433
- Treatment of Abortion Analysis of 646 Cases C R Davis Detroit —p 438
- Tenosynovitis J A Spencer Flint —p 440
- Tonsillectomy E W Teed Ann Arbor —p 445
- Ionization for Nasal Allergy Experiences and Correlation of Information S J Joyce, Detroit —p 447
- Asphyxia as Factor in Paresis Medicolegal Significance M H Skolnick Detroit —p 455
- Clinicopathologic Conference at Detroit Receiving Hospital Case of Bronchiogenic Carcinoma with Clinical and Pathologic Discussion O A Brines and G B Myers Detroit —p 457
- Cancer Survey of Michigan F L Rector New York —p 461

Missouri State Medical Assn Journal, St Louis

33 251-302 (July) 1936

- Pathogenesis of Cavernous Sinus Thrombosis L A Sarpellino P F Stookey and F J Hall Kansas City —p 251
- Pathology of Silicosis and Silicotuberculosis W M Kinney Joplin —p 257
- Rational Treatment of Sinus Disease W B Black Kansas City —p 260
- Gonorrheal Vaginitis in Children S F Abrams St Louis —p 263
- Extreme Obesity Report of Case C D Humbert Barnard —p 265

New England Journal of Medicine, Boston

215 152 (July 2) 1936

- Social Study of Patients with Chronic Cardiac Disease Treated by Total Thyroidectomy Ethel Cohen and Rosalind L Herrmann Boston —p 1
- Auscultation of the Abdomen N C Stevens Walpole N H —p 22
- Address at Annual Meeting of the Boston City Hospital Alumni Association S B Woodward Worcester Mass —p 26
- The Progress of Nutrition F L Burnett Boston —p 29

215 53-100 (July 9) 1936

- Fluid Therapy in Surgery Critical Review J D Stewart Boston —p 53
- Acute Appendicitis and Measles H W Hudson Jr Brookline Mass and C Krakower San Juan Puerto Rico —p 59
- *Simple Method of Oxygen Analysis for Use in Oxygen Tent Therapy J E F Riseman and G Lesnick Boston —p 65
- Plurality of Streptococcal Toxins S B Hooker Boston —p 68
- Therapeutics of Drug Habits A Lambert New York —p 72
- Advances in Pediatrics R C Eley Boston —p 82

Simple Method of Oxygen Analysis—Riseman and Lesnick devised an apparatus to satisfy the need for an instrument which would be accurate, inexpensive and simple enough to operate so that it could be used efficiently without any previous instruction or experience. The simplicity of operation is attested by the fact that nurses and laymen without supervision and with no previous experience with oxygen analysis have experienced no difficulty in using the apparatus for the first time. In principle the method consists of absorbing the oxygen from a known volume of gas and determining the residual volume. The oxygen is absorbed by means of copper gauze and an ammoniacal solution. Simplicity of operation is attained by three devices, which result in automatic measuring of the volumes of the sample and the residual gas and in simplified operation of a three way valve. The method yields results that are accurate within 2 per cent.

New Jersey Medical Society Journal, Trenton

33 385-440 (July) 1936

- Some Observations on Blood Pressure. T. A. Smith Short Hills —p 391
- *Treatment of Chronic Heart Disease by Total Thyroidectomy J E F Riseman Boston —p 397
- Cyanosis in Chemical Plants E. A. Jirouch Pennsgrate —p 403
- Paying for Medical Care C. Rufus Rorem Chicago —p 406
- Use of Benzadrine in Eustachian Tube and Middle Ear with Apparatus for Application. E. L. Wood Newark —p 410
- Postoperative Complications T. H. Russell New York —p 419
- Penetrating and Nonpenetrating Injuries of Thorax. V. E. Johnson Atlantic City —p 425

Treatment of Chronic Heart Disease by Total Thyroidectomy—Riseman says that in two and a half years about 100 patients have been treated by this method at the Beth Israel Hospital in Boston. The author presents the results obtained. He says that the operation confers benefit on a group of cardiac patients who have not been helped by any other method known at present. If the patients are carefully chosen with respect to preoperative basal metabolism and progress of

their disease, a satisfactory high percentage of good results can be expected. To keep mortality down and insure a maximum number of good results, the patients must be carefully prepared for operation and the operative technic must be faultless. Finally, the postoperative care of these patients during the months and years they have to live is an extremely important matter and requires careful supervision.

New York State Journal of Medicine, New York

36 959-1014 (July 1) 1936

- Clinical Manifestations of Allergy in the Eyes A J Bedell Albany —p 959
- Sympathetic Nervous System in Its Relation to Peripheral Vascular Disease E E Mack Syracuse —p 967
- Liver and Gallbladder Disease C G Hevd New York —p 974
- Low Back Pain E F Hartung New York —p 979
- Petrolitis C H Smith New York —p 983
- Between Mental Health and Mental Disease B Liber New York —p 988

36 1015-1074 (July 15) 1936

- Acute Hemorrhagic Pancreatitis Causes of—Symptoms and Treatment D Lewis Baltimore —p 1015
- Bilateral Pneumothorax Treatment in Pulmonary Tuberculosis Simultaneous Applicability in Ambulatory Cases R A Bendone New York —p 1020
- Selective Tests Used in Industry to Measure Specific Abilities and Aptitudes M Lake New York —p 1025
- Chronic Arsenic Poisoning in a Child Associated with Profound Anemia and Scleroderma Case L Mary Moench New York —p 1029
- The Practicability and Significance of Blood Iodine Estimations H J Perkin and R B Cattell Boston —p 1033

Northwest Medicine, Seattle

35 243-284 (July) 1936

- One Hundred Years of Medicine in Oregon O Larsell Portland Ore. —p 243
- Marcus Whitman Pioneer Physician S J Newsom Walla Walla, Wash. —p 250
- *Stokes-Adams Syndrome Following Influenza L M Mares, Wenatchee Wash. —p 252
- Pitfalls in Surgery of Acute Abdomen R C Schaeffer Tacoma Wash. —p 255
- Contrast Between General Surgery of Infants and Children and That of Adults C W Brunkow Portland Ore. —p 259
- Proprietary Medicine Evil E D Johnson Klamath Falls Ore. —p 263
- Hydrocele of Canal of Nuch Report of Case and Discussion of Inguinal Hernia J K Holloway Seattle —p 264
- *Initial Cold Water Treatment for Burns H W Rose Seattle —p 267

Stokes-Adams Syndrome Following Influenza—Mares says that the attending physician should watch for signs of cardiac damage in influenza. That the influenza is running a mild course is no guaranty against involvement of the heart. The heart complications are usually of late appearance after the fever has run its course and often after convalescence is well advanced. They may not be recognized till they appear as late sequels, months after the influenza. Furthermore it is probable that many cases of myocardial disease are attributable to influenza dating back for a period of years just as is the case with rheumatic fever. Complete heart block is a relatively rare complication of influenza, and the Stokes-Adams syndrome is still more exceptional. But a slow pulse has been noted as a fairly frequent accompaniment of influenzal infection for which various explanations have been advanced: toxic inhibition of the impulse-forming activity of the sinus node, vagal excitation, dromotropic disturbances and causes outside the heart. The fact that the pulse disturbances sometimes appear long after the illness shows that they must have some other basis than the physical and psychic prostration that are such well known features of convalescence from influenza. The cases occurring during convalescence would seem to find adequate explanation in toxic injury either to the vagus with stimulation of its inhibitory influence on the heart action or to the conduction pathway in the myocardium with interruption of impulses from the auricle to the ventricle. In either case the blood supply to the brain would be temporarily cut off with syncope as the natural consequence. The author reports the history of a man aged 29 whom he saw during an influenza epidemic and who complained of dizzy spells. Following the third attack he was brought to the hospital. During the next twenty-four hours he had eight paroxysms which gradually decreased in severity. He was given atropine one one hundredth grain (0.00065 Gm) every four hours along with barium chloride two-thirds grain (0.04 Gm) every six hours.

After thirty six hours the pulse rate gradually increased and the atropine was omitted. During his hospitalization, two thirds grain doses of barium chloride were given four times a day. On his discharge, this was continued in two thirds grain doses three times daily, and at the end of the fourth week his pulse remained at 70. The barium chloride was discontinued at this time. Two weeks later the pulse rate was maintained at sixty-eight, with no recurrent symptoms.

Initial Cold Water Treatment for Burns—When Rose sees the patient soon after the accident, he applies cold water to the burned tissue after as much clothing as possible has been removed. Ordinary tap water is used. In the case of small burned areas or a part of a single extremity, cold wet dressings are applied or the parts submerged in basins containing cold water. In the case of extensive burns, the patients are placed in a tub. The immediate results are favorable. Patients with severe pain are relieved within a few seconds without the use of an opiate. Patients in early shock often respond promptly with no other measures, the weak and feeble pulse becoming slower and stronger, the blood pressure rising and the patient's color resuming a normal appearance. A burn involving one half of the body surface has usually been regarded as fatal, and the fatal outcome is the result primarily of the shock. "The primary phase" of shock is due to the pain of the direct nerve injury, with its resultant reflex vasodilatation. The more important type of shock, however, is the so-called secondary shock which is due to loss of fluids from the circulating blood. If some time has elapsed before the patient is first seen, so that the state of shock is rather far advanced, other shock therapy is started in addition to the cool water. Fluids by mouth are given immediately and a transfusion of blood is started while the patient is still in the tub. If a donor is not available, intravenous acaera is used. For the next two hours this treatment is continued. During this time the water is gradually warmed, as rapidly as the pain sensations of the patient will permit. The temperature of the water at first is between 60 and 70 F. At the beginning of the third hour it is about 98 F. At this time one-fourth grain (0.016 Gm.) of morphine is usually given, preparatory to the mild debridement to follow. About half an hour later remaining pieces of clothing are removed, dead tissue and dirt are wiped away with gauze and blebs are opened. If much dirt and grease are present the body is scrubbed from head to foot with sterile soap and water. After the burned areas and body are clean, the patient is rinsed with sterile water and dried with warm air from an ordinary hair drier. The patient is then placed on a sterile sheet on the bed and is ready for Bettman's tannic acid and silver nitrate treatment or the ferric chloride coagulation method described by Coan.

Ohio State Medical Journal, Columbus

32: 601 700 (July 1) 1936

- Traumatic Diaphragmatic Hernia B V Carter Cincinnati—p 617
Study of Postdelivery Deaths Caused by Embolism C T Hemmings Cleveland—p 620
Critical Analysis of Diagnosis and Surgical Treatment of Thyroid Conditions N W Gillette Toledo—p 627
Diagnosis and Treatment of Pulmonary Tumors S Brown Cincinnati—p 630
Basic Principles in the Management of Myopias I G Clark Columbus—p 634
Acute Monocytic (Histiocytic) Leukemia T L Ramsey and R A Tank Toledo—p 637
New and Approved Methods of Combating Tuberculosis T L Bliss Akron—p 642
Malaria Treatment in Congenital Syphilis R A Kidd Jr Columbus—p 645
Essential Operations for Chronic Ulcerative Colitis J A Bargen and C F Dixon Rochester Minn—p 650
Removal of Plaster Cast from Within Out New Method W M Hayes Hamilton—p 653

Postdelivery Deaths Caused by Embolism—Hemmings found the total incidence of postdelivery embolism in a series of 80136 births to be 0.04 per cent. Postdelivery embolism presented an incidence of 7.8 per cent of the total deaths and 14.5 per cent of the delivery deaths. The incidence of postdelivery embolism was more than three times greater when operative intervention was used than in normal deliveries. Cesarean section rated second in incidence of all operative procedures. The mortality rate was highest between the ages of 26 and 30 years. Adequate antepartum care did not prevent

embolism in 78 per cent of the series. The average duration of labor in all cases was sixteen and a half hours. The most frequent causative factors were hemorrhage, trauma, infection and venous stasis. Available blood counts generally revealed a well marked secondary anemia. Symptoms of phlebitis were present in only 24.3 per cent of the patients. The medication used had no direct bearing on the causation of embolism. In order to improve the understanding and knowledge of postdelivery thrombosis and embolism, necropsies performed by obstetrically minded pathologists should be insisted on.

Oklahoma State Medical Assn Journal, McAlester

29: 239 272 (July) 1936

- Diagnosis and Treatment of Malignant Diseases of Mouth P B Champlin Enid—p 239
Study of Altered Kidney Position and Its Correction R H Akim Oklahoma City—p 242
Precancerous Lesions of Skin D G Duncan Oklahoma City—p 245
Mastoiditis in Malnourished Infants C H Hall Oklahoma City—p 247
Pulmonary Complications Which Frequently Follow Abdominal Surgery W P Neilson Enid—p 250
Paraldehyde in Obstetric Analgesia E E Rice Shawnee—p 252

Pennsylvania Medical Journal, Harrisburg

39: 665 754 (June) 1936

- Cancer of the Prostate H G Bugbee New York—p 665
The Heart in Toxic Gout H L Foss Danville—p 671
The Physician Patient Relationship E L Bortz Philadelphia—p 681
Recent Advances in Bronchoscopy of Children C Jackson Philadelphia—p 685
Varicose Veins Evaluation of Injection Treatment W M Kunkel Harrisburg—p 687
Patch Test in Determination of Arsphenamine Sensitization H Beer Philadelphia—p 690
Lower Third Forearm and Leg Fractures F W Heyer Nanticoke—p 695
Urinary Hemorrhage Symptom Not a Disease with Particular Reference to Importance of Early Diagnosis of Bladder Tumors E Hess Erie—p 698
Diabetes and Pregnancy Survey of 665 Cases D W Kramer Philadelphia—p 702
Pediatric Therapeutics H H Perlman Philadelphia—p 707

Public Health Reports, Washington, D C

51: 897 946 (July 10) 1936

- History and Frequency of Typhoid Fever Immunizations and Cases in 9 000 Families Based on Nation Wide Periodic Canvasses 1928 1931 S D Collins—p 897
Postmortem Findings in Fatalities Due to Use of Arsphenamine Group Review of Forty Four Autopsies S S Cook—p 927

Southwestern Medicine, Phoenix, Ariz

20: 247 286 (July) 1936

- Our Ethics President's Address M B Culpepper Carlsbad N M—p 247
Problems of Crying Infant J R Lemmon Amarillo Texas—p 248
Pathology of Peptic Ulcer W W Waite El Paso Texas—p 250
Filtrate Treatment of Acute Gonorrhea Case Reports W R Jamieson El Paso Texas—p 251
*Acute Gastro-Intestinal Allergy Mimic of Surgical Abdomen L O Dutton El Paso, Texas—p 252
Primary Infection Allergy and Reinfection in Tuberculosis of Children B P Storts Tucson, Ariz—p 255
Surgical Treatment of Pulmonary Tuberculosis C A Thomas and S C Davis Tucson Ariz—p 257
Diagnosis of Early Tuberculosis V S Randolph Phoenix Ariz—p 260
Suggested Improvements in Thoracoplasty W Smith Phoenix Ariz—p 263
Sheep Cell Agglutination in Diagnosis of Infectious Mononucleosis L B Baldwin Tucson Ariz—p 266
Surgical Management of Duodenal Ulcer J W Hendrick, Amarillo, Texas—p 269
Medical Annals of Arizona Health Among the Navajos S J Tillim, Amityville N Y—p 273
Public Health Notes J R Earp Santa Fe N M—p 276

Acute Gastro-Intestinal Allergy—Dutton thinks that failure to consider allergy in differential diagnosis is particularly common in the field of abdominal surgery. In studies that he conducted in order to determine how innocent appearing appendices can cause symptoms sufficiently grave to bring patients to the operating table, he detected two factors, which he at first did not appreciate. They were edema and eosinophilic infiltration. However, the significance of eosinophilia in allergic reactions in other tissues became established about this time.

Dr. Robert H. H. H. H.

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The author studied this field, but it became at once apparent that allergy alone would not explain all the facts observed. Many appendixes with an eosinophilic infiltration also presented definite evidence of infection. When the histories of these patients were studied, the conception of the interrelationship of allergy and infection agreed. It is the author's present belief that either infection or an allergic reaction may imitate symptoms referable to the appendix or other tissues and that the allergic reaction is more frequently the first. It is also his conviction that many appendixes are removed before infection develops. He believes that proper attention to the allergic phase might bring relief to many patients without operations. Many patients are not relieved by surgery. He lists some of the symptoms that have been proved to be definitely caused by allergic reactions to foods: canker sore, coated tongue, heavy breath, distention, belching, epigastric heaviness, sour stomach, burning, pyrosis, nausea, vomiting, diarrhea, mucous colitis, constipation, "gas in the bowels," pruritus ani, pain and soreness in the epigastrium, colonic soreness and the ulcer type of pain. General symptoms are toxicity, weakness, irritability, nervousness, mental dulness and depression, general aching, fever and so on. From this list it is apparent that certain abdominal symptoms might easily be interpreted as acute or chronic appendicitis, ulcer, cholecystitis, cholelithiasis, renal colic or even, in extreme cases, obstruction. Of 150 cases in which these symptoms had appeared, operations had been performed in forty-seven without permanent relief. A diagnosis depends on a careful history, including the allergic history, and a careful physical examination and blood study, weight being given to those slight variations caused by allergy. The treatment is symptomatic—epinephrine, ephedrine and opiates, fundamental—diet along allergic lines, and surgical intervention if necessary.

Tennessee State Medical Assn. Journal, Nashville

29: 253-294 (July) 1936

- Afebrile Exhaustive Psychosis Following Sickness. J. C. Hill, Knoxville—p. 253
 Practical Suggestions Concerning Orthopedic Treatment of Concomitant Squint. Lillian H. Tepper and R. O. Ryckner, Memphis—p. 258
 Congenital Atresia of Vagina. W. B. Barton, Briceville—p. 267
 Edema. J. B. Youmans, Nashville—p. 270
 Bronchial Asthma. W. C. Chaney, Memphis—p. 276
 Catheters. J. C. Pennington and E. C. Lowry, Nashville—p. 280

Texas State Journal of Medicine, Fort Worth

32: 199-258 (July) 1936

- Shall Medicine Be Socialized? H. R. Dudgeon, Waco—p. 205
 Prevention and Treatment of Scarlet Fever. J. E. Dunlap, Dallas—p. 208
 Prevention and Treatment of Measles. R. L. Moore, Dallas—p. 212
 Prevention and Treatment of Poliomyelitis. A. Résumé, P. E. Lucke, Dallas—p. 216
 Prevention and Treatment of Whooping Cough. G. B. McFarland, Dallas—p. 219
 Treatment of Enlarged Prostate Gland by Modern Methods. C. H. Mayo, Rochester, Minn.—p. 221
 Injection Treatment of Hernia. P. Riddle, Dallas—p. 226
 Nonspecific Granuloma of Gastrointestinal Tract. C. B. Sanders, Dallas—p. 230
 Urinary Calculi. G. J. Thompson, Rochester, Minn.—p. 234
 Radiation Therapy of Lobar Pneumonia. E. V. Powell, Temple—p. 237

Radiation Therapy of Lobar Pneumonia—Powell reports a series of forty-seven cases of lobar pneumonia in which, in addition to the other usual methods of treatment, roentgen therapy has been given. In this series only one patient died, whereas of seventy-six patients admitted immediately preceding and during the early part of this series who received in general the same treatment except that they were not irradiated, twenty-two died. Ten of the case histories are abstracted to illustrate individual reactions. Perhaps the most impressive thing in observing the patient is the marked relief of discomfort and the promptness with which a number of the patients developed crises. Treatment of bronchopneumonia is discussed very briefly. Conclusions are hardly warranted until a larger number of cases have been observed, however, the author thinks that a mortality of less than 25 per cent in lobar pneumonia and only 14 per cent in all types of pneumonia in which roentgen therapy was administered during the past forty months warrants continued use of the method unless some practical contraindication can be demonstrated.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 1285-1332 (June 27) 1936

- *Psychologic Factors in Asthma. R. D. Gillespie—p. 1285
 Lister's Straight Bougies in Treatment of Urethral Stricture. G. H. Edington—p. 1289
 Age Incidence and Sex Incidence of Milk Borne Epidemics. R. M. F. Picken—p. 1291
 Nasal Obstruction in the New Born. A. Moncrieff—p. 1295
 Hemochromatosis. Report on Three Cases. R. M. M. Lyon—p. 1297
 Drainage of Maxillary Sinus. New Technique. A. Miller—p. 1299

Psychologic Factors in Asthma—Gillespie believes that asthma furnishes a striking text of what needs to be emphasized in the education of medical students: that the body and the mind are one, or at least that their interaction is so close that no examination of a patient should neglect some consideration of what is going on in his mind. There is evidence that a stock in which asthma occurs is often also one in which there is a high incidence of psychoneurotic manifestations as if the asthma and the psychoneurotic constitution were closely allied. The function of breathing is very much subject to emotional influences in everybody. Numerous studies of respiration curves have demonstrated objectively the close relationship between emotional stimuli, or states of mind, and the respiratory function. The physiologic mechanism of asthmatic attacks seems to involve among other things a disturbance in what is usually called the vagosympathetic "balance," which is very much influenced by emotional states. Every emotion tends to be propagated like a wave of physiologic disturbance through the vagal and sympathetic system to the viscera. If there is already existing some disturbance of the vagosympathetic, clearly the emotional disturbance will have unusual effects, and asthma may be one of them. Psychologic stimuli can be equipotent with physical ones in producing signs and symptoms of physical disease. An idea may become the effective stimulus which elicits the asthmatic response just as much as pollen or horsehair. Not only may psychologic factors in the shape of emotions or ideas elicit individual attacks, but they may act in continuing fashion to produce a state of tension which every now and then may reach explosion point and express itself in an asthmatic paroxysm. The choice of asthma as the special mode of expression of mental unrest, whether the latter takes a psychoneurotic form or not, depends (1) on constitution, accident, preexisting fear of lung disease, preexisting disease of the lungs, a conception of breathlessness or an imitation of asthmatic attacks which the patient has witnessed, or something akin to them. This can apparently be a factor in determining the expression of the psychoneurosis in this particular way. The most obvious type of relationship between asthma and psychologic conditions is the frequency with which asthmatic patients exhibit what would be called a neurotic type of personality long before an asthmatic attack began.

Edinburgh Medical Journal

43: 349-416 (June) 1936

- Clinical Recollections and Reflections. III. Pediatric Surgery in General Practice. J. Fraser—p. 349
 *Treatment of Disseminated Sclerosis as Deficiency Disease. Study of Fifty Cases. A. Goodall and J. K. Slater—p. 368
 Intestinal Obstruction. Results of Recent Experiment Applied to Clinical Practice. I. Aird—p. 375
 Role of Luteal Hormone in Maintenance of Gestation. J. M. Robson—p. 395
 Investigation into Sterility of Droitwich Brine and Its Bactericidal Action. F. I. Dawson and H. B. Salt—p. 402

Treatment of Disseminated Sclerosis as Deficiency Disease—In treating fifty cases of disseminated sclerosis, Goodall and Slater advised half a pound of liver two or three times a week and prescribed in addition a diet of eggs, milk, fresh vegetables and fruit. The cereals were greatly restricted or cut out altogether. Potatoes and tomatoes are efficient substitutes. No other restriction of diet was made. In other directions, patients are encouraged to carry on their ordinary avocation as far as possible. None of the advanced cases in the series had reached the stage of contractures and bed sores. A feature of most cases is the early change in the

degree or rate of nystagmus, with its frequent entire disappearance. There has been only one relapse in a patient who has begun to improve and has kept to the diet. Owing to the different classes of case and the differences in observation period, no general statement of numbers improved or worse is made, but the nine patients with disseminated sclerosis of a duration less than one year are at work and six of them have been observed from two to five years. Of the nine with a duration of from one to two years, six are known to be working and all had improved when last seen.

Journal of Hygiene, London

36: 129-268 (June) 1936

- *Nasal Diphtheria Carriers. G. de M. Rudolf and W. R. Ashby—p. 129
Incidence and Clinical Correlation of Types of *Corynebacterium Diphtheriae* at Romford, Essex. Survey of 400 Cases. R. W. Tannahill—p. 140
Further Analysis of Types of *Corynebacterium Diphtheriae* Common to Glasgow Area. H. S. Carter—p. 147
Naturally Acquired Tuberculosis in Various Animals. Some Unusual Cases. A. S. Griffith—p. 156
Statistical Examination of Significance and Comparative Value of Milk Agar for Raw and Pasteurized Milk. H. Barkworth—p. 169
Influence of Raw and Sterilized Milk on Growth and Reproduction in Rats. Hilda Alice Channon and H. J. Channon—p. 173
Studies on Endemic and Experimental Goiter. C. E. Hercus and H. D. Purves—p. 182
Further Investigations on Nature of Ultramicroscopic Viruses and Their Cultivation. F. W. Twort—p. 204
*Study of Incidence of Cancer of Lung and Larynx. A. M. Kennaway and E. L. Kennaway—p. 236

Nasal Diphtheria Carriers.—Rudolf and Ashby studied sixty-two adult male carriers of morphologic *Bacillus diphtheriae* occurring in an institution. No cases of clinical diphtheria developed, although tests demonstrated that many of the cultures were virulent to guinea-pigs. Others were avirulent. Nasal swabs were collected at irregular intervals and were continued until three successive negative specimens had been obtained from each patient. The patients were isolated and treated with gargles of physiologic solution of sodium chloride and the sniffing of solution of sodium chloride up the nose three times a day. The investigation is based on the hypothesis of a constant probability of obtaining a positive swab under these conditions of treatment. With this treatment the majority of the patients were carriers for periods of less than nine days. Two successive negative swabs were followed by positive results in twenty-two cases. In order to recognize 99 per cent of the carriers in a population receiving treatment with physiologic solution of sodium chloride, five swabs are required from each person examined.

Incidence of Cancer of Lung and Larynx.—The Kennaways examined the 18,280 death certificates for cancer of the lung and of the larynx in males from England and Wales for the years 1921 to 1932 inclusive. Necropsies have been made in about 28 per cent of the cases of cancer of the lung and 9 per cent of the cases of cancer of the larynx. The agricultural and coal mining industries show a low incidence of cancer of the lung and of the larynx. The factors that lead to silicosis appear not to be very active in producing cancer of the lung or larynx, but in metal grinders the incidence of cancer of the lung is two and one fourth times that in the general population. A group of open air occupations in which there is exposure to the dust of roads, have rather high ratios for cancer of the lung and of the larynx, with the exception that motor drivers have a normal liability to cancer of the larynx. No cases of cancer of the lung in asbestos workers have been found among the certificates considered. Workers exposed to coal gas and tar, and those engaged in the preparation and sale of tobacco, tend to show an increased prevalence of cancer of the lung. Occupations concerned with the supply of alcohol have a high incidence of cancer of the larynx. The greater incidence of cancer of the lung in men than in women is discussed. The recent rate of increase of cancer of the lung in men is found to be not much greater than that in women, when these increases are reckoned in percentages. The increase in recorded cases of cancer of the lung may be due to an actual increase, improvement in diagnosis, fashion in diagnosis or any combination of these factors. The number of deaths attributed to cancer of the prostate appears to have reached a steady level. No special occupations have been found to which the increase

in the total of cases of cancer of the lung can be attributed, rural workers show an increase which is not much less than that in the general population. No evidence has been found that tarring of roads has affected the incidence of cancer of the lung in the general population. Such data as are available suggest that coal tar in the atmosphere, whether derived from roads, domestic chimneys or any other source, does not readily give rise to cancer of the lung. Cotton-mule spinners show an especially small liability to cancer of the lung, although they inhale air sprayed with an oil which produces cancer of the skin. Improvements in diagnosis must have led to the detection of a larger proportion of the existing cases of cancer of the lung.

Journal of Physiology, London

87: 1-96 (June 10) 1936

- Responses of Normal and Hypophysectomized Rabbits to Adrenalin. C. Bachman and G. Toby—p. 1
Certain Effects of Pulmonary Gas Embolism. I. Singh—p. 11
Breakdown of Color Match with High Intensities of Adaptation. W. D. Wright—p. 23
Duodenum and Automatic Control of Gastric Acidity. W. J. Griffiths—p. 34
*Acclimatization of Human Subject to Atmospheres Containing Low Concentrations of Carbon Monoxide. Esther M. Killick—p. 41
Oxygen Consumption and Carbohydrate Metabolism of Retractor Muscle of Foot of *Mytilus Edulis*. Deborah Glaister and Margaret Kerly—p. 56
Excitability of Sensory Fibers in Vagus Nerve. J. Y. Bogue and H. Rosenberg—p. 67
Some Observations on Genesis of Somatic Movements in Sheep Embryos. J. Barcroft, D. H. Barron and W. F. Windle—p. 73
Chemical Transmitter of Motor Impulses to Stomach. J. S. Harrison and B. A. McSwiney—p. 79
Further Studies on Reactions of Abdominal Vena Cava. K. J. Franklin and A. D. McLachlin—p. 87

Acclimatization to Atmospheres with Low Carbon Monoxide.—Killick attempted to produce acclimatization in the human subject by repeated exposure to atmospheres containing low concentrations of carbon monoxide and by repeated inhalations of carbon monoxide from a closed respiratory circuit. Clear evidence of a considerable degree of acclimatization was obtained in that symptoms of poisoning lessened during successive exposures to the same concentration of carbon monoxide and the relation between the concentration of carbon monoxide breathed and the degree of saturation of the blood changed with repeated exposures. Acclimatization was not accompanied by changes in the red cell count or in the hemoglobin content of the blood. The data obtained were insufficient to justify a statement as to changes in blood volume. The partition constant between oxygen and carbon monoxide of whole blood outside the body remained unaltered as acclimatization developed. The state of acclimatization produced experimentally lasted from thirteen to eighteen months, diminishing gradually in degree until the subject returned to the nonacclimatized state after eighteen months. The two possible types of explanation for the phenomena of acclimatization are (1) a selective activity of the alveolar membrane producing either a secretion of oxygen from the alveoli into the blood or an excretion of carbon monoxide from the blood into the alveoli, (2) removal of carbon monoxide from the blood by oxidative or other processes in the tissues.

Journal of State Medicine, London

44: 373-434 (July) 1936

- The Claimant Call for Changes in Medical Education. D. C. Watson—p. 373
The Honsing Act 1935. G. E. Oates—p. 384
Nutrition as Factor in Pregnancy and Childbirth. M. I. Balfour—p. 391
The Prognosis of Early Pulmonary Tuberculosis. J. B. Alexander—p. 402
The Prognosis of Pulmonary Tuberculosis, with Especial Reference to Collapse Therapy. G. S. Todd—p. 410
Public Health Administration in Bermondsey (Past and Present). D. M. Connan—p. 414

Journal of Tropical Medicine and Hygiene, London

39: 137-148 (June 15) 1936

- Some Observations on *Opuntia* Used as a Larvicide. F. G. Cawston—p. 137
Hyrax and Dikdiks (*Rhynchotragus*) from Areas Inhabited by Tsetse Flies. Note. J. F. Corson—p. 138

Lancet, London

1: 1337-1390 (June 13) 1936

- Enlargement of the Heart. J Parkinson—p 1337
 Treatment of Anorectal Wounds. W B Gabriel—p 1345
 The Initial State Principle and Its Importance in Physiology and Pathology. S Leites—p 1348
 The Problem of Repair and Regeneration of Semilunar Cartilages. A G T Fisher—p 1351
 Histidine in Treatment of Gastric and Duodenal Ulcer. R H Gardiner—p 1352
 *Weight of Thyroid Gland and Atherosclerosis. N P Dungal—p 1354

Weight of Thyroid Gland and Atherosclerosis—Although his material is not extensive, it is evident to Dungal that the Icelandic population has an unusually small thyroid and an unusually low rate of atherosclerosis of the aorta. Atherosclerosis of other arteries is also relatively rare. The question arises whether there is a causative relationship between the small thyroid (14.9 Gm for males and 11.3 Gm for females) and the low rate of sclerosis. Experimentally atherosclerosis can be produced, in rabbits, by injection of epinephrine (Josue) and by feeding viosterol. Liebig administered a diiodide of castor oil stearate having an iodine content of 116 per cent to rabbits during the feeding with cholesterol and thereby prevented or diminished atheromatosis in the aorta and the liver. Binet has shown that potassium iodide and albumin iodine have the same effect. Murata has shown that atheromatosis may be prevented in rabbits by feeding a thyroid substance. On the other hand, Pusch has shown that arteriosclerosis is four times as frequent with goiters as with nongoitrous glands. Probably the explanation for these conditions in Iceland is the abundance of iodine in the food, particularly the fish, which is consumed in relatively great amounts, but partly also by the iodine in air and soil, which probably is great. The Icelandic people range high in physical and mental powers. The question arises whether the normal weight of the thyroid is not lower than that generally accepted, and whether a low degree of iodine deficiency is not more widespread than it is thought to be.

Medical Journal of Australia, Sydney

1: 771-802 (June 6) 1936

- Obstetrical Obstacles. H S Waters—p 771
 Evolutionary Factor in Parturition. Law of Split Pelvis. C D Gilhes.—p 778
 *O Agglutinins for *Bacillus Proteus* XK in Endemic Typhus. R J Mathew—p 782
 Surgery at Sea in the Eighties. R S Skirving—p 783
 Preliminary Treatment in Relation to Therapeutic Irradiation of Mouse Tumors. W Moppett—p 785

O Agglutinins for *Bacillus Proteus* XK—Mathew says that, in recent papers on the endemic typhus of the eastern coastal areas of North Queensland by Langan and Mathew and Unwin, positive agglutination reactions with the Kingsbury strain of *Bacillus proteus* X were quoted in confirmation of the diagnosis. In the earlier tests recorded in these papers only living suspensions of *Bacillus proteus* X19 and *Bacillus proteus* X Kingsbury were used, later check tests were made with heated suspensions. The author succeeded in checking the tests further with suspensions recommended by Felix and in demonstrating that the agglutinations in these and subsequent cases are of the O type. He lists the suspensions used in the tests and describes the preparation of the suspensions, the methods of testing and the results of the agglutination tests. In summarizing his observations he states that O agglutinins for the Kingsbury strain of *Bacillus proteus* X are shown to be present in high titer in cases of one of the classes of endemic typhus in the eastern coastal area of North Queensland. It is also shown that both O and H agglutinins for the X19, X2 and XL strains of *Bacillus proteus* are not present in significant amounts.

Practitioner, London

137: 1128 (July) 1936

- Endocrines and Mental Disorders. W Langdon Brown—p 1
 Classification and Etiology of Neuroses. H Crichton Miller—p 14
 Early Symptoms of Mental Disorders. R D Gillespie—p 25
 Physical Factor in Mental Disorder. J G P Phillips—p 36
 Depression. W R Reynell—p 49
 Dementia Praecox. D F Rambaut—p 70
 Drug Addiction and Alcoholism. J Purves Stewart—p 79
 Sexual Perversions. J R Rees—p 98
 General Practice. No I Preparation for Practice. A H Douthwaite—p 108

Archives des Maladies de l'Appareil Digestif, Paris

26: 625-768 (June) 1936

- Chronic Paralytic Duodenal Stasis. J Ducuing and P Fabre—p 625
 Icterus Following Mercurial Medications. M Vauthey—p 657
 Intestinal Parasitism in Healthy Children. F Fernandez—p 665
 Sugar Days in Treatment of Liver and Biliary Tract Disorders. L B Berlin, W Z Kondachewitch, S T Granat, D I Pawloff and E I Altschuler—p 674
 *Shock Produced by Homogenous and Heterogenous Blood as Therapeutic Method in Treatment of Enterocolitis. S Ryss, A Strokova and V Vedensky—p 685
 Place of Mucus in Gastric Pathology. J M González Galvan—p 691
 Treatment of Gastroduodenal Ulcer and Simple Hyperchlorhydria by Injections of Pepsin. S Livierato and A Simoneto—p 706
 Correlations Between Secretion of Gastric and Pancreatic Glands. I M Lupetz—p 717
 Hepatitis and Gastritis. L S Schwartz and M A Krinsky—p 731

Blood Transfusion in Treatment of Colitis—Ryss and his co-workers report forty cases of enterocolitis and colitis in which treatment was administered by means of transfusion of blood. Nineteen of the patients were treated with homogenous blood, nineteen by heterogenous and ten by combinations of the two. As heterogenous blood the citrated arterial blood of the dog was introduced intravenously in doses of 5, 10 and 12 cc at intervals of from eight to ten days. Three injections usually were sufficient for obtaining the desired effect. As homogenous blood from 250 to 300 cc. of fresh citrated or preserved blood of the same grouping was introduced at intervals of from eight to ten days. The patients, in good general health up to the age of 45 and with an approximately normal blood picture, could be treated with the heterogenous blood. In all, 126 heterogenous and fifty-nine homogenous transfusions were given. The heterogenous transfusions produced more frequent and more intense reactions, the local manifestations lasting from a few hours to several days. There was some reaction in 71.4 per cent of those receiving heterogenous and in 49.7 per cent of those receiving homogenous blood. From the clinical standpoint a marked improvement of the subjective phenomena associated with rapid increase in weight, increased erythropoiesis and improved susceptibility to specific therapy were noted. Improvements from homogenous transfusions occurred in 94.8 per cent and in the heterogenous transfusions in 90.9 per cent. When the combined method was used some improvement was noted in all patients. As a result of these studies the authors believe that depending on the status of the patient one or both of these methods of transfusion is an important therapeutic measure in the treatment of diseases of this group.

Bull. et Mem. de la Soc. Méd. des Hôpitaux de Paris

52: 983-1030 (June 22) 1936

- Spontaneous and Benign Hemopneumothorax. J Troisier, M Barlet and Dugas—p 984
 Acute Aleukemic Leukosis with Pseudorheumatismal Symptomatology. R Debré, M Lamy, P Soulié and P Gabriel—p 991
 Kala Azar Observed at Several Years Interval in Same Family. Three Cases. P Giraud and Caillol—p 997
 Renal Intolerance of Lipoid Nephrosis Type Five Weeks After Series of Bismuth Salt. A Tranché, P Klotz and A Negreanu—p 1000
 Intoxication by Aniline with Intense Cyanosis. M Loeper, P Soulié and Marchon—p 1003
 *Diagnosis of Hodgkin's Disease by Lymph Node Puncture. P Emile, Weill, P Isch Wall and S Perles—p 1006
 Cerebral Angiospasm. Case. A Cernian and A Morvan—p 1010
 Diabetes and Acute Articular Rheumatism. R Waitz and R Pernot—p 1013
 Parkinsonian Syndrome of Syphilitic Nature. C I Urechia and Mme Retezeanu—p 1018

Diagnosis of Hodgkin's Disease—Because of the frequent difficulty encountered in performing biopsies in the early stages of Hodgkin's disease, Emile-Weill and his associates decided to attempt lymph node puncture. They were able to verify their observations of the accuracy of this method on twenty patients controlled by biopsy. In each case the results of the puncture coincided accurately with that of the adenectomy. The principal diagnostic criteria observed in the slides made from these punctures were endothelial elements and authentic giant cells of Sternberg. They believe that the latter elements are pathognomonic of malignant lymphogranulomatosis and that a method of lymph node puncture can be satisfactorily substituted for the more arduous and less practical biopsy.

Journal de Médecine de Lyon

17 427 454 (June 20) 1936

Chemical Influences in Neurology J Lepine—p 427
Reflex Traumatic Contractures and Paralysis by Irritation of Sympathetic J Froment—p 431
Attempted Treatment of Mental States Called Dementia Praecox by Association of Chrysotherapy and Opotherapy with Sulfur Pyrethotherapy A Brunerie and R Coche—p 445

Reflex Traumatic Contractures and Paralysis—Froment states that, following traumatism to the limbs, paralysis paresis and physiopathic contractures are frequently observed. These lesions are usually not, he believes, of a hysterical or psychopathic nature. They often develop above the traumatized area and are frequently accompanied by undeniable evidence of physiologic disturbances such as disorders of vasomotor and thermal nature, sweat gland alterations, osteoporosis, hypotonia and lowered or increased electrical excitability. The mechanism of such syndromes, which were thoroughly studied during the war, has served as the subject for interminable controversy. Thanks to experimental physiology it is becoming recognized that these symptoms are the result of a true pathologic reflex involving the sympathetic system. After studying the vasomotor reflexes of the injured limb and of the symmetrical limb of the opposite side and their reactions to diverse thermic factors, as well as the comparative study of the tendon reflexes and motor reactions in the course of chloroform narcosis, he has come to the conclusion that these are frankly disorders of the sympathetic and of the medullary centers of the injured limb. It is certainly not safe to forget the possibility of association with hysterical reactions which may involve the same region, but existence of traumatic physiopathologic syndromes is also incontestable. These lesions are, however, singularly resistant to treatment while remaining for long periods susceptible to exacerbation.

Marseille Medical

72 733 780 (Dec 15) 1935

*Acute Generalized Gonococcal Peritonitis Excluding Ruptures of Pyosalpinx R Leclère—p 733

Gonococcal Peritonitis—Leclère believes that acute generalized gonococcal peritonitis without rupture of the tubes forms a definite clinical picture. The gonococcus which localizes by predilection in the pelvis can invade the general peritoneum and thus give the symptomatology of generalized peritonitis. The lesions produced are the same as those which one finds in acute inflammations of the peritoneum of other origin. The diagnosis of this form of peritonitis is difficult and often surgical intervention alone after a bacteriologic examination of the pus can yield a definite diagnosis. The fear of allowing a peritonitis of other origin to pass without operation calls for surgical treatment. In the majority of cases simple drainage without salpingectomy is sufficient to cause the cure without interfering with the genital future of those operated on. Sometimes the abdomen can be closed without drainage, especially if bacteriologic examination made at the time reveals the presence of gonococci in the pus. It is only in exceptional cases that it is necessary to perform salpingectomy and subtotal hysterectomy is definitely contraindicated. Total hysterectomy, furthermore, is wholly unindicated.

Presse Medicale, Paris

44 1025 1048 (June 24) 1936

Nervous Syndromes in Cancer of Esophagus M Loeper Mille Riom and P Perreau—p 1025
Action of Mineral Waters in Treatment of Intestinal Disorders E Chabrol R Charonnat and J Cottet—p 1028
Massive Right Sided Diaphragmatic Eventration C Roubier and H Boucher—p 1030
Antituberculous Prophylaxis E Lesné and G Dreyfus-Sée—p 1033
Acute Streptococcal Septicemias of Gingivodental Origin J Fleury and M Mimeré—p 1035
Animal Carbon by Intravenous Route R Démarez—p 1037

Nervous Syndromes in Esophageal Cancer—According to Loeper and his co workers, a review of the anatomic relations of various portions of the esophagus with the adjacent nerve elements reveals the fact that depending on the situation of the cancer numerous nerve pathways can be affected. With the preliminary knowledge that cancer of the esophagus involves the cervical region in 18 per cent, the bronchial region in 36 per

cent and the diaphragmatic region in from 46 to 48 per cent, it becomes clear that nervous complications can be diverse, depending on the localization. Excessive salivation in the course of cancer of the esophagus must be considered a sign of involvement of the nervous system. When this symptom is analyzed more closely, it becomes in reality a symptom of irritation of the vagus. The second important nervous phenomenon is pain. Pain may be preceded by disorders of swallowing or may be localized or carried elsewhere by nerves that are involved. Disorders of phonation, especially dysphonia and aphonia, are frequently seen and seem to be due to involvement of the recurrent nerve especially the left. Dyspnea is not rare and can take on a suffocating character. Anginal symptoms sometimes occur. Special study of the nerve symptoms which may arise from esophageal cancer therefore reveals the fact that the complications may be numerous and widespread because of the close anatomic relations of the esophagus to numerous nerve trunks.

Death Following Injection of Animal Carbon.—Demarez takes issue with the opinion which has been expressed that animal carbon is more effective the more closely it approaches the colloidal form. In using animal carbon in which the particles were present in a 2 per cent suspension and were for the most part less than 5 microns in diameter, he made an injection in a woman aged 34 for postpartum sepsis. Death occurred suddenly. Examination revealed that true capillary embolism had occurred and was probably the immediate cause of death. On study of the various carbon preparations, he found that those of small diameter showed a tendency to flocculate and that in all probability this flocculation in the arterioles was the cause of the accident. It is to be concluded therefore that, while the author still believes in the effectiveness of animal carbon, a suspension should not be used in which the particles are less than 5 microns in diameter, but that above this diameter the procedure is entirely harmless.

Sang, Paris

10 537 660 (No 5) 1936

Glycemic Equilibrium and Lacunar Storage of Dextrose in Depancreatized Dog A Baisset L Bugnard J Lansac and L C Soula—p 537
*Technic of Puncture of Bone Marrow During Life G Karavanoff—p 562
Can a Person Change His Iso-Agglutination Group? P Moureaux—p 571
*Effects of Injection of Antiplatelet Serum in Three Hemophilic Subjects and One Normal Person L M Tocantins—p 582
Place of Lung in Immunization of Rabbit Against Sheep's Blood Cells P de Boissezon—p 592
Progress of Hematology in Last Ten Years J Itelson and M Kocen—p 602

Bone Marrow Biopsies—After discussing the various technics previously employed in bone marrow biopsies Karavanoff describes the method which he used. The suprasternal soft tissues instead of being dissected are pierced by means of a special small trocar. Through this the perforating trepan is introduced. After the sternum is thus perforated, the marrow can be removed by means of a small curet or aspirated with a needle. The usual antiseptic methods are employed. Local anesthesia is given as far as the periosteum by means of procaine hydrochloride and epinephrine infiltration, and the puncture is made after anesthesia is complete. As soon as the spongy portion is reached a definite decrease in resistance is noted in the perforation. The trepan can then be removed and a small curet introduced through the perforated canal. After removal of marrow the tube of the trocar is withdrawn and tamponing is performed to arrest hemorrhage. A small piece of collodion soaked cotton can be placed on the skin over the puncture mark. They believe that this method has some advantages, especially in that it is not dangerous. It is simple and safe in all cases and allows a sufficient quantity of marrow to be removed. The possibility of infection is reduced to a minimum and the ease of obtaining a second specimen is considerably increased. In view of the marked advantages of obtaining such material in a large number of diseases, the authors think that this simple method is a considerable improvement.

Antiplatelet Serum in Hemophilic and Normal Subjects—Because of the part played by platelets in blood coagulation, Tocantins attempted the injection of antiplatelet serum

into three hemophilic subjects and one normal person. The general plan consisted in studying the numerical changes of the erythrocytes and platelets and the coagulation time and the bleeding time at various intervals after the injection of serum. No other treatment was given to the patients during the period of observation. The withdrawal of blood was made at least two and a half hours after a meal. The platelet counts were performed according to the Rees and Ecker method. The normal antiplatelet serum and the hemophilic antiplatelet serum were prepared in rabbits by five injections of platelets isolated from 30 cc. of the blood of normal and of hemophilic persons. The term fresh serum was used for that obtained from normal man two or three hours after withdrawal. The serums were always administered by the intradermal route. As a result of their observations on the three hemophilic and one normal persons, they found that there was an increase practically to normal of the coagulability of the hemophilic blood but that it did not last long, perhaps because the products of the destruction of the platelets had disappeared rapidly from the circulation or had been neutralized. The phase of normal coagulability apparently began between three and five hours after the injection and lasted for about twelve to twenty-four hours. The phase of normal coagulation was not accompanied by a rapid or immediate arrest of hemorrhage in two patients who received the serum. The local application of the serum was without appreciable effect. The direct addition of normal antiplatelet serum and hemophilic antiplatelet serum to hemophilic blood in vitro was followed by a decrease in the coagulation time of about 84 per cent while when normal antiplatelet serum was mixed with normal blood there was a reduction of 18.5 per cent in the coagulation time. It is difficult to judge of the effectiveness of the serum as a therapeutic agent, since the spontaneous cessation of hemorrhage is a phenomenon often observed in these patients.

Clinica Medica Italiana, Milan

67 435 506 (July) 1936

Venous Blood Pressure with Arm in Horizontal and Vertical Positions in Several Pathologic Conditions. M. Bassi—p. 437

*Metabolism of Carbohydrates in Splenomegaly. A. Romeo—p. 468

Undulant Fever with Respiratory Symptoms. Function of Liver and Biochemistry of Blood. T. Galli—p. 477

*Behavior of Glycemia Following Administration of Derivatives of Human Bile. F. Molino and V. Patrono—p. 493

Action of Lung on Oxalic Acid in Blood. A. Chierici—p. 501

Metabolism of Carbohydrates in Splenomegaly.—Romeo made determinations of glycemia in fourteen persons with chronic malarial splenomegaly but without fever. The determinations were made before and after administration of 100 Gm. of dextrose by mouth. The author concludes by saying that chronic malarial splenomegaly is associated with hypoglycemia that does not change or slightly changes by administration of dextrose. The hypertrophic spleen has an action on the metabolism of carbohydrates, as proved by the presence of hypoglycemia and the lack of reaction or slight reaction of the glycemia curve after administration of dextrose to the patient which action is due to the presence in the blood of a hormone having glycolytic properties secreted by the spleen, but still unknown. An intravenous injection of 5 cc. of pure spleen extract given to normal persons with normal fasting glycemia caused a slight increase of glycemia in all cases.

Glycemia Following Administration of Bile Derivatives.—Molino and Patrono made determinations of glycemia before and after administration of certain derivatives of human bile in normal persons and in patients suffering from diabetes mellitus. Both normal persons and diabetic patients were placed in three groups: those who were given an intravenous injection of 10 cc. of a 20 per cent sodium dehydrocholate solution, those who were given 2 Gm. of dehydrocholic acid by mouth and those who were given a hypodermic injection of 4 cc. of a 2 per cent sodium cholate solution. The determinations were made on a fasting stomach. Glycemia increased slightly or did not change in persons of the first group and decreased or did not change in the persons of the second and third groups. It is not possible to know whether the changes of glycemia following the administration of bile derivatives are due to an action of the latter on the liver or on the pancreas.

Rassegna Internazionale di Clinica e Terapia, Naples

17 529 576 (June 30) 1936

*Posterior Tuberculous Sacral Para-Arthritis. D. Taddei—p. 531

Undulant Fever Apophyseal Arthritis. Case. P. Oretto—p. 538

Anterolateral Thoracoplasty by Mondaldi's Technique in Pulmonary Tuberculosis. F. Buonomo La Rosa—p. 544

Vomiting in Children. C. De Ritis—p. 549

Posterior Tuberculous Sacral Para-Arthritis.—Taddei calls tuberculous sacral para-arthritis the disease reported in the French literature with the name of partial or atypical forms of sacro-iliac tuberculous arthritis. The condition is neither an atypical nor an incomplete form of sacro-iliac arthritis, but a localization of tuberculosis at the epiphysis near the symphysis of the sacro-iliac joint. Both arthritis and para-arthritis of the sacro-iliac joint originate in the primary parasympathetic tuberculosis, but their clinical picture and evolution are different. In arthritis the joint is involved and there is no abscess formation. In para-arthritis the joint is spared in the process and an abscess is formed. Tuberculous sacral para-arthritis develops in two periods, one of intense pain of the type of rheumatic sciatica, which does not improve by rest of the patient, and one of amelioration of the pain and formation of a parasympathetic abscess. There is only one internal painful spot above the fistula which persists all through the disease. Of most diagnostic value, however, is the presence of rigidity of the vertebral lumbar segment to flexion but not to extension of the column. Rigidity of the vertebral segment is characteristic of tuberculous sacral para-arthritis and is of value in the differential diagnosis with Pott's disease, tuberculous sacro-iliac arthritis and other vertebral and sacro-iliac pathologic conditions in which it does not exist. The treatment of tuberculous sacral para-arthritis depends on the evolution, either anterior or posterior, of the abscess. In some cases the abscess develops anteriorly and opens spontaneously in the pelvis or the internal organs. In these cases the common treatment of tuberculous abscess gives satisfactory results. In other cases the abscess develops posteriorly into the gluteal insertions, through which it spontaneously opens to the exterior, leaving a fistula. Para-arthritis of posterior development is grave. The treatment is surgical and consists in removal of the cutaneous ulcer, the wall, the abscess and the fistulous tract and in scraping or typical resection of the tuberculous focus of the bone. A case of posterior development is reported in a patient, aged 19, suffering from pulmonary and lymph node tuberculosis.

Prensa Médica Argentina, Buenos Aires

23 1677 1730 (July 15) 1936

*Magnesium Sulfate in Crisis of Asthma. H. J. Rosello and J. C. Pla—p. 1677

Time of Ventricular Evacuation per Minute. Electrocardiographic Determination and Physiopathologic Significance. J. Duomarco—p. 1682

Heterotaxia and Thrombo-Angitis. A. Bergman and L. Dragosky—p. 1694

Primary Tuberculous Infiltration of Skin in Childhood. Skin as Port of Entry of Tuberculosis. A. A. Magalhães—p. 1700

Acute Hemorrhagic Edema in Infant. M. J. del Carril. I. Diaz Bobillo and J. Vidal—p. 1719

Magnesium Sulfate by Vein for Asthma.—Rosello and Pla state that the intravenous injection of a 10 per cent solution of magnesium sulfate, in doses of from 10 to 20 cc. each, produced an intense and immediate sedative effect in an asthmatic patient during a crisis which had failed to respond to epinephrine, ephedrine, solanaceous drugs, atropine and morphine. The action of magnesium sulfate, however, is transient and the injections have to be repeated in order to maintain the antispasmodic effect until the crisis disappears. The injections should be given slowly. The authors have not exceeded a 10 per cent solution. It is possible to inject calcium chloride immediately after the magnesium sulfate if an intense reaction develops. Magnesium sulfate because of its antispasmodic properties, gives satisfactory results in cases of cortical or reflex hyperexcitability of the central nervous system (eclampsia, tetanus, chorea, strychnine poisoning and certain sequelae of parkinsonism). Magnesium thiosulfate gives satisfactory results in certain conditions of shock (including asthma) and in other paroxysmal conditions. The authors cannot state as yet whether

magnesium sulfate, besides being an antispasmodic, may have regulating properties of the equilibrium of the humors, the blood plasma and other factors that may take a part in producing the crisis of asthma, a question that they promise to clarify in the near future by animal experiments

Semana Medica, Buenos Aires

43:73 144 (July 9) 1936 Partial Index

Colon Bacillosis in Pregnancy N Palacios Costa and A Peyloubet — p 73

Reciprocal Influence of Blood Bilirubin and Blood Urobilin Eliminated Through Bile M Royer and A Speroni — p 89

Syphilis by Contagion in Girl Aged 5 Case A Aurelio Fernández and L Iapalucci — p 91

Pseudobulbar Syndrome R Soto Romay — p 100

Spinal Anesthesia in Labor R L Gaviohi — p 119

Bilirubin and Urobilin—Royer and Speroni studied the reciprocal influence of blood bilirubin and blood urobilin when the elimination of the pigments through the bile was induced by the intravenous injection of either pigment. The influence was evaluated by the changes of the bilirubin-urobilin ratio in the canalicular bile, obtained by duodenal sounding in three cholecystomized persons. Following the intravenous injection of bilirubin, the bilirubin secretion increases in the bile. The urobilin secretion slightly increases, but the curves of both secretions are independent. The bilirubin-urobilin ratio shows great variations in a few minutes. Following the intravenous injection of urobilin in doses of 2 mg of urobilin for 5 Kg of body weight, the bilirubin secretion in the bile increases five times as much as it was before the injection while the urobilin secretion increases thirty two or forty-eight times as much. The bilirubin-urobilin ratio greatly decreases. The authors say that, although there is a reciprocal influence between blood bilirubin and urobilin in their elimination through the bile, the bilirubin-urobilin ratio varies in the same person and under the same conditions, according to the amount of either pigment in the blood.

Archiv für Gynäkologie, Berlin

162 1 204 (June 20) 1936 Partial Index

Experimental Investigations on Role of Uterus in Sexual Hormone System P Hauptstein and E Bühler — p 1

Mesenchymal Angioma of Placenta J Beaufays — p 14

Pregnancy After Treatment of Functional Disturbances of Gonads with Gonadal Hormones T Beckmann — p 21

*Intra Uterine Function of Fetal Lung and Liver B Szendi — p 27

Virulence of Bacteria in Sphere of Gynecology and Obstetrics T Koller — p 53

Fetal Lipoid and Fatty Acid Metabolism G Effkemann — p 148

Demonstration of Presence of Metabolically Active Substances from Ovarian Follicle A J Anselmino and F Hoffmann — p 176

Intra-Uterine Function of Fetal Lung and Liver—Szendi searched in human and rabbit embryos for the organs that influence the intra-uterine carbohydrate metabolism. He investigated the glycogen content of the organs of spontaneously and artificially aborted fetuses. He found that the lungs and the liver develop into glycogen organs. The glycogen content increases and decreases independently of the growth or weight of these organs, but a certain regularity is perceptible which is connected with the anatomic structure. This and the considerable accumulation of carbohydrates indicate that these organs with their great masses of glycogen take part in the regulation of the carbohydrate metabolism of the fetus. Lungs and liver act alternately on the fetal carbohydrate metabolism, for first it is done by the lungs (in human embryos between the second or third and the sixth or seventh months and in rabbits between the eighteenth and twenty-fifth days). During this time, the liver is active in the formation of blood. After that, however the liver gradually assumes a greater importance in the carbohydrate metabolism, for during this time lungs and liver are being prepared for their extra-uterine functions. The author concludes that, during the intra-uterine period the lung is not merely a developing organ, as was believed formerly, but takes part in the carbohydrate metabolism that is, it has a function which differs from its extra-uterine activity. He found also that heart and muscles have comparatively large quantities of glycogen and believes that the glycogen in the muscles is probably a secondary carbohydrate reserve. He

observed that, on the whole, the fetal organs contain more glycogen than do the organs during postnatal life and he assumes that they probably require it for their development, for the intensive increase in cells and for other functions as yet unknown.

Metabolically Active Substances from Ovarian Follicle—Anselmino and Hoffmann demonstrate that purified extracts from ovaries and from follicular juice which are free from corpus luteum hormone, produce in the animal experiment a number of characteristic metabolic effects. For instance, they observed after the administration of active extracts an increase in the basal metabolism, a heightening of the blood calcium level, an increased formation of ketone bodies in the blood and an intensified insulin blood sugar action. In contradistinction to this, the crystalline alpha follicle hormone, which is obtained from pregnancy urine and the dihydro-follicle hormone proved entirely inactive just as the extracts prepared in the same manner from liver and spleen are without metabolic action. From these observations the authors conclude that the estrogenic hormone, which is extracted from the urine and assayed according to the Allen Doisy test is not identical with the metabolically active components of the ovarian follicles. The extracts investigated by the authors exert their action (as regards basal metabolism and calcium content of the blood) by a stimulation of the secretory glands, for they are inactive after removal of the thyroid and the parathyroids. The exact action mechanism, however, is not understood as yet. After calling attention to the isomeres or related substances of the estrogenic hormone, which have been prepared by chemists from pregnancy urine, the authors state that they tested the metabolic action of two such substances and found that they lacked a metabolic action. They reach the conclusion that it is no longer permissible to regard the alpha follicle hormone and the dihydrofollicle hormone as the only active substances of the follicle. They point out that certain clinical observations, such as the unsatisfactory results obtained in menopausal disorders with the estrogenic substance extracted from the urine, corroborate their opinion. They advise that in the future more attention be given to the metabolically active substances of the ovary.

Jahrbuch für Kinderheilkunde, Berlin

147:1 64 (June) 1936

Clinical Studies on Behavior of Reticulocytes in Blood Diseases During Childhood W Heuberger — p 1

Adenosarcoma and Subacute Elimination Pyelography J R Dreyfus — p 12

Incontinence of the Feces in Girl Aged 9 with Congenital Syphilis W Mikulowski — p 23

Correlation of Cecal Appendix and Liver in Clinical Conditions in Children W Mikulowski — p 29

*Icterus Gravis with Eclampsia in Child During First Year of Life E Lohse — p 40

Icterus Gravis with Eclampsia in Child—Lohse reports the history of a boy, aged 11 months, the fifth child of apparently healthy parents. However, two of the other four children had died one at the age of 4½ months, as the result of intestinal catarrh, and one after three days with cerebral symptoms. The child under consideration had been subject to attacks of twitching and rigidity but allegedly had never had nutritional disturbances. The child had once been treated for catarrhal conjunctivitis and once for a mild bronchitis. The Wassermann reaction was negative twice. The present disorder began with fever three days before hospitalization and terminated fatally on the sixth day after admittance. The author gives a detailed description of the clinical and histologic aspects. In discussing the case he says that two processes apparently developed in the liver: a chronic disorder, namely, a diffuse proliferation of the connective tissue and of the bile ducts, and an acute process in the form of a fatty degeneration of the liver cells focal hemorrhages and necroses, and increase in cells without signs of organization. Since syphilis can be excluded, it must be assumed that the child had been subject to repeated intoxications probably of an alimentary nature. Their cumulative action produced chronic changes similar to those appearing in syphilis, but at first they did not result in insufficiency of the organ. A last acute intoxication led to complete failure of the hepatic function. This together with an acute disorder of the kidney was followed by the fatal outcome with severe cere-

bral symptoms. To be sure, it is surprising that the anamnesis does not indicate such disorders. The author suggests that mild toxic impairment may perhaps have been overlooked. With regard to the eclamptic symptoms, which developed on the last day, he says that cerebral symptoms are not unusual in the course of icterus gravis, in that they are a manifestation of a hepatic auto-intoxication. The character of the disorders (alimentary intoxication and eclampsia) in the two other children, who had died, suggests a predisposition in the children of this family.

Zeitschrift für Tuberkulose, Leipzig

75: 145-224 (June) 1936 Partial Index

- Roentgenologic Demonstration of Different Layers (Tomography) in Pulmonary Diagnosis J W Sopp—p 145
- Infectious Diseases and Tuberculosis H Starcke—p 158
- *Significance of Psychic Factors for Outbreak and Cure of Pulmonary Tuberculosis D Bargłowski—p 162
- *Serodiagnosis of Tuberculosis (Meimcke's Tuberculosis Reaction and Complement Fixation Reaction with Methyl Antigen of Nègre and Boquet) J Zeyland and E Piasecka Zeyland—p 171
- Relation Between Pulmonary Tuberculosis and Terminal Vessels in Human Skin G Sadowski—p 175

Psychic Factors in Pulmonary Tuberculosis—Bargłowski maintains that a detailed psychic anamnesis of patients with pulmonary tuberculosis reveals frequently that the outbreak of the disease was preceded by psychic conflicts. He reports the psychic anamneses of five patients which indicate that psychic conflicts and traumas are at least contributing factors in that they reduce the resistance of the organism and thus prepare a favorable field for the action of the tubercle bacilli. Since the psychic conflicts persist frequently after the outbreak of the disease and are likely to exert an unfavorable effect on the curative process, psychotherapy is advisable for such patients.

Serodiagnosis of Tuberculosis—Zeyland and Piasecka-Zeyland made 763 flocculation tests according to Meimcke's vault or curvature method. However they limit their discussion to the 479 cases in which the existence of tuberculosis was definitely established. In 148 cases they compared the results with those of the complement fixation test according to Calmette-Massol with the methyl antigen of Nègre and Boquet. The authors reach the conclusion that although its technique is simple, the Meimcke reaction is as reliable as the best complement fixation tests, and it is even superior to the complement fixation test made with the methyl antigen. However, its value for the diagnosis of tuberculosis is nevertheless slight, for it gave positive results in 80 per cent of the adults with tuberculosis, in 20 per cent of the control cases (nontuberculous serums) and in only 50 per cent of the children with active tuberculosis.

Norsk Magazin for Lægevidenskapen, Oslo

97 665-784 (July) 1936

- Endometriosis and Transplantation of Endometrium H F Harbitz—p 665
- *Tumor Colli As First Symptom of Malignant Tumors in Throat, Tonsils and Neck L Kreyberg—p 681
- *Xanthomatosis and Sudden Death F Harbitz—p 695
- Syndactylia Treated According to Method Proposed by R Klapp I Schjøth Iversen—p 700
- Amusia H J Ustvedt—p 705
- Experiences in Analytic Consultation J I Strømme—p 717

"Tumor Colli" as Symptom of Malignant Tumors in Throat.—Kreyberg says that a tumor in the neck is often the first symptom in this group of tumors, which presents three main types: transitional cell carcinomas, lympho-epitheliomas and reticulosarcomas. In a number of cases histologic differential diagnosis between these types is simple; in other cases differential diagnosis is impossible with the present technique. The reticulosarcomas are tentatively divided into three subgroups: (1) those with alveolar growth; (2) those with diffuse syncytial growth by rather uniform cells; and (3) those with diffuse growth by individual, more polymorphous cells. Except when the primary tumor is in the lymph nodes of the neck, it is usually in the nasopharynx or tonsils. Every case of a lump in the neck in an adult calls for examination of the throat by a competent rhinologist if the cause of the tumor is not evident. An amateur in rhinoscopy may easily miss a primary silent tumor in this region as it appears only as a small flat

infiltration of the nasopharyngeal wall. All these tumors are to be regarded as roentgen sensitive, some to a marked degree, and treatment is mainly roentgenologic. Prognosis is as a rule grave, because of metastasis formation. Improvement in the results depends chiefly on earlier diagnosis. Nineteen certain and two doubtful cases are reported.

Xanthomatosis and Sudden Death—Harbitz describes a case of sudden death in a man, aged 46. There were hard nodular, yellow deposits 3 or 4 cm long on the backs of his hands and coherent with the tendon sheaths. Microscopic examination showed typical xanthomas. The heart was hypertrophic, somewhat infiltrated with fat, and in the right and especially in the left coronary artery were considerable deposits of yellow-white masses, which had caused strictures in various places. Similar deposits, intensely yellow, were also present in the aorta opposite the valves and to a greater extent in the abdominal aorta. The cholesterol content of the blood plasma was normal 171 mg per hundred cubic centimeters. The author states that two patients with a history of multiple xanthomas beneath the skin in childhood, described by him in 1925, died suddenly, both at the age of 22. Necropsy performed in one case revealed large xanthomatous deposits in the aortic valves and in the aorta, with stenosis and hypertrophy of the heart. At 18 this patient's blood plasma had contained from 470 to 547 mg of cholesterol esters per hundred cubic centimeters. The father of the other patient, five paternal uncles, an aunt and an uncle on the maternal side had xanthomatosis, although in far less marked form, two brothers and a sister were well.

Ugeskrift for Læger, Copenhagen

98 677-698 (July 23) 1936

- Remarks on Exophthalmic Goiter Especially Its Relation to Nervous System P Levison—p 677
- Investigation on Adaptation Ability in Student Nurses at Rigshospital Eva Friis Skotte—p 680
- *Acquired Tertiary Pulmonary Syphilis E Strandgaard—p 682
- Dick Reaction and Relations of Immunity in Scarlet Fever O Brinch—p 689
- Report from Practice Treatment of Panaritium According to Orr A Schiermacher—p 690

Acquired Tertiary Pulmonary Syphilis—Strandgaard reports one certain and three probable cases of this disorder, all seen within a year, which he says, shows that the disorder, though rare, is a possibility to be considered in the diagnosis of chronic pulmonary disturbances. In the first patient a woman, aged 43 without known preceding syphilitic infection, a chronic progressive pulmonary ailment marked by pronounced dyspnea and cyanosis set in at the age of 38. The Wassermann reaction was positive, no tubercle bacilli were found. Necropsy revealed an extensive fibrous shrinking pulmonary process. Histologically there was marked fibrosis without signs of specifically tuberculous tissue. The macroscopic and microscopic diagnosis was chronic fibrous syphilitic pneumonia. The other patients were men. In one without known syphilitic infection, signs of tabes dorsalis developed at the age of 38, with simultaneous cough and expectoration subordinate to the tabetic symptoms but continuing unchanged for about twenty years. There were stethoscopic signs of a chronic process basally in the lung, and roentgen examination showed clarifications surrounded by fibrous parts. The Wassermann reaction was negative. The next patient infected with syphilis at the age of 18 had apparently been well until 50, when coughing with expectoration began and continued for about ten years. Fibrous processes were seen in the lower part of both lungs. The Mantoux reaction was negative, tubercle bacilli were not found and the Wassermann reaction was positive. Treatment with arsphenamine and potassium iodide produced no decisive changes in the picture. The last patient, at the age of 44 had a recent syphilitic infection which was treated energetically. It was shortly followed by continuing cough and expectoration. Nine years later there were signs of chronic pulmonary disturbance at the base of both lungs. The Wassermann reaction was not negative; there were no tubercle bacilli in the sputum. Long continued treatment partly antisyphilitic partly with short wave diathermy partly with roentgen rays brought no decided improvement.

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PHYSIOLOGIC EFFECTS OF THE CORRECTION OF FAULTY POSTURE

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Postural defects of the kypholordotic type are often productive of painful manifestations that are easily relieved by proper corrective exercises. In addition, however, postural defects are also generally believed to be a handicap to various physiologic functions of the body.¹ The following observations, which are supplementary to those reported in a previous paper,² have been made in an effort to determine to what extent this belief is justified by clinical and experimental evidence, also to evaluate what benefit, other than relief of pain, may be anticipated from the orthopedic correction of faulty posture.

METHODS

Observations were made on a series of twenty-six healthy adults of both sexes having disorders of the back attributable to postural strain. All subjects had received instructions in the correction of their postural defects. Twenty-three subjects were studied with respect to the immediate physiologic effects of changing from a faulty posture to a corrected posture, eight of these were further studied with respect to the degree of permanence of these effects following a year of routine corrective exercises. The following studies were carried out in both correct and faulty postures on the same day and (in eight subjects) after an interval of one year.

1 Orthodiagrams, with special reference to the thoracic and cardiac measurements and the maximum diaphragmatic excursions (Diaphragmatic measurements were made from the highest point of the dome)

2 Estimations of vital capacity

3 Electrocardiograms

4 Estimations of oxygen consumption, respiratory rate tidal air and respiratory minute volume (obtained by means of a standard oxygen filled spirometer for metabolism determination)

5 Repeated estimations of blood pressure and pulse rate over ten minute periods with preceding and intervening ten minute periods during which the subject

was recumbent. A rating for circulatory efficiency was thus obtained by subjecting these values to the criteria of Turner.³

RESULTS

Immediate Effects—The immediate effects of correcting faulty posture are outlined in table 1. From these results it is apparent that there is surprisingly little uniformity in the effects of postural correction between different individuals. These individual variations could not be correlated with the extent of the postural defect nor could the reaction of any particular subject be predicted in any way. It may be reasonably concluded from this that the correction of faulty posture must afford a variable degree of benefit to different individuals and that its effect is generally unrelated to the grade of the postural error. This conclusion is borne out by the following detailed consideration of the influence of posture on the circulatory and respiratory function of the body.

Transverse Diameter of the Chest—On assuming a corrected posture, the transverse diameter of the chest (made in the position of normal expiration) was increased in eight subjects, unchanged in eleven and decreased in four. The inconstancy of this change is attributed to the fact that the increase in the transverse diameter in the good posture may be slight or nil compared to the increase in the anteroposterior diameter, furthermore, it was observed that in the faulty posture the lower part of the chest, in the presence of marked kyphosis with little increase in lumbar lordosis, may be expanded as the result of upward compression of the abdominal viscera.

Position of the Diaphragm—It has been stated that the diaphragm is characteristically elevated in the corrected posture.¹ In the present study this did not always appear to be the case for the correction of posture was associated with an elevation of the diaphragm in only ten subjects whereas the height of the diaphragm was unchanged in four subjects and was decreased in nine. It seems quite evident why the diaphragm is not necessarily higher in the corrected posture (figs 1 and 2). When the thoracic spine is straightened the chest is elongated and the diaphragm although higher with respect to the sacrum, may actually be lower with respect to the first ribs (from which the accompanying measurements were made). Moreover, in cases presenting increased kyphosis, the slumped posture may cause the higher elevation of the diaphragm by upward compression of the abdominal viscera. It is probably for the latter reason that in at least eight instances the normal excursions of the diaphragm were greater in the position in which the diaphragm was low rather than high.

3 Turner A H. Adjustment of Heart Rate and Arterial Pressure in Healthy Young Women During Prolonged Standing. *Am J Physiol* 51: 197 (June) 1927.

From the Departments of Cardiology and Orthopaedic Surgery of the Graduate School of Medicine of the University of Pennsylvania.
Read before the Section on Orthopedic Surgery at the Eighty Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

1 Goldthwait J E, Brown L T, Swaim L T and Kuhns J G. *Body Mechanics*. Philadelphia: J B Lippincott Company, 1934.
Laplace L B and Nicholson J T. Observations on Some of the Physiologic Effects of the Correction of Faulty Posture. *Am J M Sc* to be published.

Position of the Heart—It has also been stated that the heart is characteristically more transverse in the corrected posture, owing to the higher position of the diaphragm.¹ In the present study, however, the heart became more transverse in the corrected posture in only six instances, in seven there was no significant

change, while in ten the transverse diameter of the heart was decreased. The change in position of the heart was confirmed by a corresponding axis deviation of the electrocardiogram in all but two cases. (These two discrepancies are probably attributable to the fact that the electrical axis of the heart may be shifted in the opposite direc-

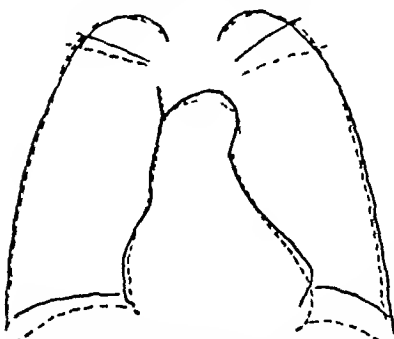


Fig 1—Orthodiagram showing higher diaphragm and more transverse heart associated with the corrected posture. The solid line indicates the corrected posture, the broken line the faulty posture.

tion by rotation and lateral displacement of the heart. Rotation and lateral displacement of the heart were often observed under the fluoroscope.) The ten instances in which the heart did not become more transverse on elevation of the diaphragm may be explained by the fact that, first, when the thoracic spine is straightened the heart is elevated by its attachments to the cervical fascia and tends to become more dependent, and, second, when the heart is pushed upward by the diaphragm it sometimes rotates around its vertical axis so that its anteroposterior silhouette may appear less wide. No obvious relationship was noted between the position of the heart and the circulatory efficiency, although such a relationship undoubtedly exists in extreme cases and probably also in certain cases of organic heart disease.

Diaphragmatic Excursions—In the corrected posture the extent of the diaphragmatic excursions between

therefore, manifestly tends to increase the vital capacity, and since this function is closely correlated with cardiovascular efficiency it is reasonable to conclude on this basis that a correct posture is a substantial benefit to the circulation. On the other hand, it should be pointed out that, when erect many subjects stooped somewhat to complete expiration and when slumped, became momentarily more erect during the preliminary inspiration. In fact it was quite evident that the vital capacity is really diminished by extreme correction of posture as well as by a marked slump and that a certain degree of flexibility is requisite for optimum results.

Electrocardiogram—Change of posture produced no significant alteration of the electrocardiogram other than deviation of the electrical axis, as previously noted. Occasionally the amplitude of the T waves in lead 3 was correspondingly modified.

Oxygen Consumption—In the corrected posture the oxygen consumption was increased in seven subjects, unchanged in eight and decreased in six. (The limit of experimental error was arbitrarily set at 25 cc.) Although these figures are inconclusive, the impression was gained that the corrected posture tends to be associated with a relatively lower oxygen consumption, but higher values are obtained in those instances in which the subject exerts unusual physical effort in maintaining his correction.

Respiration—In the corrected posture the depth of respiration (tidal air) was increased in fifteen subjects, unchanged in three and decreased in five. Increase in

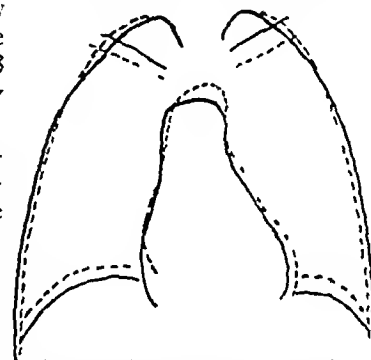


Fig 2—Orthodiagram showing lower diaphragm and more dependent heart associated with the corrected posture. The solid line indicates the corrected posture, the broken line the faulty posture.

TABLE 1—The Immediate Changes with Correction of Posture

| | Subject | | | | | | | | | | | | | | | | | | | | | | | Average | | |
|------------------------------|---------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------------------------|---------------|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | + | - | 0 |
| | B | B | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 8 | 4 |
| | 0 | 0 | 0 | + | + | - | 0 | 0 | 0 | + | 0 | + | 0 | + | + | + | 0 | 0 | 0 | + | + | 0 | 0 | 8 <td>10<td>7</td></td> | 10 <td>7</td> | 7 |
| Right | - | - | + | + | - | 0 | + | - | 0 | - | - | + | + | - | + | + | 0 | + | + | - | - | + | + | 10 <td>10<td>2</td></td> | 10 <td>2</td> | 2 |
| Left | - | 0 | + | + | - | 0 | + | - | 0 | - | 0 | + | + | - | + | + | 0 | + | + | - | - | + | + | 11 <td>6<td>5</td></td> | 6 <td>5</td> | 5 |
| Excursion of diaphragm | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Right | + | + | 0 | 0 | + | + | - | + | - | - | - | + | + | - | 0 | - | + | + | + | - | - | + | + | 11 | 8 | 3 |
| Left | + | - | - | - | + | + | - | + | - | - | - | - | + | - | 0 | - | + | + | + | - | - | + | + | 10 | 12 | |
| Electrocardiogram left devia | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | + | - | 0 | + | - | 0 | 0 | - | + | + | 0 | + | + | + | - | 0 | - | + | 0 | + | + | + | + | 7 | 7 | 6 |
| | 0 | 0 | + | + | 0 | + | + | 0 | + | + | + | + | 0 | - | 0 | 0 | 0 | + | + | + | + | + | 14 | 3 | 5 | |
| | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 14 | 14 | 4 | |
| Tidal air | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 13 | 4 | 3 | |
| Respiratory minute volume | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 14 | 5 | 3 | |
| Oxygen consumption | + | + | 0 | 0 | 0 | 0 | 0 | 0 | + | + | + | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 8 | |
| Circulatory efficiency | + | + | + | + | + | 0 | 0 | 0 | + | + | 0 | + | - | 0 | + | + | 0 | 0 | + | + | 0 | + | 14 | 2 | 7 | |

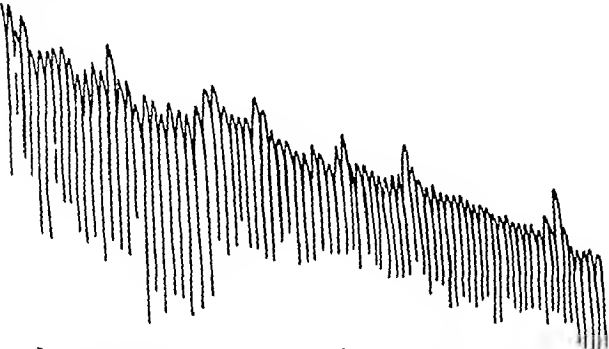
In these tables 0 indicates no change on shifting from a faulty to a correct posture + increase - decrease

maximum inspiration and expiration was increased in nine subjects, unchanged in four and decreased in nine. The extent of the diaphragmatic excursions appeared to be unrelated either to the type of posture assumed or to any of the recorded effects that might be attributed to posture. It has no obvious correlation with the vital capacity or with the average depth of respiration.

Vital Capacity—In the corrected posture the vital capacity was increased in fourteen subjects, unchanged in five and decreased in three. A correct posture

the depth of respiration was characteristically accompanied by a slowing of the respiratory rate and an increase in respiratory minute volume (fig 3) which occurred in ten subjects, and the reverse of which did not occur in any. The explanation probably depends on the facilitation of thoracic excursion by the corrected posture with resultant deeper and therefore slower respirations. It is noteworthy, however, that in at least six subjects pulmonary ventilation was unchanged or diminished.

Circulatory Efficiency—The criterion for the estimation of circulatory efficiency, according to Turner,³ is the degree to which the pulse rate, blood pressure and pulse pressure are maintained within normal physiologic limits on prolonged standing. Applied in the present study, this test indicated that in the cor-



| | Good posture | Poor posture |
|---------------------------|--------------|--------------|
| Respiratory rate | 13 | 21 |
| Tidal air | 1 012 | 467 |
| Respiratory minute volume | 12 850 | 9 820 |
| Oxygen consumption | 263 cc. | 246 cc. |

rected posture circulatory efficiency was increased in fourteen subjects, unchanged in seven and decreased in two. Of those subjects who showed an increase, the difference between the two postures was not very great except in a few cases, two of which were really striking. In these the circulation was entirely normal in the corrected posture, but when a slump was assumed the pulse rate increased and the blood pres-

TABLE 2—The Changes After One Year

| | Subject | | | | | | | | Average | | |
|----------------------------------|---------|-----|-----|-----|-----|-----|-----|-----|---------|---|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | + | - | 0 |
| Posture | C-B | C-B | C-A | C-B | C-B | D-G | D-B | D-C | | | |
| Transverse diameter of chest | + | 0 | + | 0 | 0 | - | 0 | + | 3 | 1 | 4 |
| Transverse diameter of heart | + | 0 | 0 | 0 | + | 0 | + | 0 | 3 | | 0 |
| Height of diaphragm | | | | | | | | | | | |
| Right | + | 0 | - | 0 | + | - | + | - | 2 | 4 | 12 |
| Left | + | 0 | - | 0 | + | - | + | - | 2 | 4 | 12 |
| Excursion of diaphragm | | | | | | | | | | | |
| Right | 0 | + | - | + | - | 0 | 0 | - | 3 | 3 | 3 |
| Left | - | + | - | + | 0 | 0 | - | - | 2 | 4 | 4 |
| Electrocardiogram left deviation | | 0 | + | - | + | + | + | - | 3 | 2 | 1 |
| Vital capacity | + | + | - | 0 | + | + | + | - | 4 | 2 | 2 |
| Respiratory rate | - | + | - | - | - | - | - | - | 5 | | |
| Tidal air | + | + | + | 0 | + | + | + | + | 4 | | 1 |
| Respiratory minute volume | + | + | + | + | - | + | + | + | 4 | 1 | |
| Oxygen consumption | + | 0 | - | - | + | + | + | + | 1 | 2 | 1 |
| Circulatory efficiency | + | + | + | + | - | - | + | + | 6 | 2 | |

sure fell until signs of actual syncope appeared (fig. 4). From these results, a corrected posture may be considered to be an appreciable advantage to the circulation in approximately 50 per cent of normal individuals, in about 15 per cent this advantage is very great, while in the same number the circulatory efficiency is definitely improved by a certain degree of postural slump.

Results After One Year—It is of interest to note that, of fifty subjects who had been advised to continue their routine postural exercises, only eight could be found who, free from symptoms after one year, had improved their posture sufficiently to warrant inclusion in this study (table 2). Of these eight, six showed some increase in circulatory efficiency, four showed an increase in vital capacity, two showed

increase in height of diaphragm, and four showed the characteristic slowing of the respiratory rate with increased tidal air and minute volume. Thus, there is some evidence of improved posture and its effects in the majority of cases, but the results are not remarkable. Nor can it be said that such further training as these subjects have obtained has made them any more efficient physiologically than on their first examination for this study (table 3). Comparison of the immediate effects of postural correction with the results obtained in the group of subjects who have had prolonged training, therefore, indicates that the two may be considered to be entirely comparable.

TABLE 3—Comparison of Immediate and One Year Changes in the Same Individual

| | Subject | | | | |
|----------------------------------|---------|-----|-----|-----|-----|
| | 1 | 2 | 3 | 4 | 5 |
| Posture | C-B | C-A | C-B | D-B | D-O |
| Transverse diameter of chest | - + + | + + | 0 0 | 0 0 | - + |
| Transverse diameter of heart | + + | - 0 | + + | - + | - 0 |
| Height of diaphragm | | | | | |
| Right | + - | - - | + + | + + | - - |
| Left | + - | - - | + + | + + | - - |
| Excursion of diaphragm | | | | | |
| Right | 0 0 | + - | + - | - 0 | - - |
| Left | - - | + - | + 0 | + - | - - |
| Electrocardiogram left deviation | - + | - + | + + | + + | + + |
| Vital capacity | + + | 0 - | - 0 | + + | + - |
| Respiration | - - | - - | - - | 0 - | 0 - |
| Right | + + | + + | - 0 | - + | 0 + |
| Left | + + | + + | - - | - + | 0 + |
| Circulatory efficiency | + + | + + | - - | + + | + + |

COMMENT

Considering the results of this study in general, the outstanding conclusion to be drawn is the fact that straightening of the spine does not produce the same anatomic and functional changes in all subjects. It is also evident that, although a correct posture is of some advantage to the majority of subjects, it is not so to all. Judged by the evidence of the present work, there are many persons whose optimum physiologic function is attained in a posture which is not entirely correct by orthopedic standards. Perhaps in such persons the greater spinal curve represents a compensatory mecha-

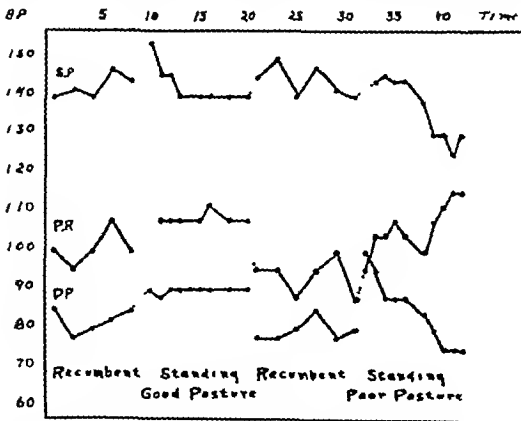


Fig. 4—Successive blood pressure and pulse rate estimations showing the comparative effects of corrected and faulty posture.

nism determined by individual differences of body structure and physical activity. In cases of emphysema, for example, if the corrected posture should produce a lower rather than a higher diaphragm (as often occurred in the present study), a postural slump would certainly act in a compensatory capacity. On the other hand at least two subjects were found in this

series whose circulatory efficiency depended very largely on the maintenance of a correct posture. To the authors it has therefore been forcefully demonstrated that the orthopedic correction of faulty posture may produce valuable therapeutic results in many cases, that in other cases a rigid correction of posture may prove a physiologic handicap and, finally, that every person has a certain posture, determined by his particular build and function, which is best suited to him. It is only by study of the individual patient and the correct appraisal of his optimum posture that the best therapeutic results can be obtained.

SUMMARY AND CONCLUSIONS

1 Twenty-six subjects having postural defects of the kypholordotic type were studied with respect to the physiologic changes produced by the correction of their faulty posture. The immediate effects were in general entirely comparable to those observed after one year of corrective exercises.

2 In the corrected posture the diaphragm was not always relatively elevated as is generally believed, nor was the heart always more transversely placed. The diaphragmatic excursions were either increased or decreased, for reasons that are discussed. The vital capacity was generally increased, although flexibility of posture was requisite for optimum results. Oxygen consumption was variable. Pulmonary ventilation was generally increased. Circulatory efficiency, as judged by constancy of blood pressure and pulse rate, was generally improved, in two cases the correction of posture was able to prevent hypostatic congestion and syncope.

3 It was concluded that the results of correcting faulty posture differ widely between individuals, irrespective of the grade of the defect. A correct posture appears to be an appreciable advantage to circulatory and respiratory function in the majority of persons, but in some a postural defect may be a compensatory mechanism which it is inadvisable to disturb. The therapeutic application of postural correction should be made according to the requirements of the individual case and only after an attempt to determine in what posture the individual is functionally most efficient.

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ABSTRACT OF DISCUSSION

DR. JOHN G. KUHN, Boston. The tests employed by Drs. Laplace and Nicholson are probably as accurate as any of the simpler ones. It is unfortunate that a larger number of individuals were not available. The changes observed would probably have been changed little, but greater reliance could have been placed on the data from such careful experiments. It is customary to measure good posture by decrease in the anteroposterior spinal curves. But with the marked individual variations in body build, no one standard can be set up that will define the mechanically best for each individual. This wide variation must be realized when one judges patients by present imperfect standards. When the patient has constant good posture one expects to find, in addition to the decrease in the spinal curves, an elevation of the chest, so that it is used habitually in the position of almost full inspiration and a rounding and firmness of the upper portion of the abdomen anteriorly. Then, too, there are no accurate measurements of health or well being, and tests of the efficiency of various bodily functions must be interpreted freely since there are wide normal variations. The immediate effects of correcting faulty posture should differ particularly in relation to the effort that is expended in maintaining the correction. The length of time that the correction is maintained should also produce changes in the effects observed. The transverse diameter of the chest

while susceptible of some immediate change with elevation of the ribs, has been found to increase steadily over a period of several years with postural exercises. Upward compression of the abdominal viscera in marked kyphosis may well increase the expansion of the lower ribs. The elevation of the diaphragm is not a constant finding in early attempts at correction of posture, but it has been observed in all cases except when adhesions or some mechanical obstruction were present, after good posture had become habitual. Habitual maintenance of good posture may require months or years, since it is a development of conditioned reflexes, which are acquired slowly. The position of the heart has been looked on to be a characteristic as Stoll has observed, of the type of body, whether slender or stocky. Often a more transverse position is not assumed, but a higher position is seen in the thoracic cavity. This can be measured by the rib spaces, either the cardiac apex or the aortic arch being taken in successive roentgenograms. The diaphragmatic excursions vary widely. Increase in the normal excursions is usually observed with long continued correction. I have rarely seen it as an immediate effect. Increase in vital capacity, with correction of faulty posture, has been a constant finding by most students of this problem. Immediate or extreme attempts at correction of posture will frequently put so great a task on the musculature of the thorax and abdomen that vital capacity will be diminished. In a few experiments that I have carried out, no appreciable difference was seen in the electrocardiogram with corrected posture. Knopf has arrived at figures similar to those obtained by Drs. Laplace and Nicholson with regard to oxygen consumption and respiratory rate following postural correction, and my observations are entirely in accord with them. In the circulatory efficiency tests of Dr. Turner there are a great many factors that are beyond the control of the examiner. It is unfortunate that more rigid ones are not available. As the authors have found, the immediate effects of postural correction are very variable, but they suggest that persistent attempts at correction are frequently of therapeutic value.

A CONSERVATIVE TREATMENT FOR HABITUAL DISLOCATIONS OF THE SHOULDER

ARTHUR G. DAVIS, M.D.
ERIE, PA.

It appears highly desirable to have some conservative method as an alternative to the surgical approach for recurrent dislocations of the shoulder. Search for a plan of conservative treatment failed to reveal anything by way of a definitely formulated technic. Bennett, Codman, Key and Conwell suggest the advisability of general shoulder development and Codman describes a method of training the patient to guard against future dislocations. Before and contemporary with the era of the Clairemont operation there were various suggestions of splints to limit abduction. This article purports to outline a conservative plan and analyze the results of cases treated by this method.

It is generally conceded that the shoulder joint is the most unstable of the entire anatomy. It is also admitted that the actual mechanics and kinetics are still only partly understood. Considerable divergence of opinion as regards etiology and operative attack is exhibited by both author and operator.

It would seem necessary, therefore, to preface a description of any method aimed at the permanent cure of recurrent dislocations with an interpretation of the generalities involved. Codman's work has shown in detail the wide departure of the human shoulder from that of the quadruped. Its high degree of specializa-

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tion in function has been pointed out by many. The evolutionary process has robbed the shoulder of its anterior muscle guard. That muscle integrity is fundamental to the integrity of the joint is a matter of daily observation. Nevertheless, muscle integrity alone is not sufficient to insure mechanical security, as evidenced by the repeated dislocation of heavily muscled shoulders. The anterior inferior section of the capsule is known to be the weakest portion. It is generally appre-

encouraged to use the arm as well as he can within the limits of the adhesive splintage. He is then instructed in a definite technic of muscle development. He is equipped with apparatus for home use to develop increasing resistive exercise. For two or three weeks his exercises are closely supervised to inculcate correct technic. With a band around the arm just above the elbow he pulls a weight horizontally across the frontal plane to strengthen the adductors. Simultaneously, he

Clinical History of Eight Consecutive Cases

| Name | Sex | Age | Date First Consulted | Occupation | Cause of First Dislocation | Subsequent Dislocations | First Reduction M D or Otherwise | Duration of Treatment | Resumption of Unrestricted Use | Duration of Observation | Recurrence | Type of Habitual Dislocation |
|--------------------------|-----|-----|----------------------|----------------------|--|--|---|---|--------------------------------|--------------------------|------------------------------------|---|
| E. F. | ♀ | 31 | Feb 1930 | Millworker | Muscular violence | Frequent | M D and anesthetic | 6 weeks | 7 weeks | 2 years | None | Dislocated partially every time arm is abducted to 90 degrees |
| W. P. | ♂ | 34 | Nov 1931 | Gymnasium director | Muscular violence | Three in ten years tho frequently | Unknown | 4 weeks | 4 weeks | 4 years | Five times | Muscular violence heavily muscled type hand ball and gymnastics |
| J. E. | ♂ | 19 | Sept 1932 | Student | Accident | Six to six weeks | M D and anesthetic | 6 weeks | 6 weeks | 3½ years | None | Heavily muscled baseball caused recurrences |
| T. T. | ♂ | 21 | July 1934 | Student | Wrestling | Repeatedly at wrestling and golf | M D and anesthetic | 6 weeks | 6 weeks | 1½ years | None | Heavily muscled well developed good posture |
| B. V. | ♀ | 14 | Jan 1935 | School girl | Unknown | Dislocated whenever arm was abducted above horizontal plane | Unknown | 3 weeks | 2 months | 1 year | None | Slender poorly muscled loose jointed type head of humerus dislocated partially forward each time shoulder was abducted to 90 degrees at first examination |
| R. F. | ♂ | 25 | April 1935 | Machinist | Muscular violence at work | Frequent last 4 years | Chiropractic reduction | 3 weeks | 6 weeks | 1 year | None | Slender lax jointed slump posture |
| A. P. | ♀ | 23 | May 1935 | Waitress | Accident | Several times daily | Chiropractic reduction | 4 weeks | 4 weeks | 10 months | Once every two weeks | Extremely slender slump posture extremely lax jointed head of humerus can be pushed out anteriorly |
| C. Mc. | ♂ | 20 | July 1935 | Student | Tennis | Three times at long intervals | First by patient second by M D | 3 weeks | 7 weeks | 9 months | None | Normal muscle development slender type dis continued all athletic activity has returned to tennis golf and swimming last 7 months |
| Majority in the twenties | | | | 50 per cent students | Five of eight cases caused by muscular violence two accidental | Some experienced constant disability, others at long intervals others discontinued athletic activity thus eliminating recurrences except for unguarded moments | Four or 50 per cent required anesthetic and M D | Average of four weeks of supervised treatment | Average of five weeks | From 9 mos to four years | Two failures and six cured to date | No conclusion possible from analysis of type |

ciated that a first dislocation should be considered a major injury and given proper convalescent care, with the anterior capsule especially in mind.

METHOD

The patient is strapped with ordinary adhesive tape in the following manner (figs 1 and 2). Strap 1 starts in the posterior deltoid region at the level of the surgical neck and proceeds around, forward and then across the patient to be affixed to the sternal region. Strap 2 starts at the postero-internal aspect of the arm just above the elbow, spirals outward upward and then forward, crossing the front of the mid upper arm, and attaches to the sternal region. The arm is thus not allowed to move backward to the coronal plane. The elbow not only is not allowed to abduct but is held adducted inside the lateral sagittal plane. The patient has not lost use of his arm during treatment but is

instructed to pronate his hand and rotate the entire arm internally to overdevelop the internal rotators. The resultant of these three components of movement is a spiral thrust across the abdomen and toward the opposite thigh. The ability of patients to increase the poundage of pull is surprising. The pectoralis major and anterior deltoid develop increased power quickly. By inference it is obvious that the subscapularis, teres minor and latissimus dorsi must also hypertrophy.

At two weeks the adhesive tape is removed and one finds that the patient has acquired the habit of getting along without abduction and without his hip pocket. He is then instructed to continue with his home apparatus for another month after which he is usually somewhat arbitrarily turned loose and instructed to engage unrestrictedly in his occupation, whatever it is.

In the accompanying table are listed the cases which form a consecutive series in private practice.

COMMENT

Case Citations—Roentgenography exhibited no evidence in any case of congenital anomaly or other pathologic condition of the bone. All eight cases were considered from both the operative and the conservative approach when first seen. All were considered eligible for the Henderson or some equivalent operative approach, such as the more recent DiNicola procedure

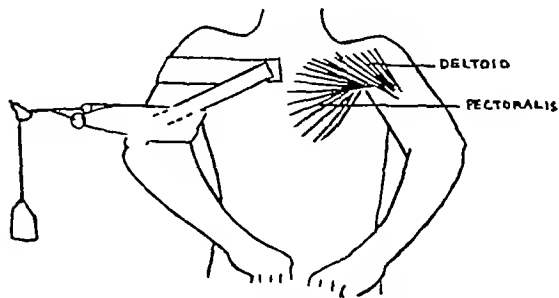


Fig. 1—Attitude at beginning of internal rotation thrust

The failure in the case of W. P. was not known until a few months ago. This patient will be operated on in the near future. The other failure (A. P.) is the most unstable of the group. In this patient it is possible to dislocate the head passively with even gentle pressure. At the time of her first appearance, failure by the conservative method was predicted, because of the very unusual laxity combined with an extremely weak deltoid. In answer to a recent questionnaire this patient states that she is comfortably at work and has no painful disability but that her shoulder "pops out" on the average of once a day. So far no cases of epileptic dislocation have occurred in this series, therefore I know nothing of the effect of this treatment in epileptic patients.

As stated before, the cases cited are a consecutive series in private practice. Ward and clinic cases, of which there have been six or eight, have been done by the Henderson suspension method, with the excep-

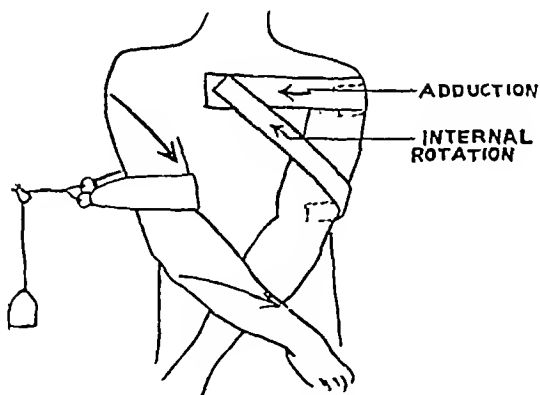


Fig. 2—Attitude at end of internal rotation thrust

tion of two, which were done by the DiNicola biceps transposition. An orderly sequence of follow up has been impossible in the surgical cases. So far as I know all of these cases have been successful.

Method—In formulating the technic the following factors are interpreted as having a direct bearing either as fortifying or as compensatory mechanisms. The temporary overdevelopment of internal rotators and adductors tends to shorten the anterior capsule and

restore the correct axial alignment of the head of the humerus with the glenoid. If the balance of power is in favor of the external rotators, the bicipital groove robs the anterior capsule of an important check strap, the long head of the biceps. The bicipital groove is capable, as is the entire humerus, of 90 degrees of rotation (fig. 3). When the balance of power is returned to the adductor and internal rotator groups, the biceps check strap, it is thought, exerts pressure backward and medially on the head. When the arm is habitually carried with more than the average degree of external rotation, sudden efforts involving abduction find both the long head of the biceps and the external rotators exerting pressure forward against the notoriously weak anterior capsule. Figure 3 shows clearly the change in position from anterolateral to posterolateral of the biceps and bicipital groove. If the transpositioning of the biceps as shown by Dr. DiNicola is sufficient per se to hold the head, then the biceps in its normal anterior position is also important. When the humerus is in wide external rotation, the greatest diameter of the head is brought against

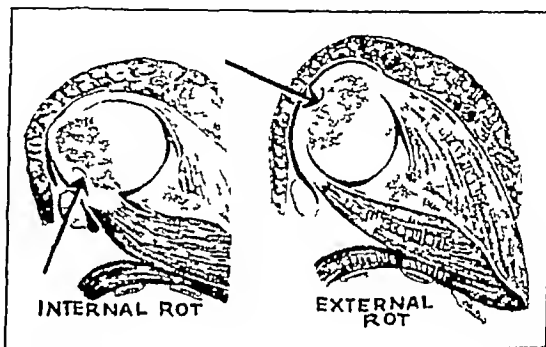


Fig. 3—Arc of rotation in the cadaver (reproduced by courtesy of E. A. Codman)

the anterior capsule. If the shoulder has been once dislocated and the capsule is not allowed to shorten, the head finds less resistance in this position. The head then exerts expansive pressure against the anterior capsule, which fact explains the usual sequence of the increased frequency of dislocations that are usually experienced.

Additional evidence of the role of the tendon of the long head of the biceps is suggested by the lateral displacement that has taken place in the transition from the quadrupedal attitude of internal rotation and pronation to the erect biped position of increasing supination and external rotation. If one simply puts one's hands on the floor (assumes the position of a quadruped) and then arises to the standing position, the humerus externally rotates approximately 45 degrees.

The aim of the conservative approach is directed at fortifying the anterior aspect of the joint, just as the numerous operative methods focus attention at this point. The strapping and exercises are also used as a convalescent treatment for ordinary traumatic dislocations.

IMPRESSIONS

- 1 The treatment outlined has eliminated the necessity of operative measures in 75 per cent of a consecutive series of typical recurrent dislocations.
- 2 The patient is only somewhat disabled during a short period of treatment.

3 The evidence submitted suggests that this short period of treatment yields results of a permanent kind and therefore offers an alternative to operative approach

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ABSTRACT OF DISCUSSION

DR. ENOS B. FOWLER, EVANSTON, ILL. Dr. Davis's conservative treatment of habitual dislocation of the shoulder consists of an attempt to strengthen by exercise, with restricted motions, structures about the shoulder joint, of which the muscles and their tendons play a major role, while the capsule plays a minor part in the prevention of dislocations. The report of eight cases with 75 per cent of cures at the end of two years is encouraging and compares favorably with operative results. Dr. Davis feels that the anterior weaker portion of the capsule is subject to rupture, tearing or injury and therefore he is careful to put the arm so as to facilitate repair and contraction of the supposed injured dilapidated anterior capsule. He also feels that the tendon of the long head of the biceps is placed in the best position to assist in preventing dislocation if the humerus is well rotated internally. I believe that the anterior capsule, though relatively weak, is practically never torn, ruptured or appreciably stretched. This conviction is based on a study of 621 shoulders in the past five years, in which no traces of scars, rents or stretching could be found on either the anterior or the inferior portion of the capsule. On the other hand, in the upper portion of the capsule with its associated tendons, there were found thirty-four complete and 101 incomplete ruptures of the capsule and tendon or tendons along with twelve complete ruptures of the long biceps tendon. These lesions increased the extent of the capsule space with a resulting unstable shoulder joint because of relaxed, lengthened tendons and capsule on the upper quadrant of the capsule. I believe that such traumatized shoulders are rarely, if ever, cured by conservative treatment, unless proper treatment is instituted at the time of the rupture. This conservative treatment consists in placing the arm in a nearly vertical position with the forearm flexed and held from six to eight weeks until the torn parts have firmly united, thus there is no relaxation of the tendons or capsule, accordingly there is no predisposition to redislocate.

DR. ARTHUR G. DAVIS, ERIC, PA. With the present status of disagreement even among contributors such as Codman, Steindler and Fowler, who have made a special study of the anatomy and kinetics of the shoulder joint, one is permitted considerable leeway for interpretation as to what constitutes normal muscle action. Gray studiously avoids many of these unsettled intricacies. One of the points of almost unanimous agreement among contributors to shoulder joint surgery is the anterior, inferior weakness of the capsule. As already mentioned in the text, my interpretation leads me to explain the successful results through the fact that, when the anterior muscle guard is off, in other words when principally the subscapularis and anterior deltoid are stretched, the balance is in favor of the external rotators, the long head of the biceps loses its check strap effect through lateral rotatory displacement, all of which favors anterior dislocation. Regarding type, no conclusions can be drawn. The heavily muscled and atonic, posturally good and posturally weak all appear in this series. In the two failures, I hope, the patients will both submit to operative procedures. I have recommended a Henderson suspension for one. I feel no hesitancy about doing a Henderson tenosuspension or a Di Nicola biceps transpositioning when conservative treatment fails. Obviously, from the evidence submitted some cases will require operative intervention. Percentage data are significant proportionately to the total number involved. What a series of 100 cases would yield by conservative method is problematic. I do know that the necessity of operation has been eliminated in six out of a consecutive series of eight cases of typical habitual dislocations, mostly in young persons.

Eating When Exhausted—When it is necessary to eat while emotionally upset or physically exhausted, it is advisable to rely upon dilute, easily digested foods.—Sherman, H. C. Food and Health, New York. Macmillan Company, 1934

GLOSSOPHARYNGEAL NEURALGIA

W. B. HOOVER, M.D.

AND

J. L. POPPEN, M.D.

BOSTON

Tic douloureux involving the glossopharyngeal nerve became a well established clinical entity between the years 1920 and 1927. Since its recognition has been quite recent and because it has been frequently unrecognized, we believe that the following report of two cases with a brief review of the literature is worth while.

REPORT OF CASES

CASE 1—J. L. C., a man, aged 59, an American of Irish extraction who had worked as a gardener was referred to the clinic because of severe pains in the left side of the throat and ear. His present illness began suddenly fourteen months previous to admission. At that time while quietly working in the garden, he was seized with a sudden sharp paroxysm of pain in the left side of the throat, which lasted about three seconds and disappeared, "tingling out through the left ear." Four hours later a second attack occurred. The pain was stabbing in character, but after it had passed he felt quite all right. Such pains as these began to recur more and more frequently, becoming more severe, and would last as long as six, ten or twenty seconds. These attacks at first occurred only during the day, but as they increased in frequency and severity they came also during the night, awakening him suddenly from sleep. Five months after their onset they were occurring every ten minutes. He recognized that eating and swallowing, gargling, talking and having his throat examined all were prone to bring on the paroxysms of pain. At times these paroxysms came on independent of any such activity. Seven months after their onset there was a spontaneous remission for two days. The attacks soon attained their former severity and even increased so that he was in fear practically all the time, although he had no pain between the attacks. In the past year he had lost 45 pounds (20 Kg.) because of inability to eat and sleep. He had seen a number of physicians, who had prescribed various sedatives without relief.

He had had many sore throats during the greater part of his life. These were improved following an incomplete tonsillectomy about 1928. He had also been partially deaf in the right ear for many years. He smoked a great deal but had enjoyed general good health up to his present illness.

The patient was undernourished and of a wiry build. During the general physical examination he kept his mouth closed most of the time, saying very little and holding himself very still with muscles tense during a paroxysm of pain. His heart and lungs were within normal limits. He had an indirect inguinal hernia. The aural examination revealed a dull right ear drum which was sclerosed, with diminution of hearing in this ear. There was a marked deviation of the nasal septum.

Examination of the pharynx showed rather dry mucous membranes slightly atrophic with a chronic tonsillitis but no difference could be discerned between the right and left sides. When the left tonsil was pressed the paroxysm of pain would occur, demonstrating a definite so-called trigger phenomenon.

In view of this finding and the characteristic history together with the location and type of pain, the diagnosis of glossopharyngeal neuralgia was made.

The patient was given trichloroethylene to inhale three or four times a day. While using trichloroethylene he was able to get relief for as long as three or four hours at a time, and under this treatment he again was able to talk, chew and swallow. Likewise several hours of uninterrupted sleep could be obtained. His general health improved markedly, but because complete relief was not afforded he was anxious to undergo a surgical procedure for complete and permanent relief. August 30 an intraaural section of the ninth cranial (glossopharyngeal) nerve of the left side was performed by Dr. Gilbert Horrax and Dr. James L. Poppen through a left

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suboccipital approach as suggested by Adson¹ and used by Dandy.² The postoperative course was entirely uneventful. The wound healed by first intention and he was immediately free from pain.

The areas marked in figures 1 and 2 illustrate the resulting anesthesia following section of the ninth nerve. His sense of taste was lost on the posterior third of the tongue on the left side. The pharyngeal muscles showed normal action. He was discharged from the hospital on the twelfth postoperative day and has remained free from pain until the present time.

CASE 2—Mrs. M. G., aged 72, a housewife, was referred to the clinic complaining chiefly of pain in the right side of the throat. Her present illness began suddenly in the fall of 1934. While she was eating a sharp pain of knife-like character shot through the throat. The pain is brought on by eating, swallowing or talking. The pain comes only during the day and does not interfere with her rest or sleep. In March 1935 the pain stopped without treatment and did not reappear until the latter part of August and has persisted since. Her general physical examination was negative except for changes associated with her age. Nothing could be found in the pharynx, and the two sides were practically identical. Swallowing a weak acetic acid solution would invariably bring on a paroxysm of pain. Following the paroxysm of pain her voice would be husky or hoarse for several minutes. The patient has been given trichloroethylene and as yet has not decided in favor of surgical treatment.

REVIEW OF LITERATURE

The first report of idiopathic glossopharyngeal neuralgia was published by Sicard and Robineau³ in 1920. They detailed three cases that were similar to the one recorded here. Their treatment consisted in peripheral division of the glossopharyngeal nerve, the pharyngeal branches of the vagus, and the branches of the cervical ganglion. In these cases pain was relieved.

In 1921 Harris⁴ reported two untreated cases of typical glossopharyngeal neuralgia. In 1923 Doyle⁵ reported four typical cases of glossopharyngeal neuralgia in one of which a gasserian ganglion operation was performed and later a peripheral section of the ninth nerve and the pharyngeal branches of the tenth nerve. In another the third division and the auriculotemporal branch of the fifth nerve were injected without relief.

Adson¹ reported four cases in 1924. Two of these patients were treated and relieved by peripheral nerve avulsion and section of the pharyngeal branches of the vagus. He described the technic for peripheral avulsion and for intracranial section of the ninth nerve, advocating the latter method to prevent recurrence, stating that it was no more formidable than the neck dissection. Heath⁶ was the first to take advantage of this route. However, his patient died of a postoperative pulmonary complication. Fay⁷ used this approach to the glossopharyngeal nerve in 1926 to relieve pain from carcinoma of the tongue and pharynx. Also Singleton⁸ reported two cases of glossopharyngeal neuralgia, one of which was treated by peripheral avulsion. In 1927 Davenport⁹ used intracranial section for glossopharyngeal pains which were later found to be due to an

epithelioma of the larynx infiltrating the pharyngeal wall. Also Goodyear¹⁰ reported an untreated case of glossopharyngeal neuralgia at this time.

In 1927 Dandy² was able to report two successful cases of intracranial section of the ninth nerve for true glossopharyngeal neuralgia, with permanent and complete cure without any unpleasant complications whatever. Dandy following this operation was the first observer to give accurate knowledge on the function and the sensory distribution of the ninth nerve and demonstrated that section of the vagus fibers to the pharynx was unnecessary to relieve the pain of glossopharyngeal neuralgia. He showed further that there was no observable motor function of the ninth nerve, the pharyngeal muscles being entirely normal after intracranial section of this nerve. The sensation of taste was found to be lost on the posterior third of the tongue on the operative side.

Dandy's report on this subject is unsurpassed in the literature. At the time of his publication he was able to collect but fourteen cases of true glossopharyngeal neuralgia, including the two cases of his own. Since this time further cases have been recorded, but the literature is by no means voluminous. In 1928 Hansel¹¹ recorded five untreated cases. In 1932 Keith¹² collected ten additional cases which were reported between 1928 and the time of his paper, adding three of his own. Cases also have been reported by Usadel,¹³ Jefferson,¹⁴ Reichert,¹⁵ Filatov,¹⁶ Chavany,¹⁷ Ball,¹⁸ Singleton¹⁹ and Peet.²⁰

The history and symptomatology of patients suffering from glossopharyngeal neuralgia are all very similar, practically the only variations being the duration of the disease and the frequency and duration of the sharp, shooting or burning pains in the throat. These pains, as a rule, become more severe and more frequent with time, but remissions at from a few hours to a number of years are frequently recorded. At the onset, as a rule the paroxysms are less frequent and may occur only during the day, but as time progresses sleep is disturbed by nocturnal attacks. The paroxysms of pain are brought on more frequently by swallowing than by any other one thing. However, talking, sneezing, yawning, coughing, laughing, examination of the throat and, in a few cases, manipulation of the ear may bring on an attack. While having pain the patient may sit transfixed with all muscles tense, or he may press his hand against the side of the neck and jaw.

DIFFERENTIAL DIAGNOSIS

Trigeminal neuralgia and glossopharyngeal neuralgia are alike in all respects except the location of the agonizing flashes of pain and the localization of the trigger areas which set off these paroxysms. The "trigger" areas in glossopharyngeal neuralgia include the pharynx—

1. Adson A. W. The Surgical Treatment of Glossopharyngeal Neuralgia. *Arch. Neurol. & Psychiat.* 12: 487-506 (Nov.) 1924.
2. Dandy W. E. Glossopharyngeal Neuralgia (Tic Douloureux). *Arch. Surg.* 15: 198-214 (Aug.) 1927.
3. Sicard R. and Robineau. Algies vélo-pharyngées essentielles traitement chirurgical. *Rev. Neurol.* 34: 256-257, 1920.
4. Harris W. Persistent Pain in Lesions of the Peripheral and Central Nervous System. *Brain* 44: 557-571, 1921.
5. Doyle J. B. A Study of Four Cases of Glossopharyngeal Neuralgia. *Arch. Neurol. & Psychiat.* 9: 34-36 (Jan.) 1923.
6. Reported by Miller L. A. Glossopharyngeal Neuralgia Tic Douloureux of the Glossopharyngeal Nerve. *Ohio State M. J.* 22: 214-215 (March) 1926.
7. Fay Temple. Intracranial Division of Glossopharyngeal Nerve Combined with Cervical Rhizotomy for Pain in Inoperable Carcinoma of the Throat. *Ann. Surg.* 84: 456 (Sept.) 1926.
8. Singleton A. O. Glossopharyngeal Neuralgia and Its Surgical Relief. *Ann. Surg.* 83: 1-11 (Jan.) 1926.
9. Reported by Bailey J. E. Glossopharyngeal Neuralgia. *S. Clin. North America* 2: 2 (Feb.) 1931.

10. Goodyear H. M. Tic Douloureux of the Glossopharyngeal Nerve. *Arch. Otolaryng.* 5: 341-343 (April) 1927.
11. Hansel F. H. Glossopharyngeal Neuralgia. A Report of Five Cases. *Ann. Otol. Rhin. & Laryng.* 37: 440-451 (June) 1928.
12. Keith W. S. Glossopharyngeal Neuralgia. *Brain* 55: 357 (Sept.) 1932.
13. Usadel Willy. Die Neuralgie des Nervus glossopharyngeus und ihre chirurgische Behandlung. *Chirurg.* 1: 550 (May) 1929.
14. Jefferson Geoffrey. Glossopharyngeal Neuralgia. *Lancet* 2: 39, (Aug.) 1923.
15. Reichert F. L. Three Cases of Glossopharyngeal Neuralgia Cured by Intracranial Section of the Nerve. *S. Clin. North America* 13: 193 (Feb.) 1933.
16. Filatov A. Die genuine Neuralgie des Nervus glossopharyngeus und ihre chirurgische Behandlung. *Arch. f. klin. Chir.* 106: 345, 1931.
17. Chavany J. A. and Welti H. La neuralgie du nerf glossopharyngien. *Iresse med.* 40: 999 (June 25) 1932.
18. Ball L. H. Tic Douloureux of the Glossopharyngeal Nerve. *Austral. & New Zealand J. Surg.* 2: 94 (July) 1932.
19. Singleton A. O. Texas State J. Med. 30: 318-322 (Sept.) 1931.
20. Peet M. M. Glossopharyngeal Neuralgia. *Ann. Surg.* 101: 166 (Jan.) 1935.

geal wall, the tonsillar region, the base of the tongue and rarely the ear, while trigger areas of trigeminal neuralgia occur in the buccal mucous membrane and about the lips, nose and various areas on the face. When the first or second divisions of the trigeminal nerve are affected there should be little or no difficulty in the differentiation of these two neuralgias, but when the third division of the trigeminal is involved a little more care must be exercised to differentiate it from the ninth

cases, even when one seems typical, the examination should include a careful inspection of the larynx, the upper end of the esophagus, the palate, the nasopharynx and the posterior molar teeth and tonsils, because malignant conditions in these regions are prone to produce symptoms suggestive of glossopharyngeal neuralgia.

TREATMENT

Medical and surgical treatment are the two methods available in the treatment of glossopharyngeal neuralgia. The medical treatment has been referred to in each of the reported cases, and in our experience trichloroethylene has been the only drug that has really been efficient in giving a marked amount of relief from this condition. It is administered by the patient's inhaling from 15 to 30 drops from three to four times a day. The patient is instructed to lie down, drop the required number of drops into a gauze pad or kerchief, place it over the nose and inhale the vapor as long as he can smell the trichloroethylene. This inhalation is to be repeated three or four times a day.

The surgical treatment of choice is the intracranial section of the ninth nerve in the posterior fossa. The exposure makes it possible to observe this area for tumors, which have occasionally given rise to this neuralgia. Intracranial section prevents the recurrence of symptoms, which is possible following a peripheral section. Adson believes that intracranial section is no more formidable than the neck dissection to reach the glossopharyngeal nerve. The disadvantage of the periph-

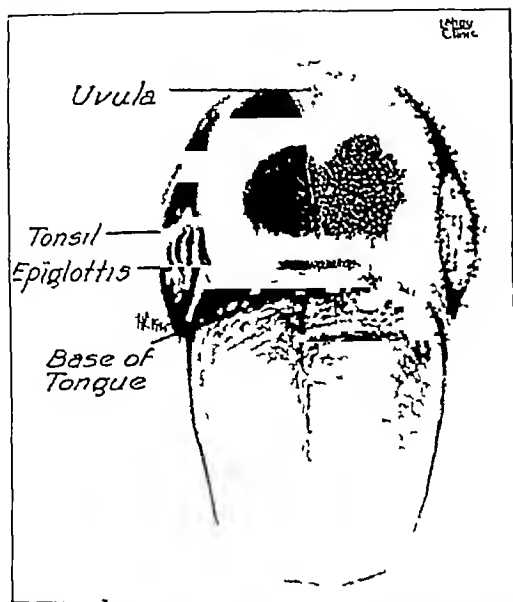


Fig 1—Area of anesthesia Oct 23 1935. Stippling represents area of anesthesia following intracranial section of the ninth glossopharyngeal nerve.

nerve. In either neuralgia the pain may seem to spread beyond the distribution of the fifth or ninth nerves, but careful questioning will reveal the point of greatest intensity or the real pain to be in the area supplied by the affected nerve. Cocainization of the mucous membranes over the distribution of the ninth nerve will, as a rule, temporarily control the paroxysmal pain from this nerve. Peet²⁰ reports combined glossopharyngeal and trigeminal neuralgia in five cases in which he feels very positive about the correctness of the diagnosis. One of his cases is unique in that there was a glossopharyngeal neuralgia on each side, but the right and left sides were never affected simultaneously and the patient had also a left trigeminal neuralgia which had been relieved by operation previous to the onset of the glossopharyngeal neuralgia.

Weisenburg²¹ was apparently the first to direct attention to the resemblance of unusual pain in the distribution of the ninth nerve to the major trigeminal neuralgia. The pain persisted after operation with partial removal of a gasserian ganglion, and during the last year of the patient's life a "trigger" area was present at the base of the tongue. The pain, however, was not idiopathic but due to a tumor in the cerebellopontile angle. For this reason Dandy stressed the importance of intracranial section of the ninth nerve so that this region might be visualized at the time of operation.

Earlier in this paper a case was referred to in which the glossopharyngeal nerve was cut and the pain was later found to be due to a carcinoma growing from the larynx and involving the pharynx. Certainly in all

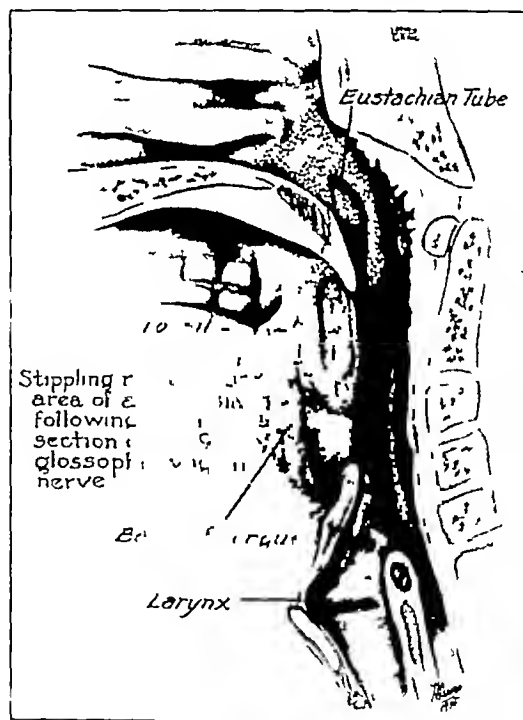


Fig 2—Area of anesthesia Oct 23 1935.

eral section and avulsion is that the condition may recur, and secondly that the intracranial region cannot be visualized. An alcohol injection is not feasible because of the small size of the nerve and its very close relation to the vagus, the jugular and the hypoglossal nerve. It is remarkable that the patient following intracranial section of one glossopharyngeal nerve is not conscious of any paresthesia or discomfort whatever from the loss of sensation of the nerve.

²¹ Weisenburg T H. Cerebellopontile Tumor Diagnosed for Six Years as Tic Douloureux. The Symptoms of Irritation of the Ninth and Twelfth Cranial Nerves, J A M A 54: 1600 (May 14) 1910.

ABSTRACT OF DISCUSSION

DR J JAY KEEGAN, Omaha The possibility of relief of intolerable spasmodic pain in the throat by intracranial section of the ninth or glossopharyngeal nerve is worth knowing both because of necessity of differentiating the pain of glossopharyngeal neuralgia from trifacial neuralgia and because of the misdirected nose and throat surgery which will not relieve the condition. The term neuralgia, like rheumatism, is used rather freely by both physicians and the public to denote pain of great variety of character and origin. Pain that is constant aching or throbbing should not be called neuralgia. The essentials of neuralgic pain are intermittent, sharp, shooting pain which is brought on by some movement or irritation of a trigger zone. In glossopharyngeal neuralgia this trigger zone is in the tonsillar region and can be relieved temporarily by cocaine anesthetization of this region. The pain radiates to the angle of the jaw and may be confused with trifacial neuralgia. Added differentiation may be obtained by procaine hydrochloride injection of the inferior maxillary branch of the fifth nerve, which will not relieve glossopharyngeal neuralgia. A condition closely related to glossopharyngeal neuralgia but perhaps more of a



Fig 3—Healed incision ten days after operation

neuritis, is the localized pain that occasionally develops after radium treatment of a tumor in the lateral pharyngeal wall. It is recognized that the dense scar which develops from intense radium treatment may so involve nerve endings that a very painful neuritis follows. This applies to the face and the cervix of the uterus as well as to the throat and may necessitate some attempt at surgical relief. I have had two such cases very similar to glossopharyngeal neuralgia in which section of the ninth nerve intracranially was done to obtain relief. Likewise in cases of extensive malignant involvement of the face and throat intracranial section of both the fifth and ninth nerves may be necessary to gain some relief from excruciating pain. It should be emphasized however that sensory root section can be expected to relieve only sharp shooting pain of neuralgic character and that continuous aching or boring pain probably from tumor pressure or infection cannot be entirely relieved by nerve section. The intracranial surgical approach to the ninth nerve is not particularly difficult or serious in the hands of one skilled in neurosurgery. The operation can be done under local anesthesia and advanced age in itself is no contraindication. The patient should tolerate the operation if his health permits reasonable activity. The ninth nerve is identified below the eighth nerve as a small filament at the upper border of the tenth nerve. It is so small that doubt cannot help but be felt that its section will relieve such an extensive painful syndrome.

DR FRENCH K HANSEL, St Louis It is interesting that although trigeminal neuralgia has been recognized as a definite clinical syndrome for more than 150 years, glossopharyngeal neuralgia had not been reported previous to 1920. The pain occurring in these two types of neuralgia is typical and characteristic and there should be no difficulty in diagnosis. It is noteworthy that, in some cases of glossopharyngeal neuralgia exacerbations may be excited by irritation of the auricle. Although other otolaryngologic conditions may be associated with glossopharyngeal neuralgia, no etiologic association is likely, but they may influence the trigger mechanism. For example, I had the opportunity to observe a patient who developed typical attacks of glossopharyngeal neuralgia during the treatment of a chronic otitis media. An analysis of the clinical history revealed the fact that the patient had had similar attacks fifteen years previously. He had experienced a period of relief lasting as long as thirteen years and before the time he was being treated for chronic otitis media he had been free of pain for four years. As a result of the treatment of the middle ear, the trigger mechanism was stimulated and the patient again began to have attacks of neuralgia. The patient was eventually relieved of all pain by intracranial section of the glossopharyngeal nerve.

DR WALTER B HOOVER, Boston I wish to thank Dr Keegan for his discussion and the mention of the operative procedure. I owe a great deal to Dr Hansel because he brought this condition to my attention. I have been looking for it during the past eight years since Dr Hansel called my attention to it and I was able to find two cases only in the past year. Glossopharyngeal neuralgia is relatively infrequent but it is much more frequent than is recognized.

PERMANENCE OF CURE FOLLOWING RUPTURED DUODENAL ULCER

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The acute perforation of a duodenal ulcer followed by the immediate emptying of gastric or duodenal contents into the abdominal cavity confronts the surgeon with two problems: first and foremost to rescue the patient from impending death and, second, to restore permanently symptom-free digestive function. Surgeons are agreed that immediate surgical intervention is imperative in all but moribund patients and that in few other abdominal emergencies is the time factor of greater importance.

The choice of operative procedure, however, has long been a subject of considerable interest, outstanding surgeons disagreeing as to the type of operation most likely to accomplish the ideal result.

The conservative school believes that the operation of simple closure of the ulcer will lower the operative mortality to a minimum and will accomplish a lasting cure in the majority of those who recover only from 10 to 20 per cent requiring a later gastro-enterostomy for obstruction.

A small number of large calloused ulcers, impossible of closure without producing obvious obstruction to the duodenum, require an immediate gastro-enterostomy. Trout¹ McClure² Fleming³ Dineen⁴ Finney⁵ Urru

Read before the Section on Surgery General and Abdominal at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

- 1 Trout, H. H. The Treatment of Perforated Peptic Ulcers. *J. A. M. A.* 104:6 (Jan. 5) 1935.
- 2 McClure Roy in discussion of Trout¹.
- 3 Fleming, B. I. Acute Perforation of Duodenal Ulcers. *J. A. M. A.* 97:6 (July 4) 1933.
- 4 Dineen, J. A. *Ann. Surg.* 90:102 (Dec.) 1929.
- 5 Finney, J. M. T. *Am. J. Surg.* 1:323 (Dec.) 1936.

tia,⁶ and the senior author are among this conservative group. The majority of final results published include both gastric and duodenal ulcer and it is difficult to separate the two groups, but approximately 60 to 65 per cent of those with simple closure were reported cured from 10 to 15 per cent received delayed gastro-enterostomy for obstruction and the remainder required medical management for continued distress.

A less conservative school, ably championed by Deaver⁸ believes that closure of the ulcer with immediate routine gastro-enterostomy will reduce the mortality and morbidity and remove the necessity of a second operation for obstruction. This group believes that the gastro-enterostomy will aid in the healing of the closed ulcer or accompanying ulcers and will prevent postoperative leakage, hemorrhage or a second perforation. These complications occur however, in only a small percentage of simple closures and have been reported in patients receiving primary gastro-enterostomy. The published mortality rates for this double procedure are not comparable with those of simple closure as it is employed in the main in early cases, although Deaver's mortality rate of 7.5 per cent for his entire series is extremely low. Such additional surgery on a critically ill patient must carry a mortality of its own in any but the most gifted hands. Lewisohn⁹ reports gastrojejunal symptoms in 34 per cent of his cases, while Dineen, Brenner¹⁰ and Urrutia report continued ulcer distress in from 25 to over 50 per cent.

Pyloroplasty has its advocates but Hinton¹¹ found that, of nine of the Horsley type followed, only two were symptom free. White and Patterson¹² found that, of seven pyloroplasties performed, six patients lived but all had continued distress, attributed to the too rapid emptying of the stomach. McDonald,¹³ however, advises pyloroplasty under twelve hours.

A recent more radical school of foreign origin has accepted partial gastrectomy as the operation of choice. Graves,¹⁴ in his survey of the German clinics, mentions the fact that 60 per cent of perforated ulcers occur in strong, heavy-eating laborers, often with hyperplastic or atrophic stomachs and in from 20 to 50 per cent of whom multiple ulcers are found. Gastro-enterostomy was formerly performed on these patients with a low mortality but a high incidence of hemorrhage, leakage and perforation of accompanying ulcers, with the result

that, in recent years, partial gastrectomy has been widely adopted. Finsterer,¹⁵ however, still advises simple closure for acute perforations of both the duodenal and the gastric type. The mortality in partial gastrectomies has remained low in early selected cases in the best clinics, but long-term follow-up studies are lacking and it is doubtful whether the gastric disease is comparable to that found in this country. Lewisohn, however, found 50 per cent multiple ulcers in gastric resections for ulcer and in reporting eighty-eight cases of perforated ulcer with a mortality of 31 per cent, stated that 39 per cent of the cases followed were not cured by simple closure, with or without gastro-enterostomy.

The operation of choice in these cases is therefore still in question and it was for this reason that the following study of our own series of seventy-eight cases of acute perforated duodenal ulcer was made.

Four of these patients were operated on outside the hospital by the senior author and seventy-four acute perforated duodenal ulcers have been treated in the Robert Packer Hospital over a twenty-six year period that ended in April 1936, and excluding sixteen acute perforated gastric ulcers also all perforations of the subacute or chronic variety of the duodenum or stomach. These occurred among 112,136 admissions, 69,876 of which were to the surgical service, being one in 1,515 general admissions or one in 944 surgical admissions. But two of our patients were females and the ages ranged from 18 to 85, the average being 44 years.

A previous history of ulcer distress was usually obtained and the abrupt onset of excruciating epigastric pain, fixing the patient in a jack-knife position from which he could be straightened out only after overcoming his strenuous objections, was of great diagnostic value. One young man however, walked into the clinic with symptoms referable to the right lower quadrant, the latter being not uncommon and confusing the condition with acute appendicitis. Vomiting, occurring but once or twice, was present in about 50 per cent, five vomiting blood. A leukocytosis with a high differential count was nearly always present a few hours after the onset.



Fig 2—Air bubble beneath the diaphragm



Fig 1—Air bubble beneath the diaphragm



Fig 3—Air bubble beneath the diaphragm

- 6 Urrutia L. *Ann Surg* 90: 73 (July) 1929
- 7 Guthrie Donald. *New York State J. Med* 23: 66 (Feb) 1923
- 8 Deaver J. M. and Pfeiffer D. B. *Ann Surg* 73: 441 (April) 1921
- 9 Lewisohn Richard. *Ann Surg* 87: 855 (June) 1928
- 10 Brenner E. C. *Ann. Surg* 86: 393 (Sept.) 1927
- 11 Hinton J. W. *Surg. Gynec. & Obst.* 52: 778 (March) 1931
- 12 White, W. C., and Patterson H. A. *Ann Surg* 94: 242 (Aug) 1931
- 13 McDonald J. M. in discussion of Trout¹
- 14 Graves A. M. *Ann Surg* 98: 197 (Aug) 1933

- 15 Finsterer Hans. Abstract of Surgical Treatment of Gastric and Duodenal Ulcers. Oct 28 1934 meeting of Royal Society of Medicine of Ghent. Illinois M. J. 69: 98 (Jan) 1936

A tense boardlike rigidity and general tenderness, not equaled in any other abdominal catastrophe, was constant, the breathing being of the costal type. In late cases, however, the picture changed to one of general peritonitis with alleviation of the intense pain and rigidity. Pneumoperitoneum, determined by correct fluoroscopic examination, was of distinct value in many cases, and Singer and Vaughan¹⁶ maintain that



Fig. 4—Eight years after simple closure for acute perforated duodenal ulcer

it is effective in 86 per cent of their cases proved by operation. Figures 1, 2 and 3 are reproductions of roentgenograms of three cases of perforated ulcer revealing the air pockets beneath the diaphragm.

The treatment employed in this clinic has been one of simple closure, a gastro-enterostomy being performed at a later date only if obstruction developed. Four patients, however, required a gastro-enterostomy at the first operation because of obvious obstruction



Fig. 5—Nine years after simple closure

of the duodenum. It is surprising, however, how much the duodenal lumen may be encroached on without producing obstructive symptoms. The ulcer in each case was closed by through and through sutures of intestinal chromic catgut and inverted by a second row of catgut or a purse-string of linen. The defect was protected by a tab of gastrohepatic omentum.

Excluding six patients entering the hospital in a moribund condition and dying without operation, there were fifteen patients who succumbed giving an operative mortality of 20.8 per cent. Postmortem examinations were performed in every instance, the results appearing in table 1.

Five patients, averaging eighteen hours' delay, drained both in the epigastrium and in the pelvis, died of general peritonitis. While it is true that, as the result of the action of hydrochloric acid, the contents of the stomach are practically sterile from three to four hours after ingestion, many of these patients had taken fluids or food at a shorter period before perforation. Deaver reported a positive culture in eleven of thirty-four cases, while Brutt¹⁷ obtained a positive culture in 74 per cent of a six to twelve hour group and in 93 per cent after twelve hours, 112 patients having cultures taken and *Streptococcus haemolyticus* and *viridans*, *Bacillus coli* and *staphylococci* being



Fig. 6—Nineteen years after simple closure

obtained. Blalock¹⁸ has shown that the injection of infected bile and pancreatic juice into the peritoneal cavity of dogs is much more lethal than the uninfected juices, also that the combination of the two is more deleterious than either alone. Trout has recently emphasized the importance of poor oral hygiene. Hinton, Dineen and many others have listed general peritonitis as by far the leading cause of death.

Three patients, operated on within an average of five hours after perforation, died of bowel obstruction at the site of drainage tubes, the former custom being to drain the pelvis and upper abdomen in all cases. One patient with five hours' delay died of abdominal abscesses, in spite of drainage in both the epigastrium and the pelvis, while one, with nine hours delay, drained only in the pelvis and died of subhepatic abscess and empyema. These collections of pus were drained without success.

At present it is our custom to close without drainage all cases of less than eight hours' delay unless poor

¹⁶ Vaughan R. T. and Singer H. A. *Surg. Gynec. & Obst.* 49: 593 (Nov.) 1929.

¹⁷ Brutt, H. quoted by Fleming¹.

¹⁸ Blalock Alfred. *Surg. Gynec. & Obst.* 61: 20 (July) 1935.

oral hygiene or extensive soiling is present. It is probable that the peritoneum can destroy the inhibited bacteria present in the early case, once the leak is stopped, with avoidance of the danger of bowel obstruction. The bacteria in the late case, however, have regained their vigor, as shown by the high percentage of positive cultures, and drainage above and below is indicated.



Fig 7—Two years after simple closure.

One perforation occurred in a patient who was in the hospital under treatment for severe massive hemorrhage from duodenal ulcer and on immediate operation, the abdomen was found filled with blood, death ensuing in a few hours in spite of transfusions. In one case the skin sutures and silkworm retention sutures were removed by mistake on the seventh day after operation, followed by wound disruption and death.

Bilateral parotitis led to death in one case on the tenth postoperative day. Following this experience, careful oral hygiene and the chewing of gum after operation were adopted in the hospital.

TABLE 1—Causes of Death in Fifteen Cases

| Cause of Death | Cases | Average Hours Delay |
|--------------------------------|-------|---------------------|
| General peritonitis | 5 | 18 |
| Bowel obstruction | 3 | 5 |
| Lobar pneumonia | 2 | 15 |
| Abdominal abscess | 1 | 5 |
| Subhepatic abscess and empyema | 1 | 9 |
| Hemorrhage and shock | 1 | 1 |
| Bilateral parotitis | 1 | 20 |
| Wound rupture | 1 | 1 |

It is important to note that not a single instance of reoperation, leakage of the ulcer or perforation of a second ulcer was present in this series. It is difficult to see therefore, how a more radical procedure, such as gastro-enterostomy or a partial gastrectomy, could have reduced this primary mortality. Table 2 shows the mortality.

Ten delayed gastro-enterostomies were performed without a death, while two of the four primary cases were fatal. In the delayed cases obstruction usually developed within a few months but Dineen has empha-

sized the fact that obstruction may be the result of pylorospasm initiated by nervous upsets which will respond to medical management.

A careful follow up, often including roentgenographic examination, was made on all but three of the fifty-seven patients who recovered, the results appearing in table 3.

The end results over a twenty-six year period of conservative treatment were as follows. One patient in five with simple closure died while, of those who lived, less than one in five required delayed gastro-enterostomy for obstruction. Of the remainder who

TABLE 2—Mortality

| | Cases | Deaths | Percentage |
|------------------------------|-------|--------|------------|
| Duodenal ulcers | 78 | 21 | 26.9 |
| Operative cases | 72 | 15 | 20.8 |
| Simple closures | 68 | 13 | 19.1 |
| Primary gastro-enterostomies | 4 | 2 | 50 |
| Delayed gastro-enterostomies | 10 | 0 | 0 |

lived, with merely a simple closure of the perforation, over 95 per cent of the patients followed are well today or were until their death from unrelated causes. The ten patients who were reoperated on for obstruction all recovered, only one of the nine followed having symptoms and one reported dead from cancer.

Figures 3 to 10 are reproductions of roentgenograms of seven patients symptom free from two to twenty-one years after simple closure.

SUMMARY

Acute perforated duodenal ulcer is of rare occurrence but must be kept in mind.



Fig 8—Three years after simple closure.

The importance of a correct diagnosis and immediate surgical management are stressed, because in no other acute abdominal emergency is the time factor of greater importance.

Postmortem examination, which was carried out in every operative case that ended in death, gave no indication that primary gastro-enterostomy or a partial

gastrectomy would have made a reduction in the operative mortality

Drainage of the abdomen increases the hazard of bowel obstruction and may well be omitted in the majority of cases less than eight hours old

In this group of patients with simple closure who did not develop obstruction, over 95 per cent of those

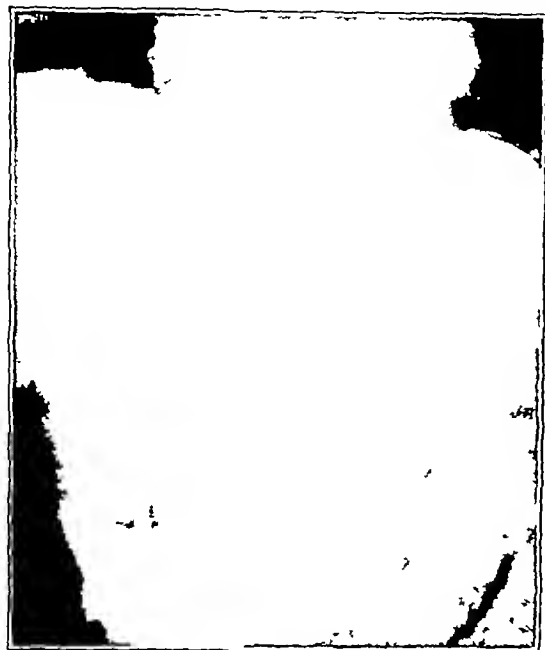


Fig 9—Two years after simple closure

followed remained well the perforation perhaps destroying the ulcer site to a degree approaching that of the cautery

Delayed gastro-enterostomy may be safely performed on those developing obstruction, the great majority remaining symptom free

TABLE 3—End Results in Fifty-Seven Cases

| | |
|---------------------------------|---|
| Primary gastro enterostomy | 2 well |
| Simple closure | 41 well 2 ulcer distress 2 unchecked |
| Plus delayed gastro enterostomy | 7 well 1 ulcer distress 1 cancer ? 1 unchecked |

From a review of the complete autopsies and a nearly complete follow up in this long term series of cases, it would appear that simple closure should be the procedure of choice in the majority of perforated duodenal ulcers

ABSTRACT OF DISCUSSION

DR. HARRY KERR Washington D C Opinions as to the ultimate results in perforated duodenal ulcer are undergoing a change Two or three decades ago perforation was considered as almost curative Indeed Gibson said in 1916 that a perforation was often a blessing in disguise to the ulcer sufferer Careful studies from larger city hospitals where early cases are more commonly seen showed a cure in only 60 or 65 per cent. This resulted in advocacy of procedures designed to cure the ulcer as well as the perforation Deaver as Drs Guthrie and Sharer have said advocated gastro-enterostomy Other

surgeons advocated pyloroplasty and some even gastric resection in acute perforated duodenal ulcer The bulk of evidence, however, still shows that the simplest operation to fit the individual case is the procedure of choice The perforation is an emergency and demands immediate operation The primary consideration is the closure of the perforation and the simplest way is best A single continuous suture placed at right angles to the axis of the bowel and enfolding the perforation will reduce the lumen much less than a suture placed parallel to the axis and will reduce the number of cases of primary gastro-enterostomy A single suture that is continuous and is well placed in the fibrous coat if subject to any tension will tighten and make the closure even firmer In the last twenty years twenty-three patients with acute duodenal perforation have been operated on at the Garfield Memorial Hospital in Washington. The immediate operative mortality was 8 per cent A follow up was obtained in twenty cases of the twenty three Thirteen of these were symptom free or almost symptom free with no indication of recurrence of the ulcer from one to fourteen years after operation In other words of our small group of acute perforated duodenal ulcers, 65 per cent showed cure of the ulcer following perforation The authors' figure of 95 per cent well after closure of acute perforation brings us back to the dictum of the past, that a perforation often cures an ulcer

DR EDWIN G RAMSDALL, White Plains, N Y This presentation emphasizing conservative treatment is most timely On the question of simple closure versus closure with added gastro-enterostomy, a few years ago, in response to a question naire, Dr Guthrie received replies from about 150 American surgeons Fourteen per cent added a gastro-enterostomy as a routine at the time of closure, 42 per cent never added a gastro enterostomy, and 41 per cent occasionally added a gastro enterostomy Drs Guthrie and Sharer have told of four cases



Fig 10—Twenty-one years after simple closure

in which at the time of the perforation on account of the presence of a probable obstruction they found it necessary to do a primary gastro-enterostomy They have illustrated the point that these cases should be individualized I have a follow up on sixteen consecutive patients on whom I operated at the White Plains Hospital On eleven a simple closure was done and on five a gastro-enterostomy was added Thirteen were operated on within six hours of perforation two within twelve hours and one at forty-two hours after perforation All recovered One required a secondary gastro enterostomy within a

year. One developed carcinoma four years after perforation. This patient has just had a partial gastric resection. The interesting problem is presented as to whether or not carcinoma was present in the edematous mass at the pylorus at the time of the perforation four years ago. Dr. Fwing has recently stated that he thought it was an error to assume that carcinoma of the stomach is always of short duration. Perhaps carcinomatous cells may remain at the site of a gastric lesion for a longer period than has been considered probable. Whether this patient had carcinoma four years ago or whether he developed it during the interval may be questioned. At any rate the possibility of carcinoma is another indication for the individual consideration of each case.

DR. W. T. COUCHLIN, St. Louis. I have never performed a gastric resection or a gastro-enterostomy at the time I had to deal with a perforation. Closing of the perforation has been my only effort. There was one case in which the tissues were so edematous that I couldn't turn the perforation in. It did very well with placing the omentum over it and stitching it around the perforation. The patients afterward have been of the same belief that some of the doctors are, namely, that one need not be concerned about them. I have found that is not so and that it has been necessary to operate on about half of them afterward for one difficulty or another. One patient died unoperated on. He said that he had had operation enough the first time. He bled to death. A point in diagnosis is the differentiation from angina pectoris. I made two such errors once, mistaking angina pectoris for an abdominal catastrophe and once mistaking an abdominal catastrophe for angina pectoris. The presence of free air under the diaphragm is diagnostic of perforation.

DR. ROBERT F. SHARFF, Oak Park, Ill. In conclusion I wish to state that our feeling in this surgical problem is as follows. If gastro-enterostomy is to be performed at the first operation, with simple closure it must accomplish one of two things: it must either reduce the primary mortality or improve the end results. In our mortality statistics there were fifteen deaths. In only seven of the fifteen could death be attributed to abdominal sepsis and most of these septic deaths were cases of long delayed operation in which peritonitis would be expected. Three of the nonseptic deaths were the result of bowel obstruction at the site of drainage tubes which gastro-enterostomy would not have saved. Another patient died of separation of the wound after the intern removed all sutures on the seventh postoperative day. Two patients died of pneumonia, one of bilateral parotitis, and one of shock following perforation of a bleeding ulcer, the abdomen being filled with blood. Certainly gastro-enterostomy would not have saved any of these patients. The important points in this complete autopsy study are that there was no evidence of later hemorrhage, no evidence of leakage of the closed ulcer, and no perforation of a recurrent ulcer. From these observations we do not believe that a gastro-enterostomy performed at the time of the original operation would have reduced the primary mortality. We made a follow-up study of end results on all but three of the fifty-five patients who lived. Only ten required a later gastro-enterostomy for obstruction and the operations were not followed by death. The follow-up on nine of these patients and forty-three of the remaining forty-five revealed all but three patients well. The latter still had ulcer distress. There were 95 per cent of cures. The patients in the well group were maintaining their weights and were actively at work, most of them paying little attention to their diet. X-ray films taken of a considerable number showed normal functioning stomachs although a scarred duodenum. Apparently the perforation destroyed the active seat of the ulcer.

'A Lean Horse for a Long Race'—In general young people who are below the standard weight for their height as of age 30 will do well to fatten themselves up to that standard, and older people do well to hold their weight down to the same standard, remembering the old adage: A lean horse for a long race.—Sherman H. C. Food and Health, New York, Macmillan Company, 1934.

ACUTE MESENTERIC ADENITIS

CHARLES STANLEY WHITE, M.D.

AND

J. LLOYD COLLINS, M.D.

WASHINGTON, D. C.

Acute inflammation of the mesenteric lymphatic glands has not been recognized as a medical or surgical entity but in the absence of much desirable data the symptoms or the disease, as the case may be, is usually designated by those few who have described it as acute mesenteric adenitis. This is not to be confused with the tuberculous adenitis that is often seen as a part of the picture of tuberculosis of the gastro-intestinal tract and peritoneum.

For a number of years I have been puzzled by having in my practice cases that appeared to be acute appendicitis clinically, but at operation the appendix did not seem pathologically consistent with the clinical picture. To be sure, the appendix was red, but it was never gangrenous or ruptured. A small quantity of clear or slightly cloudy fluid was found in the peritoneal cavity particularly adjacent to the cecum. The cecum and small bowel were abnormal only in the congested appearance of the vessels. The outstanding pathologic condition was found in the mesentery of the distal three feet of the small intestine. Here the glands were conspicuous by their number and size. Normally glands can neither be seen nor felt in this mesentery, but in these so-called cases of acute appendicitis the glands varied in size from 1 to 3 cm in diameter, were firm, were a distinct pearly gray, and numbered from three to a dozen or more. None of the glands were suppurating or gangrenous, and any one could be easily enucleated.

One procedure in such cases was to remove the appendix and wonder what was the relation between the glands, the appendix and the clinical signs and symptoms. All the patients recovered after two or three days of declining fever, and no drainage was employed in any case.

Several times I have removed a few of the mesenteric glands and sent them to laboratories for study. They have all failed to develop a growth in various mediums and the sections have shown lymphoid hyperplasia. They were definitely not tuberculous.

During the years 1934 and 1935 I had sixteen cases as described, which I have labeled acute mesenteric adenitis. There seems to be a seasonal periodicity in their appearance, not unlike an epidemic of a communicable disease. There is much information to be desired in reference to the cause and diagnosis of this disease. The sum total of present knowledge is fragmentary, but it may be possible to assemble a complete account of the disease if the various internists and operators add their bit to what there is. With the object of stimulating interest in this subject I am detailing a composite case and bringing up to date all the material contributions that were available.

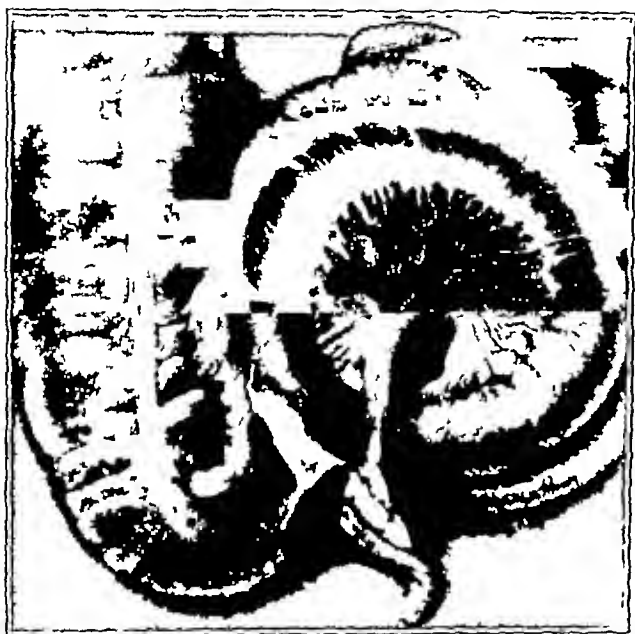
A cross section of the cases I have seen would give a history approximately as follows:

A child, aged 12 years, without previous history of recent illness, gastro-intestinal disorder, sore throat or exposure to contagious disease, is disturbed by abdominal pain. The pain is rather severe and constant but not colicky. It is rather general but is more marked

in the lower than in the upper part of the abdomen. There is generally an elevation of temperature from 102 to 103 F being rather the rule, with corresponding acceleration of the pulse and respiratory rate. Diarrhea is rarely present, and constipation is the rule. Nausea is present in nearly all cases, and vomiting has not been persistent and usually ceases after the stomach is entirely emptied. Foul vomitus has not been encountered.

The physical examination shows a slightly distended, tympanic abdomen, generally tender and resistant to pressure. While tenderness is marked in the lower right quadrant it is also conspicuous by its presence in the lower left quadrant. The abdomen is uniformly distended but not to an extreme degree. The physical examination of the throat and chest has been, in my experience, uniformly negative for gross pathologic changes.

The blood counts have shown for the most part moderate leukocytosis (from 8000 to 14000) but a



Acute mesenteric adenitis showing typical destruction of hyperplastic glands in the mesentery of the ileum

high percentage of polymorphonuclear neutrophils (from 80 to 95 per cent). The urine shows neither pus cells nor albumin.

With such a history of an illness of forty-eight hours or less in duration, scarcely any other diagnosis than acute appendicitis can be entertained, and the patient forthwith is admitted to a hospital and the appendix is removed without delay. With present knowledge of the fulminant nature of appendicitis, especially in children, any other treatment than surgical seems illogical.

At the operation as I have stated in an earlier paragraph the appendix appears in the role of the innocent bystander and promptly meets the usual fate of that individual.

Such is the history and termination of these cases as I have seen them. There is something decidedly unsatisfying in the entire performance in that (1) the diagnosis was inaccurate, (2) it is very possible the patient would have recovered without operation, (3) the pathologic condition remains unexplained and (4)

the error in diagnosis in all probability will be repeated, as no differential diagnosis can be established with the present inadequate data.

I have found a number of references to this disease (if I may so term it temporarily) by a score or more of contributors to the literature in this country, in England and on the continent, but no one has traced the inciting agent, if one exists. A possible exception may be made in the paper of Goldberg and Nathanson¹ of Chicago, who reported nineteen cases studied rather carefully. I shall consider their cases later.

Struthers² of Edinburgh seems to have been the first to call attention to this disease, in a paper in 1921 entitled "Mesenteric Lymphadenitis Simulating Appendicitis." He leaned to tuberculosis as the underlying cause but states that it is far from conclusive. Three of the four cases reported were definitely not tuberculous.

Leonard Freeman³ of Denver in 1923 writing on this subject, satisfies himself that the adenitis is due to absorption from the intestinal canal and further suggests that it follows the ingestion of contaminated milk or other foods. He offers the theory that it is of a tuberculous nature but strictly a bovine type guinea-pig inoculations, however, were not convincing.

Speese⁴ in 1929 devoted considerable space to the discussion of the etiology and suggested

(a) Stasis of fecal current with increased virulence of the organisms in the ileum

(b) Inflammatory processes with abrasions and small abscesses in the bowel in this region with secondary infection of the glands

(c) Ulcerations in Peyer's patches, with secondary gland involvement

Wilensky and Hahn⁵ in 1926 made the statement that the mesenteric lymph node of the ileum is never seen in the usual types of acute appendicitis, and since the appendix was not involved in their cases of mesenteric adenitis there is no clinical relationship between the two conditions.

I found approximately twenty other references to the subject, all very much of the same tenor. Wagner reported a case he ascribed to trauma. The consensus is overwhelmingly against a tuberculous invasion.

Goldberg and Nathanson,¹ in an analysis of their nineteen cases conclude that the disease can be laid at the door of the hemolytic streptococcus because the organism was found in all the throats of which cultures were taken, eight out of nineteen, and add that "the same organism has been isolated from a small percentage of the nodes removed and studied." Since such a study was made in but one case, this leaves much to be desired in fixing the causal relationship. I do not attach much importance to the presence of streptococci in the throat in connecting up the evidence. The authors are in accord with practically every observer in exonerating the appendix and agree with the general opinion that a prompt exploratory operation should be done, as a differential diagnosis is quite impossible. They very properly take the stand that this is a safer procedure as a surgical principle than to treat such a case medically.

1 Goldberg S L and Nathanson I T *Am J Surg* 25:35-40 (July) 1934

2 Struthers J W *Edinburgh M J* 27:22 (July) 1921

3 Freeman Leonard *Surg Gynec & Obst* 37:149 (Aug) 1923

4 Speese J *Pennsylvania M J* 32:225 (Jan) 1929

5 Wilensky A O and Hahn L J *Ann Surg* 83:812 (Jun) 1926

My experience has been interesting, but so far with rather negative results. I have not consistently found an organism, and the microscopic sections have been without differential features. I can state that it is not tuberculous and is not associated with appendicitis or with any microscopic characteristic changes in the intestine or mesentery that offer a promising clue of the disease. But this is not new.

One pathologic report by Dr. Earl B. McKinley⁶ offers a ray of hope. He said:

The lymph nodes in the case of E. E. have just been brought to my attention and upon examination I find no inclusion bodies in any of the cells which would be pathognomonic of virus infection, such as influenza. However, only about half of the virus diseases are associated with inclusion bodies and these have never been described as yet for influenza. One might try to infect ferrets with emulsions of mesenteric lymph nodes from such cases as this and in that way demonstrate the presence of the virus.

It requires considerable temerity on my part to suggest poliomyelitis or any other virus disease as a cause of mesenteric adenitis, in view of my incomplete study, but I believe that it is entitled to consideration. The conception of poliomyelitis has changed somewhat in recent years, and, while it may not fit into the symptomatology of mesenteric adenitis, one should consider for a moment the following statement by Burrows:⁷

It seems quite evident, therefore, from all available evidence at the present time that the primary lesions of the poliomyelitis are not in the central nervous system. Poliomyelitis is probably a misnomer as it is applied to the disease as a whole. It is merely a complication of a widespread infectious disease. The disease is not a primary disease of the central nervous system, it is a disease of the lymphatic systems of the body. The lesions presented are not of the kind in which pus appears early, but the lesion is rather that of an acute hyperplastic lymphadenitis. The pathologic picture in all of the fatal cases was a general lymphoid hyperplasia, which was most marked in the solitary follicles of the gastro-intestinal tract, Peyer's patches and the mesenteric lymph nodes.

He further states:

As Leake clearly pointed out, the systemic changes that are present in all cases are fever, headache and gastro-intestinal disturbances. The latter disturbances, which have been noted most often, are constipation and slight distention.

The other probable common virus disease is influenza. One hears much about "gastro-intestinal flu," but some members of the profession are skeptical of its existence and believe that the term is merely a camouflage for ignorance. The majority of country physicians, and I still believe they are the keenest observers, have no doubt that influenza of the gastro-intestinal tract is as much of a medical entity as pneumonia.

The pathology of influenza is not definitely known except in the fatal cases, and here a lung complication usually predominates. I certainly have little or no information about the pathologic changes in the gastro-intestinal tract.

Earl B. McKinley,⁸ in discussing the recent St. Louis epidemic of poliomyelitis, stated:

A study of the epidemiology and character of these various epidemics brings to mind again the possibility of their relation to epidemic influenza of probable filtrable virus origin, which, in some epidemics, may be of gastro-intestinal nature, in others,

upper respiratory, and possibly in others, one or both of these clinical pictures with the predominating effects soon after onset manifested in the central nervous system, the pathology being that of an encephalitis. The clinical history of this disease, the lack of discovery of the true etiological agent over these many years, permits at least the raising of the question again as to its possible specific relation to epidemic influenza, most probably caused by an ultramicroscopic virus.

I admit my failure to discover the cause of mesenteric adenitis and have substituted suggestions for facts. It is my hope that the profession may have the time and opportunity to write the last chapter, based on further laboratory study.

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SLOW CARBON MONOXIDE ASPHYXIATION

A NEGLECTED CLINICAL PROBLEM

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Although much has been written on the subject of acute carbon monoxide poisoning, there is a dearth of literature on chronic carbon monoxide poisoning. This may be attributed to the fact that there is no unanimity of opinion as to whether frequent exposures to sublethal amounts of the gas over a considerable period of time causes any clinical phenomena or pathologic changes. Some authoritative textbooks on medicine either do not recognize the existence of chronic carbon monoxide poisoning as a clinical entity or lead one into doubt and pass the matter over with a mere reference to the subject.

Because of this prevailing doubt, I have critically studied from the standpoint of symptomatology and clinical manifestations a series of ninety-seven patients who were repeatedly subjected to sublethal doses of carbon monoxide, at varying intervals over prolonged periods. The results of these studies, as well as those which I¹ previously reported, seem to furnish ample data on which, considered as a result of slow carbon monoxide asphyxiation, a definite clinical entity can be established.

Carbon monoxide as a cause of accidental and suicidal deaths in the United States ranks second to automobile accidents. The latter are responsible for about 36,400 deaths annually and nearly a million injuries, entailing an estimated financial loss of billions of dollars. Unfortunately, no comprehensive statistics of deaths resulting from carbon monoxide poisoning are available to make a comparison of these two great hazards. However, in New York City, where reliable statistics have been recorded, there were 5,289 deaths during a five year period, 1928-1932. This incidence of over 1,000 deaths a year has been exceeded by only a comparatively small margin resulting from highway accidents with an average of 1,400 deaths a year.

Reasoning by analogy, I concluded that no noxious gas so potent when inhaled in atmospheric dilutions of 1 per cent or even less as to cause almost instantaneous death can be incapable of producing symptoms if inhaled in lesser concentration over a longer period of time.

Read before the thirty-seventh annual meeting of the American Therapeutic Society, Kansas City, Mo., May 8, 1936.
1. Beck, H. G. The Clinical Manifestations of Chronic Carbon Monoxide Poisoning. *Ann. Clin. Med.* 5:1088-1096 (June) 1927.

⁶ McKinley, E. B. Personal communication to the author.
⁷ Burrows, M. T. Is Poliomyelitis a Disease of the Lymphatic System? *Arch. Int. Med.* 48:33-50 (July) 1931.
⁸ McKinley, E. B. and Verder, E. *Proc. Soc. Exper. Biol. & Med.* 21:297-299 (Nov.) 1933.

Neither time nor space permits of a discussion of the various sources of carbon monoxide gas or of its chemical and physical properties except to state that the gas is colorless, odorless, tasteless, nonirritating and nontoxic from a chemical point of view. The chief property on which the injurious action depends is its extraordinary affinity for hemoglobin, which is about 300 times greater than that of oxygen. This affinity results in the replacement of the oxygen in the hemoglobin molecule by carbon monoxide, inducing a state of anoxemia. Thus the symptoms produced are not directly due to carbon monoxide but indirectly to anoxemia. For this reason the term "chronic carbon monoxide anoxemia" would designate the true nature of the condition better than chronic carbon monoxide poisoning, as the latter is not only a misnomer but actually misleading.

The symptoms therefore, whether in the acute or chronic form, are identical with those occurring in other anoxic states, as, for example

1 Those due to low oxygen pressure in the arterial blood resulting from low oxygen pressure in inspired air (altitude) or mechanical interference with oxygen absorption (pulmonary edema, emphysema, bronchial asthma)

2 Those due to diminished oxygen-carrying capacity of the hemoglobin (anemia, methemoglobinemia, carbon monoxide)

3 Those due to impeded blood flow through tissues (shock, hemorrhages, cardiac failure, Raynaud's disease)

4 Those due to poisoning of tissue cells with consequent failure to utilize sufficient oxygen (cyanide, alcohol)

Bancroft² designated these forms as anoxic, anemic, stagnant and histotoxic anoxias respectively. All these conditions manifest certain symptoms in common because of insufficient oxygen to cause normal oxidation. The human organism as a whole cannot withstand the complete withdrawal of oxygen longer than a few minutes, whereas isolated tissues may recover after the complete withdrawal for several hours.

Structures that demand a rich blood supply, as the central nervous system and the heart muscles, are particularly susceptible to the effects of anoxemia. As a result the dominant symptoms of carbon monoxide anoxemia are referable to these organs. The symptoms produced naturally depend on the amount and rate of absorption of carbon monoxide by the blood and are governed by the amount of gas contained in the air inhaled, the temperature and humidity of the atmosphere, and the physical activity, general health and susceptibility of the individual exposed.

An atmospheric mixture containing 0.01 per cent or less of carbon monoxide may be inhaled indefinitely without producing symptoms. However, a mixture containing 0.05 per cent is sufficient to produce symptoms in the course of several hours, whereas a mixture of from 0.1 to 0.2 per cent causes severe symptoms dangerous to life, and a 1 per cent mixture results in almost instantaneous death.

In other words, the severity of the symptoms produced is in accord with the carbon monoxide concentration of the blood and the rapidity with which the gas is absorbed. Practically no symptoms occur with a saturation of less than 30 per cent. At 40 per cent definite neuromuscular symptoms develop. At 50 per cent or higher the symptoms become aggravated and convulsions, delirium, paralysis and coma may supervene. Death almost invariably ensues when the concentration reaches 80 per cent.

The manifestations of carbon monoxide anoxemia may be divided clinically into three forms: (1) the acute form with sudden onset of symptoms resulting from overwhelming doses of the gas, (2) the acute form with delayed symptoms or sequelae in which the individual apparently recovers from acute asphyxiation but several days later suddenly develops severe nervous symptoms, (3) the chronic form, which will be discussed in this paper.

In the acute form the symptoms may develop instantaneously and, without warning, the victim may lose consciousness and die if not promptly removed from exposure to the asphyxiating gas. If carbon monoxide is inhaled in greater atmospheric dilution but in sufficient amount to cause a blood saturation of from 40 to 50 per cent, a characteristic train of symptoms develops. Among the outspoken symptoms may be mentioned frontal headaches, dizziness, yawning, blurring of vision, mydriasis, muscular weakness, tremulousness, ataxia, anorexia, nausea, bradycardia, hypertension, hyperpnea, palpitation and cutaneous flushing. With continued exposure these symptoms are followed by stupor, syncope, mental confusion, delirium, increased pulse rate, lowered blood pressure, slight elevation of temperature and glycosuria.

Patients generally recover from acute asphyxiation without any after-effects if promptly removed from the source of carbon monoxide. However, there are exceptions when several days after an apparently complete recovery severe secondary symptoms suddenly develop, chiefly referable to the central nervous system. These forms constitute the delayed type and are frequently fatal. The lesions found at autopsies are often widespread and may involve any portion of the central nervous system. As a result, symptoms or combinations of symptoms are produced which simulate many organic nervous diseases. These may be in the nature of cerebral hemorrhage, encephalitis, multiple sclerosis, spastic paraplegia, chorea and tetany. Other nervous symptoms that may be encountered are ocular palsy, optic neuritis, anesthesia, hyperesthesia and paresthesia. The mental symptoms include amnesia, aphasia, emotional instability, confusion, transient mania, dementia and feebleness.

CHRONIC CARBON MONOXIDE ANOXEMIA

Individuals repeatedly subjected to moderate or minimal toxic amounts of the gas causing comparative slow asphyxiation develop symptoms similar to those occurring in the milder forms of acute asphyxiation. It is in cases of prolonged and moderately severe carbon monoxide anoxemia that symptoms due to structural organic changes manifest themselves not unlike those occurring in the delayed type of acute onset.

In the ensuing description of chronic carbon monoxide anoxemia the symptomatology is largely based on the study and analysis of this series of ninety-seven cases which have been under my personal observation.

Forty-nine of this group were residents of West Virginia and thirty-seven of Maryland. The remaining ones were distributed through Pennsylvania, Ohio, New Jersey, Kentucky and Oklahoma. Sixty-seven were males and thirty females. The source of carbon monoxide was from natural gas (forty-three), illuminating gas (twenty-eight), gasoline engines chiefly automobiles (twenty-four), blast furnace and coke oven (each one). The duration of intermittent exposure ranged from several months to eighteen years. The

chief complaints were headache, vertigo, nervousness, neuromuscular pains, digestive disturbances, dyspnea and palpitation. The most outstanding symptom was headache, which occurred in fifty-eight of the cases. This was usually dull in character and located in the frontal region. At times it was throbbing in character. Frequently the patients complained of a sense of pressure in the frontal area. Headache was associated with vertigo in forty-six instances, a symptom often distressing to the patient and occasionally incapacitating to those engaged in manual labor, on account of the disturbance of gait with which it was frequently associated. Thirty complained of weakness and tremulousness in the legs, with ataxia. Several had complete loss of the use of the legs. Next to headache in frequency was the symptom of weakness which was mentioned in the history of fifty-two patients. This was usually general. However, many of the patients emphasized particularly weakness in the lower extremities. Practically all the patients in the series exhibited functional nervous and mental symptoms. Many were confirmed neurotics. Some were definitely psychotic.

NERVOUS AND MENTAL MANIFESTATIONS

Among the leading nervous and mental manifestations were feelings of depression, restlessness, anxiety and fears. Introspection, emotional upheavals, mental retardation with memory defects and at times confusion, besides headache, vertigo, weakness and ataxia already mentioned were prominent symptoms. Drowsiness and insomnia occurred frequently and in about equal proportion, paresthesia, chiefly in the extremities, occurred in thirty-six, speech defects in seven and paraplegia in three cases. Vasomotor instability was a fairly constant symptom, manifesting itself in morbid-flushing, local sweating, cold extremities and purplish congestion of the hands and feet. The special senses also were involved. Tinnitus aurium was an occasional complaint. Visual disturbances were noted in five cases. Sense of smell was perverted in some and diminished or completely abolished in others, and a certain number of patients complained of a bitter or copperish taste. The nervous and mental sequelae in carbon monoxide asphyxiation have been ably discussed in a recent article by Shillito, Drinker and Shaughnessy.³

NEUROMUSCULAR MANIFESTATIONS

Among the leading diagnostic symptoms relating to anoxemia from any cause are those referable to the neuromuscular mechanism. The outstanding symptom was pain, either dull aching in character or acutely spasmodic. The former appeared as general muscular pains or localized in the back, shoulders, epigastrium, lower part of the abdomen and the chest. Spasmodic pains occurred in the nature of cardiospasm, six cases, pylorospasm, one, enterospasm, three, anal spasm, three, and ureteral spasm, two. Dysuria, which was a symptom in ten cases, was probably due to spasm of the vesical sphincter.

In seventeen cases muscle spasm, usually confined to the legs, was observed, and in fourteen cases painful spasmodic contraction occurred in one or more of the toes. Fibrillating bundles of muscles were mentioned by twenty-six patients. Cramping of the toes and muscular twitching are regarded highly diagnostic of carbon monoxide anoxemia.

GASTRO-INTESTINAL MANIFESTATIONS

In the gastro-intestinal domain glossitis occurred in a few instances, and dysphagia, apparently due to cardiospasm, in several cases. The majority suffered with digestive disturbances. Gastric analysis was made in fifty-nine patients. Five showed achlorhydria and nineteen subacidity. In only seven instances was the acidity found to be above normal. Anorexia was a frequent complaint and sixteen patients mentioned nausea and vomiting as symptoms. Constipation of the spastic type occurred in forty-five and diarrhea in five. Two patients with symptoms of gastric ulcer for which they were receiving treatment were spontaneously relieved within three or four days after admission to the clinic. The prompt relief was attributed to their removal from daily exposure to escaping carbon monoxide from defective gas heaters. Thorough examinations failed to reveal any evidence of gastric ulcer in either case.

CARDIORESPIRATORY MANIFESTATIONS

Dyspnea and palpitation were the most common cardiorespiratory symptoms. Thirty-six patients complained of the former and twenty-seven of the latter. Coughing occurred in fifteen. Yawning, which is one of the most constant symptoms in the acute form, was mentioned in only five. Hoarseness was occasionally present. Precordial distress of varying degrees manifested itself in fourteen cases. Two of these patients suffered from typical angina pectoris and one developed symptoms of heart block.

Clinically there was a definite tendency toward slowing of the pulse and lowering of the blood pressure in contradistinction to increase in the pulse rate and elevation of the blood pressure in acute asphyxiation. Bradycardia occurred in approximately 30 per cent and hypotension in 50 per cent of the cases. Although all the patients were adults with an average age of approximately 40 years, in forty-eight the systolic pressure was 120 mm of mercury or less, and in twenty-five it was less than 110, with a diastolic pressure ranging from 60 to zero. There were only a few cases of hypertension. These were associated with arteriosclerosis and cardiorenal disease.

The basal metabolic rate, which was determined in thirty patients, was found to be significantly low, as should be expected. Excluding a case of toxic goiter with a rate of plus 49 per cent, the highest rate was plus 7.7 per cent. Twenty-four were either zero or below. Sixteen of these ranged from minus 11 to minus 40 per cent.

Definite changes were found in the blood. Hemoglobin estimation ranged from 100 to 110 in sixteen patients and the red cell count exceeded 5,000,000 in forty-four patients. In one instance it reached 7,800,000. There were no noteworthy changes found in the number or morphology of the white cells.

GENITO-URINARY MANIFESTATIONS

Vesical irritability with a tendency to nocturia, dysuria and pollakiuria was quite common. Several patients had incontinence. Glycosuria occurred in thirteen instances and albuminuria in twelve. Cylindruria was limited almost entirely to those who were suffering from a superimposed chronic nephritis.

In female patients menstrual disturbances in the nature of dysmenorrhea, menorrhagia and amenorrhea were noted. In male patients diminution of libido and potentia was an occasional complaint.

³ Shillito, F. H., Drinker, C. K. and Shaughnessy, T. J. The Problem of Nervous and Mental Sequelae in Carbon Monoxide Poisoning, *J. A. M. A.* 106: 669-674 (Feb. 29) 1936.

The effect of carbon monoxide asphyxiation on the reproductive organs of rats has been demonstrated experimentally by Williams and Smith.⁴ By exposing the animals daily to carbon monoxide for variable periods ranging from two weeks to 264 days, they produced sterility in both male and female rats, and testicular atrophy in the male rats.

PATHOLOGY

As carbon monoxide is nontoxic, there is no direct effect from inhalation of the gas. The hemoglobin molecule being converted from oxyhemoglobin to carboxyhemoglobin results in anoxemia and asphyxiation. This in turn may lead to structural changes in tissues, especially those richly endowed with blood, which normally utilize much oxygen, notably the central nervous system and the heart muscles. Clinically and experimentally it has been demonstrated that if a state of anoxemia persists over a sufficiently long period degenerative lesions may develop, especially in the brain, with resultant paralysis or other nervous manifestations.

Recently some very thorough and extensive experimental investigations on the neuropathology and blood chemistry have been made by Yant, Chornyak, Schrenk, Patty and Sayers⁵ of the U. S. Public Health Service. Their report contains eighty-four illustrations showing the lesions produced in the central nervous system resulting from comparatively rapid as well as from comparatively slow carbon monoxide asphyxiation. The demonstrable nerve lesions and the blood chemistry proved to be quite similar in asphyxiation from atmospheric oxygen deficiency to those produced by carbon monoxide. They arrived at the following conclusions:

1 With comparatively rapid carbon monoxide asphyxia of dogs (twenty to thirty minutes), circulatory changes (characterized by dilatation, stasis, perivascular hemorrhage and edema) were noted.

2 The edema was diffuse and severe, both perineuronal and perivascular.

3 There was a marked difference in the susceptibility of the nerve cells to oxygen deprivation. Those of the cortex, corpus striatum, dorsal motor nucleus of the vagus, and the dorsal sensory areas of the medulla were the most susceptible. The nucleus ruber, nuclei of the oculomotor, trochlear, abducens and facial nerve, and the large polygonal cells in the reticular formation of the medulla were the least susceptible.

4 There were two general types of degenerative changes in the nerve cells: (a) Some became shrunken and stained diffusely, (b) others showed varying degrees of chromatolysis.

5 Even in comparatively rapid carbon monoxide asphyxia, there was a diffuse generative change throughout the entire brain.

6 In comparatively slow carbon monoxide asphyxia (eight and fifteen hour exposure), the neuropathology of dogs differed from the preceding only in degree.

7 The degenerative nerve cell changes especially in parts of the cortex and the corpus striatum, were a great deal more severe than in comparatively rapid asphyxia.

8 In many of the hemorrhagic areas, as well as in some of the extremely dilated vessels, the red blood cells had undergone disintegration. The perivascular areas especially in the meninges were infiltrated to a greater degree with leukocytes.

9 There was an increase in number as well as in size, and an occasional difference in shape of the neuroglia. Occasionally very large clear spaces were found throughout the medullary substance. These were not observed in the shorter exposure cases.

10 There was an extensive proliferation of both neuroglia and endothelium in the dogs killed from sixteen to 165 days after comparatively slow carbon monoxide asphyxia.

11 Large cystic areas were found in the medullary substance of the brain. There was a marked cellular reaction in these areas consisting of phagocytic neuroglial ("granule") cells, which were large and filled with fat.

12 The proliferation of the endothelium was found at the sites of hemorrhages, collapsed vessels, and in vessels that were extremely dilated and contained fragmented blood cells.

13 Some of the nerve cells were fragmented and invaded by neuronophagocytic cells. In general the nerve cells in the deepest layer of the cortex adjacent to the medullary substances showed the most severe damage. Many cells, especially in the upper layers of the cortex, and most of the cells throughout the brain stem had completely recovered.

14 There were focal areas of myelin degeneration throughout the entire nervous system, including the peripheral nerves.

Their blood studies always revealed a marked hyperglycemia and hyperuricemia, the nonprotein nitrogen and urea slightly increased, creatinine remained practically normal and the inorganic phosphates increased. There was an increase in the hydrogen ion concentration and a decrease in the carbon dioxide content of the blood. The blood counts showed a slight but insignificant tendency toward an increase in hemoglobin, red blood cells, white blood cells and polymorphonuclears.

Williams and Smith observed an increased fragility of the red cells, which occurred only in animals daily exposed over 200 successive days. The hemoglobin percentage became significantly increased and remained high throughout the course of the experiments and there was a corresponding increase in the red cells.

These observations correspond exactly with the clinicopathologic reports of the patients who died of asphyxiation. Thus MacCallum⁶ states that it is common to find at autopsy symmetrical areas of softening with minute hemorrhages in the corpora striata and lenticular nucleus in illuminating gas poisoning.

Hedren⁷ found at autopsy numerous small hemorrhages in the pia mater, especially of the cord, with a tendency to softening. There were small thrombi in the left optic thalamus, fatty degeneration of the small vessels throughout the cerebral nervous system, thickening of the pia mater of the brain and degeneration of the central and peripheral nerves.

McConnell and Spiller⁸ reported areas of softening in the lenticular nucleus and microscopic cerebral lesions in a patient who died forty days after apparently recovering from an acute attack. In most of the fatal cases death was attributed to these cerebral lesions. Many of the lesions are characteristic of the epidemic form of encephalitis and the clinical syndromes produced cannot be readily differentiated from those caused by carbon monoxide. Moreover, the symptomatology is as protean in character in carbon monoxide anoxemia as in encephalitis. Gray⁹ states that hemorrhagic encephalitis follows frequently, and Armour¹⁰ calls attention to the fact that carbon monoxide may cause encephalitis. Four patients in the series studied exhibited typical symptoms of the parkinsonian type of chronic encephalitis.

COMMENT

A knowledge of these underlying pathologic changes, the result of anoxemia, makes it possible to interpret properly the clinical manifestations exhibited by these

⁴ Williams, Isabella R. and Smith, Erma. Blood Picture Reproduction and General Condition During Daily Exposure to Illuminating Gas. *Am. J. Physiol.* 110: 611-615 (Jan.) 1935.

⁵ Yant, W. P., Chornyak, John, Schrenk, H. H., Patty, F. A. and Sayers, R. R. *Pub. Health Bull.* 211 August 1934.

⁶ MacCallum, W. G. *Text Book of Pathology* ed 5 Philadelphia W. B. Saunders Company 1934 p. 377.

⁷ Hedren, C. *Nordiskt med. ark.* 35: 3-2. *Foliden Bd 11 p. 10* 1903 cited in Sajou's *Analytical Cyclopedia of Practical Medicine* ed. 2 vol. 5 p. 4.

⁸ McConnell, J. W. and Spiller, W. G. *A Clinicopathologic Study of Carbon Monoxide Poisoning* J. A. M. A. 50: 2122 (Dec. 14) 1917.

⁹ Gray, R. N. *Attorney's Text Book of Medicine* Albany N. Y. Matthew Bender Company 1934 p. 75.

¹⁰ Armour, R. G. in Cecil's *Text Book of Medicine* ed 3 Philadelphia, W. B. Saunders Company 1934 p. 1449.

patients and correlate them with the lesions responsible for the symptoms. If the interpretations including the history, train of symptoms, clinical phenomena and laboratory observations in this series of cases are correct, a definite clinicopathologic entity due to slow carbon monoxide asphyxiation is established.

Practically all the symptoms presented can readily be explained on this basis and certain well defined syndromes referable to disturbed function of the cerebrospinal, neuromuscular and cardiovascular systems can also be readily accounted for but not easily differentiated from other closely allied syndromes resulting from other causes. Carbon monoxide anoxemia may unquestionably produce the parkinsonian syndrome so frequently accompanying other forms of encephalitis, as well as any of the many other encephalitic symptoms, since the pathology is essentially that of epidemic encephalitis. Likewise certain heart lesions may be simulated, notably angina pectoris, to which anoxemia of the heart muscle has been ascribed as an etiologic factor. One of the patients suffered with frequent attacks until the cause was ascertained, which was almost continuous exposure to carbon monoxide from defective gas heaters. As soon as he was removed from the danger, the attacks promptly ceased. The thoracic pain and precordial distress, a frequent complaint, is also most likely due to oxygen deprivation of the heart muscles. The scope of this paper does not permit of a detailed discussion of the various clinical types of the disease. These will be more fully described in another paper.

It is obvious that in these chronic forms any therapeutic measure fails to influence the course and progress of the malady so long as the cause is not removed. After the patients are freed from exposure the treatment becomes symptomatic and largely hygienic. The solution to the problem lies in the administration of proper preventive measures through well trained industrial and sanitary engineers under the direction of municipal and state boards of health. More emphasis should be placed on public health instruction with regard to the hazard, and statistics should be more available, like those obtained from traffic accidents, in order to ascertain its real significance from a public health standpoint.

SUMMARY

- 1 A series of carefully studied cases of slow carbon monoxide asphyxiation has been studied.
- 2 The symptoms exhibited have been correlated with the pathologic lesions produced in experimental animals and found at autopsy.
- 3 The results establish the fact that slow carbon monoxide asphyxiation (anoxemia) produces a definite clinicopathologic entity despite views held to the contrary.
- 4 The symptoms arise predominantly from organs rich in blood supply, thus demanding much oxygen, such as the central nervous system and the heart muscles.
- 5 Owing to doubt and uncertainty as to the actual existence of the malady and a scant literature on the subject, the condition is not generally recognized by the profession and its importance has been underestimated.
- 6 Since there is no medicinal remedy when the organic changes have once developed, treatment must be directed toward its prevention by proper public health measures.

St. Paul and Twenty Third streets

THE HYPOGLYCEMIC STATE IN THE TREATMENT OF SCHIZOPHRENIA

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During a recent trip to Europe I saw at first hand the application of a deliberately induced hypoglycemic state and insulin shock in the treatment of schizophrenia.

Through the courtesy of Dr Manfred Sakel¹ of Vienna, who introduced this method of treatment, his co-worker, Dr Karl T. Dussik, and Dr M. Muller and the staff of the Cantonal Hospital at Münsingen, Bern, I assisted in the application of this treatment for three weeks. This experience led to certain convictions based on actual observation of twenty psychotic patients undergoing insulin therapy, the personal examination of many patients who had been discharged as recovered, and the careful reading of the case records at Münsingen on which some of the statistics here quoted are based.

I am fully aware of the difficulties inherent in any attempt to estimate the worth and validity of statistical data concerning therapeutic results in psychiatry. Nevertheless, the statistics of the results of this therapy possess certain qualities which should gain for them serious attention. Time alone will tell how permanent the alleged cures are, one patient had remained entirely well for two years after the termination of the treatment, and there were several whose recovery has lasted about a year. Apart from the question of the permanence of the alleged cures, there is another important question, namely, how many of these restored patients might have made a spontaneous recovery, as sometimes happens even in severe cases of schizophrenia. These considerations apart, the available statistics are impressive, especially those based on the Swiss clinical material, which now embraces 118 cases of schizophrenia treated in ten private and public mental hospitals in Switzerland.

This new form of therapy was introduced by Sakel at Professor Potzl's clinic in Vienna in October 1933. Since then it has been employed in private and public mental hospitals in Switzerland, in the Netherlands, in Poland and in isolated German clinics, has recently been introduced at the Moscow Psychiatric Clinic by Kronfeld, and has been investigated by a special committee of the Board of Control of Great Britain, whose report will be published shortly.

RESULTS OF TREATMENT

The first available statistics were published by Dussik and Sakel² and comprise 104 cases, consisting of fifty-eight recent ones (duration under one-half year) and forty-six older ones. In the group of fifty-eight recent cases a good recovery was made in 88 per cent, enabling these patients to resume former occupations in the community, while in 70.7 per cent a complete recovery was attained. In the group of forty-six older cases (duration of illness more than one-half year) a good social recovery was made in 47.8 per cent, whereas a complete remission was attained in 19.6 per cent of the cases.

The investigators did not have complete freedom in their selection of the patients for treatment, owing to

¹ Sakel, Manfred. Neue Behandlung der Schizophrenie. Vienna, M. Perles, 1935.

² Dussik, K. T. and Sakel, Manfred. Ergebnisse der Hypoglykämie-schockbehandlung der Schizophrenie. Ztschr. f. d. ges. Neurol. u. Psychiat. 155: 34, 1936.

limited personnel at the Vienna clinic and because of other local reasons. New cases were taken on as the old ones were discharged, but naturally, whenever possible, they gave preference to the recent cases. Of the good remissions, fifteen patients have been well now (Jan. 10, 1935) about a year, and thirty-four for more than half a year. Of the group of recent cases there were nine relapses, as follows: three patients who had been considered completely restored, five who had made a good recovery and one who had made a social recovery. Of these nine patients, five were again placed under treatment, of whom three had a good recovery, one showed no benefit and one is still under treatment. All other cases which were considered to be of recent origin at the time the treatment was instituted show to the present an unchanged state of well being. Of the older cases, six showed a recurrence. All six of these patients were placed under treatment again with the following results: One gained a complete recovery, one gained a good recovery, two gave questionable results, one showed no improvement whatever, and one was still under treatment at the time of their report.

The writers consider in detail the effect of the new therapy on the various forms of schizophrenia. In common with the experience of others who have employed this therapy, they found that the paranoid types respond more favorably to the treatment than the other types. Another remarkable fact is the duration of the treatment. A computation of the length of treatment of the first twenty patients on the list of those who fully recovered gives an average duration of treatment of fifty-two and a fraction days. In view of the customary responsiveness of schizophrenic patients to the various forms of treatment hitherto employed, this is remarkable. I might also add that the quality of the recovery in most of the ex-patients whom I examined was of an exceptionally satisfactory nature, of a kind only rarely seen in those schizophrenic patients who achieve a spontaneous remission. These impressive Vienna statistics are fully corroborated by the as yet unpublished statistics of the Swiss material. I am indebted to Dr. M. Muller of Munsingen for the availability of this material for the present purpose.

In an address delivered before the Medical Society of Bern-Stadt Feb. 13, 1936, Müller³ reviewed the entire subject and reported seventy-five cases in which treatment had been completed at seven Swiss hospitals.

In estimating the results in these cases, he calls attention particularly to the two categories of complete recovery and total failure. He rightly states: "The concept 'improvement' is such a vague and tenuous one that it had better be entirely left out in any critical examination especially in this obscure field of schizophrenia, and when the estimate is made by various investigators. On the other hand, the concept 'complete recovery' can mean only one thing, the total rehabilitation of the personality, including affectivity, and also, naturally, complete capacity for work."

He divided his material into those in whom treatment was initiated within one-half year after the onset of the illness, those who had been ill one and a half years and those who had been ill more than one and a half years.

Of the entire group of seventy-five patients thirty-six, or 48 per cent of the total, achieved complete recovery. Of the thirty-six who recovered, twenty-six had been ill less than one-half year, nine between one-half and one and a half years, and one more than one

and a half years. The twenty-six recent cases in which recovery occurred constituted 76 per cent of the total of thirty-four cases in which illness had lasted less than one-half year. There were fifty-one patients in all of those who had been ill one and a half years or less. Of this total group thirty-five, or 68 per cent, made a complete recovery. Total failure occurred in eighteen of the entire seventy-five cases, but only in eight, or 15.6 per cent, of the fifty-one patients who were ill one and a half years or less. In the remaining twenty-one cases of the total of seventy-five, improvement was noted.

I agree with Muller when he says that these figures are in such marked contrast to any hitherto published figures on spontaneous recoveries that there can be no doubt about the superior worth of this method of treatment.

Since these statistics were computed, Muller and his collaborators in ten other Swiss mental hospitals, both private and public, have had at their disposal forty-three additional records of cases of schizophrenia in which the treatment has been completed, so that statistics are now available on a total of 118 Swiss cases.

Of this total, fifty-two of the patients had been ill less than one-half year, and forty of these, or 78.8 per cent, made complete recoveries, as compared with 76 per cent of similar material reported on last February. Seventy-eight of the total of 118 patients had been ill one and a half years or less, and fifty-four of these, or 68.2 per cent, made full recoveries, as compared with 68 per cent in the earlier similar material. There were forty patients of the total of 118 who had been ill more than one and a half years. Of these, two made full recoveries, sixteen were improved and twenty-two remained uninfluenced, whereas of the seventy-eight patients who had been ill one and a half years or less only eleven remained uninfluenced by the therapy, and, in addition to the fifty-four who made full recoveries, thirteen also showed improvement.

The high degree of agreement between the earlier and the present enhanced material must be looked on as an important element in estimating the validity of these statistical observations.

COMMENT

Should the results reflected in these statistics prove to be entirely permanent, or even considerably so, the discovery of this method of therapy of the psychoses will constitute, because of its far-reaching biologic, medical and social implications, one of the greatest achievements of medicine. Moreover, it opens unlimited research possibilities in directions other than schizophrenia. The evidence is far from conclusive that the effects of the hypoglycemic state and of the insulin shock in patients with schizophrenia is something specific to this form of disorder. Indeed, encouraging results have been reported in a few cases of menopausal depression and in a few cases of severe compulsive states. Such theoretical considerations as Sakel has permitted himself to advance have been stated in the two publications already referred to and in a forthcoming publication by the same author of an address given March 19, 1936, before the Psychologic and Neurologic Clinic at Vienna.⁴ The phenomena of the hypoglycemic state, especially in those patients who react with profound shock, are extremely varied, and, when viewed from the standpoint of a genetic-dynamic psychology, reveal an amazing array of manifestations which can best be understood through an acquaintance

³ Muller, Schw. z. med. Wchnschr., to be published.

⁴ Sakel, Manfred, Wien. med. Wchnschr., to be published.

with the phenomena of regression, regression, projection catharsis, transference and other well known psychoanalytic concepts. Plus is the more amazingly interesting because the therapeutic agent, whatever its specific mode of influence may be is of a biochemical nature. Certainly, the average patient's reaction to this sudden deprivation of the organism of its sugar content has much in it of the nature of a profound organismal and personality disintegration, albeit temporary in duration, as does the reaction to the reintroduction of the required quantity of sugar reflect in many ways, perceptible stages of a reintegration on neurologic and psychic levels. Tempting as is the desire to carry this thought further, this is not the place for it.

A few words as to the alleged dangers of this form of therapy. The serious and far-reaching manifestations of accidental insulin shock are well known. It is conceivable, therefore, that the deliberate introduction of a profound state of hypoglycemia with the necessity of exploiting its effects to the furthest possible limits short of endangering the patient's life, as is required by this form of therapy, carries with it a considerable element of danger. No other form of psychiatric therapy requires as much care skill and caution in its application as does this. It demands also a type of nursing personnel and hospital organization second to none in efficiency, team work and readiness for emergency intervention. Four deaths have been recorded in connection with the treatment, three in Vienna and one in Switzerland, but it is impossible to state with accuracy what percentage this constitutes of the total treated. The first mortality occurred during the early days of the use of this therapy, when the technic was not so well perfected as it is today. The second was due to coronary disease, which was not detected during the preliminary physical examination. The third death was due to a necrosis of the pancreas. The death in Switzerland occurred about three hours after the termination of the hypoglycemic state from an acute pulmonary edema in a patient over 50 years of age.

It should be stressed, however, in this connection, that because of the almost instantaneous restorative effects which the introduction of sugar brings about, the dangers of the hypoglycemic state are not as great as are the dangers connected with some of the forms of narcotic therapy in the psychoses, or those encountered at times in connection with the malaria therapy of dementia paralytica. As to the possible injurious physical sequelae of repeated insulin shock, nothing definite can be stated as yet. Certainly, while undergoing the treatment, the patients appear to be in fine physical condition, usually gain weight, and, aside from a slight sense of fatigue, do not complain of physical discomfort during the time when they are not in the hypoglycemic state.

As to the technic of application of this form of treatment, the reader is referred for a detailed description to the publications already cited. The object is to achieve a progressive insulimination of the patient through the intramuscular administration of daily increasing doses of insulin until the so-called shock dose is attained. Apart from the experience required to recognize the signs indicative of the attainment of the shock dose and the skill in dealing with such emergencies as might occur, this phase of the technic is not as difficult as is the phase that has to do with the interruption of the hypoglycemic state. The great difficulty lies in the total unpredictability of the patients' reactions from day to day or even from hour to hour.

Even the same patient reacts differently from day to day, and experience alone is the guide as to when and how to intervene. In his latest paper, already referred to, Sakel goes into great detail in explaining the differences of procedure indicated in the different forms of schizophrenia and in the changing clinical phases that occur in the course of the treatment. But while the theoretical basis for these indications may be valid, the experiences encountered in the actual application of the treatment do not permit of a close adherence to these prescriptions. The therapy, apart from certain general guiding lines, is an exceedingly individual therapy, in which not only general medicinal factors play an important role but keen psychiatric and psychologic insight are also required for the correct exploitation of the curative possibilities furnished by the hypoglycemic state in the individual case and for the avoidance of serious errors of misinterpretation and misapplication. Finally, a word of caution. Do not confuse this form of therapy with previous attempts in the use of insulin in the psychoses.

TREATMENT OF DEMENTIA PARALYTICA

COMPARATIVE STUDY OF COMBINED ARTIFICIAL HYPERPYREXIA AND TRYPARSAMIDE VERSUS THERAPEUTIC MALARIA. A PRELIMINARY REPORT

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This communication is a preliminary report of a long term study of the comparative value of combined artificial fever and tryparsamide versus therapeutic malaria in the treatment of dementia paralytica. Tryparsamide and heavy metal chemotherapy were administered in the follow-up care of the sixty patients observed in both series.

From the time of Wagner von Jauregg's original report in 1917 on the therapeutic value of malarial fever in the treatment of dementia paralytica there have been many confirmatory publications from European and American medical centers. There is no doubt that malaria is distinctly beneficial in combating this disease, but many workers are of the opinion that the procedure leaves much to be desired. In 1929 Neymann and Osborne¹ and later, in March 1930, King and Cocke² reported successful treatment of dementia paralytica with pyretotherapy produced by diathermy and stated that their results compared favorably with those obtained from malarial inoculation. In a comparatively recent monograph Hinsie and Blalock,³ pioneer investigators with the ultra-high frequency oscillator, reviewed the literature of pyretotherapy in the treatment of dementia paralytica and reported on comparable groups of patients treated by

From the Colorado Psychopathic Hospital

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¹ Neymann C. A. and Osborne S. L. Artificial Fever Produced by High Frequency Currents. Preliminary Report. Illinois M. J. 50: 199-203 (Sept.) 1929.

² King J. C. and Cocke E. W. Therapeutic Fever Produced by Diathermy with Special Reference to Its Application in the Treatment of Paralysis. South M. J. 23: 222-228 (March) 1930.

³ Hinsie L. E. and Blalock J. R. Electropyreia in General. Iare is State Hospital Press, Utah, 1934.

various methods the high frequency current followed by tryparsamide, the high frequency current alone, malaria, and tryparsamide. They indicated that their best clinical results were obtained with the high frequency current followed by tryparsamide. These workers have initiated a recent treatment series of dementia paralytica in which electropyræxia and tryparsamide are administered simultaneously. Simpson and his co-workers⁴ combined chemotherapy (bismarsen, iodobismutol or tryparsamide) with the radiotherm treatment of neurosyphilis. In December 1935 Simpson⁵ reported unusually good results in the treatment of dementia paralytica utilizing the Kettering

TABLE 1—Age and Sex Distribution

| | Male | Female | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 |
|---|------|--------|-------|-------|-------|-------|-------|
| Combined artificial fever and tryparsamide. | 23 | 7 | 4 | 13 | 11 | 2 | 0 |
| Therapeutic malaria (30 patients) | 21 | 9 | 2 | 9 | 12 | 6 | 1 |
| Totals | 44 | 16 | 6 | 22 | 23 | 8 | 1 |

hypertherm. His method was a combination of fifty hours of hyperpyrexia (105-106 F) and thirty injections of a chemotherapeutic agent, bismarsen was given prior to each heating.

The experience of the Colorado Psychopathic Hospital staff is in agreement with Wagner von Jauregg,⁶ Solomon and Epstein⁷ and others. Strecker and Ebaugh⁸ in their textbook say "In our series permanent results are much more numerous in the group which has had the advantages of intensive postmalarial chemotherapy, so that we have come to regard this as an essential part of the treatment of general paresis—tryparsamide has been found to be particularly effective. To achieve clinical arrest, prolonged treatment is essential, in no case should the duration of treatment be less than two to three years." Our results with malarial therapy⁹ are comparable to other published reports but we felt that other methods were worthy of investigation. In February 1935 we initiated a long term study of the value of combined artificial fever and tryparsamide therapy as compared to therapeutic malaria followed by tryparsamide.

MATERIAL AND METHODOLOGY

The University of Colorado Medical School and Hospitals was lent three Kettering hypertherms¹⁰ by the General Motors Company for experimental research particularly in the field of neurosyphilis. Three machines were installed in the early part of February 1935, and immediately thereafter this comparative study of therapeutics in dementia paralytica was inaugurated. From this date to February 1936, a one year period, sixty patients with dementia paralytica were treated by one of two methods, thirty patients received a com-

bined course of artificial fever and tryparsamide, while the other thirty were given a course of malaria. Both groups were followed up in treatment by weekly injections of tryparsamide, and if a period of six months elapsed after pyretotherapy, bismuth subsalicylate was administered at weekly intervals.

All the patients treated were suffering from the adult form of dementia paralytica. It will be noted in table 1 that fifty-one of the sixty patients were below 50 years of age, while nine were above that age. The youngest patient was 20 years of age and the oldest 61. The average age of the fever group was 37.9 years, as compared to 42.6 years in the malaria series. Of the total number of patients reported, there were forty-four males and sixteen females. The average age of all males was 41.4 in comparison with 37.1 years of the females.

The average duration of symptoms of dementia paralytica for the total series of sixty patients prior to treatment was 18.45 months. In the hyperpyrexia group the duration was 16.7 months, while in the malaria series it was 20.2 months.

Fifty patients had received no antisyphilitic therapy during the year prior to treatment, while ten patients had been given various kinds of chemotherapy without improvement, six of these were in the fever group and four in the malaria division. In the former series two patients had previously received malaria without benefit, while in the latter group only one patient had had a course of malaria prior to this study.

We have classified our cases of dementia paralytica for convenience into three main groups as follows:

Group A. The deteriorated group, in which destruction of the central nervous system had proceeded to an advanced degree, with little possibility of retarding the disease process. These patients presented definite evidence of mental deterioration on examination.

Group B. An organic reaction with psychosis of functional coloring. Clinically this group included psychoses similar to the functional disturbances seen

TABLE 2—Hours of Artificial Fever and Number of Treatments

| Number of Hours | Number of Patients | Number of Treatments | Number of Patients |
|------------------------------|--------------------|-----------------------------------|--------------------|
| 60-60 | 1 | 14 | 1 |
| 50 | 12 | 13 | 1 |
| 40-50 | 12 | 12 | 1 |
| 30-40 | 4 | 11 | 2 |
| 20-30 | 1 | 10 | 23 |
| | | 9 | 1 |
| | | 8 | 1 |
| | | 7 | 1 |
| Average number of hours 44.5 | | Average number of treatments 10.4 | |

in manic excitements, with depressions and other reaction types in addition to the organic symptoms present in dementia paralytica.

Group C. Cases without signs of deterioration of dementia paralytica in which mental symptoms were frequently transitory and exhibited before any signs of deterioration occurred. This group included delirious reactions and neurologic irritative phenomena, as seen in convulsive seizures, aphasic attacks, and combinations of meningovascular upsets.

Of the sixty patients of the total series there were seventeen in group A, thirty-three in group B and ten in group C. In the malaria classification there were eight in group A, eighteen in group B and four in group C, in the fever series there were nine in group A, fifteen in group B and six in group C. While this was a fairly even distribution of patients, no attempt was

4. Simpson, W. M., Kishig, F. K., and Sittler, E. C. Ultra High Frequency Treatment of Neurosyphilis. A Preliminary Report. *Ann. Int. Med.* 11: 1, 1933.

5. Simpson, W. M. Artificial Fever Therapy of Syphilis. *J. A. M. A.* 105: 2132-2138 (Dec. 28) 1935.

6. Wagner Jauregg, Julius. Malaria-therapie. *Wien med. Wchnschr.* 78: 275-287 (Feb. 25) 1928.

7. Solomon, H. C. and Epstein, S. H. Dementia Paralytica. Results of Treatment with Malaria in Association with Other Forms of Therapy. *Arch. Neurol. & Psychiat.* 33: 1008-1021 (May) 1935.

8. Strecker, E. A., and Ebaugh, F. G. *Clinical Psychiatry*. Philadelphia: P. Blakiston's Son & Co. Inc., 1935. pp. 135, 136, 142, 146 and 109.

9. Johnson, G. S. and Jefferson, R. A. Medical Aspects of Malaria Therapy in Neurosyphilis. *J. Nerv. & Ment. Dis.* 73: 104-114 (April) 1931. Strecker and Ebaugh.

10. The Kettering hypertherm was conceived and perfected at the Miami Valley Hospital, Dayton, Ohio, and at the Research Laboratories of the Frigidaire Division of the General Motors Corporation, Dayton, Ohio. We are indebted to Dr. Walter M. Simpson and Mr. Charles F. Kettering of the General Motors Company for the privilege of using three hypertherms at this clinic.

made at selection. The patients were assigned to the two services alternately when the question of treatment arose. The same prerequisites were demanded of each group, the usual contraindications were considered. In this period of one year ten additional patients with dementia paralytica were disqualified for either pyretotherapy or malaria because of gross contraindications.

APPARATUS AND TECHNIC

In the production of artificial fever we are using the Kettering hypertherm¹¹. This apparatus is an air conditioned cabinet through which moist heated air is circulated by electrical blowers. Fever induction by this method depends on two factors: (1) the transfer of heat by conduction from the circulating hot moist air and (2) the prevention of the normal loss of heat from the body by radiation and evaporation. The control of these factors accounts for the elevation of body temperature and its maintenance at a desired level.

The prescribed course of hyperpyrexia in the treatment of dementia paralytica is fifty hours of from 105 to 106 F given in ten sessions of five hours each. The interval between treatments in the series of thirty cases was from four to seven days. It is our feeling that shorter intervals tend to debilitate the patient and

TABLE 3—Elevations and Chills in the Malaria Series

| Number of Elevations | Number of Patients | Number of Chills | Number of Patients |
|----------------------------------|--------------------|------------------------------|--------------------|
| 16 | 1 | 14 | 1 |
| 15 | 1 | 13 | 2 |
| 14 | 5 | 12 | 3 |
| 13 | 0 | 11 | 4 |
| 12 | 3 | 10 | 2 |
| 11 | 2 | 9 | 2 |
| 10 | 2 | 8 | 5 |
| 9 | 3 | 7 | 1 |
| 8 | 7 | 6 | 0 |
| 7 | 3 | 5 | 4 |
| 6 | 1 | 4 | 4 |
| 5 | 2 | 3 | 1 |
| | | 2 | 1 |
| Average number of elevations 9.9 | | Average number of chills 8.2 | |

increase the hazards of pyretotherapy. With this cautious schedule the great majority of our patients gained or held their original weight during the course of treatment.

In the thirty patients treated with the Kettering hypertherm, the average number of hours of 105-106 F fever was 44.5. The average number of treatments in this group was 10.4. It will be seen in table 2 that the majority of the patients received the prescribed course.

Tryparsamide, 2 Gm, was administered intravenously at the height of each session, usually during the first or second hour of elevated temperature. Following the course of hyperpyrexia the patient received tryparsamide, 3 Gm, at weekly intervals.

In the group treated with malaria, we used the tertian strain of plasmodium. From 1 to 2 cc of citrated malaria blood was injected either intravenously or into the muscle. It will be noted in table 3 that the average number of elevations of temperature was 9.9 while the average number of chills was 8.2. It is our practice to follow each course with biweekly injections of neoarsphenamine for six doses before tryparsamide chemotherapy.

RESULTS

The results of the comparative study of the two series treated between February 1935 and February 1936 were analyzed in April 1936. It is obvious that

some cases will have been observed over a longer period than others. As we have mentioned before, this communication is a preliminary report of a proposed long term study and we do not intend to draw any conclusions at this time, realizing that a one year study is an extremely short period of observation.

Our clinical results are summarized in table 4. In the combined artificial fever and tryparsamide group there were twelve complete arrests, or 40 per cent,

TABLE 4—Types of Treatment and Clinical Results

| Clinical Status | Combined Artificial Fever and Tryparsamide | | Therapeutic Results | |
|-----------------------|--|------------|---------------------|------------|
| | Number of Cases | Percentage | Number of Cases | Percentage |
| Complete arrest | 12 | 40.0 | 7 | 23.3 |
| Improved | 9 | 30.0 | 12 | 40.0 |
| Unimproved | 8 | 26.6 | 7 | 23.3 |
| Died during treatment | 0 | 0 | 1 | 3.3 |
| Died subsequently | 1 | 3.3 | 3 | 10.0 |
| Totals | 30 | 100.0 | 30 | 100.0 |

while in the malaria series there were seven complete arrests, or 23.3 per cent. One will note nine improved cases in the fever group (30 per cent) as compared to twelve improvements in the malaria series (40 per cent). This means that in the fever series 70 per cent of the patients were definitely benefited by their treatment while in the malaria group 63.3 per cent were likewise helped. Eight fever cases were unimproved (26.6 per cent), seven of the malaria series failed to show improvement (23.3 per cent). No patients died during the course of hyperpyrexia but one died two weeks after the completion of an artificial fever course from a cerebral hemorrhage. One patient died during a course of malaria and three have died subsequently.

It may be interesting to compare the results in the group A, B and C classification in table 5. The great majority of complete arrests occurred in group C, particularly in the fever series. The next best results were obtained in group B, dementia paralytica patients with psychoses in which there was a functional coloring. The majority of the failures were in group A, the deteriorated dementia paralytica patients.

We recognize that it is very difficult to ascertain the exact status of the clinical picture in dementia paralytica. The picture may be a changing one especially

TABLE 5—Group Classification in Relation to Clinical Results

| Clinical Status | Combined Artificial Fever and Tryparsamide | | | Therapeutic Malaria | | |
|-----------------|--|---------|---------|---------------------|---------|---------|
| | Group A | Group B | Group C | Group A | Group B | Group C |
| Complete arrest | 0 | 6 | 6 | 0 | 6 | 1 |
| Improved | 3 | 6 | 0 | 3 | 7 | 2 |
| Unimproved | 0 | 2 | 0 | 3 | 3 | 1 |
| Died | 1 | 0 | 0 | 2 | 2 | 0 |
| Totals | 10 | 14 | 6 | 8 | 18 | 4 |

in the groups we are observing, for in many instances the lapse of only a few months has occurred since the completion of the fever or malaria course.

In considering the apparently better results in the fever group over the malaria series, we must evaluate the age distribution and duration of symptoms prior to treatment (tables 1 and 6). In that the average fever patient was younger and his symptoms were of shorter duration, he was perhaps a better candidate for either type of treatment. One must consider, moreover, that the fever patients had the advantage of tryparsamide chemotherapy during the hyperpyrexia sessions.

¹¹ A detailed description of this apparatus is given by Simpson.⁵

The cerebrospinal fluid serologic results are presented in table 7. It will be noted that practically the same number of patients showed improvement in the two series. There were four serologic reversals in the fever group as compared with none in the malaria series, but we were unable to check eight cases in the latter group in contrast to three in the former. We have followed the serologic grading of Solomon and Epstein⁷ and likewise have not considered the serologic reaction of the blood as significant in determining the efficiency of

TABLE 6—Duration of Symptoms Prior to Treatment

| | Combined Artificial Fever and Tryparsamide | | | | Therapeutic Malaria | | | |
|-------------------|--|---------------|-----------------|------|-------------------------|---------------|-----------------|------|
| | Com- plete Arrest | Im- proved | Unim- proved | Died | Com- plete Arrest | Im- proved | Unim- proved | Died |
| Within 6 months | 4 | 3 | 3 | 0 | 3 | 3 | 1 | 1 |
| Within 12 months | 4 | 4 | 1 | 1 | 2 | 2 | 2 | 0 |
| Within 18 months | 1 | 1 | 0 | 0 | 1 | 2 | 3 | 2 |
| Within 24 months | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 0 |
| Within 30 months | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| More than 3 years | 1 | 0 | 3 | 0 | 1 | 3 | 1 | 0 |
| Totals | 12 | 9 | 8 | 1 | 7 | 12 | 7 | 4 |
| | Average 16.7 months | | | | Average 20.2 months | | | |

treatment. Our results demonstrate no parallelism between clinical and serologic improvement, as one would expect in a one year study.¹² It is a known fact that as years go by following the treatment of dementia paralytica the cerebrospinal fluid tends to become negative.

COMMENT

In conducting the two types of treatments simultaneously we have been impressed with certain advantages and disadvantages in each type of treatment. In regard to the combined artificial fever and tryparsamide method its advantages are that tryparsamide may be administered without interfering with the course of treatment, prescribed dosage of treatment may be given, treatment may be terminated instantly if complications arise, secondary anemia does not contraindicate treat-

TABLE 7—Serologic Results of Cerebrospinal Fluid

| Clinical Status | Combined Artificial Fever and Tryparsamide | | Therapeutic Malaria | |
|---------------------|--|------------|---------------------|------------|
| | Number of Cases | Percentage | Number of Cases | Percentage |
| Completely negative | 4 | 13.3 | 0 | 0 |
| Greatly improved | 3 | 10.0 | 4 | 13.3 |
| Moderately improved | 3 | 10.0 | 8 | 26.6 |
| Unmodified | 17 | 56.6 | 10 | 33.3 |
| Unable to check | 3 | 10.0 | 8 | 26.6 |
| Totals | 30 | 100.0 | 30 | 100.0 |

ment, emaciation of the patient is no contraindication, we have observed no evidence of hepatic or splenic damage from this method, hospitalization is not necessary in many patients and some of them may work between the fever sessions and the induction of a disease is not necessary. The disadvantages of the mechanical fever method include the fact that uncooperative patients may require narcosis, treatment can be carried on only by specially trained personnel in hospitals, and the period of treatment is comparatively long (from five to ten weeks).

The advantages of malarial fever in the treatment of dementia paralytica include the facts that uncooperative patients do not require narcosis, treatment may be administered in private practice without specially trained personnel, and the course of treatment is relatively short (from two to three weeks). The disadvantages of induced malarial fever include the facts that tryparsamide cannot be given simultaneously with malaria, the amount of fever cannot always be controlled and many patients are immune to malaria, in some cases it is difficult to terminate malaria when complications arise, this method tends to produce a secondary anemia which may be difficult to combat, the majority of malaria patients lose weight, occasionally hepatic or splenic damage results from the disease, hospitalization is usually imperative, and the induction of a secondary disease is necessary.

SUMMARY

1. A comparative study was made of combined artificial fever and tryparsamide versus therapeutic malaria in the treatment of sixty cases of dementia paralytica over a one year period. Chemotherapy followed both methods.

2. During this period in the artificial fever series 70 per cent (twenty-one patients) were definitely benefited while in the malaria group 63.3 per cent (nineteen cases) were likewise helped.

3. The serologic reactions of the cerebrospinal fluid in both groups did not parallel the clinical results.

ABSTRACT OF DISCUSSION

DR. A. E. BENNETT, Omaha. The fact that remissions in dementia paralytica are obtainable by a large variety of fever inducing agents, malaria, sodoku, typhoid vaccine, pyrogenic bacteria, sulfur in oil and the various physical fever-producing methods makes it appear that the heat production regardless of the cause is a curative agent. If this fundamental fact is established by further studies, the safest and most economical method will be the general method of choice. I should like to ask whether the authors feel that more malarial fever might have increased their percentage of improvement. It is my impression that the best results from malarial fever are seen in patients who receive from fourteen to sixteen malarial fever elevations. I have seen improvement at times in apparently hopeless cases when twenty or more paroxysms were permitted. At the Douglas County Hospital and Lutheran Psychiatric Hospital in Omaha for the past ten years 182 patients with dementia paralytica received malarial fever therapy. About the same percentage of improvement has occurred as universally reported. The immediate mortality of malarial therapy in this group has been 6 plus per cent. I do not feel that the mortality of malarial therapy has been sufficiently emphasized in reported studies. In reviewing the literature one finds that the immediate mortality of malarial therapy is high. In large series of cases it runs about 10 to 20 per cent. This is a tremendous drawback to this form of therapy. There is also a delayed mortality rate that is hard to evaluate. There is practically no need for immediate mortality from Kettering hypertherm therapy. At the University of Nebraska in one and one-half years experience with the Kettering hypertherm we have completed treatments in eleven cases of dementia paralytica, six of which were simple dementing types and five expansive types. We have used the same technique as outlined in the Colorado study, namely, fifty hours of fever in ten sessions above 105 F. We have used bismuth arspenamine sulfonate instead of tryparsamide with each fever session. Nine of these eleven patients are in complete remission and at full occupational status. One of these patients was a complete malarial failure. One other patient now under treatment has been in a psychopathic hospital almost a year and received seventeen malarial paroxysms followed by tryparsamide therapy without improvement. He is practically normal now after about thirty-five hours of fever therapy.

¹² Ferraro, Armando, and Fong, T. C. Malaria Treatment in General Paresis. *J. Nerv. & Ment. Dis.* 65: 225 (March) 1927.

From observations with Kettering hypertherm therapy in dementia paralytica I can say that the immediate results are at least equal to malarial therapy without its hazards. It remains for further investigative studies to decide whether the results are superior, how much the total treatment course is shortened, and what changes occur in the serologic formula.

DR. PAUL A. O'LEARY, Rochester, Minnesota. I have passed through the era of enthusiasm for the mechanical units which produce fever for the treatment of neurosyphilis and still feel that malaria therapy is the superior method of the two. In patients with asymptomatic neurosyphilis, or preparetic neurosyphilis the incidence of relapse, both clinical and serologic, is decidedly lower following malaria therapy than it is after the electrical forms of fever therapy. Although fever is the common factor to both malaria and vapothermy it does not seem that fever alone is responsible for the good therapeutic results obtained. The reasons for this belief are as follows: The thermal death point of *Spirochaeta pallida* is approximately 111 F. The good results in the treatment of gonorrhea and gonorrheal arthritis by hyperpyrexia may be due to the fact that the thermal death point of the gonococcus is 103 or 104. Although we are unable to raise the patient's temperature to the thermal death point of *Spirochaeta pallida*, good therapeutic results are noted in patients treated for neurosyphilis in whom the temperature did not exceed 104 F. The second point against fever per se being the cause of improvement is the time factor. In those patients treated by the vapothermy clinical remissions may appear a bit sooner than following malaria therapy. However, relapses both clinical and serologic occur much sooner following vapothermy than malaria treatment. The results from malaria, although a trifle slower in appearing are apparently more permanent. If fever was producing the therapeutic results by a "cooking" process it is evident that the improvement would appear earlier than from eighteen to twenty four months following the fever course. The third point against the factor of fever alone as the therapeutic mechanism is that several years ago I treated with malaria therapy twelve patients with early syphilis whose spinal fluids became more positive while undergoing arsphenamine and bismuth therapy. Six of these patients returned within a period of six to ten months after the malaria therapy presenting those bizarre cutaneous signs of syphilis known as precocious tertiarism, in which signs of secondary and late syphilis are present in the same lesions. To me these lesions were evidence that *Spirochaeta pallida* had not been "cooked" by the malaria fever. Accordingly, it must continue to be acknowledged that the various methods of fever therapy are used empirically. The advantage of the mechanical units is the opportunity they afford to give as many treatments or as few as are needed, whenever they are desired. The disadvantage of the electrical units is the lower remission rate and higher incidence of relapse than is noted following malaria. I agree with the authors that the vapothermy method of treatment should be continued, with observation of a larger series of patients over a longer period of time.

DR. WALTER FREEMAN, Washington, D. C. In these days of superelectrical instruments, the malaria therapists are having a difficult time. I was glad to hear Dr. O'Leary come to the rescue of this time honored method of treatment. The trouble with all these reports, not excepting Simpson's, is that the results have not been followed for a sufficient period of time to exclude the possibility of relapses. If one considers only the first year cases the first two year cases, even the first three year cases, fully studied I think it will be found that the percentage of relapse rises with the passage of time. Malaria has already been evaluated on the basis of studies on patients followed over a period of ten years. One of the main difficulties with the Kettering hypertherm is the treatment of disturbed, deteriorated patients. It is the relatively healthy, cooperative patients in the early stages of the disease, who can be persuaded to get into the fireless cooker and stay there during the course of the treatment. I will admit that it is only during the first hour while the fever is rising, that the objections are vocal, but then the patients seem to subside into a state of semiconsciousness and, even without the administration of sedatives lie there in relative insensibility, if not in comfort. The precautions that were originally hedged around the malaria treatment, enforced hospitalization, special nursing and so on

made the malarial treatment rather difficult to give. However, with the passage of time and with the additional experience gained it has been found that most of these patients can be treated in the open wards of the general hospitals and even in the home. In Washington we have a series of some thirty or forty patients now who have been injected with malaria and have been sent home to report the occurrence of the first chill and then have been treated at home, either in whole or in part. These patients, of course, have been of the relatively fresh type not deteriorated and they have done exceptionally well. Some of them have been followed over a course of five years now. While I am not ready to report the results until the series is enlarged I can say that the results have been quite gratifying. No doubt there is a place for the Kettering hypertherm. Patients who are poor risks for malaria can undoubtedly be treated more safely by this method. However, it is going to take a longer time before the results can be satisfactorily evaluated.

DR. WILLIAM NELSON, St. Louis. There are certain things I think physicians need to have some caution about in connection with either one of the treatments. In the first place, I rather doubt seriously that patients can be intelligently classified into groups 1, 2 and 3 or A, B and C symptomatically. As a matter of fact, it is very difficult. It has been difficult to determine just to what extent deterioration has taken place in an individual and to what extent toxicity is a factor in the symptoms that are present. I have seen some people show some rather aggravated symptoms clinically. I have assumed at times that they were indications of structural deterioration. As a matter of fact, I have seen functional integrity restored, to a degree, in some of those cases that I thought were rather hopelessly deteriorated. So I think that, from a symptomatic standpoint, it is rather difficult to classify the patients in that way and consider results then, in terms of classification. There are certain things for and against malaria and hyperthermia as has been stated. I think not the least of them, of course, in favor of hyperthermic treatment, is the difficulty of inoculation of some patients with malaria. I don't know the disparity between the inoculability of patients suffering from syphilis and those of the general population. I know that in my series of 107 cases we have had extreme difficulty in inoculating some of the patients. In some of the patients after repeated attempts, we have tried to treat them with other means, including hyperthermic treatment, and got no results. Whether we have gotten satisfying benefit from the malaria or not, in my opinion, is a question. I don't think that it can be concluded arbitrarily that any one method of treatment is better than another. I am glad to see this comparison made. I am like Dr. Freeman in thinking that we need to defer our conclusions until we have had sufficient experience with it to know what degree of return of disease we have, the length and period afterward, and just what the ultimate results are.

DR. HANS H. F. REESE, Madison, Wis. Dr. Bennett quoted figures of unusual high mortalities as the result of malarial therapy. Do his statements represent the immediate mortality during the course of fever paroxysms or do they incorporate late fatalities also of follow-up cases? I recommend to a therapist who encounters over 20 per cent of fatalities with a method of treatment for dementia paralytica to give up his endeavors with malarial fever, as he is not qualified to supervise a therapy which in the hands of experienced investigators has less than 5 per cent of mortalities. During the last years my associates and I have not lost a single case of neurosyphilis not because of selecting ideal cases but because of accurate clinical supervision. Artificial hyperpyrexia is not superior to therapeutic malaria. I prefer the latter to the former.

DR. CLARKE H. BARNACLE, Denver. In answer to Dr. Bennett's question it might be said that we give an average of eight to twelve malaria elevations and believe this amount to be sufficient. In this series we averaged 9.9 elevations. This is the policy that has been followed for at least ten years at the Colorado Psychopathic Hospital. I appreciate the discussion of Dr. O'Leary and Dr. Freeman. I will say that we are open minded. We want to know ourselves which is the better method, if there is a better method but it will take a long time to determine. We plan at least a five year study,

most likely a ten year study of the question. In regard to the management of disturbed cases, three of the thirty hyperpyrexia patients required narcosis throughout the heatings. Our classification is just one of convenience, so we can talk the same language. When I talk about group A, I mean the deteriorated type, and I think that it is something that can be used to advantage.

VASCULAR COLLAPSE IN TOXEMIA OF PREGNANCY

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A thorough study extending over a period of years has recently established the risks of repeated pregnancies for the patient suffering from an increasingly severe toxemia of the nonconvulsive, vascular renal type. Real hazards are to be anticipated whether the etiology of the renal damage is from a glomerulonephritis or prolonged essential hypertension acquired independently of pregnancy or from an insidious and progressive nephritis or hypertensive disease in successive pregnancies. These risks consist not only of abortions or fetal deaths but also of a definite shortening of life expectancy and a loss of maternal life in the immediate puerperium.

Experience with the type of toxemic patient who is in jeopardy from shock shortly after delivery has prompted this study.

The careful work of Simons and Rasmussen,¹ following the blood pressure through pregnancy, labor and the puerperium in the same patients, showed a gradual rise of systolic, diastolic and pulse pressure during gestation. They observed a sudden rise during labor with a marked decrease immediately after delivery, and then a gradual decrease to normal at about six weeks post partum. They noticed that in toxemic patients the drop in blood pressure immediately after delivery was more pronounced and was followed by a secondary rise and more gradual secondary drop to lower values. In these toxemic patients an exaggeration of the normal reaction of blood pressure to gestation and parturition is often seen.

Bailey² in 1911 first called attention to shock occurring soon after delivery in eclampsia and preeclampsia. He reported six cases with one death.

Schwarz³ in 1923 contributed the most thorough study of vascular collapse in toxemic patients, making the important observation that most of these patients were not of the convulsive but of the nephritic type. He recorded thirteen cases of postdelivery shock among sixty-eight cases of toxemia seen during eleven years, giving the high incidence of 19 per cent for such a serious complication. There were five deaths, a mortality of 38.5 per cent for cases in which collapse occurred.

One of us⁴ has reported experience with postdelivery collapse in patients with chronic kidney lesions and has observed one fatality.

Driscoll⁵ in 1928 reported several cases of obstetric shock with one fatality and feels that the shock that is incident to the delivery of a nephritic patient offers the worst prognosis of any.

One thousand and eighteen cases of toxemia of pregnancy were observed from May 1931 to March 1936 in the Department of Obstetrics and Gynecology of the University of Chicago at the Chicago Lying-In Hospital. Among these patients there have been twenty-six cases showing a drop in systolic blood pressure of more than 70 mm of mercury. There were profound clinical manifestations of shock in addition to the fall in blood pressure in sixteen of these cases, eleven of which were of the chronic and five of the acute type. Energetic treatment followed the occurrence of collapse in all, and yet four patients relapsed into shock a second time and required repetition of the treatment. In only two of these acute cases did it occur within fourteen hours after delivery.

Lesser drops in blood pressure were considered a "normal" phenomenon. One usually sees a fairly marked drop in eclamptic and preeclamptic patients shortly after delivery, with or without a subsequent rise before the blood pressure gradually returns to normal in the puerperium. Therefore, one notes less dramatic drops in eclampsia and not nearly as severe a shock clinically.

ETIOLOGY

There was no excessive hemorrhage in any of these cases. However, vaginal and intra-uterine examinations were made in four to rule out ruptured uterus with massive intra-abdominal hemorrhage. One exploratory laparotomy was done because of symptoms very suggestive of intra-abdominal hemorrhage, but none were found.

The one etiologic factor common to all cases was the toxemia and its manifestations, such as subjective symptoms, hypertension, albuminuria, retinal changes and decreased urea clearance.

In three of the more serious cases collapse occurred prior to delivery. One patient had a typical eclamptic convulsion, a second had an atypical eclamptic convulsion, and the other had a seizure suggestive of a cerebral accident or spasm. The last patient had also suffered a definite cerebral accident in her last pregnancy, with a residual hemiplegia. Delivery itself seems to be the most common associated cause aside from toxemia. All but three patients had their reaction within fourteen hours, and the majority within six hours after delivery. These patients had received hypertonic intravenous therapy, which might have postponed the collapse. One had a persistent hypotension with partial anuria. In the typical case the collapse was associated, as Schwarz has emphasized, with the emptying of the uterus. The idea of shock following sudden and great alterations in intra-abdominal pressure is, of course, not new.

Anesthesia and heavy sedation cannot be universally blamed. Neither was used in some of the worst cases in this series. The former use of powerful depressants, chiefly veratrum viride, was cited by Bailey as a factor in collapse of eclamptic patients.

From the Department of Obstetrics and Gynecology the University of Chicago.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

¹ Simons, E. J., and Rasmussen, C. C. Blood Pressures During Pregnancy, Labor and Puerperium. *Minnesota Med.* 8: 303 (May) 1925.

² Bailey, H. C. Shock in Eclampsia. *Am. J. Obst.* 64: 260, 1911.

³ Schwarz, O. H. Blood Pressure Changes Following Delivery. *Am. J. Obst. & Gynec.* 6: 656 (Dec.) 1923.

⁴ Adair, F. L. Hypertension in Pregnancy. *Minnesota Med.* 7: 110 (March) 1924.

⁵ Driscoll, W. P. Shock in Pregnancy and Labor. *Anesth. & Analg.* 7: 113 (March-April) 1928.

The absence of hemorrhage, excessive surgical trauma and other common etiologic agents of shock with the presence of an acute strain (labor and delivery) on a chronically strained (toxemia and its hypertension) vascular system leads us to believe that this shock is a vascular collapse. The abdominal support of the gravid uterus is suddenly withdrawn. It may be due to a paralysis and massive ectasia of the splanchnic capillary bed. Vascular spasm has been demonstrated in these toxic cases.

It should be kept in mind that in most of these cases there is a disturbed water balance and altered fluid exchange between extravascular and intravascular fluids may be a factor in producing the collapse. It is also possible that the vasomotor center which has been stimulated may become depressed.

PATHOLOGY

In the few cases of this type that have come to autopsy a chronic glomerulonephritis has usually been observed. There were widespread areas of focal necrosis of the liver in two cases. Further comment on the pathologic changes in these cases is withheld because the number of cases is so small. However, further study of the liver lesion in such cases might prove instructive.

THE CLINICAL SYNDROME

The patient usually sinks into an apathy of shock without any distressing subjective symptoms that would give warning. Occasionally there is nausea, vomiting, epigastric pain and a vague feeling of apprehension. The condition, unless anticipated, is usually detected by the nurse, who notes the weak pulse, the clammy skin, a grayish, slightly cyanotic pallor to the face, or the mild stupor. Examination for hemorrhage is negative and when the blood pressure is taken a tremendous drop is observed. No systolic blood pressure could be demonstrated on the arm for several minutes in many cases in this series. The pulse may not be rapid, as was noted in the type of shock observed by Livingstone, McFetridge and Brunner,⁶ but it may be even too weak to feel at the radial artery. The patient may be quite comatose in a serious attack but can usually be partially aroused. The extremities are cold and moist.

The history is of some aid. In three of our series of sixteen severe cases there had been previous cerebral accidents (with clinical residuum present) in past pregnancies associated with nonconvulsive toxemia. Six patients had eclampsia at some time in their obstetric careers, which probably initiated the renal damage.

The histories of previous pregnancies were available in twelve of the twenty-six cases. In each instance there was such definite evidence of toxemia as convulsions, significant albuminuria or a blood pressure over 165 systolic and 115 diastolic. A reliable family history was obtainable in many instances, and there is some evidence that these patients came from a family stock predisposing to vascular disease. The mother of one patient had died of eclampsia, a sister had had convulsions at childbirth, and a brother had died following a cerebral hemorrhage. The sister of another patient is being treated in our clinic for a severe chronic nephritis complicating a pregnancy. The fathers of two patients died of cerebral hemorrhage. The parents of several other patients died of "heart failure with

dropsy" at more advanced ages. The past histories in six cases revealed scarlet fever with the notes "with dropsy" and "very ill" in two cases. Seven other cases gave the history of severe attacks of influenza, the significance of which is questionable.

The average age in the severe cases is 37.6 years and the parity 3.8, for the milder cases these figures are 29.5 and 2.9, respectively.

In the sixteen severe cases in which the fetal weight is recorded the average is 1,198 Gm with a fetal mortality of 76.4 per cent, showing the hazards for the fetus in such advanced toxemia. When these figures are corrected for hysterotomy and sterilization done early in pregnancy, the average weight rises only to 1,540 Gm, but there is still a fetal mortality of 70 per cent.

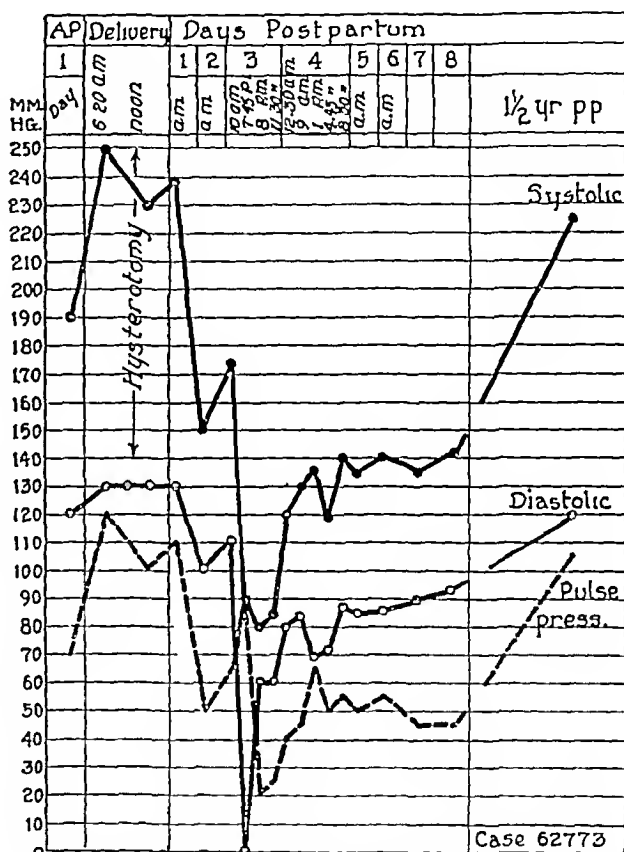


Chart 1—Blood pressure tracings of woman aged 43, octipara (five abortions). Toxemia with last two pregnancies. Symptoms: vertigo, vomiting, epigastric pain. Laboratory examination: albumin +++ casts + + + + hemoglobin 14 Gm, cell volume 37. Eyes: hypertensive changes. Delivery: hysterotomy and sterilization. Baby: weighing 890 Gm, died neonatally. Collapse occurred fifty hours after delivery.

Retinoscopy was done in fifteen of the sixteen severe cases, and in eleven, or 69 per cent, there were definite changes showing evidence of a chronic nephritis or hypertension.

FOLLOW UP

All except two of the sixteen patients have been followed from six weeks to over three years. Of these fourteen patients, seven have been observed to have a systolic blood pressure of over 200 mm of mercury and a diastolic of over 120. One suffered an attack of cerebral thrombosis. Six complained of headaches, blurred vision or fatigue, while eight felt well. Six cases showed traces of albumin, one with hyaline casts. Blood chemistry showed no conclusive or consistent changes.

⁶ Livingstone H. M., McFetridge, S. E. and Brunner R. N. Profound Blood Pressure Fall with Bradycardia: a Normal Pulse Rate in Surgical Procedures. Surg. Gynec. & Obst. 56: 917 (May) 1933.

TREATMENT

Prophylactic treatment begins early in the obstetric career of these women. Eclampsia—or, worse, a prolonged state of preeclampsia—should be forestalled by proper medical treatment and the termination of pregnancy if indicated. Successive pregnancies reproduce or aggravate a nephritis and should be avoided or limited. Sterilization by the method of choice for the given case will salvage many years of useful, healthy existence for the patient and her family.

The blood pressure and pulse should be watched closely for several hours after the delivery of a patient with severe (usually recurrent) nonconvulsive toxemia. A tight binder and a small sand bag applied to the

lary, transfusion is not amiss, as these patients often have a secondary anemia.

One should not overlook the possibility of an internal hemorrhage, as from a ruptured uterus. Vaginal examination with careful exploration of the entire parturient canal will determine this as well as detect retained secundines with slow but dangerous seepage of blood and serum. Intra-abdominal hemorrhage may be ruled out by abdominal paracentesis of the more dependent flank or by puncture of the culdesac. Exploratory laparotomy may have a place in rare and confusing cases.

Hypodermic use of ephedrine and solution of posterior pituitary is indicated. The usual treatment of shock from any cause is always in order, such as the

steep Trendelenburg position, external dry heat, caffeine by hypodermic injection or a hot coffee enema. Even binding the extremities toward the torso may be of aid in an emergency. A functional cerebral blood circulation must be maintained.

When the diagnosis is made, the administration of dextrose should be started immediately and if the collapse is profound from 2 to 3 minims (0.12 to 0.18 cc) of 1,000 epinephrine should be injected by hypodermic syringe into the tubing near the vein and the remainder of the 1 cc ampule be emptied into the dextrose flask.

After the initial recovery the patient must be watched for several hours for detection and treatment of a relapse (such as occurred in three of our most serious cases).

The urinary output is an important guide to prognosis, especially as a partial anuria is a secondary danger that the patient faces after recovery from the

initial collapse. If this occurs the hypertonic dextrose solution may need to be increased from 20 to 30 per cent, or even to 50 per cent, to obtain a satisfactory urinary output.

MORTALITY

One fatality occurred in our series.

A woman aged 28, a septipara, who was admitted to the hospital in convulsions in the thirty-fourth week of gestation, had chronic nephritis of several years' duration, she had had convulsions during a previous labor and had a definite familial history of vascular-renal disease. The vascular collapse took place six hours prior to delivery and eight hours before death.

Several other patients were in a very critical condition.

One patient with a milder collapse has since died of uremia and cardiac failure with autopsy signs of chronic glomerulonephritis. Another patient in this group has been hospitalized in the medical clinic because

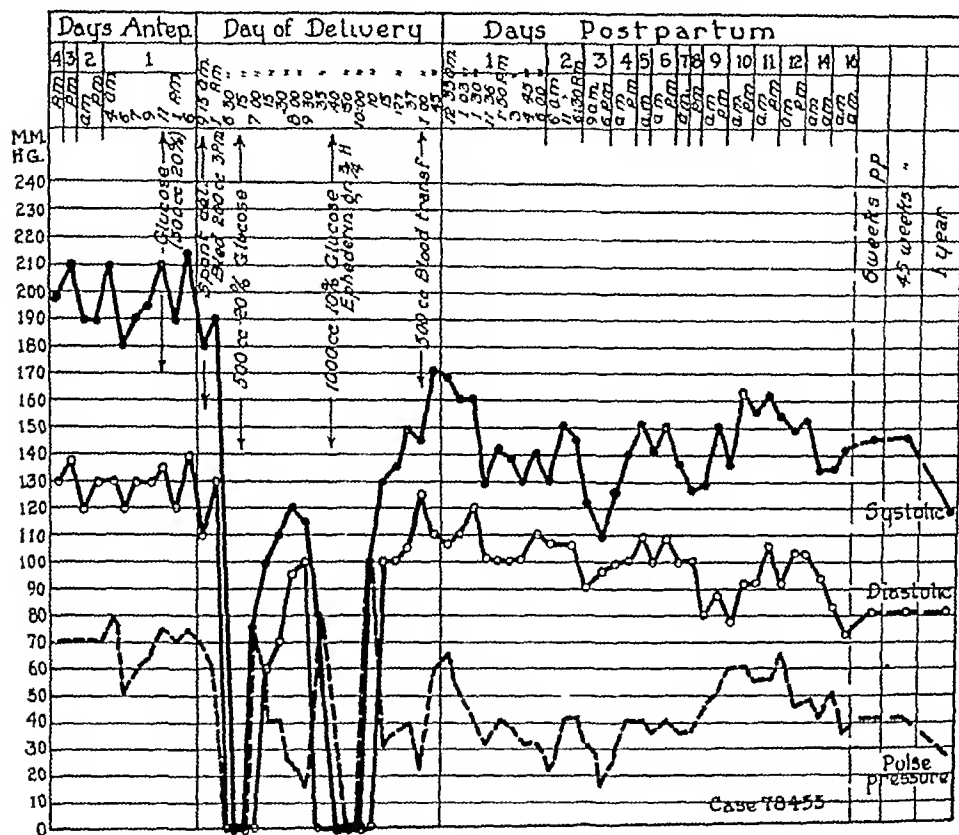


Chart 2—Blood pressure tracings of woman aged 39, quintipara (two abortions). Scarlet fever ten years before father died of cerebral hemorrhage. Symptoms: headache, scotomas, epigastric pain, vertigo. Laboratory examination: albumin + + +, occasional cast, hemoglobin 15.5 Gm, cell volume 44. Eyes: hypertensive changes. Delivery: spontaneous, vascotomy performed on husband. Baby weighing 1,660 Gm survived. Collapse occurred five hours after delivery.

abdomen may compensate for the pressure of the previously gravid uterus and prevent a collapse.

Active Treatment—Prompt treatment in the event of a collapse of the blood pressure, will be required to save the patient if the systolic pressure remains below 60 mm of mercury for any length of time. One should not wait for this to occur. Prolonged anoxemia is followed by a severe acidosis and irreparable damage to the brain. Hypertonic intravenous dextrose of 20 per cent, and occasionally 30 per cent, is the best agent to raise the blood pressure. Acacia, 30 Gm, with 4.5 Gm of sodium chloride in 100 cc ampules diluted to 500 cc with freshly distilled water, given intravenously, is useful. A hypodermoclysis of not too great an amount may be started early, but isotonic dextrose rather than sodium chloride should be used in these patients. Blood transfusion may be needed, as the serum proteins exert a more prolonged osmotic effect to pull and hold fluids in circulation. As a corol-

of continued hypertension, headaches and hypertensive retinitis but is still living. It would seem that the normal life expectancy of at least half of these patients is definitely reduced.

We have been able to add to our twenty-six cases twenty-four similar ones from the literature and from other sources, wherein there were nine deaths. The total mortality for the series of fifty cases was 20 per cent. Wegner of the Department of Obstetrics and Gynecology of Washington University School of Medicine has reviewed the cases occurring at the St. Louis Maternity Hospital and has found twenty-one among 231 cases of toxemia, an incidence of 7.66 per cent. There was one death giving a mortality of 4.76 per cent. There is therefore a combined incidence in 1,249 cases of toxemia at the St. Louis Maternity Hospital and the University of Chicago Clinics of forty-seven cases, or 3.76 per cent. Including these cases, through the courtesy of Schwarz and Wegner,⁷ a total of seventy-one cases of this type have been observed. The gross mortality for the entire series is 15.49 per cent. There is no doubt that some of these patients will die in spite of the best therapy. This is evidenced by the

CONCLUSIONS

- 1 Parturitional vascular collapse is a grave condition occurring typically in a rather small percentage of elderly multiparas who have been afflicted with a progressively severe nephritis in succeeding pregnancies.
- 2 The incidence of this condition in our clinic was 0.2 per cent of all deliveries and 2.55 per cent of all toxemic patients.
- 3 The toxemia seems to be the most important etiologic factor, with delivery definitely exciting the appearance of vascular collapse.
- 4 The blood pressure and general condition of cases of severe and chronic toxemia should be watched closely for twelve hours after delivery. Equipment and personnel should be ready for prompt and effective treatment in the event of the collapse of such a patient.

Drop in Systolic Blood Pressure in Twenty-Six Cases of Nephritic Preeclamptic and Eclamptic Toxemia

| Drop in Systolic Blood Pressure in Mm. Hg | Number of Cases | Type of Toxemia | | | Type of Delivery | | | | | |
|---|-----------------|-----------------|----|-----|------------------|---|---|---|---|---|
| | | I | II | III | A | B | C | D | E | F |
| 70-89 | 8 | 5 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 1 |
| 100-119 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| 120-139 | 4 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 2 |
| 140-159 | 6 | 4 | 0 | 2 | 3 | 0 | 1 | 1 | 0 | 1 |
| 160-189 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 190 plus | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Totals | 26 | 10 | 3 | 4 | 7 | 3 | 2 | 4 | 4 | 6 |

| | | |
|------------------|--------------------------------|------------------------------|
| I Nephritic | A Spontaneous | D Vaginal hysterotomy plus |
| II Preeclamptic | B Low forceps | sterilization |
| III Eclamptic | C Bag induction and craniotomy | E Abdominal hysterotomy plus |
| 19 Nonconvulsive | | sterilization |
| 7 Convulsive | | F Cesarean section plus |
| | | sterilization |

fact that in our clinic and also in that of Schwarz and Wegner a low mortality has occurred in spite of every known therapy being employed. However, because our cases have responded to the treatment outlined and because Schwarz and Wegner have (by practically identical therapy) reduced the mortality strikingly (from 38.5 per cent to 4.8 per cent) from that of the earlier cases reported in 1923, one is led to believe that the treatment available at present will definitely lower the death rate.

The gravity of this obstetric accident may be appreciated from the foregoing statistics. Most of these patients received proper treatment, and without this the mortality might have been higher. We agree with Driscoll that this type of obstetric shock carries the gravest prognosis of any obstetric complication, excepting probably that of a ruptured uterus.

It is surprising that more attention has not been given to this condition. It is, in our opinion, an accident as dramatic, more urgent and more fatal in itself than eclamptic seizures, but, because less common, it has not received so much consideration. Many conditions are probably more rare, such as abdominal pregnancy, and yet have been much more prominently mentioned in the literature.

⁷ Wegner C. R. Personal communication to the authors.

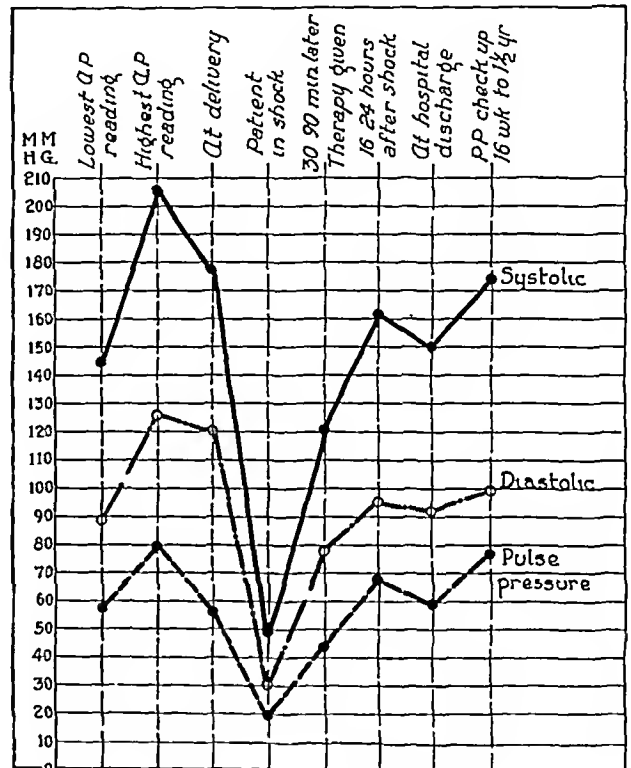


Chart 3—Composite blood pressure tracings in sixteen cases

5 The mortality is high, 15.49 per cent of seventy-one cases reported. The condition is an entity deserving of recognition and further study because of its gravity and because proper treatment should reduce the mortality appreciably.

6 The most common pathologic lesion was a chronic glomerulonephritis. The liver lesions in these cases may merit further study.

7 Proper use of hypertonic intravenous dextrose solution forms the basis for effecting recovery from the shock. A secondary partial anuria, associated with hypotension, may require management.

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ABSTRACT OF DISCUSSION

DR RALPH R. WILSON, Kansas City, Mo. I wish to emphasize that toxemias with hypertension are not the only ones subject to circulatory collapse. I refer especially to that group which is characterized by hypometabolism, hypotension and general asthenia. Their labors are usually rather asthenic. Near term they often present edema out of proportion to

related symptoms. By some they have been designated as "low kidney reserve." At any rate they represent a chronically exhausted circulatory system and are prone to collapse. At this point I wish to bring out the observation that often a delayed placental expulsion is an early indication of approaching shock, delay being due to incidental uterine inertia. Since the report of Titus and his co-workers relative to the pre-operative administration of concentrated dextrose, I have adhered to that practice rather rigidly. As to the type of toxemias occurring in successive pregnancies and associated with pronounced hypertension, it is logical to assume a mechanism somewhat different. The actual mechanism, however, of either the low pressure or the high pressure toxemias still remains rather speculative until more is known about capillary physiology. Damage to parenchymatous structures may be extensive before blood studies of the central circulatory system can indicate it. With the fulminating type of toxemia the act of delivery must be considered actually one of decompression, and it is subject to the same dangers as any decompression, if performed too rapidly. In my opinion, intravenous administration of concentrated dextrose made up in distilled water is the best measure. Sodium chloride is contraindicated because these patients are subject to urinary suppression and they do not handle the salts well. In addition to the liver and kidney lesions found at autopsy, I have been impressed with the frequency of hyperplastic developments of the heart and greater blood vessels, as well as of those of the adrenals and the thyroid. In a routine manner the following conditions must be excluded: ruptured uterus, inversion of the uterus, concealed hemorrhage, hypertrophy with acute dilatation of the heart, cerebral accidents, acute dilatation of the stomach, and even diabetic coma.

DR. R. D. MUSSEY, Rochester, Minn. These interesting data on the occurrence of vascular collapse following delivery of women who have hypertensive toxemia indicate that the disturbed mechanism of the arteriolar vessels is widespread throughout the body, even in cases in which the renal lesion is most prominent. This has been shown by evidence obtained by a study of vessels of the nail folds, of the ocular fundi, of muscle tissue obtained by biopsy from patients who are suffering from toxemia, and by examination of the glomerular and other vessels of such patients who have died. The nature of the arteriolar involvement has been demonstrated by repeated examination of the ocular fundi in cases of advancing hypertensive toxemia of pregnancy to be a spasm of the arterioles, which may vary from day to day early in the disease, later, as the hypertension increases, injury to the vessels is indicated by a general narrowing of the lumen and by edema and sometimes by hemorrhage into the surrounding tissues. When this injury is superimposed on vessels already damaged, these vessels are rendered more spastic and less elastic than are the vessels of women who have acute toxemia without previous arterial or renal injury. Allen and McQuiston have reported 350 cases in which persons who had a systolic blood pressure of 180 mm of mercury or more were subjected to major surgical operations. As a result of their observations the authors concluded that patients of both sexes with all grades of hypertension, without obvious or with mild myocardial and renal insufficiency, withstood operation as well as did those without such hypertension. In approximately three fourths of the cases of vascular collapse reported by the authors, the patients had preexisting arterial or renal damage. Vascular collapse that occurs after delivery of patients who have toxemia and chronic arterial damage may be explained by the sudden release of intra-abdominal pressure at a time when the walls of the arterioles have lost the elasticity by which sufficient blood pressure is maintained in the general circulation. This paper serves to emphasize the importance of prophylactic treatment. If a woman is found to have definite evidence of chronic nephritis or evidence of well marked arterial injury, measures should be taken to prevent pregnancy or to terminate pregnancy if the condition is discovered early in gestation. Later in the pregnancy, the avoidance of operative trauma associated with sudden release of intra-abdominal pressure, when possible, is highly desirable.

Clinical Notes, Suggestions and New Instruments

SPOROTRICHOSIS OF THE CERVICAL AREA

GILBERT M. LOEWE, M.D., WINNETKA, ILL.

Reports of sporotrichosis of the skin are common in the literature but of involvement of other tissues less frequent. The case in this report occurred in the anterior cervical area, beginning as a deep seated infection, with no apparent portal of entry, was not diagnosed for thirteen months, with able counsel, and did not respond to the customary medication.

Because of the long duration of this case, numerous investigative procedures were employed. For the sake of brevity only the essential data are recorded here.

A. N. L., aged 30, wife of a physician, was in excellent health until December 1931. She was visiting in Montgomery, Ala., where she developed a rather severe rhinitis. Following this attack a pea-sized nodule was noted in the region of the right anterior cervical gland. This nodule gradually increased in size and tenderness for a period of two weeks, when fluctuation was present, accompanied by chills and fever. At this time the tumor was incised, deep penetration being necessary, and about one ounce of grayish thick pus was obtained. Cultures and animal inoculation of this material failed to disclose any causative organisms. The incision failed to heal and there became established a small sinus, which appeared to lead to an underlying indurated, indolent mass, which was fixed to the overlying skin but movable above the underlying tissue. This tumor was about the size of a small hen's egg.

The patient's condition remained stationary until the following March, when the swelling increased markedly in size, involving the major portion of the right side of the neck and part of the face. There occurred at this time attacks of intermittent fever and chills. This condition continued for two months and on May 6 a biopsy was performed. The tissue was submitted to several competent Chicago pathologists, who considered the lesion to be a "chronic granuloma, probably of mycotic origin." For the following six months, though the patient's general health was relatively good, there was little change in the local condition. Potassium iodide was given in dosages amounting to as high as 270 grains (17.5 Gm.) daily. X-ray and quartz light therapy were employed at various times. A large number of local treatments were administered and nucleotide and gold sodium thiosulphate were also given. All these therapeutic measures were tried at various times with no effect on the local condition. During this period the patient was seen by many leading consultants in the Middle West. Diagnosis consisted of almost all the known chronic granulomas, those most seriously considered being tuberculosis, Hodgkin's disease and a mycotic infection. The treatment that was advised naturally varied widely. It consisted of the measures mentioned and also of radical excision and exploration of the involved area. November 19 an extension of the process posteriorly to the sternocleidomastoid was drained. The pus from this yielded a hemolytic streptococcus.

In February 1933 the patient was seen by Dr. Harold Amoss and his associates W. D. Forbus and D. T. Smith. They were able by means of bacteriologic studies of the discharge to isolate a sporothrix and a beta hemolytic streptococcus. Sporotrichosis was the first of many clinical diagnoses to be confirmed by laboratory observations. On their advice ethyl iodide inhalations were attempted but they were so poorly tolerated that they had to be discontinued. Increasing doses of autogenous sporothrix vaccine, streptococcus vaccine and streptallergen were administered subcutaneously. Shortly after this treatment was begun there was a striking though not complete regression in the size of the mass, the sinuses and the amount of discharge.

The sinuses continued to drain a scant amount of seropurulent material until April 1934. At this time my attention was called to Dr. Levine's report on the use of phenylmercuric nitrate for the treatment of mycotic infections. On Dr. Levine's suggestion irrigations of phenylmercuric nitrate 1:30,000 and application of 1:1,500 ointment were used twice daily in con-

1. Personal communication to the author from Dr. Benjamin Levine of Cleveland.

junction with the irrigation of the sinuses once daily with dilute solution of sodium hypochlorite. The change following this treatment was spectacular and by June 6, 1934, the indurated mass had almost entirely disappeared while the sinuses were completely closed. There has been no recurrence or discharge since that date and the condition has apparently remained cured.

The causative organism is a species of *Rhinodermum*, which in 1898 was classified by Schenck² as *Sporotrichum*. It is usually characterized according to Lawless³ by various sized subcutaneous nodules and nodules with associated lymphangitis which may soften enlarge and involve the skin in an ulcerative process or undergo spontaneous healing. The differential diagnosis between sporotrichosis, syphilis and tuberculosis is sometimes difficult and on this basis lies the importance of the treatment.

Four clinical manifestations of the disease are most commonly described:

1 The localized lymphatic form with (a) sporotrichotic chancre and (b) lymphangitis

2 The disseminated and generalized forms with (a) gummatous or (b) ulcerative lesions. This type resembles syphilis

3 The hemogenous form, which involves bone, synovial membrane, the testicle and so on most commonly with or without an associated inflammatory skin involvement. Any portion of the body may be affected

4 Mucous membrane involvement found most commonly in the mouth, pharynx, larynx and trachea

Mount⁴ believes that transmission through unbroken mucous membrane is possible and that man is a passive carrier as he has found the sporothrix in the pharynx as a saprophyte. Davis⁵ has shown that *Sporotrichum* may be carried through the intact intestinal mucosa by the migratory phagocytes. Animals are frequently named as carriers.

A biopsy is of material assistance but the discovery of the specific organism is the only positive method of definite diagnosis. Direct smears, cultures on Sabouraud's medium and hanging drop examination of the pus should be used. Seroagglutination and complement fixation tests and also cutaneous and intracutaneous reactions may be of value.

The case here reported presents several possibilities:

1 The original acute pharyngeal infection with secondary involvement of the cervical lymph node may have been due to *Sporothrix*. No local lesion, however, developed in the throat and the teeth were found to be normal by direct and roentgenographic examination.

2 The primary infection of the pharynx and cervical node may have been due to a pyogenic organism with later localization of the sporothrix in the damaged node.

3 The process may have been a suppurative one until drainage to the exterior was established with entry of the sporothrix through the external sinus.

SUMMARY

1 In a case of sporotrichosis, the duration of which was more than two years, the etiologic agent was not discovered until after the patient had been seen by more than fifty competent consultants among whom there were seventeen noted pathologists who examined the tissue.

2 Many forms of therapy were advocated; radical excision of the affected area was advised by three competent consultants.

3 The orthodox therapy of iodides for sporotrichosis was ineffective. Specific autogenous vaccines were apparently effective and produced a marked improvement in the local condition. The residual lesion responded to phenylmercuric nitrate and dilute solution of sodium hypochlorite.

4 The patient has remained cured for more than fifteen months.

5 The importance of proper bacteriologic investigation of chronic suppurative lesions is strikingly illustrated by the history of this case.

² Schenck D R. On Refractory Subcutaneous Abscesses Caused by a Fungus Possibly Related to the *Sporotricha*. *Bull Johns Hopkins Hosp* 9: 286, 1898.

³ Lawless T K. The Diagnosis of Sporotrichosis. *Arch Dermat & Syph* 22: 381 (Sept) 1930.

⁴ Mount L B. Sporotrichosis with Report of a Rather Unusual Case. *Arch Dermat & Syph* 25: 528 (March) 1932.

⁵ Davis D J. The Permeability of the Gastro-Intestinal Wall to Infection with *Sporothrix*. *Schenck J Infect Dis* 19: 688 (Nov) 1916.

MYELOGENOUS LEUKEMIA WITH CUTANEOUS INVOLVEMENT

S M GOLDHAMER M D AND B F BARNEY M D ANN ARBOR MICH
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Respectively University of Michigan Medical School

True myelogenous leukemia with cutaneous involvement is a relatively rare clinical entity, only sixteen cases having been reported. The early literature has been reviewed by Barney¹ and Hollander, Kastlin, Permar and Schmitt² who added two additional cases. Since the publication of these reports one case has been described by Patrassi.³

The case here reported was diagnosed as cutaneous myelosis and the clinical observations were substantiated by subsequent biopsy and autopsy studies.

REPORT OF CASE

R C a white man, aged 41 on admission to the Simpson Memorial Institute Aug 11, 1933, complained of pain in the left upper quadrant. Since January 1933 he had noted increasing weakness, palpitation and dyspnea on exertion. More recently a constant pain was present in the left upper quadrant.

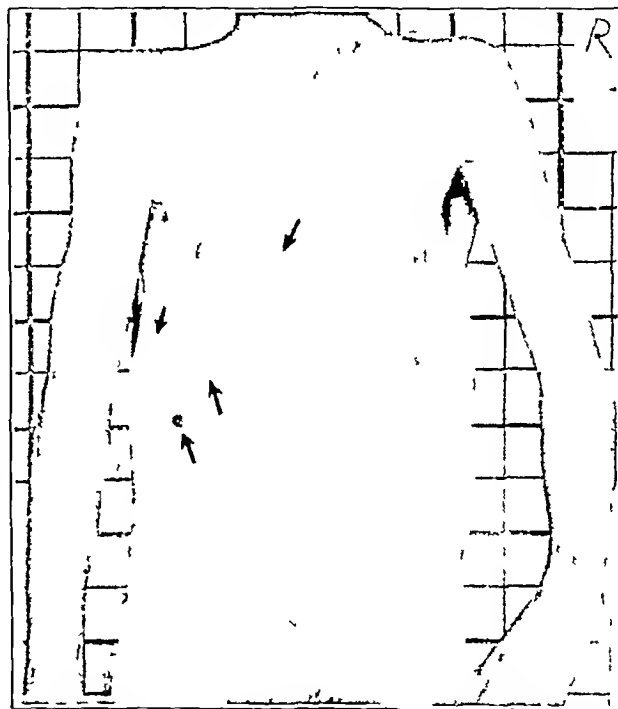


Fig 1—Gross appearance of nodules at time of autopsy

One month previous to admission the patient accidentally noted a mass in this region. He had had hemorrhoids for two years but noticed that they had been bleeding more readily for the past three weeks. In addition there were many spontaneous 'black and blue spots' appearing on the skin.

The patient was well developed and well nourished; he was obviously ill but not acutely so. The superficial veins were quite noticeable and many purpuric areas were present on the right leg. The skin was deeply pigmented over the exposed surfaces. The conjunctivae were pale. Many hemorrhagic spots were present on the buccal mucosa. The spleen occupied the entire left side of the abdomen. The liver edge was palpable 7 cm below the costal margin. In addition there was marked generalized lymphadenopathy.

From the Thomas Henry Simpson Memorial Institute for Medical Research and the Department of Dermatology and Syphilology, University of Michigan Medical School.

¹ Barney R E. Leukemic Myelosis Associated with Specific Nodules in the Skin. Report of a Case and Review of the Literature. *Arch Dermat & Syph* 27: 725 (May) 1933.

² Hollander Lester, Kastlin G J, Permar H H and Schmitt C L. Myeloid Leukemia with Cutaneous Manifestations. *Arch Dermat & Syph* 29: 821 (June) 1934.

³ Patrassi G. Ueber einen Fall von Uebergang chronischer Myelose in Myeloblastenleukämie mit gleichzeitigem Auftreten leukämischer Hautgeschwülste. *Folia haemat* 50: 415 1933.

The laboratory data were as follows. The Kalm test of the blood was negative. The basal metabolic rate was +45 per cent, with a pulse rate of 76 on two determinations. Stool examinations were consistently "negative." Repeated urine specimens showed an occasional trace of albumin. X-ray examinations of the chest revealed essentially normal lungs. The blood picture showed 2,630,000 red cells per cubic millimeter

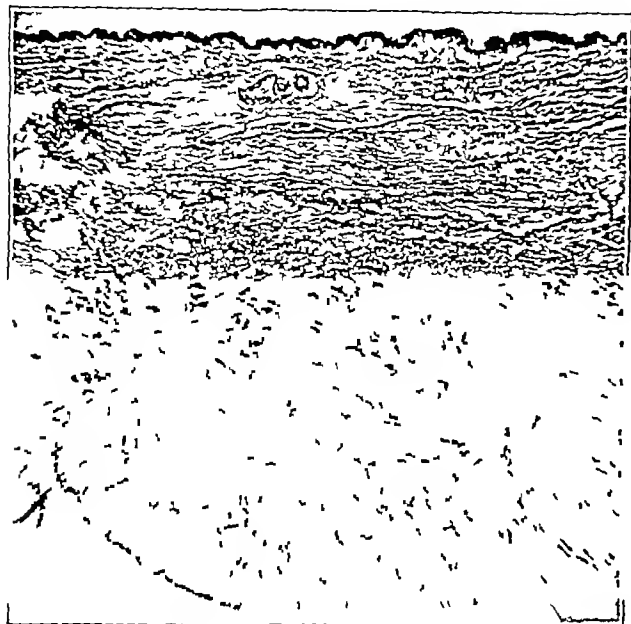


Fig. 2—Low power magnification of entire nodule

122,800 white cells per cubic millimeter and hemoglobin 5.32 Gm per hundred cubic centimeters (38 per cent Sahli). The differential count was as follows: adult polymorphonuclear leukocytes, 30 per cent, young polymorphonuclear leukocytes, 19 per cent, metamyelocytes, 6 per cent, myelocytes, 11.5 per cent, blast cells, 16 per cent, eosinophils, 6 per cent, eosinophilic myelocytes, 5.5 per cent, basophils, 2 per cent, large lymphocytes, 2 per cent and small lymphocytes, 2 per cent. With a few minor variations due to the progress of the disease, these blood determinations were similar to those noted subsequently (100 observations).

The patient was in the hospital on six different occasions from Aug. 8, 1933 until his death Dec. 23, 1934. During this period he received such treatment as roentgen therapy to various portions of the body, solution of potassium arsenite by mouth, transfusions and other supportive therapy. Although these measures occasionally resulted in symptomatic improvement no definite progress was made in altering the course of the disease.

Dec. 4, 1934 the patient was examined by a member of the department of dermatology. There were three half cherry sized nodules seen in the skin on the right wall of the chest and a similar number over the right tibia. These lesions were discrete, attached to the overlying skin but not bound to the underlying structures. They were firm, not tender, circumscribed and rubbery in consistency. The skin over them was dull, erythematous. There was no evidence of hemorrhage. Subsequent to this examination other split-pea sized nodules appeared in the aforementioned areas. No definite history of trauma was elicited at the sites at which the tumors appeared. The radiosensitivity of the tumors was not determined.

A picture taken at the autopsy shows clearly the nodules on the chest (fig. 1).

HISTOLOGIC STUDY OF NODULE (BIOPSY)

The section studied was from a nodule on the chest. This was fixed in solution of formaldehyde and stained with hematoxylin and eosin. There was an infiltration of myeloid cells in nodular formation located deep in the corium overlying the adipose tissue. The papillae showed no definite infiltration nor did the more superficial layers of the corium. The epithelium appeared atrophic and there was a decrease in the sebaceous and sudoriferous glands apparently from pressure. The infiltrate for the most part was sharply demarcated and

surrounded by a fibrous capsule. Within the blood vessels was seen the blood picture of myelogenous leukemia (fig. 2).

The cells of the infiltrate were large, pale-staining mononuclear cells, some of which contained granules and others were agranular. Interspersed between these were stroma or fibrous tissue cells. Schultz's stain for oxidase granules was positive (fig. 3).

AUTOPSY REPORT

A complete postmortem examination was carried out. Both grossly and microscopically, the bone marrow, lymph nodes and spleen were entirely replaced by "leukemic" cells while the thymus showed partial replacement. In the heart the vessels

Summary of Reported Cases

| Case | Author | Age | Sex | Duration | Site |
|------|--|-----|-----|----------|--------------------------|
| 1 | " | 18 | ♂ | | Trunk and arms |
| 2 | " | 37 | ♂ | 2½ mos | Generalized |
| 3 | " | 60 | ♂ | | Neck and body |
| 4 | " | 17 | ♂ | | Generalized |
| 5 | " | 47 | ♂ | 11 days | Face |
| 6 | " | 20 | ♂ | | Body and legs |
| 7 | Ketron and Gay | 63 | ♂ | 4 mos | Body |
| 8 | Almkvist and Artzt | 39 | ♂ | 4 mos | Body |
| 9 | Hartmann | 11 | ♂ | 2 mos | Head and arms |
| 10 | Artzt | 60 | ♂ | 2 mos | Body |
| 11 | Sannileandro | 2 | ♂ | | Body |
| 12 | Artzt | 20 | ♂ | 1 mo | Body |
| 13 | NeLam | 62 | ♂ | 15 days | Chest, arms, legs |
| 14 | Barney | 55 | ♂ | 2 mos | Trunk, arms, legs, mouth |
| 15 | Patrassi | 31 | ♂ | 2 mos | Trunk and legs |
| 16 | Hollander, Kastlin, Permar and Schmitt | 60 | ♀ | 3 mos | Trunk and arms |
| 17 | Barney and Goldhamer | 47 | ♂ | 3 wks | Trunk and legs |

were surrounded by a leukemic infiltrate, and the liver, adrenals and kidneys showed various sized nodular infiltrates. The gross and microscopic skin changes were the same as those noted previous to death.

COMMENT

In the sixteen cases that have been recorded in the literature previous to this report, the interval between the appearance of the cutaneous manifestations and death was very short, as shown in the accompanying table. The time varied from eleven

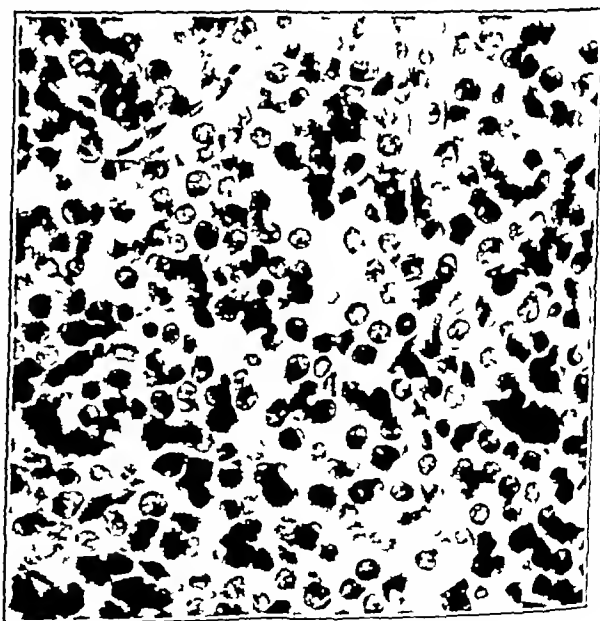


Fig. 3—High power magnification of lesion

days to four months and averaged sixty-four days. In the case here presented it was noted that subsequent to the cutaneous eruption the patient's condition became markedly worse and death ensued three weeks later. It is thus apparent that skin manifestations appear late in the disease. Therefore when cutaneous involvement does occur the expectancy of life is commonly measured in weeks.

All cases presented in the literature have shown essentially the same cutaneous changes. The eruption appeared as nodules varying in size from a glass-headed pin to a cherry and in color from that of normal skin to deep purple. The sites of predilection were the skin of the trunk (particularly the anterior surface of the chest), the extremities and rarely the face and mucous membranes. As a rule these nodules were unaccompanied by local symptoms.

RAPID GROWTH OF A LARGE BREAST FIBROMA IN A YOUNG GIRL

BENJAMIN MARKOWITZ, M.D. AND H. L. HOWELL, M.D.
BLOOMINGTON, ILL.

This case is of interest only because of the extremely rapid growth of a large breast tumor in a girl, aged 14 years. While the Cohnheim theory of the origin of such tumors arising from misplaced islands of tissue is in many instances doubted, it is difficult to explain this case on any of the other theories.

This girl had normal appearing, symmetrical breasts with no evidence of nodule formation in February 1935. Sometime

responsible for the enlargement. The tumor was very hard, rounded and freely movable underneath the skin, with no involvement or dimpling of the nipple. It was thought that a line of demarcation could be detected between the tumor and the breast tissue proper. The superficial veins particularly



Fig 1—Appearance of patient before the operation July 11

during April she began experiencing a 'heaviness' of the right breast and noted that the nipple areola on this side appeared wider. Sometime in May she noticed that the entire right breast was larger than the left, and the 'feeling of heaviness' was increased. For relief her mother made her a 'carrier' to help support this breast. From this time on the breast grew very rapidly. Within two months from the time the patient first complained of symptoms the right breast was described as twice as large as the left. Figure 1 shows the inequality in size found within three months from the very first complaint.

REPORT OF CASE

History—The only important factor in the history is the emphasis on the rapidity of growth of the tumor. There was no history of trauma, no disturbance during puberty, no menstrual disturbances, no pain except the 'feeling of heaviness' and no history of any inflammatory process. The appetite was good and there was no loss of weight.

Physical Examination—On physical examination, July 5, the patient was well developed and healthy appearing. The right breast was tremendously enlarged, extending slightly below the waistline. On palpation a large tumor involving the entire circumference and anterior pole of the breast was found



Fig 2—Appearance of patient after the operation August 17

around the nipple and the areola were enlarged and engorged. The axillary lymph glands were not palpable.

Operation—July 11, the day of operation, we felt that the breast had increased in size since July 5, the day of examination. An incision about midway between the natural chest fold



Fig 3—Microscopic section of removed tumor

and the nipple was made in the lower surface of the breast in preference to a flap incision at the natural crease. The tumor was only slightly attached by delicate adhesions which were easily freed with the finger. Removal was very easy with minimum trauma to the breast. The small hemorrhage was easily controlled and the skin closure was readily accomplished.

A small wick drain was left in the outer angle. Healing took place very rapidly by first intention. By August 17 the operated breast had made a very rapid approach to normal (fig 2).

Pathologic Examination—The specimen consisted of a single rounded, somewhat oval, encapsulated tumor mass about the size of a fetal head. The surface was quite smooth and the consistency rather soft. The cut surface was a bluish gray, somewhat resembling sarcoma, measured 14 by 11 cm, everted slightly and was very moist, with thick, mucus-like material which accumulated in small cystlike spaces and rounded depressions.

Microscopically there was marked overgrowth of both fibrous and epithelial elements. The acini and ducts were quite numerous, and in many areas the acini were lined by several layers of cells. The fibrous stroma was edematous and hypertrophied (fig 3).

The diagnosis was benign fibro-adenoma with myxomatous changes.

COMMENT

Many authors maintain that inflammation is responsible for the origin of many of the simpler fibro-adenomas. Some assert that it is impossible to establish a definite demarcation between the cystic changes of so-called mastitis or mastopathy and fibro-adenomas. Various stages of the growth of diffuse adenofibrosis may be found within chronic mastitis. Ewing believes that tumor-like areas found in chronic mastitis show many inflammatory changes.

In the case here reported we are evidently dealing with a true tumor arising in breast tissue with a predisposition in the form of superfluous or misplaced material.

525 Griesheim Building

Special Clinical Article

INJURIES OF THE HAND

CLINICAL LECTURE AT KANSAS CITY SESSION

SUMNER L. KOCH, M.D.

CHICAGO

Why should there be many varied opinions among medical men as to what constitutes the most adequate and effective treatment of a compound injury, whether it involves the hand or some other part of the body? Much of this difference of opinion is due to the fact that we have often lost sight of basic surgical principles and concentrated our attention on details of treatment. In ignoring principles we have sometimes been led to utilize methods which retarded or actually defeated the recovery we desired to hasten.

What are these surgical principles which form the basis of logical treatment?

- 1 The first law of surgery *nihil nocere*—to do no harm
- 2 Not to leave contaminated tissue in the injured area
- 3 To avoid so far as possible leaving foreign bodies buried in the tissues
- 4 To close every open wound as soon as it can be done with safety
- 5 To put injured tissues at rest.

TO DO NO HARM

What does "Do no harm" mean? It means first, to avoid every form of injury—mechanical, thermal, chemical, and, secondly, not to add contamination to that which is already present.

Why is trauma so important and why did one of America's greatest surgeons, William S. Halsted, lay

so much emphasis on avoiding it? Living tissue is delicate, fragile substance. The covering tissues of skin and mucous membrane have acquired some resistance to injury and a certain adaptation to contact with the outside world, the deeper tissues have little resistance to injury. As Petersen¹ says and as many others have pointed out, as medical students our first conception of body tissues results from continual observation of fixed, hard, immobile structures: the cadaver in the dissecting room, the formaldehyde hardened specimen in the histology and pathology laboratory, viscera and tumors and extremities in glass jars, preserved for indefinite periods. In our early surgical training we fail to recognize the sensitiveness and susceptibility to injury of living body cells, for anesthesia has blunted the sharp edge of pain, and in our desire to be helpful and efficient assistants we are often unwittingly ruthless in our forceful retraction and manipulation of this fragile, delicate living substance.

Our first task in the treatment of the injured hand—and because of the limitation of time I must ignore here the treatment of the patient in shock and omit any discussion of the careful preliminary examination of the patient to determine as accurately as possible the extent of his injuries—is often the arrest of hemorrhage. It should be done without adding trauma or without adding contamination. For persistent oozing, gentle manual pressure over the bleeding surface with a handful of sterile gauze is often all that is necessary. If a single spurting vessel can be seen, it can be caught with a sterile forceps and the hemostat left in place. If bleeding is profuse, an ideal method of arresting it is always at hand: the blood pressure band inflated to 250 mm of mercury and used as a constrictor. I have never seen nerve palsy resulting from the use of a blood pressure band as a constrictor but have often seen injury of soft tissues and nerves from the ordinary constrictor powerfully applied and have too frequently seen evidence that infection was introduced into an open wound from the needless attempt to ligate bleeding vessels under unsuitable conditions.

NOT TO LEAVE CONTAMINATED TISSUE IN INJURED AREA

The next step is preparation of the operative field. Whether the injury is extensive or slight, the method is identical. While the patient is being anesthetized for with extensive injuries a general anesthetic is always used, the surgeon and his assistants scrub their own hands. The one who finishes first dries his hands, puts on sterile gloves and prepares the field of operation. If the injury is a very serious one I prefer to prepare the patient myself for it is difficult to tell in words to a beginner in surgery what one means by adequate preoperative cleansing. With the wound itself covered with sterile gauze and with the blood pressure band inflated to prevent bleeding a wide area about the wound is first shaved and then cleansed with soap and water. If the part is covered with greasy dirt a preliminary cleansing is carried out with benzene or ether and this in turn followed with soap and water. If the preoperative examination indicates that the median or ulnar nerve has been divided, the preparation includes the entire forearm and lower third of the

From the Department of Surgery, Northwestern University Medical School.

Read in the General Scientific Meetings at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 12, 1936.

¹ Petersen, W. F. *The Patient and the Weather*. Ann Arbor: Edwards Brothers, 1935, p. xiv (preface).

arm so that if necessary the dissection can be carried above the elbow. When the part about the wound is cleansed the wound itself is uncovered and very patiently, gently and thoroughly cleansed with soap and water. With deep and irregular wounds the edges and deeper tissues are separated with sterile retractors so that there is no doubt that the cleansing process has been applied to every part of the wound which has been exposed to contamination. Finally the soapy solution is washed away with sterile water or salt solution. No antiseptics of any kind are used in the open wound, for I believe that none of them are necessary and that some of them destroy living tissue and do the harm we are trying so hard to avoid.

Without wishing to put undue emphasis on this controversial question I would mention only two facts: antiseptics are of two types, bactericidal and bacteriostatic. Those which are actually bactericidal kill living tissue as quickly as they kill bacteria. The destructive action of phenol on living tissue and of tincture of iodine on a sensitive skin need only be mentioned to recall to mind the many clinical observations every sur-

ments have been applied to catgut ribbons, to raw catgut strings, as well as to artificially infected catgut.

The chemical compounds used in this research study included mercurochrome, mercuraphen, merthiolate, metaphen, potassium-mercuric-iodide, hexylresorcinol, tribromoresorcinol, orthophenylphenate, ethylhydrocupreine, tribrometanaphthal, copper cyanide, copper chloride, copper sulfate, copper sulfate plus methylene



Fig 1 (case 2)—Diagram indicating extent of injury. (Solid black lines represent tendons.)

geon has made on this point. The effect of these and other bactericidal agents on the fragile and delicate tissues underneath the body surface, which have never come in contact with the outside world and have little resistance to trauma, I can leave to the imagination. With reference to bacteriostatic agents, and this group includes many of the antiseptics so widely advocated today, I need only call attention to the careful investigation of Ralph O. Clock² reported in a paper entitled "The Fallacy of the Chemical Sterilization of Catgut Sutures."

He says, in part, in a summary of his work:

In this investigation, which extended over a period of two and one half years, several thousand catgut sutures were prepared from 334 lots of catgut. Twenty-seven different chemical compounds were used for treating these various lots of catgut under a wide variety of conditions, in an attempt to bring about chemical sterilization. The various chemical treat-

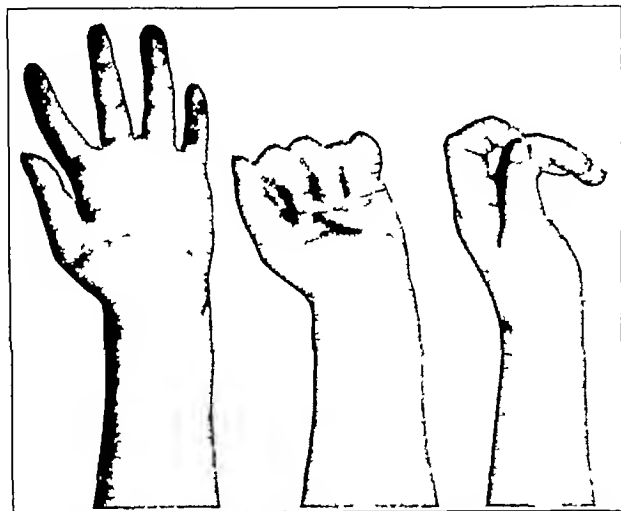


Fig 2 (case 2)—Result of immediate suture of all long flexor tendons of thumb and fingers and of median and ulnar nerves twelve weeks after injury and operation.

blue zinc sulfate, peppermint oil, oil of tea tree (*Melaleuca alternifolia*), hydrogen peroxide, malachite green, pyridium, iodine, iodine plus potassium iodide, myodine, parachlormeta-cresol, diacetylmethylmercuriothocresol, parachlorphenol and chlor-thymol ester.



Fig 3 (case 6)—Crushing injury of hand with destruction of skin and subcutaneous tissue and injury of extensor tendons treated by soap and water cleansing, tendon repair and immediate closure of wound with free full thickness graft.

Bacteriologic tests, applied to commercial catgut sutures containing a large amount of a mercury compound have shown that arrested development of bacteria within the catgut is brought about through the bacteriostatic action of the mercury.

² Clock, R. O. The Fallacy of the Chemical Sterilization of Catgut Sutures. Surg. Gynec. & Obst. 56: 149-161 (Feb.) 1933.

compound. These tests have also proved that removal of the mercury compound from the sutures by means of a suitable neutralizing fluid, reactivates the bacteria, which then are able to grow in the culture medium.

None of the twenty-seven chemical compounds studied in this investigation was found to have reliable or uniform sterilizing action on catgut for in no case did all lots of sutures, sterilized with any one of the chemicals or a combination of the chemicals prove to be entirely free from living bacteria.

If antiseptics were necessary it would not be logical to use substances which simply produce bacteriostasis and leave bacteria free to multiply when the dye that fixes them for a time is neutralized or diluted by body fluids. It has often seemed to me that many people today are expending a great amount of effort and ingenuity to drag the surgeon back into the bygone days of antiseptics instead of helping him to go forward in the modern world of asepsis.

Perhaps you will ask, 'Does any one contend that he can render a contaminated wound sterile by soap and

during the World War, and we follow practically the technic described in all our work. Why talk about it when there are many more important subjects to discuss?' If this is your attitude I can only say that you are in the minority, and that you have been too long silent about your practice and your beliefs. As far as my observation goes, the facts that antiseptics are unnecessary and that many of them produce chemical trauma and render wound healing more difficult are either not known to many men or are ignored in their practice.

When the preparation of the operative field and the wound is completed, the next step is excision of hopelessly injured tissue—debridement. This procedure needs no comment. It is sound surgical practice. It should be done with care and discretion, and without needless sacrifice of living tissue.

The next step is repair of injured tissues—reduction of fractures, repair of divided and torn joint capsules, suture of divided tendons and nerves. These pro-

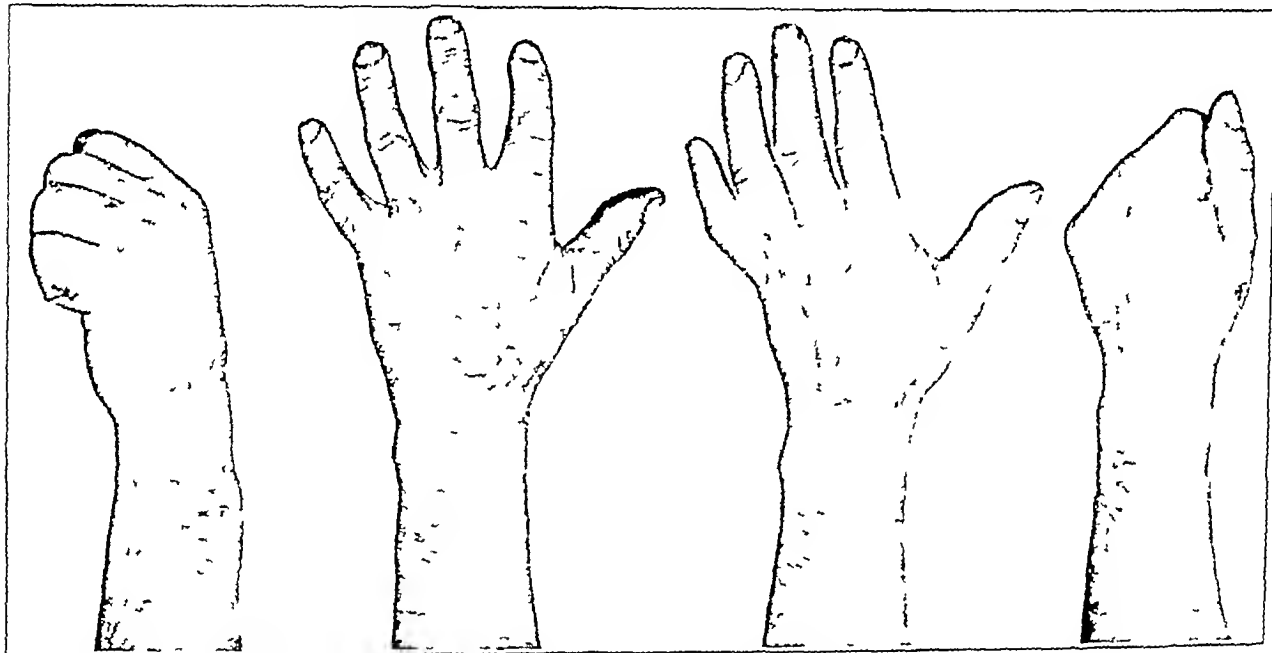


Fig. 4 (case 6)—Result two years after injury

water cleansing?" I do not contend that for one moment. My belief is that if the surgeon sees a patient with a contaminated wound shortly after injury and before infection takes place, in other words before bacteria have begun to invade and destroy tissue, in the great majority of cases he can cleanse the wound and render it surgically clean so that it can be closed and can heal by primary union. The wound area is usually not sterile, but it has often been demonstrated that wounds can heal by primary union if bacteria are not too numerous and not too virulent, if hemostasis is complete and if the tissues about the field of operation have not been unduly injured. The most striking proof of this statement is the frequently demonstrated fact that the washings of 'clean wounds'—i. e., wounds made by the surgeon in the operating room—frequently show bacterial contamination and yet these wounds heal by primary union.

Perhaps you will say again. These facts were known to us long ago. They were demonstrated repeatedly

cedures also need little comment. Each one must be done with exactness, with care, and with a minimum of trauma. Repair of such tissues is not minor surgery, nor a procedure that can be carried out single handed in an office or a ward dressing room. Knavel often said he would rather have the average surgeon operate on him for acute appendicitis than for repair of a divided flexor tendon. That such procedures, however, are often regarded as minor surgery accounts in part for the poor results so frequently obtained.

TO AVOID LEAVING FOREIGN BODIES BURIED IN TISSUES

In repairing injured tissues, consideration of the third principle—to avoid so far as possible leaving foreign bodies buried in living tissue—means abstaining from the use of metal plates or other means of internal fixation in the treatment of fractures, avoiding heavy suture material such as kangaroo tendon, heavy catgut and braided silk and utilizing for ligatures and

for repair of joint capsules of tendons and of nerves the finest and thinnest silk that will accomplish the desired end

TO CLOSE WOUNDS AS SOON AS IT CAN BE DONE WITH SAFETY

The injured tissues having been repaired the next step is closure of the wound. If I were to ask you when operating on a hernia you insist on closing the



Fig. 5 (case 7)—Crushing injury of hand with destruction of covering tissues tendons and part of metacarpal bones treated by immediate soap and water cleansing and early application of pedunculated flap from thigh. Above hand immediately after injury. Below hand underneath flap.

wound after the abdominal wall is repaired you would reply, and correctly, that if it were left open infection would inevitably enter the wound from without and such infection might well be disastrous. At best, healing would take place slowly with great expense of time, of money and of comfort to the patient. Finally there would remain an extensive and contracting scar as a permanent liability and disability. Each of these arguments applies with undiminished force to the accidental wound which our patient has sustained. The great majority of wounds which are seen immediately after the injury is sustained can be closed with safety if the preoperative preparation is adequate and atraumatic. If the wound can be closed with safety there are many sound reasons for doing so. In cases in which the surgeon is doubtful as to whether the preoperative cleansing has converted the contaminated wound into a clean surgical wound he can pack the cleansed wound lightly with gauze impregnated with some nonirritating material as petrolatum or liquid petrolatum and wait for twenty-four hours before closure is completed. At the end of that time closure will be somewhat more difficult because of edema and infiltration of the tissues, but it will still be possible and one will have the advantage of twenty-four hours time to demonstrate the presence or absence of infection of the wound

If there has been extensive destruction of overlying skin and subcutaneous tissue at the site of injury, one still cannot disregard the primary surgical principle of wound closure. It is the same principle that is constantly utilized in the present-day treatment of burns and for the practical application of which we are under everlasting debt to Davidson, a surgeon who taught us how to cleanse and close extensive wounds in which not all of the covering tissue had been destroyed. If all the covering tissue has been destroyed as a result of serious injury, a substitute can often be obtained from some other part of the body—as a graft of intermediate thickness a free full thickness graft or a pedunculated flap, and the much desired objective—immediate closure of the wound—still be attained.

TO PUT INJURED TISSUES AT REST

I need only mention the last principle—rest of injured tissues. Hugh Owen Thomas the uncle of Sir Robert Jones and the father of orthopedic surgery, stressed it continually in his teachings. Every surgeon recognizes its importance in connection with the treatment of fractures. He does not always remember that rest in the early stages of treatment is equally applicable and helpful in the treatment of fractures of tendons of nerves and of covering tissues.

Finally, you may say, This sounds very well in the lecture room, but we would like to see evidence that these theories work out in practice. I wish I could take you back with me to No. 18 General Hospital between Etaples and Boulogne in northern France, and show you how in the last year of the war wounded men came from the British casualty clearing stations

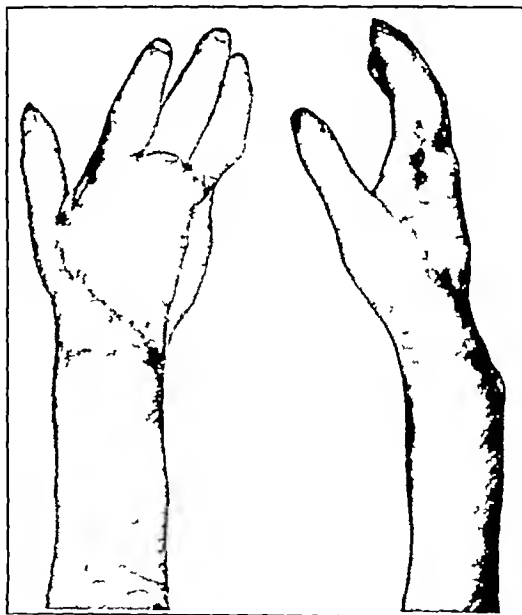


Fig. 6 (case 7)—Appearance of hand eleven weeks after injury.

with extensive wounds of every part of the body which had been cleansed excised, often sutured, sometimes usually because of the pressure of work, lightly packed with gauze saturated in paraffin and left open for twenty-four or forty-eight hours until the surgeon at the base hospital could close them. I wish I could show you the freedom from swelling and induration, the absence of inflammatory reaction and fever, and the comfort of these patients as compared with those who

were treated by the antiseptic methods that were in vogue the year before. One of my most vivid recollections is of a young soldier who had sustained a penetrating wound of the knee joint with fracture of both tibia and femur. The surgeon had laid the joint widely open by an incision extending upward along the medial side of the upper part of the leg, transversely across the patellar tendon, and upward along the lateral side of the lower part of the thigh. The loose bone fragments had been removed, the shell fragment and the clothing and skin carried in before it carefully and completely removed from the lower end of the femur, the joint cavity irrigated with salt solution, and the entire wound closed in layers and without drainage. In the days of my internship at the Cook County Hospital only three years before, such treatment would have been heresy, yet eight days after operation in a casualty clearing station this boy lay with the lower extremity immobilized in a Thomas splint, with normal temperature, with the operative wound healed, and with only a slight swelling of the suprapatellar bursa as evidence of wound reaction. That was only one of many such cases, but it stands out in my memory with peculiar vividness. It seems little short of tragic that the hard won and costly lessons of the World War should be so often ignored and forgotten in our teaching of surgery today.

ILLUSTRATIVE CASES

Here are a few illustrations of recent cases from the service of Dr. Michael Mason and myself at Passavant Memorial Hospital.

CASE 1—A man, aged 35, tripped over a rug April 29, 1934, and as he fell thrust his left hand through the glass of a French window toward which he was walking. He sustained a deep transverse wound just above the wrist, with immediate and profuse bleeding. A doctor in the room immediately applied compression above the wound and shortly afterward a sterile dressing and pressure bandage over the wound. When I saw the patient ninety minutes later he could move all his fingers well but had a complete loss of sensation in the area of median nerve distribution and loss of the ability to rotate his thumb so that it faced the fingers.

The patient was anesthetized immediately, and the hand and forearm and finally the wound itself cleansed very gently but thoroughly with soap and water. Examination of the wound showed, in addition to complete division of the median nerve, division of the tendons of the palmaris longus and the superficial flexor to the middle finger, and partial division of the tendons of the superficial flexors to the ring and little fingers, the flexor pollicis longus and the flexor carpi ulnaris. The injured tendons were repaired and finally the median nerve accurately reunited with very fine silk sutures. The wound in the skin and subcutaneous tissue was accurately closed without drainage and a light splint applied to maintain immobilization and volar flexion at the wrist.

The wound healed by primary union and the patient was dismissed from the hospital with the hand splinted in volar flexion at the wrist on the third day after operation. Four months later he was moving his fingers normally and there were definite signs of returning function of the muscles supplied by the median nerve and of returning sensation in the area of median nerve distribution.

CASE 2—A boy, aged 6 years, sustained a deep transverse cut of his left palm as he fell headlong over an ash pile Nov. 30, 1935. It was not determined whether the injury was caused by sharp tin or broken glass. The wound bled profusely until a first aid dressing and tourniquet were applied by a physician who saw him twenty minutes after the injury. The patient was admitted to Passavant Memorial Hospital in the service of Dr. Michael Mason ninety minutes after the injury. Examination of the hand without removal of the dressing showed

motionless fingers and anesthesia of the entire palmar surface of hand and fingers.

The patient was immediately anesthetized, and the forearm hand and finally the wound itself carefully washed with soap and water. To make certain that cleansing was as complete as possible the edges of the wound, which extended in a curved line almost completely across the proximal portion of the palm, were held apart with sterile retractors so as to expose its entire depth. The soap solution was washed away with sterile water and the divided structures (fig. 1)—nine tendons and four nerves, for the ulnar nerve was divided 1 inch distal to its division into its two digital branches and its deep muscular branch—were united by end-to-end suture. Finally the subcutaneous tissue and skin were accurately united. The wound healed by primary union.

Feb. 21, 1936, twelve weeks after the injury, the boy was beginning to use his fingers (fig. 2) and there were definite signs of returning sensation over the proximal portion of the palm.

CASE 3—A girl, aged 8 years, sustained a crushing injury of the distal phalanx of the left ring finger as it was caught by a closing door June 2, 1935. The distal half of the distal phalanx was almost avulsed but still held by a flap of skin and soft tissue on its radial side. The bone had been completely fractured and the distal portion torn away with the soft tissues which surrounded it.

The patient was seen forty-five minutes after the injury. The finger tip was dusky and cyanotic but it seemed possible that one digital vessel had escaped injury. The patient was anesthetized immediately with nitrous oxide, the hand and wound were cleansed with soap and water and the distal bone fragment brought back into place as accurately as possible. The "cap" of soft tissue was fitted over it and the skin edges united as exactly as possible with fine horsehair sutures. No sutures were placed on the dorsal surface so as to avoid injury of the nail bed.

A pressure dressing was applied so as to prevent passive congestion of the flap. The wound healed by primary union.

CASE 4—A mechanic, aged 38, sustained multiple lacerated wounds of three fingers when his left hand was caught in an electric fan June 11, 1934. The most serious injuries consisted of a laceration of the dorsal surface of the index finger at the proximal interphalangeal joint with division of the extensor tendon and joint capsule, and the loss of two half square inches of skin over the middle phalanx of the index and the distal phalanx of the middle fingers. The dirty wounds were carefully cleansed by Dr. Michael Mason, the joint capsule and the divided extensor tendon were accurately united, the lacerations were united with fine sutures and two small grafts were laid over the denuded areas. The wounds and grafts healed without infection.

CASE 5—A mechanic, aged 46, sustained burns of both hands April 18, 1935, from blazing gasoline. Linseed oil and gauze dressings were applied shortly afterward at a nearby hospital. He was admitted to Passavant Memorial Hospital an hour after the injury. The oily material and greasy dirt were washed from his hands as he soaked them for nearly a half hour in two large basins of sterile water and soap suds. When the hands were clean they were allowed to dry under a heat lamp and then sprayed with 5 per cent freshly made tannic acid solution. The hands were alternately sprayed and dried during a period of twelve hours, when tanning was almost complete. Some exudation of serum from the right hand continued for almost three days. The day after admission the patient's temperature was 101.4 F and there was considerable swelling and redness of the right forearm just proximal to the burned area. These symptoms gradually subsided, the patient was dismissed from the hospital seven days after admission with the dry crusts covered with a light protective dressing and the right hand immobilized in a light splint. Separation of the crusts was complete eight days later.

CASE 6—A workman, aged 40, was admitted to Passavant Memorial Hospital March 29, 1934, shortly after he had sustained a crushing injury of the left hand. While repairing a freight elevator he was suddenly carried upward clinging with his upstretched hands to the floor of the elevator. His left hand was caught between the floor of the elevator and the upper beam of the doorway just as the elevator was brought

to a stop. The soft tissues over the dorsum of the metacarpus were crushed and torn away. The skin over the dorsal surfaces of the proximal phalanges of the index, middle and ring fingers was white, bloodless and insensitve (fig 3). Over the metacarpus a part of the extensor indicis proprius had been avulsed, the surface of the common extensor tendons to the index and middle fingers was ragged and torn, but the tendons were not divided.

After the hand and forearm had been shaved and cleansed with soap and water the wounds themselves were carefully cleansed. The crushed and lacerated edges of skin about the wound on the metacarpus were cut away, leaving a denuded area involving the greater part of the dorsum of the hand. The free ends of the partially destroyed extensor indicis proprius were sutured to the adjacent tendon of the common extensor. A free full thickness graft of skin of the exact size and shape of the defect was then dissected free from the abdominal wall and sutured accurately in place over the defect. A second similar graft was used to fill the defect in the dorsum of the ring finger. On the middle and index fingers it was possible to approximate the skin edges, after excision of the devitalized skin and subcutaneous tissue.

When the pressure dressing was removed and the wounded areas examined for the first time eight days after operation it was seen that a small area of dry necrosis approximately one inch square, had developed where the large graft lay over bare extensor tendons. Elsewhere the grafts had healed perfectly. This necrotic portion of the graft was cut away a few days later, and the patient left the hospital three weeks after the injury. When healthy granulation tissue had formed over the raw spot, thirty-seven days after the injury and primary operation a thin graft was laid over the granulations and healing was complete a week later. Figure 3 shows the hand immediately after the injury, and figure 4 two years after the injury.

CASE 7—A woman, aged 34, was admitted to Passavant Memorial Hospital in the service of Dr. Michael Mason April 23, 1935, shortly after she had sustained multiple serious injuries in an automobile accident. The most severe injuries consisted of a comminuted supracondylar fracture of the left humerus, lacerations of the left parietal and right orbital regions, and a deep abraded wound of the dorsum of the right hand with tangential loss of a portion of all the metacarpal bones and complete loss of all the tissues—tendons, nerves, blood vessels and covering tissues—overlying them (fig 5).

The extensive wound of the hand was carefully cleansed with soap and water and debrided and the lacerations of the head and face cleansed and sutured, but because of shock and, later, the difficulty of securing complete reduction and satisfactory immobilization of the fractured left humerus, six days elapsed before it was possible to raise a flap from the right thigh and lay the hand underneath it. In the meantime the hand had been dressed daily with every care to avoid adding infection to the large open wound. May 29, just one month after the hand had been placed under the flap, its attachments were divided, suture of the cut edges to the hand completed, and the raw surface left on the thigh covered with thin grafts.

Figure 5 shows the hand immediately after the injury and as it lay underneath the flap, and figure 6, eleven weeks after the injury. Dr. Mason plans at a later date to transplant tendons underneath the flap to replace the destroyed extensor tendons.

SUMMARY

The arrest of hemorrhage, the treatment of shock, and the careful examination of the hand—not the wound, are the first steps in the care of an injured hand. The principles involved in the further treatment, as in the treatment of any compound injury, are care not to add injury to that which has already taken place, careful excision of hopelessly injured tissue, the use of a minimum amount of foreign material in the repair of the injured structures, closure of the open wound as soon as it can be done with safety, and rest until healing has taken place.

54 East Erie Street.

Special Article

THE CHOICE OF ANALGESICS

R. W. WAGGONER, M.D.

ANN ARBOR, MICH.

This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION—ED.

It has been said that, "next to the saving of life, the relief of pain is a physician's most important function." Most patients can be made relatively comfortable in order to prevent the use of energy in the form of actual physical and nervous response to painful stimuli. Protection from these stimuli will allow the use of this energy for a better purpose. On the other hand, the indiscriminate and illogical use of analgesics is frequently unsatisfactory and may actually cause more damage than the pain itself. The type of analgesic should be chosen with care from an analysis of the patient's condition. Pain is an important factor from the diagnostic point of view, but once the type of pain, its situation, frequency and duration are noted it becomes unnecessary and the patient has every right to expect relief. Pain having served its purpose as a warning should be eradicated as soon as possible. The means by which pain is to be relieved depends largely on the type of pain and the causative factors. For rational therapy, therefore, the physician must analyze the situation and proceed accordingly.

Obviously, the causative factor must be removed if and when possible. For example, an inflamed appendix should be removed, tabetic patients with root pain should receive the proper sort of antisyphilitic therapy. Headaches associated with some organic manifestation should be treated accordingly. In the meantime, however, it is the duty of the physician to control the symptoms which the patient manifests until such time as the removal of the cause is possible. Analgesics that are satisfactory for the control of one type of pain may be almost valueless in another case. In order to decide the type of analgesic to be used, it will be of value to develop some sort of classification of the different types of pain.¹

PSYCHALGIA

In such a classification psychalgia, or pain without organic cause, should be considered first. It would seem that all pain, whether secondary to some physical pathologic process or associated with no chemical or physical cause, must have a psychologic component, the degree of psychologic component present varying with the patient as well as with the disease. There is apt to be a greater degree of fear and consequently a greater degree of psychologic pain in certain types of conditions than in others, and the diminution of fear or anxiety whether by psychotherapy or by physical means will very distinctly assist in the control of physical pain. Certain types of pain, particularly if there happens to be a large element of psychalgia, will respond poorly even to large doses of morphine. On the other hand, a small

The author is indebted to Mr. Harvey Whitney, chief pharmacist of the University Hospital for assistance in preparing the prescriptions used in this paper.

¹ Dunlap H. A. *Lancet* 2:909 (Oct. 19) 1935.

dose of some one of the barbiturates, together with a relatively small dose of morphine, may result in complete relief of the patient's symptoms. It is possible to relieve even the most severe types of pain in given individuals by strong suggestive therapy without the use of any of the chemical analgesics. The proper amount of psychotherapy correctly used, irrespective of the type of chemical analgesia necessary, is always of value and should never be neglected. Care should be used in the diagnosis and treatment of psychalgia, since if it is

PRESCRIPTION 1—Sodium Bromide and Ammonium Valerate

| | | |
|---|---|-----------------|
| R | Sodium bromide | 100 Gm |
| | Elixir of Ammonium Valerate | to make 600 cc. |
| M | Label One teaspoonful, diluted with water three times daily after meals | |

PRESCRIPTION 2—Carbromal

| | | |
|---|---|-------|
| R | Carbromal | 50 Gm |
| | Divide into 15 capsules (or tablets) | |
| L | Label One capsule after meals and two before retiring | |

PRESCRIPTION 3—Phenobarbital

| | | |
|---|---|--------|
| R | Elixir of Phenobarbital | 600 cc |
| | Label From one teaspoonful to one tablespoonful before bedtime (Each teaspoonful contains 0.016 Gm) | |

handled badly the patient's attention may be fixed on some symptom and increase rather than diminish the manifestations. If one is sure that there is no organic component in such a situation, one should be exceedingly careful in the use of any physical or chemical therapy.

THE NEURALGIAS

The neuralgias present a serious problem from the point of view of treatment. Under the general term must be included, of course, certain treatment-resistant conditions such as tic douloureux, atypical neuralgia

PRESCRIPTION 4—Aminopyrine

| | | |
|---|--|-------|
| R | Aminopyrine | 50 Gm |
| | Divide into 15 capsules (or tablets) | |
| L | Label One capsule every three hours as required to relieve pain. | |

PRESCRIPTION 5—Acetylsalicylic Acid

| | | |
|---|---|-------|
| R | Acetylsalicylic acid | 50 Gm |
| | Divide into 15 capsules | |
| L | Label from two to three tablets every three hours as required | |

PRESCRIPTION 6—Aminopyrine

| | | |
|---|---|--------|
| R | Elixir of Aminopyrine N F | 600 cc |
| | Label From one to two teaspoonfuls (each teaspoonful contains 0.16 Gm of Aminopyrine) | |

of the face, intercostal neuralgia, post-herpetic neuralgia and sciatic neuralgia. In the treatment of these, perhaps mechanical therapy or surgical intervention is in the end the most satisfactory. However, in the meantime the patient should be kept comfortable and in cases that are not too severe perhaps proper mechanical therapy combined with judicious analgesic medication may eliminate the necessity of surgical intervention. In such circumstances it must be remembered that because of the chronicity of these conditions morphine and its derivatives are contraindicated. Aminopyrine

and salicylic acid derivatives are in general most satisfactory for the treatment of these cases.

Of the special neuralgias, trichloroethylene has been suggested in the treatment of tic douloureux but at best should be used only as a temporary type of treatment. It is usually somewhat unsatisfactory. Even

PRESCRIPTION 7—Trichloroethylene

| | | |
|---|------------------------|--------|
| R | Trichloroethylene | 100 cc |
| | Divide into 10 ampules | |
| L | Label Inhale vapors | |

morphine may fail in handling this particular type of condition and should not be used unless the patient is under the continuous observation of the physician.

NEURITIS

In contrast to the neuralgias, patients with neuritis show definite neurologic changes, such as sensory changes, changes in the reflexes and muscle weakness etc. Since a great many of these cases are associated with toxic conditions of some sort, care must be exercised not to prescribe any medication that will increase the toxic manifestation. In cases of neuritis, as in cases of neuralgia, mechanical therapy is of great value. As a necessary adjunct, however, one should include the use of proper analgesics. The pain in most of these cases will yield fairly promptly to the use of amino pyrine or the salicylates, but early in the treatment of the condition the pain may be so severe as to necessitate the use of morphine or one of its derivatives.

ROOT PAINS

Three important conditions come under the heading of root pains: tabes dorsalis, spinal cord tumor and radiculitis. In the first two, obviously, the important consideration is to treat the underlying condition. In spinal cord tumor, for example, removal of the tumor, if operable, will usually result in prompt relief of the pain. In the other two, however, the patient must be made comfortable by the use of analgesia, particularly during the period of treatment. During this time

PRESCRIPTION 8—Analgesic for Radiculitis

| | | |
|---|--|---------|
| R | Acetylsalicylic acid | 35 Gm |
| | Acetophenetidin | 25 Gm |
| | Caffeine | 0.5 Gm |
| | Codeine sulfate | 0.25 Gm |
| M | Divide into 15 capsules | |
| L | Label One or two capsules at onset of pain. May repeat in an hour. | |

various types of analgesia may be used. A patient with tabes dorsalis whose pain is very severe, whether associated with the characteristic root pains involving the extremities or associated with a gastric crisis, should be made quiet and should be relieved of fear of repeated attacks of pain. The use of one of the longer acting barbiturates is often of great value in such cases. Ordinary analgesics such as aminopyrine, acetylsalicylic acid and acetophenetidin will rarely have much effect but may be tried on such cases. Obviously, because of the frequent recurrence of attacks of such pain, morphine and its derivatives are contraindicated. A successful method of handling these cases is to administer intravenously one of the intravenous barbiturates, giving the patient enough medication to make him semiconscious and keeping him in such a condition for a period of from twelve to twenty-four hours, when the patient is allowed to regain consciousness the

attack may be gone. This procedure should be used with great caution, and not as a general practice. This type of treatment is to be used only in conjunction with the antisyphilitic therapy which should be instituted as soon as the condition is recognized. In the treatment of radiculitis, on the other hand, the milder types of analgesia oftentimes serve quite satisfactorily. One may try aminopyrine, acetophenetidin or a salicylate

PRESCRIPTION 9—*For Pain in Spinal Cord Tumor*

| | |
|--|----------|
| R Morphine sulfate | 0.15 Gm |
| Physiologic solution of sodium chloride | 10.00 cc |
| M Make a sterile solution | |
| Label Give 1 cc. hypodermically as ordered (1 cc. equals one fourth grain) | |

In the spinal cord tumor cases, the pain may be controlled with morphine or some of its derivatives until such time as the patient comes to operation.

HEADACHE OR CEPHALALGIA

One of the most common conditions to which man is heir is headache. Since it may be due to a multitude of causes, it is obvious that different types of analgesia should be used according to the type of condition present. It is likewise obvious that, if the causative factor can be found, this should be removed. For example, in allergic conditions the patient should eliminate the reacting substance, or, in brain tumor, the tumor, if operable, should be removed. In meningitis the inflammatory lesion deserves immediate consideration from the standpoint of treatment. Local disorder in the nose or throat, visual disturbances, such as refractive error, should all be treated as such. Fre-

PRESCRIPTION 10—*Acetylsalicylic Acid Combined with Acetophenetidin and Caffeine*

| | |
|--|--------|
| R Acetylsalicylic acid | 3.5 Gm |
| Acetophenetidin | 2.5 Gm |
| Caffeine | 0.5 Gm |
| M Divide into 15 capsules | |
| Label One or two capsules at onset of pain. May repeat in an hour. | |

PRESCRIPTION 11—*Ergotamine Tartrate*

| | |
|---|----------|
| R Ergotamine tartrate | 0.015 Gm |
| Divide into 15 tablets | |
| Label One to two tablets at the onset of an attack. | |

PRESCRIPTION 12—*Acetylsalicylic Acid with Acetanilid and Hyoscyamus*

| | |
|---|---------|
| R Acetylsalicylic acid | 5.0 Gm |
| Acetanilid | 1.5 Gm |
| Extract of Hyoscyamus | 0.15 Gm |
| Divide into 15 capsules | |
| Label One capsule every two to four hours as needed for pain. | |

quently evening or nocturnal headaches are associated with syphilis and in such cases active antisyphilitic therapy should be administered.

As a type of palliative medication the analgesic must be chosen according to the cause of the headache, if it is to be most effective. So-called reflex headache and headache associated with anxiety, excitement or depression may be controlled with relatively small doses of acetylsalicylic acid, the acetylsalicylic acid may be combined with other analgesics and caffeine. These drugs, on the other hand, have little influence on the patient with migraine or allergic headache. In ordinary migraine, most attacks can be controlled relatively easily

by one or two hypodermic injections of ergotamine tartrate, or the ergotamine tartrate may be taken by mouth.

The use of ergotamine tartrate is not without some danger of ergotism. In some of these cases moderate doses of analgesic medication together with large enough doses of a barbiturate to induce sleep may result in complete relief of the symptoms.

Headaches that are associated with gastro-intestinal upsets and toxic factors of various sorts, as after acute alcoholism, respond very well to acetanilid prescriptions. In the use of this drug, however, one must guard against habit formation and poisoning.

MISCELLANEOUS CONDITIONS

In patients who have increased muscular tone associated with cramping of the muscles and constant severe pain, one chooses the analgesic according to the condition present. For example, in patients with paralysis agitans, scopolamine hydrobromide administered three times daily over a relatively long period occasionally gives relief. During the attacks of pain the scopolamine effect can be boosted by the use of aminopyrine or if necessary an occasional hypodermic of morphine or one of its derivatives. On the other hand, muscle cramps as seen in athletes, which cause very severe pain, may be promptly relieved by the use of aminopyrine or acetphenetidin.

In thalamic disease the patient occasionally complains of very severe and almost intractable spontaneous pain. Obviously, no operative procedure is possible under such circumstances. These cases, although rare, are perhaps the most difficult to treat, frequently requiring large doses of morphine. Occasionally one gets better results by the use of morphine sulfate combined with one of the lesser analgesics such as aminopyrine or acetphenetidin.

The pain associated with dysmenorrhea presents a very important problem and one frequently encountered. In those cases in which there is some cause which can be corrected, this should be done rather than

PRESCRIPTION 13—*Acetylsalicylic Acid Combined with Amytal*

| | |
|-------------------------------------|---------|
| R Acetylsalicylic acid | 5.0 Gm |
| Amytal | 0.75 Gm |
| M Divide into 15 capsules | |
| Label One capsule every three hours | |

continuing the use of analgesics from month to month. However, in such cases it may be necessary to use some type of analgesia and in such cases the physician should attempt to estimate the degree of pain and use a drug that produces the desired degree of analgesia. Frequently these situations are a mixture of emotional disturbance and actual pain, and as a result a drug combination of an analgesic together with a sedative is of more value than a single analgesic drug. The use of acetylsalicylic acid or acetophenetidin combined with some mild sedative such as phenobarbital or amytal is usually quite satisfactory. Possibly the combination of aminopyrine and the barbiturates should be frowned on. The amount of the analgesic drug can be increased according to the severity of the pain. The sedative medication, however, should be about the same in most cases. In some instances the pain may be severe enough to require one of the opium derivatives.

In the control of pain associated with trauma, one should not hesitate to use the opium derivatives in most cases unless one expects the cause of the pain to last for a relatively long period. Some qualification of this

may be considered in the treatment, for example, of fractures, in which the introduction of a local anesthetic such as procaine into the fracture site may very markedly reduce the pain associated with reduction of

PRESCRIPTION 14—*Neocinchophen*

Rx Neocinchophen 7.5 Gm
Divide into 15 capsules
Label One capsule every three hours

PRESCRIPTION 15—*For Chronic Infectious Arthritis*

Rx Acetylsalicylic acid 3.3 Gm
Magnesium oxide 3.3 Gm
M Divide into 15 capsules
Label One capsule every three hours

the fracture and obviate the necessity for general anesthesia. The end results are said to be better than in those cases in which general anesthesia is used.

One of the most satisfactory drugs in the treatment of the pain associated with the degenerative types of arthritis, such as hypertrophic arthritis, is cinchophen or neocinchophen. Since neocinchophen gives such excellent results and is less toxic, it should be used rather than cinchophen.

In chronic infectious arthritis the pain is relieved more satisfactorily by the use of salicylates.

SUMMARY

Much has been written during the past few years concerning the harmful effects of certain drugs. Perhaps aminopyrine has been most severely indicted for its supposed cause of agranulocytosis. There are still many who are afraid to prescribe this splendid analgesic because of the possibility of harm resulting from its use.² The property of producing agranulocytosis may be due to the benzene ring, but many cases of industrial benzene poisoning have been noted without agranulocytosis.³ It is logical to believe that there may be an idiosyncrasy to the drug,⁴ just as there is to many other valuable drugs. It should not be discarded because of the unfortunate reaction in a few cases.

Similar criticism of the use of cinchophen and neocinchophen has been raised because this drug is presumed to cause liver damage. Studies on experimental animals have not proved that these drugs have a constant specific liver toxic effect even when given in doses far in excess of the therapeutic dose.⁵ An analysis of the literature would indicate that these drugs may be prescribed safely when a proper indication for their use exists.

Many of the barbituric acid derivatives have been used for the relief of pain. The high comparative dosage of these drugs necessary for analgesic action makes their routine use for such purposes inadvisable.

Sensitization to acetylsalicylic acid is said to be frequent among allergic persons.⁶ Placing a small bit of the drug on the tongue and allowing it to dissolve will produce itching, cough or asthma in a short time in sensitized persons.

2 Hoffman A. M. Butt, E. M. and Hickey N. D. *Neutropenia Following Aminopyrine* J. A. M. A. 102:1213 (April 14) 1934.
Pepper O. H. P. *California & West Med.* 35:173 (Sept.) 1931.
Randall C. L. *Severe Granulopenia Following the Use of Barbiturates and Aminopyrine* 102:1137 (April 7) 1934.
3 Kracke P. R. *Am. J. Clin. Path.* 2:11 (Jan.) 1932.
4 Lemarzi L. R. and Murphy Iva G. *J. Lab. & Clin. Med.* 20:616 (March) 1935.
5 Barbour H. G. and Fish M. E. *J. Pharmacol. & Exper. Therap.* 48:341 (July) 1933. Barbour H. G. and Gilman A. *ibid* 55:400 (Dec.) 1935.
6 Duke W. W. *J. Allergy* 4:427 (July) 1933.

The physician should recognize first of all the temperament and personality of his patient and, secondly, the situation, type and severity of the pain, and he should prescribe his analgesic medication accordingly. If the patient is a high strung, so-called nervous individual and there appear to be many emotional components in the situation, obviously much greater benefit will be derived from the use of some sedative medication in conjunction with the analgesic to be prescribed. On the other hand, a plethoric, nonemotional individual who has severe pain may be given an analgesic without the sedative component. It should be remembered in the use of this type of medication that habit formation is easily established and in those cases in which the pain is apt to be present over a long period drugs should be used which are least likely to induce habit formation. The narcotics, therefore, should be used rarely and only in emergency situations, not in those cases in which analgesic medication may be necessary over a long period.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER, Secretary

BECK-LEE SHORT WAVE DIATHERMY MACHINE ACCEPTABLE

Manufacturer Beck-Lee Corporation, Chicago

The Beck-Lee Short Wave Diathermy is designed for medical and surgical diathermy. It is a two-tube machine having a modified circuit of the push-pull type. No condenser is used in the tank circuit, the capacity between the turns of the coils being utilized. The wavelength is between 15 and 16 meters. The input power required to operate the unit is approximately 750 watts. Since there is no acceptable method of measuring the output power of short wave machines, this value is not given.



Fig 1—Beck-Lee Short Wave Diathermy

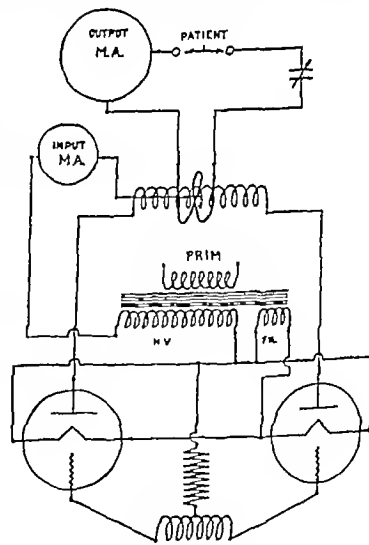


Fig 2—Schematic diagram of circuit

The shipping weight of the unit is approximately 50 pounds. Both pad and cuff electrodes are furnished as standard equipment.

In accordance with the regular procedure of considering devices submitted to the Council the firm was asked to present evidence to substantiate the claims made for the device. Tissue heating effects in the human thigh were observed. Cuff electrodes were applied to the thigh, one posterior to the hip and the other anterior to the knee. Thermocouples were introduced into the deep-lying tissues and also into the subcutaneous tissues being placed midway between the electrodes and temperature readings were made immediately before and after the treatments during which the thermocouples were removed. After twenty minutes' treatment, the machine being operated at the

patient's tolerance the temperature rise and final temperature (average of six tests) were observed to be comparable to those temperatures obtained when using conventional diathermy as a control.

The machine was used in a clinic acceptable to the Council and the foregoing report was confirmed. The temperature rise of the transformer was found to come within the limits accepted by the Council. The unit was operated under actual conditions for a period of three months. It gave satisfactory service both for medical and for surgical diathermy. Burns may be produced by this or any other short wave machine, but they may be avoided by ordinary precautions.

In view of the favorable report on the unit, based on its performance when cuff electrodes were used the Council on Physical Therapy voted to include the Beck-Lee Short Wave Diathermy in its list of accepted apparatus.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH, Secretary

INJECTION TREATMENT OF HERNIA

In March 1936 the Council on Pharmacy and Chemistry of the American Medical Association addressed a questionnaire to a selected list of hospitals, with a view to obtaining data on the injection treatment of hernia. This method is now being exploited actively to the medical profession by many purveyors of mixtures of one type or another, used in this method of treatment. In the questionnaire, information was sought particularly as to the extent of this practice, its safety and its effectiveness, the extent of unfavorable complications, and the nature of such complications.

Replies, which were received from most of the institutions addressed, indicated that the method is not used in the majority of the hospitals consulted and that it is considered safe and effective by those using it, although many qualified their opinion as to safety and effectiveness by specifying careful selection of cases. Several unfavorable complications were recorded, including mild infections, the development of fibrous masses of cutaneous tissue, and failure of the method to correct the hernia. In addition, there were some instances of painful scarring, occasional cases of swelling of the testis, and a few instances of subsequent impotence. In two cases, gangrene followed the use of the method.

The solutions used by various observers included sodium morrhuate, a mixture of phenol, alcohol and oil of thuja, and several mixtures containing tannic acid or tannic acid derivatives. In some of the institutions, preparations of proprietary character, such as the Pina-Mestre solution, Galtanol and Proliferol, were used.

Opinions varied as to the number of cases suitable to this method of treatment. In those most favorable, from 12 to 15 per cent of cases were treated by the injection method. Other institutions reported that the majority of cases of hernia in the outpatient clinic were treated by this method.

Several reports concerned surgical operations on patients who had been formerly treated by the injection method ineffectively. The surgeons report, however, that the previous injections had not made later surgery more difficult.

One of the complications involved in the introduction of the method has been the attitude of the insurance organizations, workmen's compensation boards and similar groups, in relation to bearing the cost of such a procedure. Another complication has been the fact that the method has been taken up by osteopaths and even by laymen, and that some of the difficulties that have arisen are due to the results of such nonmedical use of the injection method.

In some institutions in which physicians especially well trained have been put in charge of the injection method as administered in the outpatient clinic the results seem to be quite satisfactory not only to the special worker but also to

the members of the surgical staff who have followed these cases. The most unfavorable opinion seems to be that there may be more recurrences attending the injection of the indirect inguinal hernia than follow under adequate operative care.

It must be borne in mind, however, that these are ambulatory patients and that this type of care permits continued industrial employment as well as releasing a considerable number of beds for patients definitely requiring surgery.

Subsequent to the issuance of the questionnaire by the Council on Pharmacy and Chemistry, a letter was addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION by some fifty physicians in good standing who have been using the injection method citing their opposition to some of the criticisms contained in the questionnaire and emphasizing the fact that suitable selection of cases, injection by experienced practitioners, and suitable control of the patients treated make the injection method just as safe as, if not safer than a surgical procedure. These fifty physicians are convinced that the injection method is applicable and effective in the majority of cases of hernia, that it is often applicable when surgery is inadvisable and vice versa, and that it is just as free from complications and dangers as are surgical procedures. It is their opinion that the method will develop greater usefulness as it is more definitely understood, as the solutions used are more capably investigated and standardized, and as the limitations and uses of the method are more completely worked out.

With this point of view the Council on Pharmacy and Chemistry is inclined to agree. Nevertheless, the following considerations should be borne in mind not only by those expert in the injection method but also by the medical profession in general. The attempted cure of hernia by the application of the method of adhesive inflammation is not new. The method has, however, failed to establish itself as a routine method for the treatment of hernia and is still in an early experimental stage. In view of these facts, surgeons who practice this method should realize the dangers from an ethical, a legal and a financial point of view.

Those who inject into the bodies of their patients mixtures of unknown composition, not suitably standardized by any unprejudiced agency, and capable of bringing about definite pathologic changes in living, healthful tissue, may be subjecting themselves to unwarranted risk of legal difficulties should unfortunate results ensue. Those who continue to experiment with the injection method for the treatment of hernia with a view to standardizing this method will do well to use only such mixtures as may be prepared under their own direction in the laboratory of the hospital with which they may be associated, or mixtures prepared by competent pharmacists according to prescriptions prepared by the physician himself.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

DEXTROSE (See New and Nonofficial Remedies, 1935, p 280 and THE JOURNAL, June 27, 1936, p 2239)
Hospital Liquids, Inc., Chicago

The several accepted dextrose solutions (in distilled water and in physiologic solution of sodium chloride) marketed in Filtrair Containers of 1 000 cc. capacity are also supplied in 500 cc. containers.

POLLEN EXTRACTS-MULFORD (See New and Nonofficial Remedies, 1936, p 41)

The following additional products have been accepted

Grass Mixture Pollen Extract Mulford (Timothy, June, Orchard Sweet Vernal and Red Top Grass Pollen in equal proportion), Grass Mixture Pollen Extract Mulford (Pollens of Southwestern Grasses Bermuda Grass and Johnson Grass 30 per cent each June Grass and Timothy Grass 20 per cent each)

These products are marketed in vial and syringe treatment packages containing graduated doses, representing respectively 5, 10, 20, 40, 60, 100, 200, 400, 700, 1,000, 1,500, 2,000, 3,000, 4,000, 5,000, 6,000, 7,000, 8,000, 9,000 and 10,000 pollen units. Also in packages of three 5 cc vials containing respectively 100, 2,000 and 20,000 pollen units per cubic centimeter.

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SATURDAY, SEPTEMBER 26, 1936

ARE WE GROWING BIGGER?

The grown children of today entering colleges and universities in the United States seem to average two inches taller and weigh some seven pounds more than did their parents and grandparents who entered the same schools. A similar observation has recently been made abroad. Measurements of the rate of growth of children in recent years have been accurately made in a number of German cities.¹ All agree in showing considerable increases in height and weight during the last few years. Thus the mean height of boys entering school between 6 and 6½ years of age in 1924 was 108.7 cm, in 1932 it was 114.9. Over the same period the mean of girls increased from 108 to 114.5 cm. Similar changes in weight were noted. The mean height of boys leaving school at about 14 years of age increased from 146.4 cm in 1924 to 152.7 cm in 1933. The mean weight of the boys changed from 38.9 Kg to 42.7 Kg during the same period. Similar changes occurred in girls. In seeking an explanation it must be remembered that some of the children either were born in the period of war or postwar privation or as infants suffered from severe dietary deficiencies during the same period. Additional information, however, is available. Thus the average height of recruits in Norway increased 3.01 cm between the years 1878-1887 and 1923-1925, in Holland 6.67 cm between the years 1863-1867 and 1921-1925, in Sweden 4.5 cm between the years 1846-1850 and 1921-1922, in Switzerland 9.5 cm between the years 1792-1799 and 1861-1872, in Denmark 3.69 cm between the years 1852-1856 and 1904-1905, and in Italy 2.1 cm between the years 1855-1859 and 1896.

These figures appear to confirm those reported by Bowles² in this country in 1932. The latter investigations were based on the anthropometric measurements of fathers and sons at Harvard University and mothers and daughters who attended Vassar, Wellesley, Smith

and Mount Holyoke colleges. The available material from Harvard included a small series of 481 couples (400 fathers and their sons) for whom thirty measurements and seven observations were available, and a large series for which only heights, weights and nationalities were available, numbering 1,461 couples (1,160 fathers and their sons). The statistical accuracy of the information obtained was open to some question from the standpoint of the small numbers involved, but the variants were such that comparisons of reasonable accuracy could be drawn. Racially the material of the Harvard study was remarkably constant, only 5.79 per cent containing other than "old American" stock. Of this small proportion 3.9 per cent were of purely British stock—much the same as the original "old American". The results with regard to stature could be summarized as follows: 1. Sons are absolutely taller than their fathers. 2. In the student population for at least the past eighty years and probably longer there has been a marked annual increase. The rate has varied, reaching a peak in those born between 1860 and 1870, when the mean annual increase was 0.15, and dropping in those born between 1905 and 1910, when the increase was 0.07. 3. The mean annual rate of increase for the entire student population for the past eighty years has been approximately 1 cm every twelve and one-half years, statistical significance occurring every eight and one-half years. 4. For the population as a whole the figure is somewhat smaller but is probably between 0.06 and 0.07 cm per annum. 5. The mean stature of the present-day "old American" student population in Massachusetts and vicinity is 178.03 cm, rating thus among the tallest people observed anywhere and 4 cm or more above the population as a whole. 6. There is no significant correlation between age and stature among students between the usual college ages of 17 and 23. 7. The increase in one generation, approximately thirty-five years, has been 3.55 cm, or about 1¼ inches. The weight studies could be summarized as follows: 1. Male students as a whole have shown a mean annual increase of 2¼/100 pounds during the past fifty years. 3. Weight increase has been to a certain extent associated with stature increase in that the greatest increases were noted in the same decade, but the falling off of increment has been more marked for weight. 4. Proportionally weight has not increased at the same rate as stature, consequently, significant difference occurs every eleven and one-half years as opposed to every eight and one-half in stature. 5. Men are today getting taller and slenderer even though in absolute weight they exceed their parents. For the college women studied the mean increase in stature of the daughters over their mothers was 2.93 cm. The mean weight of the daughters was 4 pounds over that of the mothers in the group studied.

A number of other measurement comparisons were reported by Bowles which should serve for a background in extending the studies of gradual physical

¹ Are We Growing Bigger? Brit. M. J. 1, 1163 (June 6) 1936.

² Bowles G. T. New Types of Old Americans at Harvard Cambridge Mass. Harvard University Press 1932.

evolution. The causes for the increase in weight and stature remain uncertain. At present he lists the most probable as increased medical attention in preserving those children who have outgrown their strength until they have reached maturity and a normal state of resistance to disease, cultural modernization and a general speeding of processes, better food in more abundance and in greater variety, more exercise, possible assortive and selective mating on the part of parents, occupational change of parents, and nonascertainable elements of climatological and meteorological effect.

ECZEMA FROM DYED CLOTHING

Dermatologists for many years considered eczema a dermatosis caused by endogenous metabolic disturbances, and some still accept this doctrine. Repeated efforts to obtain accurate proof for this view have yielded uniformly negative results. True, the production of eczema by the injection or ingestion of iodine, quinine or arsphenamine, for example, indicates that products of metabolism may in certain special instances play a part in the etiology of the eczematous condition. However, quantitative determinations of various constituents of the urine and of the blood of eczematous persons have resulted in a complete failure to relate any endogenous metabolic disorder to the many types of eczema. From the standpoint of physiologic chemistry, therefore, eczema is not a metabolic disease. This makes fallacious the numerous dietary measures that have been suggested for treating the condition. Evidence has rapidly accumulated, however, which indicates conclusively that external factors play a far more important part than was formerly assigned to them in the etiology of acute, subacute and chronic eczema. In considering the etiology of eczema, due regard must be given to the not infrequent significance of the individual constitutional factor or human idiosyncrasies. Hypersensitivity to the primrose or to *Ascaris* are classic examples of idiosyncrasy. The thorough work of Bloch¹ has aided greatly in distributing the proper emphasis among the possible etiologic factors in eczema and has developed the somewhat newer, allergic, view of the condition.

Of the environmental factors that are the most common causative agents of eczema, articles of clothing are of considerable significance. Numerous illustrative references are contained in the literature and serve to demonstrate the difficulty in diagnosis of the cause in each patient. Generalizations are extremely difficult because of individual susceptibilities, and each case usually requires prolonged observation and study, but the results obtained are generally well worth the extra time and effort required to secure them. These points are strikingly illustrated in an interesting report by

Simon and Rackemann.² Small eczematous areas and lesions developed from time to time in a man in widely diverse portions of the body and at varying intervals over a period of from four to five years. Various local applications had no apparent effect on the course of the disease, and roentgen therapy resulted in only temporary improvement. Repeated microscopic examinations and cultures failed to reveal fungi, a general physical examination gave no evidence of focal infection. Sensitization was considered, but skin tests by the scratch method with extracts of all foods in the patient's diet and with many epidermal products and pollens all gave negative results. A careful consideration of the location of the lesions, and the fact that lesions on the ankles disappeared when white socks were substituted for colored ones worn previously suggested clothing as a cause of the eczema. Proof was soon obtained by patch tests that a wide variety of articles of colored clothing were responsible for the long suffering from localized areas of eczema. The most important and interesting of these eczematous recurrences were lesions in the neck from the collar of an overcoat, on the forehead from the hat band, on the legs from the garters, on the feet and ankles from socks and shoes, on the feet, legs, hands, arms, face and neck from bed clothing on the hands from automobile upholstery, and on the hand and forearms from the varnish on a mahogany table, the linings of two suits, his wife's dresses, and the upholstery of living room furniture. Lesions on the face, eyelids and genitals were shown to result from transference of the allergen by the fingers. On one occasion the eyelids were so swollen that the eyes could not be opened. By exercising great care in avoiding contacts, the recurrences of severe eczema have been avoided. In further interesting experiments with this subject, the Boston investigators demonstrated that the reaction produced was dependent on the dyestuff and not on a combination of the coloring substance with protein or some other constituent of the fabric. Various classes of dyes were tested, all the azo dyes gave positive tests in this subject, whereas all other types of dyes were negative with the exception of three triphenylmethane dyes, which were weakly positive. Studies designed to determine which portion of the dyestuff molecule was responsible for the specific eczematous reactions threw suspicion on the diazo linkage, diazoaminobenzene gave a strongly positive test on the patient. It should be pointed out that all these positive tests were obtained by the patch method, uniformly negative results were obtained when the scratch method of testing was used. This serves to illustrate the importance of the patch test in diagnosis and treatment and as a means of preventing contact with new clothing and other materials likely to cause trouble.

¹ Bloch, Bruno. The Role of Idiosyncrasy and Allergy in Dermatology. *Arch. Dermat. & Syph.* 19: 178 (Feb.) 1929.

² Simon, F. A. and Rackemann, F. M. Contact Eczema Due to Clothing. *J. A. M. A.* 102: 127 (Jan. 13) 1934.

Recently an illuminating report³ of fifteen cases of eczema due to dyed clothing has served to emphasize the difficulties in making an accurate diagnosis of the condition, the careful study required in each case, and the frequency with which the condition may be encountered. All the cases reported from the Danish clinic were traced directly to dyes present in articles of clothing, in many cases a positive eczematous reaction was observed when the patient was tested with dyes of relatively simple chemical structure. Aromatic amines were particularly effective in producing the reaction. It is interesting to note that several patients showed reactions to tests with substances of an entirely different chemical nature. These observations would seem to suggest that patients who have eczema from dyed clothing may have an idiosyncrasy and are particularly easy to sensitize. A study of the individual cases serves to illustrate the importance of obtaining a thorough history in order to determine the origin of the eczema in each instance. Furthermore, the observation of this rather considerable number of cases within a relatively short period adds significance to the importance of dyed clothing as an etiologic factor in eczema.

Current Comment

SEYDEL ARTHRITIS TREATMENT —THE AFTERMATH

The tempest created by the premature publicity for the proprietary product promoted by Seydel through the American Chemical Society session in Pittsburgh has subsided, leaving behind it a calm atmosphere indicating that much good was accomplished by the protest which THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION made against the publicity methods. The paper of Seydel was read in a closed meeting of the American Chemical Society. Dr. Paul Nicholas Leech, Director of the Bureau of Foods, Drugs and Physical Therapy of the American Medical Association, took part in the discussion. Following this discussion a statement was issued by Dr. Edward Bartow, president of the American Chemical Society, Dr. Thomas Midgley, chairman of the board of directors, and Dr. Norris Shreve, chairman of the division of medicinal chemistry, jointly with Dr. Leech. This statement said:

In the discussion it was pointed out that much more work is necessary before the product can be considered as of established value. Representatives of the American Chemical Society and the American Medical Association agreed that the difficulties which have ensued in the past will be eliminated in the future by closer cooperation.

In the future, publicity released by the American Chemical Society as it affects the recommendation of drugs and medicinal products will be suitably controlled. The American Medical Association has no desire to assume responsibility for the subjects to be discussed before other organizations. It is, however,

definitely the province of the American Medical Association to see that medicine is not misrepresented by the use of the good auspices of any organization to undermine the confidence of patients in the medical profession or to promote the sale of new products of unestablished clinical value. THE JOURNAL commends the stand taken by the American Chemical Society in the control of its future publicity and readily offers its facilities to reputable organizations that seek information on topics definitely within the medical field.

REMOVING ADHESIVE TAPE

The deaths of two football players at Purdue University and the serious burning of several others as a result of the explosion of gasoline focuses attention on the correct method of removing adhesive tape. From time to time, various recommendations have been made as to the easiest methods of performing this task. Every one knows that it is painful to turn up one edge of the adhesive tape and to jerk it suddenly away from the skin. Furthermore, this will pull out the hair—and even remove the skin—and give opportunity for secondary infection. Gasoline has been recommended in the past, as well as ether and various volatile oils. Kerosene has also been employed for removal of adhesive tape from the skin. None of these substances meet the optimal indications. For some time ethyl acetate was advocated, but it has a definite fire hazard and is irritating to the eyes, nose and throat. Carbon tetrachloride is known as a standard fire extinguisher. It is not inflammable and is frequently used for the removal of tape. It constitutes the chief ingredient of some of the well known cleaning fluids on the market. Recently the Council on Pharmacy and Chemistry has voted to accept¹ two solvent preparations proposed primarily for the removal of adhesive tape from the skin. One² of these substances consists of 98 per cent dichloromethane and has no fire hazard, since it is non-explosive and noninflammable. However, it is similar to chloroform in its action and the same precautions are necessary as to its inhalation. The other product³ is a mixture of approximately 60 per cent carbon tetrachloride and 40 per cent naphtha with a small amount of oil of sassafras. Such a mixture may burn but will not explode under ordinary conditions and in the ordinary sense is considered to be noninflammable. With any of these preparations there may be some danger associated with the removing of large quantities of tape in small rooms without proper ventilation. This is, however, a minor danger and should not be seriously disturbing. Certainly it is a far less hazard than the use of gasoline anywhere near a source of flame or heat. Coaches and trainers of football teams will do well to equip training quarters with plenty of modern improved solvents so as to eliminate the danger of catastrophe such as that which has thrown a somber atmosphere about the current football season.

1 Acceptance awaits receipt of properly revised advertising and labels to conform to the Council's decision.

2 Dichloromethane Solvent Belle marketed by Belle Alkali Company, Charleston, W. Va.

3 Ohio Carbon Tetrachloride Compound marketed by Ohio Chemical and Manufacturing Company, Cleveland.

3 Bonnerie Poul and Genner Viggo. Eczema Due to Dyed Clothing. Arch. Dermat. & Syph. 34: 220 (Aug.) 1916.

Medical Economics

MICHIGAN FILTER SYSTEM

The Michigan State Medical Society has undertaken to integrate all its activities so as to assure cooperation and prevent overlapping. One phase of the society's work has become of special importance in relation to the operation of two state laws. These laws provide for free medical care for "afflicted children" and for "crippled children." The first is an exclusive state affair, the second is conducted in cooperation with the Federal Social Security Act, which provides about \$100,000 annually as a subsidy from the federal government.

If financial and medical resources are to be used effectively and economically, two preliminary examinations are necessary before any assistance is given. The Michigan State Medical Society has assisted in the organization of two "filters" to be used in the selection of those who are to receive medical care. This system has been organized by the Public Relations Committee of the Michigan State Medical Society and seventeen district counselors.

Dr L. Fernald Foster of Bay City, chairman of the Public Relations Committee, explains the operation of this system as follows:

- A The County Medical Society appoints in each county of the state
 - 1 A Medical Filter—a board of physicians who shall decide on each applicant as to
 - (a) medical need
 - (b) medical necessity and urgency
 - (c) necessary period of hospitalization and treatment

- B The judge of probate appoints with advice and counsel of the county medical society's representatives
 - 1 An Economic Filter—a social servicing agency which shall determine
 - (a) whether the patient can pay the existing fee of the private physician
 - (b) whether the parent is temporarily unemployed or a worker in the low wage bracket who can pay the fee of the private physician on a deferred payment plan
 - (c) whether the parent is one who cannot now or apparently at any future time pay anything to his private physician

An applicant under the Afflicted and Crippled Child Act should be referred first to the economic filter. If he is judged to fall in the economic group he is worthy of consideration by the medical filter to which he should next be referred. If his condition is medically needy or urgent, his commitment by the judge of probate should follow. All other cases rejected by either filter should return as private patients to the physicians of their choice for disposition.

The economic filter is appointed by the probate judge of each county and is composed of laymen. Most of the counties of Michigan have a three man board composed of the county poor commissioner, superintendent of the poor and perhaps a state welfare agent or the probate judge. In some of the larger counties the regular social service investigation bureau is used. The medical filter is composed of physicians appointed by the county medical society.

After one county medical society in the state had operated this form of filter on "afflicted adults" (the responsibility of the counties, not the state) sufficiently long for its value to be shown, a joint committee of representatives of the Michigan State Medical Society, Michigan Hospital Association, the Michigan Association of Probate Judges, the State Administrative Board, the Crippled Children Commission and the Auditor General's Office met Oct. 30, 1935, in the office of the Auditor General and adopted a resolution endorsing the "filter" system for crippled and afflicted children, and providing for the two committees described. On June 4, 1936, Governor Frank D. Fitzgerald issued an executive order providing:

IT IS ORDERED that no state money shall be paid for the care and treatment of afflicted or crippled children until there has been filed with the Judge of Probate a statement by a parent or legal guardian under oath and approved by the Economic Committee giving fully the economic condition of the parents or guardians of said children including the details of property owned and income received by all members of the family and such other information as such Economic Committee requires—and until there shall have been a physical examination by said Medical Committee of said Filter Board with a report thereof in plain terms, filed with the Judge of Probate. If the Judge of Probate makes an order for the medical and/or surgical treatment, bills rendered to the state therefor shall be accompanied by certified copies from the Judge of Probate of the county of both the Economic Committee report and the Medical Committee report.

This plan is now in operation in eighty-two counties in the state of Michigan. Michigan would appear to have worked out outlines of an experiment that may prove of great value in the organization of medical service. It is the first state to establish a state-wide method of selection on both economic and medical grounds and to separate these so as to give both the lay and professional representatives as complete autonomy as is possible with close cooperation. It is an experiment which may well be studied with interest and profit by medical associations throughout the country.

Association News

GRANTS FOR RESEARCH

The Committee on Scientific Research of the American Medical Association invites applications for grants of money to aid in research on problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. For application forms and further information, please address the Committee at 535 North Dearborn Street, Chicago.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

The Poliomyelitis Situation—A total of 346 cases of infantile paralysis with twenty-five deaths was reported between January 1 and September 18, showing an increase of eleven cases over an earlier total of 335 reported in *THE JOURNAL*, September 19. Jefferson County still leads in incidence with seventy-two cases, while Lauderdale County is second with forty-eight, Morgan County, thirty-nine, Colbert, twenty-eight, Franklin, twenty-one, and Cullman, eighteen.

ARKANSAS

Personal—Dr. Melvin E. McCaskill, Little Rock, was recently appointed to the state board of health to succeed the late Dr. Wells F. Smith, Little Rock.—Dr. Roy E. Schirmer, formerly of Little Rock, has been named director of the Mississippi County health unit at Blytheville, succeeding Dr. Arthur M. Washburn.

Society News—A joint meeting of the Southeast Arkansas Medical Society and the Fourth Council District Medical Society was addressed at Monticello, August 17, by Drs. Virgil L. Payne, Pine Bluff, on "Ionization Treatment of Hay Fever," Alan G. Cazort, Little Rock, "Desensitization Method of Treating Hay Fever," and John S. Wilson, Monticello, "Report of Four Cases of Cholecystitis with Cholecystectomy in Children."

COLORADO

Health at Denver—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 12, indicate that the highest mortality rate (17.2) appears for Denver and for the group of cities as a whole, 9.7. The mortality rate for Denver for the corresponding period last year was 13.7 and for the group of cities, 9.7. The annual rate for eighty-six cities for the thirty-seven weeks of 1936 was 12.3 as against a rate of 11.5 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

State Medical Election—Dr. William T. H. Baker, Pueblo, was chosen president-elect of the Colorado State Medical Society at the annual meeting September 12 and Dr. Arthur J. Markley, Denver, was installed as president. Dr. Albert C.

McClanahan, Delta, was elected vice president. The next annual session of the society will be at the Antlers Hotel, Colorado Springs, late in September 1937. Dr. Rosco G. Leland, director, Bureau of Medical Economics, American Medical Association, was elected to honorary membership in the society at the recent meeting. New by-laws were adopted and the house of delegates gave its approval to the proposed revision of the constitution, with the recommendation that it be adopted without change at the next annual session. Under a new plan the board of trustees, composed of nine members, includes the president, president-elect, vice president, constitutional secretary, treasurer, and four additional trustees. With this arrangement it will be impossible for more than four members of the board of trustees to go off the board any one year, and as a rule only three will do so.

CONNECTICUT

University News—Yale University, New Haven, will receive \$50,000 to erect an addition to the university infirmary and \$50,000 for its maintenance, in accordance with the will of the late Mrs. Grace Witbeck Barrell, Chicago. An endowment of \$75,000 is also established for the university, the income to be used to assist three deserving students a year. This endowment is created in memory of Mrs. Barrell's son, John, a former student at Yale, who was drowned in 1916, aged 25.

New Regulations for Wells in New Haven.—The proposed location of a well, the type of construction and the uses to which the water is to be put will henceforth be under the supervision of the New Haven Department of Health in accordance with a recently adopted regulation, effective August 15. The regulation provides that, on completion of the construction of any well so registered, a final report as to the depth and size of the well, pumping facilities and other pertinent information shall be furnished to the department of health within ten days after completion.

IDAHO

State Medical Meeting and Election—Dr. Arthur C. Jones, Boise, was chosen president-elect of the Idaho State Medical Association at its annual meeting, September 4, and Dr. Dailey C. Raj, Pocatello, was installed as president. The program consisted of a series of lectures by six members of the faculty of the University of California School of Medicine, San Francisco, forming a course of graduate instruction with no papers by members of the association. The speakers were Drs. Curle Latimer Callander, on abdominal surgery, amputation and gas gangrene, Langley Porter, pediatric subjects, Howard E. Ruggles, x-ray diagnosis, Gordon E. Hein, diseases of the intestinal tract, infections of the chest, pneumoconiosis and postoperative complications, George K. Rhodes, surgery of the large bowel, abdominal injuries in relation to industry and treatment of infections, and Chauncey D. Leake, Ph.D., pharmacologic subjects. At a meeting to which the public was invited, the speakers were Drs. Porter, on "The Physician's Place in the Community", Leake, "Medicine in Art", Ruggles, "The Process of Digestion as Revealed by the X-Rays", and Hein, "Diet". The annual banquet was held Tuesday evening, September 1, with Ralph H. Lutz, Ph.D., professor of history at Stanford University, as the speaker, on "The European Crisis of 1936".

ILLINOIS

The Prevalence of Syphilis—Totals of 150,462 cases of syphilis and 176,094 of gonorrhea were reported in Illinois during the ten years ended with 1935, according to the state department of health. During the same period 1,232,746 births were recorded, indicating that about one in every eight or nine children is destined to be infected with syphilis at some time during life unless the sources of infection are cleared up. In 1935 a total of 15,628 cases was reported against 12,577 in 1926, with 12,988 and 19,813 as minimum and maximum figures for intermediate years, the department stated.

Society News—At a meeting of the Adams County Medical Society in Quincy, September 14, Drs. Richard S. Weiss and Duff S. Allen, St. Louis, discussed drug eruptions and recent developments in surgery of the thyroid, respectively. Dr. Rosco G. Leland, Chicago, addressed the Sangamon County Medical Society in Springfield, September 3, on "The Economics and Ethics of Medicine."—Dr. Margarete M. H. Kunde, Chicago, addressed the Iroquois County Medical Society in Watseka, September 24, on endocrine therapy.—Dr. Henry Schmutz, Chicago, addressed the Kankakee County Medical

Society in Kankakee, September 10, on carcinoma of the cervix.—Dr. Raymond W. McNealy, Chicago, discussed cancer of the breast before the Peoria City Medical Society, September 15.

CHICAGO

Gift to Promote Instruction in Psychiatry—The Rockefeller Foundation has granted to the University of Illinois College of Medicine a fund of \$15,000 a year for three years to promote undergraduate instruction in psychiatry. The work is under the immediate supervision of Dr. Harold Douglas Singer, professor and head of the department of psychiatry, and was begun September 1. In general, the program involves the extension of psychiatric teaching into other departments of medicine, particularly that of internal medicine.

Addition to Surgical Institute for Children—A three-story addition to the Surgical Institute for Children, University of Illinois College of Medicine, is now under construction. The basement will contain an all tile hydrotherapy pool. On the first floor there will be a solarium which will accommodate twenty patients at one time for ultraviolet treatments, and a gymnasium and apparatus room completely equipped for corrective exercises. Occupational therapy, recreation, case and general duty rooms will occupy the second floor, while the third will be given over to a complete laboratory, including fume and dark rooms, and two large school rooms with adjustable desks for the children. The present building is undergoing minor alterations on various floors which will increase its capacity about sixty beds, making a total of 144 beds to be occupied by indigent crippled children from all parts of the state.

IOWA

Stream Pollution—According to the state department of health, of the 330 municipalities having sewerage systems 237 have sewage treatment plants. Only three of sixteen first class cities in the state have sewage treatment plants, while 233 out of 314, or 74 per cent, of the smaller cities and towns have treatment plants.

Ophthalmology and Otolaryngology Meeting—At the annual meeting of the Iowa Academy of Ophthalmology and Otolaryngology in Marshalltown, September 16, the program included the following:

- Dr. Rollin W. Wood, Newton, Salivary Calculi
- Dr. Warren H. Foster, Clinton, Peritonsillar Abscess
- Dr. Edward C. Nowak, New Hampton, Uveitis Caused by Focal Infection
- Dr. Thomas R. Gittins, Sioux City, Acute Conditions in the Chest from the Bronchoscopic Standpoint

The program opened with the presentation of cases and concluded with a symposium on malignant conditions of the ear, orbit, nose and throat, presented by Drs. Placidus J. Leinfelder, Iowa City, Howard E. Thompson, Dubuque, and Dean M. Lierle, Iowa City.

KANSAS

Medical Exhibit at Jubilee Celebration—The Sedgwick County Medical Society will sponsor an exhibit depicting the advancement of medical science, at the Kansas diamond jubilee exposition in Wichita, October 7-17.

Society News—The Wyandotte County Medical Society was addressed, September 1, by Drs. Harry W. King and Henry L. Regier, Kansas City, on "Malignancy of the Colon" and "Emergency Care Following Accidents" respectively.—The Kansas City Rotary Club dedicated its meeting, August 11, to the medical profession, speakers were Drs. Harry R. Wahl, medical education, John F. Hassig, medical ethics, Clifford C. Nesselrode, medical organizations and their functions, Thomas J. Sims, our medical law, William J. Feehan, basic science law, and Clifford J. Mullen, socialized medicine.

KENTUCKY

Personal—Dr. Jesse M. Dishman, Greensburg, health officer of Green County has been appointed health officer of Caldwell County to succeed Dr. B. Kirtley Amos, resigned.—Dr. Ernest L. Gates, Greenville, has been appointed a member of the state board of health.

Society News—Dr. Murray L. Rich, Covington, addressed the Grant County Medical Society, Williamstown, August 19, on pernicious anemia.—The Jefferson and Fayette county medical societies held a joint meeting in Louisville, September 21, with Drs. Fred W. Rankin and Ernest B. Bradley, Lexington, as speakers, on "The Evolution of Surgery of the Colon and Rectum" and "A Medical Glance at the Past Thirty Years" respectively.—Dr. Frank W. Pirkey addressed the

Louisville Eye and Ear Society, September 10 on "Sympathetic Optic Neuritis"—At a joint meeting of the medical societies of Graves and Fulton counties in Mayfield, August 26, speakers were Drs Henry G Reynolds, Paducah, on diseases of the ear, Edward B Houston, Murray, diseases of the heart, and Earle C Walter, Mayfield, cancer of the uterus

MASSACHUSETTS

Personal—Drs W Russell and Andrew R MacAusland have been appointed clinical professors of orthopedic surgery at Tufts College Medical School, Boston

Memorial Presented to Academy—A series of six panels done in oil by Miss Harriet Ellis depicting the doctor from 1636 to 1936 was presented to the Springfield Academy of Medicine at its first meeting of the year, September 15. The panels are a memorial to a group of twenty-seven colleagues who served Springfield during their lifetime in a particularly distinguished manner, according to the *New England Journal of Medicine*. Dr George L Schardt, chairman of the medical profession's committee for the observance of the tercentenary of Springfield, read a paper entitled "Rewards of Service." The academy was addressed, September 22, by Dr Vilray P Blair, St Louis, on "Injuries of the Bones and Soft Tissues of the Face"

MICHIGAN

Dr McCord Heads Bureau of Industrial Hygiene—The Detroit Department of Health recently established a bureau of industrial hygiene and occupational disease to cooperate with industry in the elimination of work conditions inimical to workers health. It will be advisory and educative rather than a regulatory or law enforcing agency. In addition to field investigations, laboratory studies have been instituted seeking methods for the control of industrial intoxications. The department is in charge of Dr Carey P McCord as director, William H Carey Jr as sanitary engineer, W G Frederick as chief chemist, and Herbert Walworth as engineer for field activities. Dr McCord, formerly of Cincinnati, recently directed the establishment of the industrial hygiene laboratories of the Chrysler Corporation, Detroit

MISSOURI

Personal—Dr Lynn M Garner, director of the Miller County Health Department, Tuscumbia, has been appointed to a similar position with the Greene County Health Department, succeeding Dr John W Williams Jr, who will become associated with the state department of health

Dedication of New Auditorium—The entire third floor of the Receiving Building, Kansas City General Hospital, has been set aside for the use of the Jackson County Medical Society. The meeting of the society, September 15, was devoted to the dedication of the new auditorium, with Dr Albert Graeme Mitchell, B K Rachford professor of pediatrics University of Cincinnati College of Medicine, Cincinnati, giving the dedicatory address. His subject was "What Now Physician?" Other speakers were Dr Edwin H Schorer director of health of Kansas City, and Judge Henry F McElroy, city manager. Dr Frank R. Teachenor, president of the society presided at the meeting, which was the first in the new quarters

NEW YORK

Society News—The annual joint meeting of the Syracuse Academy of Medicine with the Utica Academy of Medicine was held at the Syracuse Yacht and Country Club, September 17. In the afternoon there was a golf tournament followed by a clambake. In the evening Drs Arthur R Grant and Thomas Wood Clarke, Utica, addressed the meeting on "Venoclysis—Uses and Abuses" and "Little Recognized Types of Allergy" respectively. Dr Gabriel Tucker, Philadelphia, addressed the Medical Society of the County of Westchester, at Grasslands Hospital Valhalla, September 15, on bronchoscopy in relation to general practice

New York City

Cornell to Cooperate in City Health Center—Cornell University has donated to the city a site on East Sixty-Ninth Street between First and York streets near the medical school for a health center which will be used jointly by the city for health promotion work and by the school for training of medical students. It is reported

Personal—Dr Fred H Albee on a recent trip to South America was made an honorary member of medical organizations in Brazil, Peru, Chile, Argentina and Ecuador, he was elected honorary president of the Brazilian Society of Ortho-

pedic Surgery and Traumatology and appointed a member of the faculty of medicine and surgery of the University of Chile.—Dr Stanley L Wang read a paper on quartz light therapy at the Third International Congress for Study of Light held in Wiesbaden, Germany, September 1-7

William Hallock Park Laboratory to Be Dedicated—The new public health laboratory of the New York City Department of Health, named in honor of Dr William Hallock Park, founder and director emeritus of the laboratory, will be dedicated October 6. Speakers at the ceremony will be Drs Thomas Parran Jr, surgeon general U S Public Health Service, Charles Gordon Heyd, Vice President American Medical Association, George W McCoy, director National Institute of Health, Washington D C, Augustus B Wadsworth, director, state laboratory, Albany, Anna W Williams for many years assistant to Dr Park, Charles-Edward Amory Winslow, Dr PH, New Haven Conn, and Mayor La Guardia

Lectures on Dental Medicine—Mount Sinai Hospital announces a course of lectures on dental medicine for the coming year. Following are the speakers and subjects

Dr Charles K Friedberg October 8 What Part Does Dental Infection Play in Systemic Disease?
Dr Isidore Friesner November 12 Dental Infection and Its Relation to Otiology
Dr Abraham Hyman December 10 Focal Infection and Its Relation to Urologic Diseases
Dr Joseph Harkavy January 14 Allergy in Relationship to the Teeth and Gums
Dr Ira Cohen February 11 Trigeminal Neuralgia Diagnosis and Treatment
Dr Robert K Lippmann March 11 Relationship of Arthritis to Focal Infection
Dr Isidore Goldstein April 8 Dental Infection and Its Relationship to Diseases of the Eye

Medical Exhibits for the 1939 Fair—Plans for the health and medical exhibits at the New York World's Fair of 1939 have been announced by Grover Whalen, president of the fair corporation. Louis I Dublin, Ph D is chairman of a committee to arrange the exhibits, Dr James R Reuling Jr Bayside, N Y, vice chairman, and Homer N Calver, former secretary of the American Public Health Association, secretary. Other members of the committee are Drs Victor G Heiser, George Baehr, John L Rice and Sigismund S Goldwater. The major objectives of the committee are a coordinated health and medical exhibit to be the nucleus of a permanent museum of health and hygiene, a model health village, educational work through protective devices and services for visitors throughout the fair, provision for a permanent health center, and censorship of medical and other products sold or promoted on a health basis

Symposium on Dysentery—The department of medicine, New York Postgraduate Medical School and Hospital, offers a symposium on dysentery, September 26, concluding a course on gastro enterology which it has sponsored during September. The symposium is planned to include two general divisions, dysentery as a public health problem and practical clinical aspects of dysentery. Discussing the first division will be Dr Samuel Frant, epidemiologist, state department of health, Dr Hollis S Ingraham district state health officer of New York, Dr George W McCoy, director National Institute of Health Washington, D C, and Lewis V Carpenter, associate professor of sanitary engineering, College of Engineering of New York University. Dr John L Rice, city health commissioner, is chairman. With Dr Walter G Lough, executive officer of the department of medicine, as chairman, speakers treating the second division will be Drs Ralph S Muckenfuss, acting director, bureau of laboratories, city department of health, Francis W O'Connor, associate professor of medicine Columbia University College of Physicians and Surgeons, and Ward J MacNeal, professor of pathology and bacteriology. Zacharias Bercovitz, instructor in medicine, Adolph G G DeSanctis, professor of clinical pediatrics and Rupert Franklin Carter, associate professor of surgery, all of New York Post-Graduate Medical School of Columbia University

OHIO

Society News—The Summit County Medical Society held a joint meeting with the Akron Bar Association in Akron September 8 with Dr Walter G Stern, Cleveland and William L Hart LL D, lecturer of international law and political science, Mount Union College Alliance, as speakers on "The Lawyer in Court and The Doctor in Court" respectively.—Drs Ludwig F Derfus and La Verne C Ziegler Salem will address the Columbiana County Medical Society, East Palestine October 13 on "Undulant Fever and 'Common

Colds" respectively — Dr Chester D Christie, Cleveland, addressed the Geauga County Medical Society, Chardon, July 29, on glands of internal secretion

OREGON

State Medical Meeting at The Dalles—The sixty-second annual meeting of the Oregon State Medical Society will be held at The Dalles October 8-10. The guest speakers on the program will be

Dr Clifford D Sweet, Oakland Calif The Child as a Patient
Diagnosis and Treatment of Upper Respiratory Tract Infections in Children
Acute Surgical Conditions of the Abdomen in Children
Dr Claude E Dolman Vancouver B C Diagnosis and Treatment of Localized Staphylococcal Infections
Diagnosis and Treatment of Generalized Staphylococcal Infections Principles and Practice of Serum Therapy
Joseph T Tamura Ph.D., Cincinnati Cultivation of and Immunological and Clinical Studies with Lymphogranuloma Inguinale

Dr Olin West, Chicago, Secretary and General Manager of the American Medical Association, will make the principal address at the annual banquet. The following Oregon physicians, all of Portland, are listed on the preliminary program:

Dr Otis F Akin Treatment of Fractures of the Neck of the Femur
Dr Richard F Berg Pathology of the Knee Joint
Dr Edmund H Berger Kidney Function in Alkalosis
Dr James Marr Bissailon Pneumonia
Dr Harry C Blair Common Disorders of the Feet
Dr Isidor C Brill Treatment of Auricular Fibrillation
Dr Louis P Gambee Infections of the Hand
Dr Franklin P Johnson A New Ureteral Stone Snare
Dr George N Pease Surgical Anesthesia
Dr William M Wilson Etiology Pathology and Treatment of Functional Uterine Bleeding
Dr Francis B Zener A More Effective Method of Treatment of Trichomonas Vaginalis Infection in Women

PENNSYLVANIA

Society News—Dr William Wayne Babcock, Philadelphia, addressed the Lawrence County Medical Society, September 23. —Dr Francis M Pugliese, Wilkes-Barre, addressed the Northampton County Medical Society, September 18, on "Management of Obstructive Jaundice."

State Medical Meeting at Pittsburgh—The eighty-sixth annual meeting of the Medical Society of the State of Pennsylvania will be held in Pittsburgh October 5-8 at the Hotel William Penn. General sessions will be held in the mornings and section meetings in the afternoons. Guest speakers will be

Dr William S McCann Rochester N Y Sclerosis—Determination of Disability with Reference to Workmen's Compensation
Dr Sumner L S Koch Chicago Infections of the Hand
Dr Elliott P Joslin Boston Diabetes (in symposium)
Dr Leslie N Gay Baltimore Treatment of Asthma Based on Etiologic Factors
Dr George W Crile Cleveland Genesis and Surgical Treatment of Essential Hypertension
Dr Frederic W Baneroff New York Inguinal Hernia
Dr Henry P Wagener Rochester Minn Clinical Interpretation of Vascular Lesions in the Retina in Hypertensive Disease
Dr Albert C Furstenberg Ann Arbor Mich Acute Infections of the Mouth Pharynx and Cervical Region
Dr Roy Graham Hoskins Boston Present Status of Endocrinology in Its Relation to the Child
Dr Harold N Cole, Cleveland Venereal Disease, with Particular Reference to Granuloma Inguinale and Lymphogranuloma Inguinale
Dr Gershom J Thompson Rochester Minn Prostatic Resection

Pittsburgh

Obstetric and Pediatric Institutes—The first of a series of institutes on obstetrics sponsored by the state department of health and the Medical Society of the State of Pennsylvania as a part of the health program of the Social Security Act was held at Magee Hospital, September 16. Drs Howard A. Power, Charles E Ziegler and William Paul Dodds of the University of Pittsburgh School of Medicine delivered the lectures. Similar institutes on pediatrics will be presented by Drs Harold H Finlay, Wilkesburg, Henry T Price and David Hartin Boyd.

SOUTH CAROLINA

Graduate Assembly at Anderson—The second annual clinical assembly presented by the Anderson County Medical Society was held at the Anderson County Hospital, September 8-10. The first day was devoted to lectures on diseases of the kidney by Drs Kenneth M Lynch and Joseph H Cannon, Charleston, and James E. Paulin, Atlanta Ga. Wednesday there was a joint meeting with the South Carolina division of the Southeastern Surgical Congress with the following speakers: Drs Edgar G Ballenger, Atlanta on "Office Treatment in Genito-Urinary Diseases"; Joseph D Guess, Greenville, "Office Practice in Gynecology"; Robert E Abell, Chester, "Office Treatment in Traumatic Surgery"; and Joseph M Feder, Anderson, "Biopsies." Speakers the last day were Drs Joseph

I Waring, Charleston, on infant feeding, Robert W Ball, Columbia, who showed a motion picture on county health work, and Richard M Pollitzer, Greenville, "Pediatric Gleanings." A banquet was held at the John C Calhoun Hotel Wednesday evening with Drs Ballenger and Frank K Boland, Atlanta as speakers on "Early Recognition of Urologic Diseases" and "Liver Abscess" respectively. Dr Edgar A Hines, Seneca, is president of the assembly, Dr Jack D Parker, Greenville, vice president, and Dr Archer L Smethers, Anderson, secretary.

UTAH

State Medical Meeting and Election—Dr Menzies J MacFarlane, Cedar City, was chosen president-elect of the Utah State Medical Association at the annual meeting September 3-6 in Salt Lake City. Dr George N Curtis, Salt Lake City, was elected president to take office immediately because of the resignation of Dr Louis E Viko. Vice presidents elected were Drs Lewis W Oaks, Provo, John G McQuarrie, Richfield, and Dr William T Ward, Salt Lake City. Dr Frank M McHugh, Salt Lake City, was elected secretary. Guest speakers were

Dr John H J Upham, Columbus, Ohio President Elect American Medical Association The Changing Times in Medicine
Dr Hamilton H Tyndale New York Present Knowledge of Anterior Pituitary Gonad Functions Gonadotropic Hormones from Blood and Urine with Clinical Applications
Dr Clifford D Sweet, Oakland Calif Diagnosis and Treatment of Upper Respiratory Infections in Children The Child as a Patient.
Dr Charles M Blumenfeld, Salt Lake City Surgical Anatomy of the Hand
Dr Isidor S Ravdin Philadelphia Terminal Ileitis The 'Bad Risk' Thyroid Patient
Dr Walter C Alvarez Rochester Minn Helpful Hints in the Diagnosis of Gastro-Intestinal Disease Food Sensitiveness
Dr Otto Jason Dixon Kansas City Etiology and Treatment of Osteomyelitis of the Skull Major Complications of Mastoid Disease
Dr Karl A Menninger Topeka Kan Psychiatry in Relation to the General Practice of Medicine Alcohol Addiction as a Psychiatric Syndrome
Dr Leo Eloesser San Francisco Sources and Treatment of Bleeding from the Lungs Cancer of the Lung
Dr Fred H Albee New York Recent Advances in Treatment of Fracture of the Neck of the Femur Resection of Bone Sarcoma with Bone Graft Replacement (motion picture) Treatment of Osteomyelitis and Blood Infections with Bacteriophage
Dr William F Braasch Rochester Minn Recent Advances in Treatment of Urinary Infections

At a public meeting Thursday evening Dr Alvarez spoke on "Popular Fads in Diet" and Dr Menninger on "Various Forms of Disguised Aggressiveness in Children." Dr Alvarez also addressed the Woman's Auxiliary on "Why Some Women Are Nervous."

VIRGINIA

Bureau of Industrial Hygiene—The state department of health established a bureau of industrial hygiene July 1 with Dr William D Tillson, Richmond, in charge. The new bureau, financed by social security funds, will first survey the scope and nature of industrial problems in the state and will make its services available to industries that wish information as to actual hazards to which their employees are exposed.

Society News—The Southside Virginia Medical Association held its quarterly meeting in Burkeville, September 8 with the following speakers: Drs Rudolph C Thomason, Richmond on "Gonorrheal Conjunctivitis"; Prosser Harrison Picot, Richmond, "The Climacteric"; Walter L Nalls, Richmond, "Effect of Irritant Gases on the Lungs"; Marshall P Gordon Jr, Richmond, "Tuberculosis of the Kidneys," and John A Proffitt, Burkeville, "Tuberculosis in the Negro Race."

Personal—Dr Jack B Porterfield, Christiansburg, has been appointed health officer of the peninsula district, to succeed Dr George E Waters, Williamsburg, resigned. Dr Sheldon D Carey, recently at Abingdon, has been named to succeed Dr Porterfield as health officer of Montgomery County. —Dr Arthur H Perkins, since 1928 assistant superintendent of the Waterbury (Conn) Hospital has been appointed medical director of the Norfolk General Hospital, a newly created position.

WASHINGTON

State Medical Election—Dr J Reid Morrison, Bellingham, was named president-elect of the Washington State Medical Association at the annual meeting in Yakima, August 31. September 2. Dr Arthur C Crookall, Seattle, was installed as president and Dr Vernon W Spickard, Seattle, reelected secretary-treasurer. Next year's meeting will be in Seattle.

Personal—Dr Eugene B Potter, associate professor of surgery, University of Michigan Medical School, Ann Arbor, has been appointed chief of a service in general surgery at the Virginia Mason Hospital, Seattle. Dr Joel Baker will continue

as chief of another service in general surgery. Dr Potter graduated from Michigan in 1925 and began his service in the department of surgery at that time. In 1930 he was made assistant professor and in 1934 associate professor.

WISCONSIN

New Officers of State Board—Dr Charles W. Giesen, Superior, was elected president of the Wisconsin State Board of Medical Examiners at a meeting at Madison, September 8. Dr Henry J. Gramling, Milwaukee, was elected secretary.

Dr Cantwell Honored—Dr William H. Cantwell, Shawano, was guest of honor at a reception given by his community, August 30, celebrating his long years of practice. Dr Cantwell was graduated from Rush Medical College, Chicago, in 1887 and has spent his life in Shawano and Shawano County. Two of his sons are physicians, Drs Roger C. and Arthur A. Cantwell, Shawano, and one a veterinarian, W. H. Cantwell, Jr. He has been postmaster and health commissioner of Shawano. The speakers at the celebration included Mayor Harry Meyer, Dr Lyndle W. Peterson, president of the Shawano County Medical Society, Attorney M. J. Wallrich and Circuit Judge Edgar V. Werner. Dr Cantwell is 78 years old.

Public Health Position Open—The state bureau of personnel announces an examination for appointment under the state civil service of a supervisor of public health service at \$300 a month. The duties of the appointee will be to coordinate local public, private and professional agencies with the public health activities of the state board of health with special reference to either gonorrhea or venereal disease prevention. The minimum requirements include training equivalent to that represented by graduation from a medical school of recognized standing, additional training in public health, a license to practice in Wisconsin at least three years' practice of medicine desirable, part in the field of public health, thorough knowledge of modern scientific medicine with special reference to gonorrhea or venereal disease or both, physicians between the ages of 30 and 40 are preferred, continuation of the work after June 30, 1937, is dependent on availability of funds under the social security act. Citizenship in the United States and residence of one year in Wisconsin are required. Application blanks may be obtained from the bureau of personnel, state capitol, Madison. The closing date for filing is September 28.

HAWAII

Society News—Dr Oswald Swinney Lowsley, New York, addressed the medical corps of the army and navy and the Honolulu County Medical Society, September 8, on new developments in renal and prostatic surgery; he also conducted an operative clinic at Queens Hospital, Honolulu, September 10.

GENERAL

Droughts in the United States—According to a recent statement by the U. S. Department of Agriculture, for about sixty years previous to 1930, when the present dry phase began, there had been a number of transitory droughts, and one persistent drought (1886-1895). In the present drought there have been three extremely dry years, 1930, 1934 and 1936. The few available precipitation records covering 100 years or more, indicate that a general dry phase was noted in the thirties of the last century, about 100 years ago. The principal wet phase of the United States climate in the last century was from about 1865 to 1885, with a secondary maximum during the first two decades of the present century, though several transitory droughts were interspersed. Two basic principles are involved in rain production: getting moisture into the air through evaporation and getting it out again through condensation in the form of cloud and rain drops. The only way to produce rain in appreciable amounts is by cooling the air containing the invisible vapor of water. Enough is known of climatic conditions to make ridiculous any suggestion that man can basically change the order of such things.

Accidents Fatal to Children—Twice as many children died in 1930 as a result of accidents as died of measles, scarlet fever and diphtheria, the U. S. Public Health Service reports in a study recently published. Fatal accidents from all causes claimed the lives of 22,044 children under 15 years of age and the three diseases, 10,629. The type of accident changes with age, the investigators found. For infants under 1 year old, mechanical suffocation ranked first for children of 1 and 2, burns caused most deaths. At 3, burns and automobile accidents were about equal. From 4 to 14, automobile accidents held first place; the rate in the group 5-9 years of age was almost twice that for the group 10-14. The statisticians studied

especially the death rate with respect to geographic regions, dividing the United States into four divisions. The rates were: Northeastern, 174 per hundred thousand children; Western, 161; North Central, 148; and Southeastern, 91. Calculated by the number of deaths under 15 years of age per hundred thousand registered automobiles, the percentage changed as follows: Northeastern, 244; Southeastern, 221; North Central, 164; and Western, 135. Another calculation was made of the rate per 50 million gallons of gasoline consumed, giving the following rates: Northeastern, 205; Southeastern, 188; North Central, 158; and Western, 121.

Permit to Enter Canada Required of Certain Physicians—A physician resident in the United States, unless he is a citizen of Canada, cannot lawfully enter Canada for the purpose of working there as an officer or employee of a hospital or other institution unless his entry into that country has first been authorized by the Minister of Immigration and Colonization. Such physicians are, under the laws of Canada, within the scope of the term 'contract laborers.' They therefore cannot enter Canada to work there unless they first show to the satisfaction of the Minister of Immigration and Colonization that their services are required in Canada. A physician desiring to enter Canada for service in a Canadian hospital should make timely application to the Minister of Immigration and Colonization, at Ottawa, submitting evidence that he (1) is a citizen of the United States; (2) is a graduate of a medical school recognized by the licensing authorities in the jurisdiction in which he desires to serve; (3) purposes to proceed to a definite position in Canada, where suitable arrangements have already been made for his care and maintenance during the term of his service; and (4) desires to enter Canada for a temporary stay and not for the purpose of making his permanent home there. The applicant should indicate the place through which he desires to enter Canada and the approximate date of his proposed entry. Application should be filed far enough in advance to make it possible for him to receive some assurance that the evidence that he has submitted has been accepted by the Minister of Immigration and Colonization and to permit the Department of Immigration and Colonization to authorize its officers at the prospective point of entry to permit the applicant to enter. A physician who fails to comply with the requirements of the Canadian laws will be denied entry when he presents himself at any point of entry into Canada. The possibility of such embarrassment should be avoided by obtaining in advance a permit to enter.

Government Services

Centennial Anniversary of Army Medical Library

The one hundredth anniversary of the founding of the Army Medical Library, Washington, D. C., will be observed November 16. The ceremonies will be held in the library building. The library grew from a small collection of books in the office of Surg. Gen. Joseph Lovell in 1836 to 941,181 volumes in 1936. The library owns 450 of the known medical incunabula, numbering about 600 many of them first editions. Of some works, it has the only known copy. Of rare books published after 1500 its collection is one of the best and it possesses 150 early medical manuscripts of great value. The oldest publication it has is Johannes Gerson's *De pollutione nocturna*, printed in Cologne in 1467.

New Head of Pharmacologic Division, Food and Drug Administration

Herbert O. Calvery, Ph.D., senior pharmacologist in the U. S. Food and Drug Administration, has been appointed chief of the division of pharmacology to succeed Dr. Ervin E. Nelson who returns to the University of Michigan October 1 as professor of pharmacology. Dr. Nelson has been on leave from the university since January 1935 for the purpose of organizing the division. Dr. Calvery received his doctorate at the University of Illinois in 1924 and was assistant professor of physiologic chemistry at the University of Louisville and later instructor in physiologic chemistry at Johns Hopkins University School of Medicine. From 1927 until his appointment in the food and drug administration in June 1935 he was assistant professor of physiologic chemistry at the University of Michigan. He has been in charge of biochemical work in the division of pharmacology.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 8, 1936

Sir Henry Wellcome

The passing of Sir Henry Wellcome at the age of 82 removes an American who had made his home in this country and was not only a great but a unique figure in the medical world. Born in Wisconsin, he took part as a youth in the great Sioux war in Minnesota, where more than 1,000 white persons were massacred. He studied chemistry and pharmacy in Chicago and Philadelphia. He visited South America and studied the cinchona forests, publishing his observations in scientific journals. He was attracted to London as an ideal manufacturing and distributing center for chemical industries and established there in 1880, in conjunction with the late S. M. Burroughs, the firm of Burroughs, Wellcome & Co., as manufacturers of fine chemicals, alkaloids and pharmaceutical products. The business grew with extraordinary rapidity, and offices and warehouses were established all over the world. For many years Sir Henry Wellcome showed great interest in scientific research to which he became a munificent donor. In 1894 he founded the Wellcome Physiological Research Laboratories. He was a great collector of relics, books and data in connection with primitive customs and ancient methods of medical treatment. He organized the Historical Medical Museum, which was opened in London in 1913 at the time of the International Medical Congress. The most extensive of its kind in the world, it contains exhibits illustrating the development of medicine, chemistry and the allied sciences from primeval times. It has an extensive library of rare manuscripts and printed books. Its purpose is educational and it is of great value to students and research workers. In 1913 Sir Henry Wellcome founded in London the Bureau of Scientific Research to coordinate the work of his separate research institutions as well as to undertake original investigations in tropical medicine, hygiene, sanitation and parasitology. The bureau places its records, equipment and experience gratuitously at the disposal of physicians, sanitary administrators and others interested in tropical medicine and hygiene. Associated with it is the Museum of Medical Science, illustrating for students and other visitors the subjects in a graphic and readily accessible manner. Another research institution associated with the bureau is the Entomological Field Laboratories at Esher, Surrey. In 1931 was founded the Wellcome Research Institution to embrace the various research laboratories and museums founded by him and to provide for their extensive developments. All the laboratories and museums are conducted by a director separately from the business of Burroughs, Wellcome & Co., and although much scientific work is done for the firm, their main activities are original research, which is published in the usual manner. In 1900 he established the Wellcome Tropical Research Laboratories at Khartoum. Here many important investigations into the endemic diseases of tropical Africa have been conducted. In connection with the Association of Military Surgeons of the United States he founded an annual competition for essays on medicomilitary subjects. This list by no means exhausts his benefactions. Many honors were conferred on him—LL.D., D.Sc., F.R.C.S., and last of all F.R.S., which he valued much. His life story might be called a romance of business and science.

Radium Necrosis of the Cornea

At the recent ophthalmologic congress, in London, Mrs. Philippa Martin, F.R.C.S., read a paper showing the danger of applying radium near the eye. She has found that necrosis of the cornea may occur in any case in which intensive irradiation

is used in the treatment of adjacent malignant disease. The time of onset depends on the intensity of irradiation. The reaction is much more severe and early after repeated irradiation or in the presence of sepsis, particularly if intensified by intervention, in the form either of surgery of access or of preliminary operation.

The earliest sign of damage to the cornea is diminution of sensibility. Blinking in response to the touch of light absorbent cotton is slower than in the normal eye. This sign appears within a few weeks of irradiation and may persist for months, but even then normal sensibility may be restored. On the other hand, diminution of the corneal reflex to light touch may be the first indication that radium necrosis will follow.

After a few weeks or months the cornea may lose its polish. As a rule this occurs at the center, but when the irradiation has been from the side the effect may be confined to the corresponding sector. The loss of polish is followed in a few hours by a small superficial ulcer, which spreads slowly. Small areas of ulceration appear in the cornea where the superficial layer has been thrown off. At this stage the condition may be arrested or the areas may coalesce until there is a large superficial ulcer, which may involve the whole cornea except a narrow rim at the periphery. Alternatively the main ulcer may extend by stripping up the epithelium. Within a few days the epithelium splits and the edges of the split are lifted. When the ulcer has been present for some time its edges are undermined for about 5 mm. The base is smooth.

At this stage pain is not marked but it is more severe when there is punctate infiltration, indicating a mild infection. If a mydriatic and bandage are used the eye may remain comfortable and the lesion stationary for months. Under these conditions the eye appears resistant to infection. After some months a few points of yellow exudate may appear in the base of the ulcer, and punctate infiltration, with some deep striation, may also be observed. Infection may also be indicated by a mild iritis which yields readily to treatment. Occasionally perforation occurs, but even then infection of the whole eye is slow to develop. The perforation has been seen to heal, and if this takes place within a reasonable time some sight may be preserved.

Healing will occur provided the reparative powers of the cornea have not been destroyed. Repair may not begin for months and always is slow. When an intensive irradiation near the eye is proposed it is wise to sew the lids together, but in less intense cases strapping is sufficient. As the normal conjunctival reaction to irradiation is chemosis, which may be sufficient to hold the lids apart, closure of the palpebral fissure is the only way to prevent damage to the cornea through exposure. If irrigation of the eye is necessary, physiologic solution of sodium chloride should be used. Zinc lotion especially may give rise to secondary irradiations. During the stage of radium reaction in the skin and conjunctiva, a sensation of pricking and burning is normal, but watch must be kept for pain, which suggests involvement of the iris, either a simple swelling ("iris reaction") or irradiation iritis. In the former, pain is slight in the latter, severe. If the patient complains of pain, a mydriatic should be used and the effect on the pain noted. In all cases of massive irradiation the pupil must be dilated with a mydriatic beforehand and its size noted. After treatment the iris can be examined when the stitch which holds the lids together has been removed. The degree to which the pupil then dilates under the same mydriatic is an index of the presence or absence of an "iris reaction." Probably irradiation iritis is always followed by radium necrosis of the cornea and also by "iris reaction," but in less degree.

Usually an interval of a few weeks occurs before any involvement of the cornea. The first sign is reddening of the eye, probably with some pain. All such cases are worth staining to detect commencing desquamation, as healing may take place

under palliative treatment. If, in spite of this, radium necrosis spreads, tarsorrhaphy must be done. If perforation occurs, the eye can safely be kept for a few weeks to give the perforation a chance of healing.

Provisions for Medical Research

The Medical Research Council has instituted a new scheme of research to encourage young graduates of special ability to undertake research work. Six postgraduate studentships are offered to graduates who have already held house appointments and are strongly inclined to a career in clinical science or experimental pathology. Each student will receive a grant at the rate of \$1,000 a year for a period not exceeding twelve months, for personal maintenance while undertaking approved courses of study such as may be regarded as best calculated to advance his training in methods of research. This may be undertaken under recognized teachers, but it must not include studies to enable him to pass further examinations. The council is also offering four research fellowships for candidates of similar qualifications who have already had experience in research work. Each fellowship will be tenable for one year at the value of \$1,250 and will be renewable in approved instances at the rate of \$1,500 for a second year. These fellowships are intended as probationary appointments for research in clinical science or experimental pathology under suitable direction. Research expenses will be provided in addition to the stipend.

PARIS

(From Our Regular Correspondent)

Aug 15, 1936

An Experimental Study of Pulmonary Embolism

The experimental production of pulmonary embolism was the subject of a series of communications presented at the May 22 meeting of the Société médicale des hôpitaux of Paris by Villaret, Justin-Besançon, Pardin and Delarue. The object of their research was to determine why a clot in a pulmonary artery can cause death in the majority of cases. The authors maintain that the arterial occlusion and insufficiency of the pulmonary circulation are too frequently cited as explaining the fatal outcome. Clinically, it has been learned that a large artery can be obstructed by a clot, yet death does not occur immediately, as shown by the fact that an operation, as suggested by Trendelenburg, can still be performed to remove the clot. On the other hand, sudden death follows blocking by a relatively small clot and resultant interference of circulation of only a small pulmonary area. During lobectomy or pneumectomy, ligation of a single branch or all the branches of a pulmonary artery is unavoidable, yet no asphyxia results. How does a pulmonary embolism act? Two answers can be given to such a question. (1) Either the embolism acts directly on the respiratory and circulatory functions of the lung or (2) the acute block starts up a series of general phenomena of a reflex character. An extensive study by the authors, presented in 1935 in the *Annales de médecine* showed that both these answers are correct but that each includes only a portion of the real underlying factors. In order to establish major forms of embolism, i. e., blocking of large arteries, the authors employed pearls of enamel (without lead), which were introduced into the external jugular vein of dogs. The pearls varied in diameter from 2 to 8 mm according to the size of the respective vein. Equally good results followed the use of a watery suspension of mucilaginous seeds, which swell and thus block the pulmonary artery. To block smaller arteries, finely powdered pumice stone was used. The experimental results varied according to the size of the foreign body that was employed. Massive obliteration of pulmonary arteries is followed by slight dyspnea or none at all, although a typical triangular infarct ensued. The dog continued to live for several days or even weeks.

Following the introduction of minimal amounts of finely powdered pumice stone, the death of the animal occurred in a few minutes. It was evident that large emboli did not cause death but that the animal died when pulmonary arterioles were blocked. Sudden death therefore is not due to an obstruction of the pulmonary circulation but is the result of a reflex through the action of the embolizing particles acting on the nerve terminations in the arterioles and not of the arteries or capillaries. The neurovegetative modifications can thus play an important part in the anatomic and physiologic changes that follow an embolism.

The histologic changes of hemorrhagic infarction were studied from the instant they took place to their end stage of complete cicatrization of the infarct. The hemorrhagic infiltration of the pulmonary parenchyma is above all the result of a sudden dilatation of the capillaries in a limited area. This is soon accompanied by a considerable thickening (from three to four fold) of the interalveolar septums, an edematous exudate and intra-alveolar hemorrhage. This is the histologic picture in animals killed immediately after the experimental embolism. At the end of fifteen minutes one can already observe foci of infarction. One hour after introduction of the foreign bodies into the jugular vein there is a regression of the congestive phenomena and accentuation of the infarct pictures, which assumes a typical appearance at the end of from twenty-four to forty eight hours, becoming even more so on the seventh, tenth and twentieth days. The lesions begin to show definite regression after the third week, and complete healing (cicatrization) is noted from thirty to ninety days following the experiment.

The authors' theory as to the pathogenesis of pulmonary embolism as revealed by their histologic studies was confirmed by unilateral section of the trunk of the cervical sympathetic, which showed that following such an operation the early pulmonary lesions were quite similar to those observed in post-embolic hemorrhagic infarct at the corresponding period of development.

Also the influence of certain pharmacodynamic preparations on the prevention of death following experimental embolism was studied. Although division of the vagosympathetic trunk is without immediate effect in dogs, division of the vagi in rabbits necessitates an increase in the amount of powdered pumice stone required to produce death from embolism. On the other hand a smaller fatal dose is needed in rabbits if both sympathetic trunks are divided. In dogs to which chloral has been given, although death does not occur after experimental embolism for five minutes, when yohimbine is injected death takes place immediately. On the other hand, when ephedrine was given intravenously death followed only fifteen minutes after the foreign body was introduced into the external jugular vein. This interval was considerably longer after the injection of ephedrine and sodium bicarbonate. Finally when ephedrine atropine and sodium bicarbonate are injected intravenously at the same time, sudden death from experimental embolism does not occur.

These experimental studies serve as a starting point of therapeutic attempts to prevent fatal postembolic accidents.

The Convalescent Serum Center of Strasbourg

At the June 23 meeting of the Académie de médecine, Borrel and Loewenberg reported the results of the center established in 1930 during the severe epidemic of poliomyelitis in Alsace. A stock had been collected of several liters of blood from adult convalescents of former epidemics and from those who had recent infections. In 1931 the collection of serum from measles and scarlatina convalescents was added. Blood from the former (measles) convalescents was obtained from eight to twelve days and from four to five weeks after defervescence for scarlatina. The serum of poliomyelitis convalescents having conserved all its potency since 1930, such donors were asked to return nearly

every month, so that one of these donors has been used forty times. In poliomyelitis, serotherapy when employed during the first four days has been followed in thirty-four cases by 70 per cent of cures. When applied later, 36 per cent of twenty-two cases were cured. In thirty cases of toxic scarlatina the respective convalescent serum yielded twenty-seven cures. Of 180 individuals to whom a convalescent measles serum was given as a prophylactic measure, 160 of the 180 were completely immunized, there were nine mild cases, three showed a doubtful amelioration, and in one case there was complete failure.

BERLIN

(From Our Regular Correspondent)

July 28, 1936

Natural Antisyphilitic Healing Forces

Prof Franz Jähnel of the German Institute of Psychiatric Research (Kaiser Wilhelm Institute) in Munich has published in *Forschungen und Fortschritte* a report on recent investigations on natural antisyphilitic healing forces. The favorable effect of pyretotherapy in dementia paralytica is well known, although the complicated mechanism of its action on the spirochetes of syphilis is not yet completely understood. Malariotherapy too is beneficial in early syphilis. Jähnel and Weichbrodt were able to demonstrate with syphilitic rabbits as long ago as 1919 that the first pathologic manifestations and the concomitant spirochetes of syphilis were made to disappear on artificial elevation of the temperature.

Nature is still able in several even more perfected ways to bring syphilitic infection in various animals to a cure. Apes and rabbits in particular, as well as mice, rats and guinea-pigs, are readily infected with syphilis. In the three last named species the infection generally runs its course without the exhibition of any symptoms. Several wild animals are also susceptible to syphilis, the loir (*Myoxus glis*), for example, as Jähnel found. The hibernation of these creatures differs from ordinary sleep not only in profundity but because metabolism is reduced to a minimum and the body temperature, which tends to adapt itself to that of the environment, is drastically lowered. In some animals it was found to be around 5 C. (41 F.), in others it sank to within a few tenths of a degree above 0 C. (32 F.). The loir possesses a singular capacity for heat regulation and thus avoids the death by freezing that otherwise would threaten. As the need arises, increased respiration generates additional heat. Jähnel now reports that syphilitic loirs and hamsters among other animals become healthy again in the course of hibernation. The presence of the causative agents of syphilis could in no way be detected subsequent to the hibernation. Control animals that were kept in a heated room to prevent hibernation could not be rendered free from syphilis within a corresponding period. One might plausibly conclude from this that no actual cure of the disease takes place but rather that the spirochetes undergo a biologic alteration within the hibernating organism and as a result lose their pathogenic properties for other animals. The foregoing hypothesis is, however, as Jähnel made plain, highly improbable, since in many other diseases (trypanosomal infections, for example) complete cure takes place during hibernation. There are, of course, other possibilities. For example, it was found that Alpine marmots which had been infected with bubonic plague during hibernation slept peacefully on without manifesting any pathologic symptoms, but when with the spring they awoke from their winter's sleep the plague erupted among them and killed them all within a brief period.

This natural antisyphilitic curative process is obviously not applicable to man as all mammalia with the exception of the hibernants, are adversely affected by severe refrigeration and besides any appreciable cooling of the human body is difficult to bring about.

Rudolf Virchow, the pathologic anatomist, as is known was able to lower the temperature of his own body only to 35 C. (95 F.) and even in effecting this slight decrease he suffered disturbing manifestations. According to Jähnel's more recent experiments the eradication of the syphilis during hibernation is possible only if body temperature is at least below 20 C. (68 F.). So low a temperature, however, could not be induced in man, the demands of human metabolism alone preclude any such possibility. Moreover, hibernation does not act so forcefully against all species of spirochete. Jähnel found that the spirochete of relapsing fever, for example, could survive a thirty day period of unbroken hibernation. These microorganisms are much less sensitive to external influences than the spirochete of syphilis, they can be preserved in a refrigerator for weeks at a time without undergoing destruction whereas the spirochete of syphilis quickly perishes outside the animal organism itself and even under the most favorable conditions. At present further investigations are under way to determine on what aspect of hibernation the noxious effect on the spirochete of syphilis is dependent. One may find that this phenomenon is due not to the decreased metabolism or body temperature but to an endocrine reaction. The establishment of such a reaction, Jähnel thinks, would help to widen our perspective of the action of syphilis in man as well. In any event, these observations are of fundamental interest.

Deliveries by Midwives

In 1934 there were in Germany 1,181,000 living births and 31,800 stillbirths, a total of 1,212,800 births. Midwives in independent practice were in charge at 919,447 births and 32,327 miscarriages. In 1935, according to tentative reckoning, there were 1,265,000 living births, and the number of stillbirths has been estimated at around 34,000. This means a provisional total figure amounting to around 1,200,000. In the same year (1935) midwives were in charge at 971,970 births and 43,804 miscarriages. At the request of the National Association of Midwives, the representative professional organization of the group, the number of births for each practicing midwife was computed. In 1933 there were twenty-nine births to one midwife, in 1934 thirty-four births, in 1935 from thirty six to thirty-seven births. It will be noted that, on the basis of the more recent figures, the number of miscarriages at which midwives were in charge has increased by around 11,500. In the opinion of the *Deutsches Ärzteblatt*, the official organ of the medical profession, this figure may have resulted from a misinterpretation of the data or (what is more interesting) it may be ascribed to the fact that a smaller number of miscarriages were in charge of physicians. Pregnant women often themselves induce abortion and then call on the midwife for help. How the ministry of the interior has given especial attention to the situation of the midwives was previously reported (*THE JOURNAL*, July 6, 1935, p. 60). The ministerial policy has been gradually to reduce the number of midwives until an average of fifty confinements falls to the share of each.

In Germany independently practicing midwives are in charge at 75 per cent of all confinements, the other 25 per cent represent institutional confinements. The number of the latter has perhaps undergone a slight increase.

Death of Prof Paul Morawitz

Prof Paul Morawitz, distinguished clinician and director of the university clinic of internal medicine at Leipzig died July 1 aged 57. Morawitz had an excellent professional training. He first acquired a good background in physiology, which later formed the foundation of his clinical opinion. Among the professors under whom he worked as an assistant was Krehl of Heidelberg. While at Heidelberg, Morawitz obtained his first important appointment, the directorship of the University Medical Polyclinic at Freiburg. He was only 30 years of age at the time. Soon thereafter Morawitz became professor of inter-

nal medicine at Greifswald. Later he served in the same capacity at Wurzburg, succeeding finally to the celebrated chair of Strumpell at Leipzig. Morawitz was a prodigious and diligent worker who demanded a great deal of his assistants but enjoyed helping them along. He was beloved as a teacher. His clear diction and his high ideal of professional ethics made a permanent impression on many a young medical man. By the death of Morawitz the German universities have lost one of their ablest clinical professors.

AUSTRALIA

(From Our Regular Correspondent)

July 29, 1936

Psittacosis in Australia

During the summer of 1935-1936 seventeen instances of probable human infection of psittacosis were recognized in Victoria. Psittacosis virus has been demonstrated in the sputum of five of these patients. The most important sources of infection in Victoria are young newly captured birds, particularly cockatoos. The evidence suggests that maintenance of birds under crowded unhygienic conditions results in a lighting up of their naturally acquired infection with the virus. There were two proved human infections, which were apparently derived from aviary bred budgerigars (*Melopsittacus undulatus*).

Working under a grant for research on virus diseases from the Rockefeller Foundation and the department of health of the commonwealth of Australia, F. M. Burnet and Jean McNamara have published the results of their investigations into human psittacosis in Australia (*M. J. Australia* July 18). In the summer of 1934-1935 these investigators had found that a large proportion of recently caught individuals of *Psephenus haematotus* and *trichoglossus* (two species) and *Leptolophus hollandicus* were infected. It is possible that cases of this disease among human beings escaped recognition before the attention of physicians had been directed to the possibilities of infection by these two workers. It is considered that, in the case of the birds infection with psittacosis is very frequently contracted by young cockatoos in the nest but is usually overcome by the time they are captured, at least to the extent that the spleen no longer contains virus. If the young cockatoo, after capture, is kept under good conditions, it remains healthy and presents no danger to human beings. When, on the other hand, birds are crowded into small spaces with inadequate food and sunlight, their latent infection is lighted up.

The Australian experience with the human disease indicates that in children the disease is of a minor nature settling down in a few days, but that in adults, particularly in the elderly, the course of the disease is longer and the patient is much more seriously ill. There were no deaths in the series. Lung signs predominate, suggesting an atypical bronchial pneumonia but the lung signs are more extensive than the symptoms have led the physician to expect. The onset is almost influenzal in type, with malaise, severe headache and diarrhea as the common symptoms at this stage. The headache is not localized to any one part of the head but is so severe that the patient calls in medical attention relatively early. Eleven of the series were proved to be due to infection from the sulfur crested cockatoo (*Kakatoe galerita*).

The International Significance of a Bronchoscopic Operation

Early this year an Australian child named Kelvin Rodgers inhaled a nail into his lung. Australian surgeons considered themselves insufficiently experienced to attempt the removal of this foreign body, and he was referred to Chevalier Jackson for treatment. The successful outcome of this operation at the hands of this master of bronchoscopy has provided an incident which will act as a bridge of the happiest nature between two great English speaking countries. The incident

was the occasion for a statement by the premier of Victoria in the Victorian legislative assembly, July 1, in which he expressed the feelings of gratitude of the people of Australia. The premier referred to the incident as a striking reminder that science and humanitarian developments know no geographic boundaries.

In an editorial the *Argus*, the leading conservative daily newspaper of Victoria, developed the sense of gratitude even further. There is one man acknowledged by the world's surgeons as the great specialist in the field of bronchial surgery. The brevity of the operation in a few overcharged minutes of probing in a child's lungs for a nail may tend to obscure in our minds the training and preparation of a lifetime of study and practice which made the achievement possible. The perfection of instrument and technic that necessarily preceded the operation is to some extent forgotten in the relief that a great surgeon has succeeded. To that success nearly all the great pioneers of surgery have contributed in some measure. In the daring experiment let us not overlook the skill of instrument makers. The part played by the physicist in developing the modern technic of roentgenologic examination and diagnosis should be recognized. The efficiency and competence of a great array of people from hospital managers to nurses is important. To the amazing feat of this one man, all yielded something, and Dr. Jackson, to his great honor, was the only one to make light of his own part and to acknowledge the work of others.

The great traditions of medicine and the noble humanitarianism of its great doctors and surgeons have been worthily upheld. The world expects it but rarely stops to wonder how far it has a right to expect such high virtue and enlightenment in great practitioners. The part played in the achievement by communications and transport is also too easily forgotten. The concentration of resources for the one coordinated purpose of saving a life is surely a magnificent object lesson on the capabilities and resources of the modern social system. This one episode should stimulate acknowledgment of the vast volume of similar self sacrifice and devotion to duty that is traditionally associated with private surgery and the public hospital. The acknowledgment of Dr. Jackson's skill and generosity should be carried over to that great army of men and women who are daily performing similar acts of skill and devotion. The organization of medical services which freely places all the resources of medicine and surgery at the disposal of the people of this and other countries is something that calls for profound gratitude and admiration.

'The incident,' concludes the *Argus* "has fired the imagination of the people of Australia, and the measure of exultation in every mind is that our civilization is capable of such unselfish effort."

Survey of Orthopedic Cases

To ascertain the chief factors that cause crippling deformities in Australia, a preliminary survey has been made of the

Causes of Crippling Deformities

| | Victoria | New South Wales | South Australia | West Australia | Queensland |
|--|----------|------------------------|-----------------|----------------|------------|
| Tuberculosis of bones and joints | 16.9 | 7.2 | 22.0 | 3.7 | 4.3 |
| Poliomyelitis | 27.7 | 12.8 | 42.0 | 4.5 | 18.1 |
| Osteomyelitis | 26.2 | 22.8 | Not specified | 5.3 | 31.5 |
| Talipes | 12.3 | Not separately classed | 18.2 | 12.2 | 28.7 |
| Congenital dislocations | 10.2 | 11.0 | 10.8 | | |
| Congenital deformities including talipes | | 26.5 | | 10.0 | 8.6 |
| Spastic paraplegias | | 0.8 | 1.4 | 3.0 | 0.9 |

hospital statistics in the various states. The figures in the accompanying table are expressed as percentages of the total admissions for crippling deformities in each state.

While these figures can be accepted as indicating only a general trend, it is interesting to note how tuberculosis incidence diminishes toward the subtropical and tropical areas. The effect of poliomyelitis epidemics can be seen also in South Australia, Victoria and Queensland.

Ophthalmologist Retires

Having been associated with the Dunedin Hospital for fifty-two years as ophthalmic surgeon and dean of the Faculty of Medicine of the University of Otago for twenty-two years, Sir H. Lindo Ferguson has retired from the chair of ophthalmology in the university and from the active staff of Dunedin Hospital and Medical School. Sir Lindo is an honorary fellow of the American College of Surgeons and a fellow of the Royal Australasian College of Surgeons. He qualified at Dublin in 1880 and was the first ophthalmic surgeon in New Zealand.

MOSCOW

(From Our Regular Correspondent)

Aug. 23, 1936

Abortions Forbidden

In a previous letter (*THE JOURNAL*, August 1) information was given concerning the government bill on abortion, aid to lying-in women and families with many children. The decision of the Central Executive Committee of June 27 made this bill a law. Some changes have been made as the result of public discussion at numerous meetings as well as in the press. The operation of artificial abortion is completely forbidden everywhere, including hospitals, lying-in houses and the homes of physicians. The operation can be performed if a special commission will permit it; the only indications accepted by the law are a serious menace to the pregnant woman's health and severe hereditary diseases of the parents that can be transmitted to the child. If these conditions are not present, the physician as well as the person who seeks the abortion will be punished with two years' imprisonment and the pregnant woman with public censure and a fine. Another change in the new law is some decrease of alimony paid by the father for the children's maintenance after divorce: instead of one third of the salary for one child, a half for two and three fifths for three or more; the corresponding sums are one fourth, one third and one half. Mothers having six or more children receive premiums (the bill gave money premiums to women having seven or more children). The first claims for state allowances for 1,940 large families were received from forty-two districts of the Moscow province (excluding the city of Moscow). Already the building of new medical establishments, kindergartens and lying-in homes has begun.

The Institute of Experimental Medicine

In a decision on the work of the Gorky All-Union Institute of Experimental Medicine the Council of People's Commissars of the Soviet Union noted that its medical workers have made a detailed study of the human organism and that it has become a basic scientific institution. At the same time the council states that the work lags behind the level of modern medical achievements. The clinical work is not properly organized, for which the commissariats of health are responsible. Therefore the institute must reconstruct its work, giving consideration to the experience of other countries. Special attention must be paid to the solution of important problems in the treatment of cancer, tuberculosis, influenza, malaria, typhus, scarlet fever and rheumatism. The institute will have 400 clinical beds in Moscow. There as well as in other institutions under the guidance of the Institute of Experimental Medicine new methods of treatment will be tested and worked out.

For the rapid application of the methods that it works out, the Institute of Experimental Medicine must provide facilities for giving instruction to a hundred persons a year. It must

work in connection with other establishments for scientific research and be active in organizing medical conferences and congresses. The principal work of the institute is carried on in Moscow and Leningrad, but it has a subtropical department at Sukhum on the Black Sea, where experimental work is done with monkeys. The institute is instructed to publish an annual report of its work in Russian, French, English and German.

League of Nations Hygienic Committee

A session of the Hygiene Committee of the League of Nations was held June 22-27 in Moscow. The head of the committee, Thorvald Madsen of Copenhagen, the head of the Public Hygiene Bureau, Joseph Jitta of Paris, Jacques Parisot of Nancy, G. Pittaluga of Madrid, Montague Morgan of London, Charles Winslow of the United States, Elmer McCollum of Columbia University and many other foreign guests were present. The Soviet scientists V. Bronner, venereologist, A. Sisin, hygienist, P. Sergiev, malariologist, L. Stern, physiologist, and others took part in the proceedings. At the first meeting G. N. Kaminsky, the people's commissar of health, greeted the session and spoke of the increase of population in our country as being 3,000,000 persons a year, while the mortality rate is much less than in the prerevolution period. Professor Parisot made a report about the activity of the hygiene organization of the league in rural hygiene.

For better acquaintance with the hygiene in rural districts the foreign members of the session visited regional and district hospitals, kindergartens and other medical establishments of our country. They made a trip to Gorky, Leningrad, Rostov-on-Don and the Georgian and Ukrainian republics. They saw the health resorts, the spas, and the climatic and balneologic stations on the shore of the Black Sea and in the Crimea.

After the Moscow session was ended, the Section of Information of the League secretariat published a paper in which the development of medical aid in the Soviet Union is mentioned.

The Commissariat of Health

Instead of the separate health commissariats that existed in every Soviet republic, the government resolved to establish an All-Union Health Commissariat with Dr. Gregory N. Kaminsky (former people's commissar of health in the Russian Soviet Republic) at its head. The new commissariat is to unite in one system and plan the care of the people's health in the Soviet Union. Sums given for this purpose have been increased from 5,365 million roubles in 1929-1932 to 17,870 millions in 1933-1936. The All-Union Health Commissariat will develop great activity in measures for the elimination of venereal diseases, tuberculosis and rheumatism. The laboratory and medical equipment of hospitals and scientific establishments will be greatly improved. Simultaneously with the building of regional hospitals for 200-250 beds with all types of qualified medical and laboratory aid, the new commissariat will found well equipped interregional hospitals. The improvement of medical aid administered to workmen of heavy industries—principally metallurgic, coal mine and chemical—the study of occupational diseases and their treatment are one of the principal aims of the new commissariat. Many problems confront the new commissariat in all of them in the front rank being the care taken of living man—a struggle for health, elimination of obstacles to normal growth of the new Soviet generation, the prolongation of life and the encouragement of efficiency.

Blood Transfusion

A new decree on blood transfusion in the Soviet Union was recently published. Every person older than 18 if of sound mind and of normal physical development can be voluntarily enrolled among the number of donors. The average quantity of blood required from a new donor is 150-200 cc. The donation of blood for transfusion is to be repeated not more than seven times a year when the maximal quantity is taken.

Marriages

EDWARD M ANDERSON, Iamberton, Minn to Miss Mabel Gilland of Sleepy Eye, in Minneapolis June 4

ANTHONY JOSEPH BARRANCO, Bartow, Fla, to Miss Fannie De John at Birmingham, Ala July 28

ROBERT JENNINGS BAKER, Charleston, S C, to Miss Anne Hunter Linley of Anderson, June 27

RAYMOND F HEDIN to Miss Lydia Elizabeth Anderson, both of Red Wing, Minn, June 19

ALVIN ERICKSON Hendricks Minn, to Miss Marion Piltingsrud of Leeds, N D, June 12

JOHN J BOEHNER JR. to Miss Jeanne Kathryn Halloran, both of Minneapolis, June 15

JOSEPH HOWARD SIEGFRIED to Miss Mary Elizabeth Easton both of Peoria, Ill, August 7

HORACE CRAIG GIBSON to Miss Mary Louise Thomas both of Charlotte, N C, recently

THEODORE MYRON DEUTSCH to Miss Selma Klausner both of Brooklyn, recently

Deaths

George Abraham Torrison, Chicago, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889, member of the Illinois State Medical Society, associate clinical professor of laryngology and otology, Rush Medical College fellow of the American College of Surgeons, aged 71, attending laryngologist to the Lutheran Deaconess Home and Hospital and Lutheran Memorial Hospital, assistant attending laryngologist to the Presbyterian Hospital, where he died, June 20, of pulmonary tuberculosis

James Madison Baird, Columbus, Ga Kentucky School of Medicine, Louisville, 1892, Eclectic Medical Institute Cincinnati, 1893, Homeopathic Medical College of Missouri St Louis, 1898 member of the Medical Association of Georgia, past president of the Muscogee County Medical Society, president of the Georgia State Board of Medical Examiners, formerly on the staff of the Columbus City Hospital, aged 66, died, July 10, in the Piedmont Hospital, Atlanta, of coronary occlusion

Joseph Barnes Bacon, Macomb, Ill Texas Medical College and Hospital, Galveston 1879 Chicago Medical College, 1881, member of the Illinois State Medical Society fellow of the American College of Surgeons at one time instructor in surgery at the Northwestern University Medical School, Chicago, for many years surgeon for the Burlington Railway, formerly on the staff of St Francis Hospital, aged 82, died, July 21 of carcinoma of the rectum

Marion Earle Brown New Orleans Tulane University of Louisiana Medical Department, New Orleans 1911 member of the American Academy of Ophthalmology and Otolaryngology, professor of ophthalmology Tulane University Graduate School of Medicine, served during the World War on the staff of the Eye, Ear, Nose and Throat Hospital, aged 50, died, August 19

Russell Montague Young, Lima, Ohio Rush Medical College Chicago, 1900 member of the Ohio State Medical Association, veteran of the Spanish-American and World Wars, on the staffs of the Lima Memorial and St Rita's hospitals, aged 59, died, June 21, as the result of a spinal injury received in a fall several months previously

Russel Murray Rome Brooklyn Long Island College Hospital Brooklyn, 1901, formerly clinical professor of surgery at his alma mater fellow of the American College of Surgeons surgeon to the Kings County and Bushwick hospitals, aged 57, died June 24 at his summer home in Shelter Island N Y of coronary thrombosis

Anthony Bernard Zwaska, Beloit, Wis Marquette University School of Medicine Milwaukee, 1915 member of the State Medical Society of Wisconsin served during the World War on the staff of the Beloit Municipal Hospital, aged 45, died June 30 in Rochester Minn of hypertension and uremia

Robert Astley Rice, Fitchburg Mass, Harvard University Medical School Boston 1902 member of the Massachusetts Medical Society served during the World War, formerly

city and school physician, aged 60, died, June 13, in the Burbank Hospital, of arteriosclerosis and chronic myocarditis

Herman Reinsch Chicago Chicago College of Medicine and Surgery 1912 fellow of the American College of Surgeons served during the World War, aged 48, member of the staff of St Francis Hospital, Evanston where he died, June 14, of coronary thrombosis, while visiting patients

Felix Melville Scott, Paragould Ark Vanderbilt University School of Medicine, Nashville, Tenn, 1881, member of the Arkansas Medical Society, past president and secretary of the Greene County Medical Society county health officer, aged 82, died, June 17, of bronchopneumonia

Jesse J Saxton, Tampa Fla Eclectic Medical Institute, Cincinnati 1907 member of the Florida Medical Association past president of the Hillsborough County Medical Society, aged 56, died, June 29 in St Luke's Hospital, Jacksonville, of injuries received in an automobile accident

Austin David Bates Denton, Texas Rush Medical College Chicago, 1922 secretary of the Denton County Medical Society served during the World War, aged 43, died, July 18 in the Dallas (Texas) Medical and Surgical Clinic Hospital of coronary occlusion and arthritis

Rodrigue Mignault, Lowell Mass, M B Laval University Medical Faculty, Montreal, Que, Canada 1882, M D, School of Medicine and Surgery of Montreal 1884, member of the Massachusetts Medical Society, for many years school physician, aged 73, died, June 26

John Denniston Wilson Scranton, Pa Jefferson Medical College of Philadelphia, 1905, fellow of the American College of Physicians veteran of the Spanish-American War on the staff of the Scranton State Hospital, aged 56, died, June 20 of coronary artery disease

Blackburn George Tucker, Nashville, Tenn, Vanderbilt University School of Medicine Nashville 1897, at one time county health officer medical superintendent of the Davidson County Tuberculosis Hospital, aged 60, died, June 22, in a local hospital of pneumonia

John James Quinn Lansford Pa, University of Pennsylvania School of Medicine Philadelphia 1917 past president of the Carbon County Medical Society served during the World War, aged 46, died, June 23 of traumatic gastroptosis with multiple adhesions

Buchanan S Wert Chattanooga, Tenn, University of Louisville (Ky) Medical Department, 1879 past president of the Chattanooga and Hamilton County Medical Society, on the staff of the Erlanger Hospital, aged 79, died June 20, of coronary thrombosis

Francis Joseph Pfeffer, Quincy, Ill Washington University School of Medicine, St Louis, 1895 served during the World War, aged 63, died, June 16, in the Veterans Administration Facility Jefferson Barracks, Mo, of myocarditis and coronary thrombosis

Lyman E Rockwell, Amenia N Y University of the City of New York Medical Department 1873 member of the Medical Society of the State of New York for many years health officer of Amenia, aged 90, died June 11, of cerebral hemorrhage

Florence Harvey Tresilian, Hudson Mass Boston University School of Medicine 1895 formerly on the staffs of the Gardner (Mass) State Hospital and the Taunton (Mass) State Hospital, aged 80, died, June 26 in the Flower Hospital New York

Wallace Emery Bray, Delavan Wis Northwestern University Medical School Chicago 1934 formerly on the staff of the Southern Wisconsin Colony and Training School, Union Grove, aged 33, died, July 2, of an overdose of a barbitual compound

Mitchell Sisson, Boston Harvard University Medical School, Boston 1913, member of the Massachusetts Medical Society for many years school physician for the school district of East Boston, aged 49, died June 1, of melanotic sarcoma

William W Core, Nashville, Tenn Vanderbilt University School of Medicine, Nashville 1880, formerly county health officer, aged 76 for many years medical superintendent of the Davidson County Hospital where he died, June 3, of influenza

William Edward Holmes Morse, Oakland Calif, University of Michigan Department of Medicine and Surgery Ann Arbor 1885, aged 74, died June 4, in the Alameda County Hospital of shock following an operation on the bladder

Ethbert Cole Rosamond, Birmingham, Ala., Louisville (Ky.) Medical College, 1893, member of the Medical Association of the State of Alabama, on the staff of the Norwood Hospital, aged 65, died, June 16, of coronary occlusion

George W. Snively, Dalton, Ohio, Medical College of Ohio, Cincinnati, 1900, member of the Ohio State Medical Association, aged 70, died, June 4, in the City Hospital, Massillon, of cerebral hemorrhage and arteriosclerosis

George Washington Bamberger, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904, aged 56, died, July 9, in the Michael Reese Hospital, of carcinoma of the stomach

Ludwig Amster, Flushing, N. Y., University of the City of New York Medical Department, 1888, formerly a practitioner in Atlanta, Ga., was one of the founders of the Piedmont Hospital, Atlanta, aged 72, died, July 2

Louis P. Reimann, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1883, aged 83, died, June 1, in the Lankenau Hospital, of bronchopneumonia, arteriosclerosis and coronary sclerosis

William Albert O'Connor, Chicago, University of Illinois College of Medicine, Chicago, 1914, served during the World War, aged 50, died, June 25, in the Wesley Memorial Hospital, of hypertensive heart disease

Mary Dunn Crane, Columbus, Ohio, Woman's Medical College of Cincinnati, 1893, aged 81, died, June 22, in the S. M. Heller Memorial Hospital, Napoleon, of burns received when an oil stove overturned

Thomas Walter Raper, Williamsport, Pa., Jefferson Medical College of Philadelphia, 1897, member of the Medical Society of the State of Pennsylvania, aged 78, died, June 29, of carcinoma of the prostate.

Benjamin Randal Ballard, Kinston, Ala., University of Tennessee Medical Department, Nashville, 1894, aged 65, died, July 10, in a hospital at Montgomery, of sepsis due to a carbuncle on the neck

Ehme E. Aukes, Lincoln, Neb., Georg-August-Universität Medizinische Fakultät, Göttingen Prussia, Germany, 1877, aged 84, died, July 17, of cerebral hemorrhage, arteriosclerosis and hypertension

General Pinnell, Miami, Okla., Memphis (Tenn.) Hospital Medical College, 1902, member of the Oklahoma State Medical Association, aged 58, died, June 15, in a hospital at Tulsa, of heart disease

Joseph Price Tunis, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1889, aged 70, died, June 10, of myocarditis, hypertrophy of the prostate and chronic cystitis

Wilfred Freeman Gove, Wareham, Mass., Boston University School of Medicine, 1926, member of the Massachusetts Medical Society, aged 40, died, June 26, of acute monocytic leukemia

William Henry Davis, Creston, Iowa, Bennett College of Eclectic Medicine and Surgery, Chicago, 1887, Marion-Sims College of Medicine, St. Louis, 1893, aged 80, died, June 10, of myocarditis

Joseph C. Culp, Thayer, Mo., Marion-Sims College of Medicine, St. Louis, 1892, member of the Missouri State Medical Association, aged 80, died, June 27, of chronic nephritis and uremia

William Lorenzo Shank, Lee, Ill., Central College of Physicians and Surgeons, Indianapolis, 1894, aged 69, died, June 1, in the East Side Hospital, Waterman, of coronary thrombosis

John Francis Riordan, Kenosha, Wis., Northwestern University Medical School, Chicago, 1905, aged 58, died, June 14, in St. Catharine's Hospital, of myocarditis and hypostatic pneumonia

George Asher Strader, New York, Hahnemann Medical College and Hospital of Philadelphia, 1902, aged 63, died, June 27, at his summer home in Norway, Me., of angina pectoris

Leonard Clair Baldauf, Erie, Pa., Jefferson Medical College of Philadelphia, 1926, member of the Medical Society of the State of Pennsylvania, aged 35, died, July 5, of heart disease

Curtis Albert Bailey ♂ Athens, La., Louisville (Ky.) Medical College, 1890, past president of the Claiborne Parish Medical Society, aged 67, died suddenly, July 15, of heart disease

Jay Harry Barto, St. Louis, Missouri Medical College St. Louis, 1897, aged 66, member of the staff of the Missouri Baptist Hospital, where he died, July 4, of cerebral hemorrhage

Samuel Jay Barker, Largo, Fla., Missouri Medical College, St. Louis, 1883, formerly a practitioner in St. Louis, aged 78, died, July 1, of myocarditis and chronic nephritis

Thomas Joy Putnam, Springfield, Mass., Homeopathic Hospital College, Cleveland, 1877, aged 86, died, June 10, in the Wesson Memorial Hospital, of cerebral hemorrhage

Frank W. Adriance, Elmira, N. Y., Hahnemann Medical College of Philadelphia, 1877, aged 81, died, July 24, of cardiac decompensation and hypertrophy of the prostate

Eyer Walter, Williamsport, Pa., Jefferson Medical College of Philadelphia, 1880, aged 82, died, June 2, in the Williamsport Hospital, of myocarditis and acute cholecystitis

Christopher Peters Walter, Lyman, S. C., Medical College of the State of South Carolina, Charleston, 1885, aged 82, died, June 25, of sarcoma of the bladder

Maurice Watson, Manchester, N. H., Dartmouth Medical School, Hanover, 1901, aged 62, died, June 22, at his summer home in Gilmanton, of bronchopneumonia

Sinclair Kirtley Royle, Patchogue, N. Y., New York University Medical College, 1896, aged 76, died, June 25, of bronchopneumonia and pernicious anemia

Charles Henry Brewer, Stayton, Ore., Willamette University Medical Department, Salem, 1898, at one time mayor, aged 57, died, July 16, of heart disease

Garland M. Vaden, Capeville, Va., University College of Medicine, Richmond, Va., 1901, member of the Medical Society of Virginia, aged 58, died, June 20

Van Lear Polk, Chicago, Meharry Medical College, Nashville, Tenn., 1919, aged 43, died, June 26, in Proviso Township, of carcinoma of the tongue.

Ephraim Le Rue Walmer, Harrisburg, Pa., Jefferson Medical College of Philadelphia, 1891, aged 73, died, June 22, of chronic nephritis and uremia

Daniel Sickler, Ogden, Iowa, Albany (N. Y.) Medical College, 1879, for many years mayor of Ogden, aged 85, died, June 19, of chronic myocarditis

Joseph Guardith Moore ♂ Philadelphia, Temple University School of Medicine Philadelphia, 1918, aged 56, died, June 6, of chronic myocarditis

Carl Johan Anderson, Porter, Okla., Bennett College of Eclectic Medicine and Surgery, Chicago, 1898, aged 72, died in June, of pernicious anemia

Sherman T. Lewis, Menard, Ill., Northwestern University Medical School, Chicago, 1892, aged 69, died, June 20, of cerebral arteriosclerosis

C. Roland Per Due, Indianapolis, Central College of Physicians and Surgeons, Indianapolis, 1897, aged 62, died, June 15, of coronary occlusion

Rufus Austin Black, West Sullivan, Maine, College of Physicians and Surgeons, Boston, 1905, aged 54, died, June 1, of acute myocarditis

Anton Radesinsky, Chicago, Medizinische Fakultät der Universität Wien, Austria, 1894, aged 69, died, June 18, of cerebral thrombosis

Thomas D. Palmer, Elk City, Okla., Columbian Medical College, Kansas City, Mo., 1901, aged 66, died, June 15, of paralysis agitans

John Hepburn Lloyd, Erie, Pa., Jefferson Medical College of Philadelphia, 1896, aged 62, died, June 2, of pulmonary tuberculosis

Charles Albert Orr ♂ Crafton, Pa., Jefferson Medical College of Philadelphia, 1901, aged 65, died, June 6, of myocarditis

CORRECTIONS

Not Dead—The report of the death of Dr. William Preston Haynes of Washington, D. C., received in this office from the Commission on Licensure of the District of Columbia and published in the obituary columns of *THE JOURNAL*, September 12, page 893, was erroneous. Dr. Haynes writes that he is alive and was never in better health.—Dr. Hermann Frederick Erben was erroneously reported as having died in Calcutta, India, in various newspapers, and in the obituary columns of *THE JOURNAL*, June 13, page 2087. Dr. Erben recently wrote from New York City that the report of his death in Calcutta was grossly exaggerated.

Correspondence

CLASSIFICATION OF ARTHRITIS

To the Editor—Desirable as it may be, it is often impossible neatly to define and classify clinical syndromes the origin of which is unknown. Nowhere is this better illustrated than in the report of the transactions of the American Association for the Study and Control of Rheumatic Disease, which appeared in THE JOURNAL August 8. An analysis of this report shows that classification may at times obscure as readily as it may clarify a clinical problem. It is all very well to tack labels on morbid processes, but labels have a way of wearing thin and then our underlying ignorance is more clearly exposed.

Much was said at the conference about the belief that rheumatoid arthritis and osteo-arthritis are clinically and pathologically different and that the terms represent two different diseases. Very little was said about the concept supported by me and by others (THE JOURNAL, May 5, 1934, p 1449) that these terms are merely labels to distinguish clinical variants of the same disease. A few words in support of this point of view may not be amiss.

It has been clearly shown that trauma, specific infections such as syphilis, and at least one metabolic irritant (the urates in gout) may produce proliferative arthritis or degenerative osteo-arthritis, depending for the most part on factors other than those of causation (*New England J Med* 213 799 [Oct. 24] 1935). Proceeding from the known to the unknown, it seems reasonable to believe that a similar group of irritants may be the primary cause of proliferative or degenerative pathologic changes in the arthritides of unknown origin. Nor is the logic of this conclusion greatly affected by variations in the nonfilament count, sedimentation rate or even agglutination tests in rheumatoid and osteo arthritis. If a specific infectious agent such as *Spirochaeta pallida* can produce in one patient a proliferative type of arthritis and in another individual a degenerative type of osteo-arthritis there is good reason to believe that some as yet unknown infectious agent may affect principally the synovial membrane in one type of patient resulting in nonspecific rheumatoid arthritis, and the articular cartilage in another type of individual, resulting in nonspecific osteo-arthritis. The same reasoning would seem to apply to trauma, extrinsic or intrinsic, and likewise to some hypothetical metabolic irritant that may be operative in the causation of nonspecific arthritis. Indeed, it is my opinion that nonspecific rheumatoid arthritis and osteo-arthritis are not produced by any single irritant but may result from multiple causes.

Then, of course, there is the second and almost insuperable argument against a sharp division of rheumatoid arthritis from osteo arthritis. Today it is freely admitted by practically all students of the subject that the two forms of the disease occur frequently in the same patient in the same finger, even in the same joint. The explanation which has been advanced, that in all such instances two different diseases have been superimposed on each other, is in my opinion unacceptable and contrary to my observation and experience. As Dr Jordan stated at the conference, 'In many instances the two seem to be intertwined in the one patient to such an extent that it is difficult to draw any hard and fast line between them.' As Morrison and Kuhns have recently stated, "The day may not be far distant when division of types in chronic arthritis will become obsolete and articular changes will be looked upon as signs of a general physiological disturbance, varying in their nature largely with the anatomic type and age of the individual."

To those who are skeptical of the unitarian concept of the etiology of nonspecific arthritis may be commended the suggestion of Dr Key—the study of the synovial membrane in

cases diagnosed as osteo-arthritis. It is such a study that has convinced me of the essential unity of proliferative and degenerative arthritis, and it was this type of investigation that convinced Knaggs, Nichols and Richardson, and others, of the validity of the unitarian concept of the etiology of chronic nonspecific arthritis.

I cannot concur with Dr Jordan that there is no compromise possible between those who believe that we are dealing with two diseases and those who think that proliferative and degenerative arthritis are different manifestations of the same disease.

Would not the following statements be a fair exposition of the status quo, which might be acceptable to both sides of this controversy? The primary agent or agents that are the cause of rheumatoid arthritis and osteo-arthritis are unknown. There are nevertheless two concepts regarding the etiology of these two forms of nonspecific arthritis: (1) that proliferative rheumatoid arthritis and degenerative osteo-arthritis are two different diseases and are due to different etiologic agents, and (2) that rheumatoid arthritis and osteo-arthritis are different manifestations of the same disease and are the result of the same etiologic agent or group of agents.

Quite clearly, future investigation will have to determine which concept is correct.

BENJAMIN H. ARCHER, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

USE OF CAMPHORIC ACID

To the Editor—In Beckman's "Treatment in General Practice" edition 2, page 245, there appears the following prescription:

| | |
|---------------------|------|
| Camphoric acid | dr 4 |
| Alcohol | ou 2 |
| Mucilage of acacia | ou 3 |
| Syrup of orange q s | ou 6 |

I have been unable to fill the prescription owing to the fact that alcohol added to the acacia or acacia added to the alcohol causes the formation of a white gummy material impossible to break up. How can this prescription be filled? (The mucilage was made up fresh according to directions given in Remington's "Practice of Pharmacy.") If the prescription is an impossibility can you suggest another method for getting camphoric acid in solution with a pleasant tasting vehicle?

REUBEN HOFFMAN, M.D., Henryton, Md.

ANSWER.—The prescription can be satisfactorily compounded if the following instructions are carefully heeded:

Place the freshly prepared mucilage of acacia in a clean mortar, add 4 drachms (15 cc) of syrup of orange, and stir the two together vigorously with a pestle. Then dissolve the camphoric acid in the alcohol separately and slowly add this solution to the mixture in the mortar with constant stirring. The white gummy flocculent material that appears will gradually disappear during ten minutes of vigorous trituration with the pestle. The mixture may then be poured into the dispensing bottle, which should bear a 'shake' label, it will be muddy in appearance and only translucent because these are the properties of the mucilage of acacia but will be a satisfactory suspension for administration from a bottle.

In the textbook referred to there are listed on page 785 several vehicles of an alcoholic content from 45 to 75 per cent any of which will satisfactorily dissolve the camphoric acid and should thus be simpler to use in extemporaneous compounding. A prescription using one of these vehicles, which would be red and not unpleasant in taste, would appear as follows:

| | Gm or Cc | |
|-------------------------------|--------------|-------|
| Camphoric acid | 150 | 3 iv |
| Compound tincture of cardamom | to make 1800 | 3 vii |

For other tastes the compound tincture of cinchona which would give a brown solution, might be preferable. Indeed any one of the higher alcoholic vehicles will satisfactorily dissolve the

camphoric acid without losing transparency or any other of its desirable properties. The lower alcoholic vehicles, however, such as the well known aromatic elixir, will not completely dissolve the drug.

CHRONIC POTASSIUM CYANIDE POISONING

To the Editor—I am unable to find definite or detailed descriptions of chronic potassium cyanide poisoning symptoms. One of my patients a man 79 years old has worked for a year past in a room about 40 by 15 feet in dimension in which were two potassium cyanide furnaces (for case hardening steel) which were heated to 1600 F for ten hours daily. There was no special ventilation in the room though an apparatus for proper ventilation has since been installed. He worked under these circumstances about a year, during which time he noticed on occasion that a white dust collected on all objects in the room (when freshly loaded furnaces were in operation little dust was noticed but when the level of the material in the furnaces got lower the dust was more noticeable). He never worked on Saturday or Sunday. On Monday Dec. 2, 1935 he became suddenly and violently ill. He had arisen half an hour earlier than usual feeling perfectly well but before he could get dressed he was seized with intense pain across his chest, back abdomen and down to his hips. He does not remember being dyspneic but he writhed with pain and broke into a cold clammy sweat. He got to bed had an electric pad took a dose of aromatic spirit of ammonia and was somewhat relieved when I first saw him. His convalescence has been very slow for six weeks. His appetite is very poor and he feels weak. The pain in the chest abdomen and back lasted four weeks and then gradually improved. He had little blisters in his nose (on the septum and alae) for a month or so before the acute attack. These disappeared about two weeks after the attack. Will you please tell me whether or not such symptoms are due to chronic cyanide poisoning? Can they appear forty-eight hours after exposure has ceased? Will you give me any references on the subject that will help me find a good description of the effects of chronic potassium cyanide exposure? In a report of the Commission on Occupational Diseases to Charles S. Deneen a reference to photo-engravers using potassium cyanide is mentioned stating the symptoms to be nausea, loss of appetite and general disinclination to work stating that it occurs after six or seven weeks exposure and is especially likely to recur in two or three weeks and is then likely to be fatal. Do you think that it is likely that my man will have a recurrence if he attempts this job again now that proper ventilation is provided? M. D. Pennsylvania

ANSWER.—The use of potassium cyanide in the heat treatment of metals has led to little evidence of harm to exposed workmen. In many large establishments there may be as many as fifty cyanide pots. Around these pots the waste cyanide material is ground into fine dust. Janitors sweep these floor areas without any precautions, leading to visible clouds of dust, some of which is cyanide. The clothes of workmen may become coated with cyanide incrustations. The lunches of workmen may be seen lying on the lip of the cyanide pots, to be kept warm until consumed. Workmen eat their food without washing their hands and with utter lack of concern as to hazardous chemicals all about them. This experience, which has been shared by many industrial hygienists, has led to the opinion that industrial exposure to cyanides provides only a low order of risk. This does not imply that cyanides are not poisonous but instead only that in industry few acute and fewer chronic poisonings from such agents ever have come to light. The fatal dosage of potassium cyanide, when taken internally, is about 0.2 Gm.

Both acute and chronic poisoning are discussed in the following publications:

Collins and Martland *J. Nerv. & Ment. Dis.* 35: 417, 1908.
Peterson, Frederick, Haines, W. S. and Webster, R. W. *Legal Medicine and Toxicology*. Philadelphia: W. B. Saunders Company, 1926.
International Labor Office. *Occupation and Health*. Geneva, 1934.

The chief symptoms of chronic poisoning are given by Peterson, Haines and Webster as follows:

A form of chronic poisoning is stated to occur among gilders, photographers and others who are engaged in the handling of hydrocyanic acid, potassium or sodium cyanide. The symptoms are stated to be headache, vertigo, paleness of the face, loss of appetite, offensive breath and difficult respiration. Collins and Martland reported a case of chronic poisoning in a silver polisher in which the symptoms were scarcely distinguishable from those of an anterior poliomyelitis: paralysis of the limbs and muscular atrophy but with a certain degree of recovery. Chronic poisoning by hydrocyanic acid does not, however, seem to be a frequent result of the long-continued exposure to the gas. An irritation of the skin of the face like acne rosacea is described.

The occurrence of any chronic poisoning as the sole manifestation of cyanide poisoning is open to question. The cyanides, apart from being local irritants, act as asphyxiants. The nature of the asphyxiation is peculiar in that the tissues themselves are rendered unable to take up oxygen from the arterial blood. The venous blood remains the same color as the bright red contents of arteries. A delayed action is not known. A delay of forty-eight hours is highly improbable. To the contrary, cyanogen compounds are accorded first or near first rank in exerting toxic action instantaneously—within a few seconds.

The manifestations described in a workman 79 years of age away from work for two days, may with no assurance be associated within potassium cyanide as the cause. The skin lesions described may very well have arisen from cyanide dust or fume as cyanide dermatitis is relatively common. The gross lack of sanitation described in the first portion of this reply is not condoned, but it is difficult to procure the cooperation of industrialists when the evidence of practical hazards is so meager. Nonfatal cyanide poisoning is ordinarily followed by complete recovery, with no known predilection for subsequent attacks in the absence of an adequate new exposure. However in the case of a workman in his eightieth year there may be good reason for the avoidance of further exposure to cyanide or to any other distinct occupational hazard.

VARICOSE VEINS WITH PHLEBITIS

To the Editor—I have a patient a married woman, aged 36 who came to see me regarding painful varicose veins. These varicosities developed after her second pregnancy. They are superficial tortuous and extend from the ankle as far as the knee. They are present on the left leg only. During her menstrual period the veins become markedly engorged and enlarged and they are extremely painful especially at the ankle. The pain is so severe that the patient has to keep off her feet. At the time of the flow the ankle presents a bunch of superficial varicosities painful to touch. I was called to see the patient today (this is not her menstrual time). She complained of severe pain in the left leg the pain coming on suddenly without any warning and while she was sitting in a chair. Examination revealed thin tortuous superficial veins extending from the ankle to the knee. There were three red spots between the knee and the saphenous opening these spots were fairly painful to digital pressure. Apparently there is at present some phlebotic condition. I ordered the patient to stay in bed, elevate the leg and apply ice. Would it be proper to institute the injection treatment of the veins sometime in the future for the abolition of them? If there is any other method of easing the severe pain in the ankle and leg will you kindly inform me? Please omit name.

M. D. Connecticut.

ANSWER.—From the available data one can gather that the patient suffers from a patchy type of phlebitis of a preexisting varicose vein. The development of these venous dilatations following pregnancy and the increasing discomfort during menstruation are suggestive of a pelvic thrombosis as the cause of varicosities. Whether or not any obliterative treatment is advisable will depend on two factors: the patency of the deep veins and the activity of the infection in the veins. To determine the former the test of Perthes is most informative. With the patient in the standing position a towel or a rubber band is thrown round the thigh and enough compression is exerted to obliterate the saphenous but not the femoral vein. Next the patient is asked to bend and extend the knee vigorously and in rapid succession ten times. If the deep veins are patent the superficial varicosities will diminish in size, as the blood will be squeezed and aspirated into the deep venous circulation. Releasing now the constricting towel results in a refilling of the varicosities from above, indicating the amount of blood that has passed into the deep venous bed following exercise. If there is no appreciable diminution of the size of the veins after muscular exercise either the deep circulation is obstructed or there is an increase in venous pressure owing to valvular incompetence of the iliofemoral vein so that blood cannot pass readily through the communicating branches.

If injections are made in patients with deep venous obstruction or valvular incompetence, there may be an increase in edema and there is bound to be a recurrence, as the increased deep venous pressure will open the obliterated veins or force its way into new channels.

Even more important is the recognition of infection in the varicosities, because an injection into a vein harboring manifest or latent infection is often followed by a reactivation of the phlebitis, which, in case of a latent pelvic phlebitis may even extend into the pelvis with the production of a typical deep thrombophlebitis, a milkleg.

In the given case, elevation with hot boric acid dressings should rapidly ease the pain. Ice sometimes aggravates the neuritis that often accompanies an acute or subsiding phlebitis. If there is no swelling of the ankle and no evidence of deep thrombosis, and the patient's temperature and pulse are normal she may be allowed to get up with an Unna's paste boot or an elastic stocking. Later the white count and especially the sedimentation rate will give a fair estimate of the presence of residual infection. This infection may have subsided in six months or may be present after ten years especially if other foci of infection have not been eradicated.

Further information on this problem requiring considerable clinical experience can be obtained by writing for a bulletin on the Varicose Vein Exhibit of the American Medical Association shown in Philadelphia in 1931, enclosing a 10 cent stamp.

GONORRHOEA IN WOMEN

To the Editor—About two years ago a female patient contracted a gonorrhoeal infection. I saw her March 15, 1934 at which time she had gonococcal involvement of endocervix. This cleared up under local treatment. Apparently there was no involvement of the tubes. Smears were negative. In September 1935 following a menorrhagia she again developed a vaginal discharge, which was positive for the gonococcus. At this time there was slight tenderness and swelling of the right tube. There was no elevation of temperature. I began using nonspecific protein with local treatment and the discharge soon stopped. I later used a gonococcus filtrate intradermally as there was still slight tenderness of the right tube which was still palpable. At the present time smears following menstruation from the cervix are negative. The tube is not tender but there is a strongly positive complement fixation test. Is this significant and what can be done about it? Please omit name and address. MD Ohio

ANSWER—A positive complement fixation test means that the patient has specific gonococcus antibodies still present in the blood stream. Since such specific antibodies are found only when gonococci are present in the body and disappear within several weeks after the disappearance of the gonococci a careful search for the residual infection must be made. Such a residual infection may be found in the deeper cervical glands but is more frequently found in Skene's ducts or in Bartholin glands. If the latter are palpable and enlarged, they are pathologic and should be removed by radical surgical excision. Skene's ducts demand especial attention since chronic infections are more persistent here than elsewhere in the female genital tract. If a secretion can be expressed from them by digital pressure or if they are thickened and cordlike, the duct outlets should be located in the floor of the urethra or immediately adjacent to the external urinary meatus, threaded on the blunt end of a needle and excised (see Curtis Textbook of Gynecology, Philadelphia and London, W B Saunders Company, 1934).

The possibility of reinfection must also be borne in mind since the patient had apparently at least one reinfection. A male partner with a chronic infection can produce repeated infections in his partner. Coitus should therefore be forbidden under these circumstances.

THROMBO ANGIITIS OBLITERANS

To the Editor—A patient gives a history of intermittent claudication that is a dull ache in the left leg on walking several blocks relieved by rest. This first began four years ago and he has had several attacks so severe that he was put to bed and once his leg was opened up and drained. Although the condition has been present continuously he has had spells when it is worse especially in the winter. This affects only the left foot the right one feels normal. He also complains of easy chilling of the left foot and he has noticed that the left toe nails grow much slower than the right. He has noticed too that the left foot often gets fiery red when in a dependent position. At present there is exquisite tenderness on pressure over the anterior midportion of the leg. He is a man, aged 43 of French and German ancestry. He states that he has never had syphilis and he smokes about a pack of cigarettes daily. He gives a history of migrating transient soreness over various parts of the body. He is 67½ inches (170.5 cm) tall and weighs 165 pounds (75 Kg). The temperature is 98.4 F pulse 65 respiration 17. The systolic blood pressure is 115 diastolic 78. Red blood cells number 4,890,000 the hemoglobin is 90 per cent the white blood cells number 8,600. The Wassermann reaction is negative. He has four crowned teeth which have not yet been investigated as to the presence of infection. The eye grounds show fullness of the veins but his physical examination is good otherwise except for the left leg. The dorsalis pedis pulse is absent the posterior tibial faint the foot shows dependent rubor and elevation pallor. There is slight swelling about the external malleolus and rather marked tenderness along the large vessels of the calf of the left leg. I have made a diagnosis of thrombo-angitis obliterans. I have forbidden him the use of tobacco and contemplate putting him to bed and giving him saline injections and postural exercises. Please comment on the diagnosis and outline briefly the treatment to follow. Please omit name and address. MD Wisconsin

ANSWER—The history which the correspondent submits of his patient's illness and his examination are quite compatible with the diagnosis of thrombo-angitis obliterans. It is not clear what the correspondent means by the several severe attacks (apparently claudication) which necessitated surgical drainage of the leg. This is an extremely rare complication of thrombo-angitis obliterans. Absolute cessation of smoking tobacco is advisable. It is doubtful whether it is necessary to keep the patient in bed. Good results have been reported by Samuel Silbert (Studies on Thrombo-Angitis Obliterans [Buerger] THE JOURNAL, Sept 17, 1927, p 964) following the intravenous injection of hypertonic salt solution but it is the experience of other investigators that the results are not very impressive. Avoidance of trauma to the feet is important. Great care should be exercised in trimming the nails. The application of medicaments of an irritating nature should be judiciously avoided. The danger of contracting trichophytosis should be recognized and proper treatment should be given if the disease appears. Soft

woolen hose should be worn in cold weather. Postural exercises and contrast baths seem of some value, although it is difficult to evaluate them. The value of artificially induced fever by the intravenous injection of typhoid vaccine has been stressed by N W Barker (Results of Treatment of Thrombo-Angitis Obliterans by Foreign Protein, THE JOURNAL, Sept 19, 1931, p 841).

The most effective method for the treatment of claudication is the use of tissue extracts, as reported by N W Barker, G E Brown and G M Roth (Am J M Sc 189 36 [Jan] 1935), and intermittent negative and positive pressure environment may increase circulation to the extremities, a subject that has been reviewed by E V Allen and G E Brown (Intermittent Pressure and Suction, THE JOURNAL Dec 21, 1935, p 2029).

When the condition of the patient is satisfactory, A W Adson and G E Brown have shown that sympathectomy may be beneficial (Thrombo-Angitis Obliterans, THE JOURNAL, Aug 13, 1932, p 529).

Reviews on the subject of thrombo-angitis obliterans may be found in

- Brown G E Thrombo Angitis Obliterans, Surg Gynec & Obst 58 297 (Feb 15) 1934
Brown G E Allen, E V and Mahorner H R Thrombo Angitis Obliterans Clinical Physiologic and Pathologic Studies Philadelphia W B Saunders Company 1928
Buerger Leo The Circulatory Disturbances of the Extremities Including Gangrene Vasomotor and Trophic Disorders Philadelphia W B Saunders Company 1924
Scupham G W and de Takats Géza Peripheral Vascular Diseases Arch Int Med 58 530 (Sept) 1935

It is impossible to outline in a few words the treatment of thrombo-angitis obliterans which obviously must be varied to meet the various manifestations of the disease.

UNILATERAL EDEMA

To the Editor—The communication in THE JOURNAL January 18 page 238 under Queries and Minor Notes on unilateral edema interests me because I now have under my care a case of unilateral edema for which I have been seeking an explanation. The patient is a woman, aged 81 to whom I was called January 11 on account of symptoms due to pneumonia of the left lower lobe (type II) which had originated five days before I saw her. On the sixth day under my care my attention was called to a marked edema of the right hand extending into the forearm and upper arm to a less degree. The skin was of normal color the joints were flexible there was no pain or tenderness evidence of thrombosis was absent the heart and kidney functions were not such as to explain the condition the fever subsided by lysis respirations varied between 36 and 40 leukocytes numbered 42,900 and the percentage of polymorphonuclears was 92. January 21 an x-ray film showed opacity over the left lung indicating fluid associated with considerable pleural thickening. The heart was displaced far toward the right side. The compression of the right lung accentuated the degree of pathologic changes as viewed in the roentgenograms. There was also marked displacement of the trachea to the right. January 21 following this report the chest was tapped in the tenth left interspace posteriorly and at that point a size 20 self retaining catheter was introduced into the pleural cavity and closed drainage was instituted. At this time edema of the right upper eyelids was noticed. As drainage was not satisfactory only 260 cc being evacuated in about twenty four hours on January 22 another drainage catheter size 22 was placed in the seventh interspace near the lower angle of the scapula and from this drainage appears to be sufficient. With relief of intrathoracic pressure January 23 the edema had disappeared from the arm and hand and from the eyelid. Trying to discover the cause of the unilateral edema (which I do not recall ever to have previously seen except as the result of some obvious pathologic condition) a consideration of the relationship of the great vessels near the base of the heart to the bony chest cage makes it appear likely that an increase in intrathoracic tension together with a lateral displacement of the heart and trachea could easily result in a partial obstruction of the innominate vein of one side by compression between the trachea innominate artery and the first rib resulting in unilateral edema. This appears to me as the most likely cause of the condition in the case under my observation. The prompt disappearance of the edema coincident with relief of tension in the chest cavity would at least seem to indicate some relationship of the edema to the pathologic condition of the chest. I would like to have your opinion of this view. Although my case and that reported in THE JOURNAL are dissimilar in several important respects such as parotitis being a forerunner of the chest conditions and edema in the latter and the occurrence of edema on the side opposite the chest lesions in my case and on the same side in the child with parotitis it is not probable that in both cases the edema was due to compression of an innominate vein?

LINDSAY PETERS M.D. Alameda Calif

ANSWER—The explanation offered of the edema of the right upper extremity and the right upper eyelid in the case described in this communication seems reasonable enough under the circumstances, but obstruction of an innominate vein could not cause the edema of the left leg as described in the query in THE JOURNAL, January 18. Mechanically, edema of the left leg can be caused only by obstruction to the venous return from the leg.

FREQUENT FRACTURES AND FRAGILITAS OSSIUM

To the Editor—I have under my care an otherwise healthy man aged 55 who has sustained several fractures from rather trivial causes. These have all been during the past four years. Healing has been quite satisfactory in each case. Complete studies have been impossible but roentgen examination of the humerus (the site of the last fracture) shows a definitely thin shadow with a thin cortex and rather open trabeculation of the medulla. There are no cystic areas. There is no anemia. General nutrition is excellent and the dietary history average except for rather constant use of alcohol. Serum phosphorus is 3.29 and calcium 9.5 mg per hundred cubic centimeters. The provisional diagnosis is osteomalacia. The patient has been advised to take viosterol 60 drops a day and calcium gluconate 5 Gm a day and foods high in calcium have been recommended. Please advise as to probable diagnosis and comment on the treatment. Does fragilitas ossium ever make its appearance so late in life? Please omit name and locality.

M D, Canada

ANSWER—True fragilitas ossium of the type seen in children does not occur later in life. Decalcification of the skeleton to a sufficient extent to lead to frequent fractures in adults of the age period of the patient are usually due to metastatic lesions, hyperparathyroidism or osteomalacia. Since these fractures have been occurring over a period of four years during which time the patient's health has not been seriously impaired and the fractures themselves have united, malignant conditions would appear to have been ruled out. The relatively normal phosphorus and calcium figures cast a definite doubt on any tentative diagnosis of hyperparathyroidism. There have been several proved cases of adenomas of the parathyroid glands with decalcification of the skeleton and fractures in patients who had a relatively normal content of calcium and phosphorus in the blood. These patients, however, were excreting abnormal amounts of calcium in the urine. It would seem more likely that the patient in question is suffering from the senile type of malacia, which is not necessarily due to excessive excretion of calcium or inadequacy of the diet but to faulty absorption from the intestinal tract. If the patient is suffering from beginning cirrhosis of the liver as a result of the constant use of alcohol, inadequate absorption of calcium might be explained, in part at least, by dysfunction of the biliary system.

The suggestions for treatment that have been outlined are satisfactory. It would be quite safe to double the amount of viosterol and of calcium gluconate by gradually increasing these doses. Although it would be purely empirical, the possibility that the patient is suffering from some degree of liver injury would justify giving some bile salts in addition to the program outlined. Sun baths or ultraviolet treatments may be of value in disturbances of calcium metabolism.

ACIDITY AND ALKALINITY OF STOOLS

To the Editor—Will you kindly inform me in detail how to perform a test for total acidity and total alkalinity of stools. What are the normal figures of total acidity and total alkalinity of stools?

BORIS KAPLAN M D New Bedford Mass

ANSWER—Stools are ordinarily neutral in reaction to litmus paper, although acid and slightly alkaline stools are seen under normal conditions. An acid reaction is less frequent and commonly follows a vegetable diet. The acid reaction is due to the presence of lactic or butyric acid and is indicative of fermentation in the intestinal canal.

In testing the reaction of the stools, litmus is usually employed. Moisten red and blue litmus paper with distilled water and place on a clean glass slide, then rub on a fragment of feces, observing the change of color. Or a small amount of feces is placed in a test tube and a suspension is made in water. A watery solution of tincture of litmus is prepared and a few drops of the fecal suspension added. If the turbidity of the suspension interferes with the reading the suspension may be centrifuged or filtered. Another good test is the use of a 1 per cent alizarin solution. To a drop of this solution on white porcelain add a drop of the feces suspension or filtrate. An alkaline reaction is indicated by a reddish violet to violet neutral no change, and acid a light yellow. The density of the color depends on the amount of acid or alkali present.

A meat diet has a tendency to produce an alkaline reaction. As putrefaction increases alkalinity and fermentation increases acidity the test must be done soon after passage of the stool. Excess of fat increases acidity from the formation of fatty acids. Rapid peristalsis may increase the acidity. Chronic processes as tuberculosis or amebiasis, tend to produce an alkaline reaction. Pancreatic obstruction leads to fatty stools with increased acidity, a block in bile outflow gives an acid stool if there is associated pancreatic disease. If there is no pancreatic disease the stools are usually alkaline.

Thus, the reaction of the stools varies with the diet, motility of the intestinal contents, predominance of putrefaction or fermentation, intestinal disease, biliary or pancreatic obstruction, and other factors. There is no standard method for determining the total acidity or alkalinity of the feces. Extraction of a weighed amount of feces with distilled water, filtration, and titration with tenth normal sodium hydroxide, or acid, will determine the total acidity or alkalinity per hundred grams. Such a method would be similar to that now employed in determining the total acidity of urine.

DISTURBED METABOLISM AND POSSIBLE NARCOLEPSY

To the Editor—A girl aged 17 years well nourished with family and personal history negative except that she has had measles and chicken pox when a child was normal and peppy before she began to menstruate. Since then she has been drowsy rather listless and wants to sleep most of the time. The menstrual functions are normal in every way and physical examination gives negative results. Her progress at school is poor and she does not take a great deal of interest in things about her. I have given her thyroid extract because her eyelids are a little puffy and her facial expression rather suggests that of an acromegaly but the symptoms did not improve. It would seem that the case is one of disturbed metabolism.

E D AUGSPURGER M D Menno S D

ANSWER—The information given in the inquiry is not adequate for a diagnosis. Detailed examination may be necessary. It is probable that the general metabolism is not greatly disturbed, as the patient menstruates normally. The basal metabolism should be determined after administration of thyroid has been discontinued for some time. If the metabolism is low, it should be elevated to normal with thyroid extract, if it is normal, medication with thyroid is inadvisable. If improvement is associated with elevation of the metabolic rate, treatment should be continued under careful control with determinations of the metabolic rate until the maintenance amount of thyroid is determined. If elevation of the metabolism does not cause improvement in symptoms, it is doubtful that this type of treatment need be continued.

The symptoms mentioned may be those occasionally experienced by normal adolescents, may be manifestations of organic intracranial lesions such as tumor or encephalitis, or may be early representations of a psychosis or of numerous organic diseases. If no definite diagnosis, requiring appropriate treatment, can be established, it might be well to try ephedrine sulfate in amounts of 25 to 50 mg three or four times daily (Daniels, L E. Narcolepsy, *Medicine* 13 1 [Feb] 1934) or benzedrine in amounts of from 10 to 40 mg three times daily (Prinzmetal, Myron, and Bloomberg, Wilfred. The Use of Benzedrine for the Treatment of Narcolepsy, *THE JOURNAL* Dec 21, 1935, p 2051). It is supposed that the patient has adequate sleep and outdoor recreation.

EPILEPSY

To the Editor—I have under my care a white girl aged 13 years who a day or two prior to the onset of her menses has a seizure consisting of unconsciousness, defenseless falling, pallor and muscular rigidity. The attack lasts two or three minutes with no after-effects. The menses began at 11 and occur regularly every twenty six to thirty four days. Physical examination is negative. Laboratory tests are negative except for a slight secondary anemia. Her past history is negative and there is no familial history of epilepsy. Several times in the past she has had nocturnal enuresis the night before her menstrual onset. I attribute this to nocturnal attacks of epilepsy. She is an active girl, I attribute this to nocturnal attacks of epilepsy. She is an active girl, I attribute this to nocturnal attacks of epilepsy. My present treatment consists of general hygienic care, iron and ammonium citrate, a high fat diet and 15 grain (1 Gm.) doses of bromides three times daily. This has lessened the severity of the attacks but has not reduced the number. I would appreciate any suggestions as to treatment. Do you feel that bromide or phenobarbital medication the week prior to the onset of the menses would be more desirable? Please omit name.

M D Ohio

ANSWER—The attacks described suggest short grand mal seizures of essential epilepsy. It is assumed that the first seizures began with the menses at 11. In the treatment it would be advisable to use the high fat diet according to the directions of the introducer, that is, be sure that the carbohydrate allowance does not exceed 15 Gm daily, the protein 1 Gm per kilogram of body weight and the fat in increasing amounts as much as necessary or as can be tolerated, to produce ketosis. The fluids should be restricted to 1,000 cc daily. If medication becomes necessary after the ketogenic diet has been given a trial, phenobarbital is much more desirable than the bromides. It should be given for one week preceding the menses in doses of 0.03 Gm three times a day, increased to 0.05 Gm if necessary.

DEMINERALIZATION AFTER FRACTURE

To the Editor—On Jan 29, 1936, a woman aged 50 sustained a fracture of the right wrist. Roentgen examination the same day revealed a Colles' fracture with only a slight displacement of the fragments. Next day under an anesthetic the fracture was reduced and put in a sugar tong splint. Later roentgen examination revealed good reduction and fragments in good position. The patient was advised to use her fingers and to abduct the arm a number of times a day. She got along nicely for two and one-half weeks without pain or difficulty. I was called one day for pain in the elbow. Thinking that the splint had slipped I removed it, cut it down at the elbow and replaced it. The patient thought it was too loose but I told her to let me know the next day and I would tighten it. Next day she called me her hand had swollen considerably and so I removed the cast again and adjusted it. I advised massage and bathing in hot salt solution. I took a third roentgenogram a few days later and found nothing wrong with the fracture. The position was good. Since that time I have removed the cast entirely and advised massage, heat treatment and soaking in hot salt solutions. To date the swelling has persisted in the hand, the fingers are markedly swollen and she cannot use the hand in either adduction or abduction without considerable pain. She cannot bend the little and ring fingers at all. Can you advise me what has happened in this case and what is to be done? There seems to be pain in the shoulder also which she did not have for about three weeks. I have no galvanic or faradic current. Please let me know at once. Kindly omit name and address. M D New York.

ANSWER.—The inquirer should have noted the mineral content of the bone of the hand, wrist and shoulder. This may be a case of demineralization following trauma (a very common lesion). There may be a neurocirculatory aspect producing an osteoporotic lesion. There may be an element of causalgia in this case.

A splint and active movements should be tried. Heat often exaggerates this type of pain. Electricity may do likewise. Massage by the patient using her other hand may do more good than physical therapy by a trained person.

With regard to calcium balance there may be a glandular element, owing to the age of the patient, who is in the climacteric phase. Calcium gluconate plus a high calcium diet may be of value.

Concerning the shoulder, it is well known that as a result of concussion followed by hemorrhage and adhesions which occur in the shoulder, following a fracture of the wrist, a traumatic arthritis may supervene.

LOW BACK PAIN AND POSTURE

To the Editor—I am treating a married woman aged 22 who has been complaining of low back pain and frequency of urination for the past four months. Physical examination shows only an exaggerated lumbar curvature (anteroposterior) of the spine. There is also a slight degree of round shoulders. Pelvic examination is negative as are repeated urinary examinations. Would the lordosis be sufficient reason for the symptoms? If so what treatment can be suggested. Please omit name. M D New York.

ANSWER.—Low back pain, in the absence of any organic disease, is not infrequently due to chronic faulty posture. In the case described it would be significant to determine by x-rays whether or not the primary anteroposterior curve is that of the dorsal spine as suggested by the round shoulders or of the lumbar spine. Anterior wedging of the dorsal vertebral bodies and a rigid rounding of the back are commonly caused by changes described as vertebral epiphysitis. The forces of gravity require a compensatory lordosis of the lumbar spine to keep the body weight in balance. This causes a more acute angle between the fifth lumbar vertebra and the sacrum. The weight that should be borne squarely on the fifth lumbar vertebral body and transmitted through this body to the sacrum is therefore shifted backward to the small lateral articulations. These articulations are not adequate to carry this weight load and hence pain may be expected.

Treatment for backache of the type that has been described consists of an attempt to correct the mechanics of the spine. This calls for a program of physical therapy. Exercises are given that will tend to correct both the dorsum rotundum and the pelvic tilt and thus relieve the strain at the lumbosacral angle. Such exercises can be safely taken only in the recumbent position and include head and shoulder raising while lying both face downward and on the back. Exercises of this type will tend to straighten the dorsal spine and to strengthen the abdominal muscles. Assuming the knee chest position tends to flatten the lumbar spine and further correct the pelvic tilt and the lumbosacral angle. Exercises are indicated also for stretching the iliobial band and the flexors of the thighs, both of which become shortened secondary to the chronic downward tilt of the front of the pelvis.

A well reinforced corset or brace should be worn that will help to support the abdominal muscles and correct the pelvic tilt. Shoulder straps attached to the brace remind the patient

to stand straight with shoulders back. If this type of program is followed, relief from pain and functional recovery for the average patient can be expected.

INTRACTABLE INSOMNIA

To the Editor—Intractable insomnia in a patient of mine a section foreman aged 51 puzzles me greatly as to its cause and management. Physical examination shows all systems of the body apparently normal. His weight is 166 pounds (75 kg), height 5 feet 5 inches (165 cm) and blood pressure 120 systolic 80 diastolic. His father died of cancer and his mother died of apoplexy and there is no history of insanity anywhere in his ancestry. One brother and three sisters are all in good health. He had typhoid at the age of 15 and appendicitis fourteen years later but no other illnesses or complaints until eleven years ago when he was unable to sleep for ten days. Now he has not had three nights sleep with or without sedatives for three weeks. 0.3 Gm. of amylal one night gave him no sleep and 0.5 Gm. the following night resulted in one hour of sleep and he was taking regular doses of bromides besides. Please state whether you think he might be helped by properly directed psychotherapy or if he may improve under medical management, and outline course. Please omit name. M D Washington.

ANSWER.—In a man of 51, intractable insomnia may occur from many organic conditions, particularly of the central nervous system. Cerebral arteriosclerosis without hypertension, is one of the more common causes, examination of the peripheral, and more especially the retinal, arteries may help in the diagnosis. The family history of apoplexy should also be considered in this light. Brain tumor and neurosyphilis call for special investigation of the retinal fundi, blood and cerebrospinal fluid.

The majority of cases of insomnia, especially of the intractable, periodic type, have a psychogenic origin. In many instances, however, the physician is taxed to his utmost to find the cause. Simple anxieties and worries usually have their basis in fear—fear of poverty, of ill health, of unworthiness or of domestic insecurity. In men of 50, cancer of the prostate, angina or 'shock' are the principal causes of anxiety regarding health.

It must not be forgotten, moreover, that insomnia is a frequent symptom of mental disease, particularly in the manic-depressive states. Mild manic phases, periodic in character and often not associated with depressions, are most often evidenced by insomnia. This perhaps the most frequent cause of all, is also least often thought of by physicians. In such instances the normal sleep rhythm may be resumed in a few weeks. A patient passing through a period of insomnia, unless it is of very brief duration, needs and should receive the appropriate sedatives. Sleep thus brought about may cut short a more severe mental illness.

BLOOD CHOLESTEROL DETERMINATIONS AND BASAL METABOLIC RATES

To the Editor—What reaction does the blood cholesterol level have to the basal metabolic rate in children? Can this determination be used in ascertaining hypothyroid and hyperthyroid states without requiring the use of a metabolism machine? The reports in the literature to date discredit the use of this blood test in determining altered thyroid states in adults.

EDWARD SUCKLE, M D Coatesville Pa.

ANSWER.—Determination of the total blood cholesterol is of definite value in corroborating the diagnosis of hypothyroidism in children just as it is in adults. It is of no special value in the diagnosis of hyperthyroidism in children or adults except that hyperthyroidism is not likely to be present if the total blood cholesterol is over 200 mg per hundred cubic centimeters. Reports that tend to discredit the value of the blood cholesterol in the diagnosis of myxedema refer to hypothyroidism, a term confused with hypometabolism. Primary thyroid deficiency gives rise to myxedema even though the individual may not present all the clinical features of the disease. Total thyroidectomy is followed by myxedema and hypercholesterolemia even in a few cases in which the basal metabolic rate does not drop significantly. Hypercholesterolemia may be due to other causes, some of which may not always be ascertained. If there is a suspicion of myxedema in these cases, a therapeutic trial of desiccated thyroid is as justified as when a low metabolic rate is found. There are more low metabolisms found which are unassociated with thyroid deficiency than there are with thyroid deficiency. Myxedema is still a comparatively rare disease.

Since basal metabolic rates are difficult to obtain in children, and since the standards for calculating the basal metabolic rate in children are far from satisfactory, a high blood cholesterol in a child, along with some clinical evidence of thyroid deficiency (bone, age, skin, mental reaction) is as reliable as any laboratory procedure.

Various methods of determining blood cholesterol do not give consistent results, so that it is important to know the normal range by any given method.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA Montgomery June 29 July 1 Sec Dr J N Baker 519 Dexter Ave Montgomery

ARIZONA Phoenix, Oct 67 Sec Dr J H Patterson 826 Security Bldg Phoenix

ARKANSAS *Basic Science* Little Rock Nov 2 Sec, Mr Louis E Gebauer 701 Main St Little Rock *Medical (Regular)* Little Rock Nov 10 Sec Dr A S Buchanan Prescott *Medical (Eclectic)* Little Rock, Nov 10 Sec Dr Clarence H Young 207½ Main St Little Rock

CALIFORNIA Sacramento Oct. 19 22 Sec, Dr Charles B Pinkham 420 State Office Bldg Sacramento

COLORADO Denver Oct 6 Sec Dr Harvey W Snyder 422 State Office Bldg Denver

CONNECTICUT *Basic Science* New Haven Oct 10 *Prerequisite to license examination* Address State Board of Healing Arts, 1895 Yale Station New Haven *Medical* Hartford Nov 10 11 *Endorsement* Hartford Nov 24 Sec Dr Thomas P Murdock 147 W Main St Meriden

DELAWARE Dover July 13 15 Sec. Medical Council of Delaware Dr Joseph S McDaniel Dover

DISTRICT OF COLUMBIA Washington Jan 11 12 Sec Commission on Licensure Dr George C Rubland, 203 District Bldg Washington

FLORIDA Jacksonville Nov 16-17 Sec Dr William M Rowlett P O Box 786 Tampa

GEORGIA Atlanta Oct 13 Joint Sec State Examining Boards Mr R C Coleman 111 State Capitol Atlanta

HAWAII Honolulu Oct 12 15 Sec Dr James A. Morgan 48 Alexander Young Bldg Honolulu

IDaho Boise, Oct. 6 Commissioner of Law Enforcement Hon Emmitt Pfozt 205 State House Boise

ILLINOIS Chicago Oct 20 22 Superintendent of Registration Department of Registration and Education Mr Homer J Byrd Spring field

IOWA *Basic Science* Des Moines Oct. 13 Sec Prof Edward A Benbrook Iowa State College Ames

KANSAS Topeka Dec. 8 9 Sec. Board of Medical Registration and Examination Dr C H Ewing 609 Broadway Larned

KENTUCKY Louisville, Dec 24 Sec State Board of Health Dr A T McCormack 532 W Main St Louisville

LOUISIANA New Orleans December Sec, Dr Roy B Harrison 1507 Hibernia Bank Bldg New Orleans

MAINE Portland Nov 3-4 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St Portland

MARYLAND *Regular* Baltimore, Dec. 8 Sec Dr John T O Mara 1215 Cathedral St Baltimore. *Homeopathic* Baltimore, Dec 8 9 Sec Dr John A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston Nov 17 19 Sec. Board of Registration in Medicine Dr Stephen Rushmore 413 F State House Boston

MICHIGAN Lansing Oct 14 16 Sec Board of Registration in Medicine, Dr J Earl McIntyre 202 3-4 Hollister Bldg Lansing

MINNESOTA *Basic Science* Minneapolis Oct 6-7 Sec Dr J Charnley McKinley 126 Millard Hall University of Minnesota Minneapolis *Medical* Minneapolis Oct 20 22 Sec Dr Julian F DuBois 350 St Peter St St Paul

MISSOURI Kansas City Oct. 21 23 State Health Commissioner Dr E T McGaugh State Capitol Bldg Jefferson City

MONTANA Helena Oct 6 Sec Dr S A Cooney 7 W 6th Ave. Helena.

NEBRASKA *Basic Science* Lincoln Oct 6-7 Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEW JERSEY Trenton Oct. 20 21 Sec Dr James J McGuire 28 W State St Trenton

NEW MEXICO Santa Fe Oct 12 13 Sec. Dr Le Grand Ward Santa Fe.

NORTH CAROLINA *Endorsement* Raleigh Nov 30 Sec Dr Ben J Lawrence 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks Jan 5 8 Sec Dr G M Williamson 4¼ S 3rd St Grand Forks

OKLAHOMA Oklahoma City, Dec. 9 Sec Dr James D Osborn Jr Frederick

OREGON *Basic Science* Portland Nov 31 Sec Mr Charles D Byrne University of Oregon Eugene. *Medical* Portland Jan. 5 7 Sec Dr Joseph F Wood, 509 Selling Bldg Portland

RHODE ISLAND Providence, Oct 12 Chief Division of Examiners Mr Robert D Wholey, 366 State Office Bldg Providence

SOUTH CAROLINA Columbia Nov 10 Sec Dr A Earle Boozar 505 Saluda Ave. Columbia

SOUTH DAKOTA Pierre Jan 19 20 Dir Division of Medical Licensure Dr Park B Jenkins Pierre

TENNESSEE Memphis Sept 29 30 Sec Dr H W Qualls 130 Madison Ave. Memphis

TEXAS Waco Nov 10 12 Sec Dr T J Crowe 918 19 20 Mercantile Bldg Dallas

VERMONT Burlington Feb 10 12 Sec. Board of Medical Registration Dr W Scott Nay Underhill

VIRGINIA Richmond, Dec 9 13 Sec. Dr J W Preston 28½ Franklin Road Roanoke

WEST VIRGINIA Wheeling Oct 12 14 State Health Commissioner Dr Arthur E. McClue Charleston

WISCONSIN Madison Jan 12 14 Sec Dr Henry J Gramling 2203 South Layton Blvd Milwaukee

WYOMING Cheyenne Oct. 5 Sec Dr G M Anderson Capitol Bldg Cheyenne

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Philadelphia, June. Sec. Dr C Guy Lane 416 Marlboro St. Boston

AMERICAN BOARD OF INTERNAL MEDICINE *Written examination* will be held simultaneously in different centers of the United States and Canada in December. *Practical or clinical examination* will be given in St Louis in April. Chairman Dr Walter L Biering 406 Sixth Ave Des Moines

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov 7* Sec. Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan. 9 Sec Dr Fremont A Chandler 180 N Michigan Ave. Chicago

AMERICAN BOARD OF PEDIATRICS San Francisco Oct. 22 24 Baltimore and Cincinnati in November Sec. Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec 29 30 Application must be sent to the Secretary before Oct 30 Sec. Dr Walter Freeman 1028 Connecticut Ave. Washington D C

AMERICAN BOARD OF UROLOGY Chicago Dec. 4 6 Sec. Dr Gilbert J Thomas 1009 Nicollet Ave Minneapolis

Iowa Reciprocity and Endorsement Report

Mr H W Greife, director, Division of Licensure and Registration, reports 9 physicians licensed by reciprocity and 5 physicians licensed by endorsement from Jan. 15 through June 30, 1936 The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|-------------------------|------------|------------------|
| College of Medical Evangelists | | (1925) | California |
| University of Georgia School of Medicine | | (1933) | Georgia |
| Indiana University School of Medicine | | (1934) | Indiana |
| University of Minnesota Medical School | | (1935) | Minnesota |
| Washington University School of Medicine | | | Missouri |
| Ohio State University College of Medicine | | | Ohio |
| University of Vermont College of Medicine | | | Minnesota |
| University of Wisconsin Medical School | | (1933) | Maine |
| University of Toronto Faculty of Medicine | | (1928) | New York |

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|--|-------------------------|-----------------|----------------|
| Northwestern University Medical School | | (1933) N B M Ex | |
| Rush Medical College | | (1925) N B M Ex | |
| Harvard University Medical School | | (1932) N B M Ex | |
| University of Minnesota Medical School | (1934) | (1935) N B M Ex | |

Nebraska June Examination

Mrs Clark Perkins, director, Bureau of Examining Board, reports the written examination held in Omaha, June 9 10, 1936 The examination covered 10 subjects and included 88 questions. An average of 75 per cent was required to pass. Seventy-three candidates were examined, all of whom passed. The following schools were represented

| School | PASSED | Year Grad. | Number Passed |
|--|----------------------------|------------|---------------|
| Creighton University School of Medicine | (1935 4) | (1936 8) | 12 |
| University of Nebraska College of Medicine | (1934) (1935 7), (1936 32) | (1933) | 61 |

Nine physicians were licensed by reciprocity and 1 physician was licensed by endorsement from January 8 through July 16. The following schools were represented

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|-------------------------|------------|------------------|
| University of Colorado School of Medicine | | (1934) | Colorado |
| State Univ of Iowa College of Medicine | (1929) | (1933) | Iowa |
| St Louis University School of Medicine | | (1931) | Missouri |
| Washington University School of Medicine | | (1934) | Missouri |
| University of Nebraska College of Medicine | (1929) | (1932) | Kansas |
| University of Tennessee College of Medicine | | (1930) | Missouri |
| Baylor University College of Medicine | | (1924) | Texas |

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---------------------------------------|-------------------------|-----------------|----------------|
| McGill University Faculty of Medicine | | (1934) N B M Ex | |

North Dakota July Report

Dr G M Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral and written examination held in Grand Forks, July 7-10, 1936. The examination covered 13 subjects and included 100 questions. Eight candidates were examined, all of whom passed. One physician was licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented

| School | PASSED | Year Grad. | Per Cent |
|---|--------|------------|----------|
| Indiana University School of Medicine | | (1934) | 80.4 |
| University of Louisville School of Medicine | | (1935) | 80.3 |
| Tufts College Medical School | | (1935) | 84.9 |
| University of Minnesota Medical School | | (1932) | 85.8 |
| (1935) 84.5 86.1 | | | |
| University of Nebraska College of Medicine | | (1934) | 80.5 |
| Marquette University School of Medicine | | (1936) | 81.4 |

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|--|-------------------------|------------|------------------|
| St Louis University School of Medicine | | (1933) | Missouri |

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|--|-------------------------|------------|----------------|
| Northwestern University Medical School | | (1930) | N B M F |
| University of Minnesota Medical School | | (1931) | N B M F |

Book Notices

Diagnostic Roentgenology Edited by Ross Golden, M.D., Professor of Radiology, the College of Physicians and Surgeons, Columbia University. Fabrikoid. Price \$20. Pp. 864 with 964 illustrations. New York & Edinburgh: Thomas Nelson & Sons, 1936.

This volume is a noteworthy American contribution. The authors of the various chapters have been carefully selected, so that the book represents a consensus on diagnostic roentgenology. In his introduction, Dr. Golden states that the information obtained from a roentgen examination, even when it points clearly to a definite pathologic diagnosis, must be correlated with the history, the physical examination and the laboratory observations. This can best be accomplished by the cooperation of the clinician and the radiologist. The former must not expect his clinical impression always to be confirmed and must be prepared at times to discard certain preconceived ideas with regard to a case, the latter, while considering the clinical evidence and "what ought to be there," must at the same time keep an objective and unbiased point of view to avoid overlooking something unsuspected by the clinician. Even when a positive diagnosis cannot be made, information of great aid may be obtained. The importance of cordial sympathetic cooperation of clinician and roentgenologist and frank discussion of specific clinical problems cannot be overemphasized.

Allen O. Whipple, in the foreword, points out that no single diagnostic measure has so profoundly altered the diagnosis and rationale of the therapy of diseases requiring surgery as has the discovery of Roentgen with its subsequent developments. The roentgenologist should be as well trained in the fundamentals of medical science as the physician or surgeon and should have a real experience in clinical medicine as intern and resident. Without this training he cannot discuss the patient intelligently with his associate clinicians.

In the foreword also W. W. Herrick states that, while it may be debated whether the best results for the patient and for the science of roentgenology may not follow limiting its practice to the specialist, the advantages of having all factors in diagnosis, including the roentgenologic, under the immediate control of the clinician, with the continuity of observation and the saving of time thus brought about, cannot be denied. The increasing tendency for the clinician to make and interpret his own roentgenograms may lead to an exaggeration of the importance of the method and to direct error.

Chapter I, by Cornelius G. Dyke, concerns the roentgen diagnosis of diseases of the skull and intracranial contents. The roentgenologic criteria for the diagnosis and treatment of cranial and intracranial lesions have been set forth as briefly as is commensurate with accuracy. Chapter II, on the roentgen examination of the paranasal sinuses and the mastoids, is by G. W. Grier. The description of the positioning of the patient to be roentgenographed is good although it is felt that sketches illustrating graphically the relation of the central ray, the angle of the skull and the position of the film would be clearer. The author fails to mention the Rheser position, which frequently gives differential evidence in the anterior and posterior ethmoidal cells, and also the Stenvers position for demonstrating the petrous tip cells, which is the reverse of the Granger position, the petrous being projected through the temporal bone.

Chapter III, by Coleman B. Rabin, is on the radiology of the chest. A brief description of atelectasis and emphysema is followed by an excellent discussion of the pneumonias and the various forms of pulmonary tuberculosis. After short discussions of the unusual infections of the lungs (fungus diseases, psittacosis, echinococcosis) only one page is devoted to pneumococcosis. There are fifteen pages on primary and metastatic lung tumors, and thirty pages on diseases of the pleura, diaphragm and mediastinum.

Chapter IV, on the clinical roentgenology of the cardiovascular system is by Hugo Roesler. This sixty-seven page chapter contains an excellent discussion of the roentgen examination in the various diseases of the heart and aorta. The introduction includes a discussion of the technic of fluoroscopy and orthodiagraphy, cinematography and kymography. The

anatomy and measurements of the cardiovascular system cover seventeen pages. The clinical considerations are divided into (1) dilatation, (2) appearances from the standpoint of etiology, (3) structural changes, (4) widening, elongation and increased density of the aortic shadow, (5) diseases of the pulmonary artery, (6) pericardial disease and (7) congenital cardiovascular malformations. This chapter, for its size, is one of the best discussions of the value of roentgenology in cardiovascular disease that has appeared in English.

Chapter V, on the roentgen examination of the digestive tract, by Ross Golden, covers eighty-six pages and includes discussions on the esophagus, stomach, duodenum, jejunum and ileum, large intestine and gallbladder. The correlation of the roentgen and pathologic examinations is commendable.

Chapter VI, on the roentgen diagnosis of diseases of bones, is by Paul C. Hodges, D. B. Phemister and Alexander Brunschwig, and the editor could have chosen no better qualified group. The discussion deals with diseases of bones and joints but does not include consideration of fractures, dislocations or postparalytic deformities and the operative procedures calculated to correct them. In this chapter discussion of the normal has been made brief, partly because of space limitation, partly because excellent atlases of the normal are available in the English language. The chapter includes the roentgen appearance of the normal skeleton, the skeleton of the child, generalized alteration in bone density, congenital anomalies of skeletal development, infections and parasitic involvement of the bones, bone changes in endocrine disturbances, bone changes due to metabolic disturbances, aseptic necrosing lesions of bone, chronic arthritis, abnormal deposition of bone calcium in soft tissue, bone changes produced by certain physical and chemical agents, neuropathic lesions of bones and joints, pulmonary osteoarthropathy, melorheostosis, bone and joint changes in hemophilia, xanthomatosis of bones, bone changes associated with congenital arteriovenous aneurysm, congenital varicosities in the extremities, bone changes in neurofibromatosis, Paget's disease of bone, osteitis fibrosa cystica, multiple fibrocystic disease, hyperparathyroidism and bone tumors. The excellent charts of Camp and Cilley on the normal development of roentgenologically important bones and epiphyses and by Paul Hodges on the development of the human skeleton are reproduced.

Chapter VII, on the roentgen diagnosis of spinal cord tumors by Cornelius G. Dyke, is a most valuable one because this is a new and important field. The chapter includes roentgen signs of intramedullary, extramedullary and extradural types of tumors. The section on the use of iodized oil includes technic and interpretation. The comparatively new work of the measurements between the pedicles, known as the interpediculate distance, by Elsberg and Dyke is commendable. A chart is included showing the extreme and usual interpediculate measurements of each vertebra in millimeters, from the second cervical to the fifth lumbar inclusive. The recognition of intraspinal neoplasms by means of roentgenograms is based, mostly, on a thorough knowledge of the size and shape of the spinal canal and the appearance of the individual parts of the vertebrae. Contrary to the accepted belief it is frequently possible to determine the character of the growth, and whether it is extramedullary or extradural, from the roentgenograms. Neoplasms of the spinal cord and its coverings and also of the nerve roots, unlike intracranial tumors, do not produce a generalized reaction on the vertebrae which can be seen in the roentgenograms. However, they often provoke changes in the contiguous vertebrae and may alter the surrounding soft tissues over a limited area corresponding to the site of the growth. The factors on which a diagnosis is based are (1) bone destruction, (2) appearance of and measurement between the pedicles, (3) distortion of the paraspinal tissues, (4) bone proliferation, (5) abnormalities of the intervertebral disks, (6) kyphosis and scoliosis, and (7) calcification. The first three are the most important.

Chapter VIII, on the roentgenologic diagnosis of diseases of the urinary tract, is by Leopold Jaches and Marcy L. Sussman. The subject of urography has been covered thoroughly in spite of the relative compactness of the section. Especially to be commended is the chapter on intravenous urography, which presents an excellent analysis of the indications, contraindications

tions and technic of this invaluable diagnostic procedure. The illustrations include all the common and many of the unusual urologic conditions that may be demonstrated by roentgenography. No mention of the danger of embolism is made in the paragraph devoted to air cystography. It is not a procedure to be adopted as a routine without recognition of this possibility.

Chapter IX, on uterotubography, is by Samuel A. Robins and Albert A. Shapira. The authors' technic is described and their results are evaluated. A good description of the use of uterotubography in cases of sterility is included, which undoubtedly is its most practical application. The authors' conclusions with regard to the diagnosis of pelvic tumors may be questioned. Their final statement "that the combination of pneumoperitoneum with hysterosalpingography ought to give better results" implies lack of experience with their combination method. The appended bibliography, however, includes references on that subject.

Chapter X is on the use of the roentgen rays in obstetrics, by Howard C. Moloy and Paul C. Swenson. The portion dealing with pelvimetry and pelviradiography is well prepared, profusely illustrated and adequately described. The parts, however, dealing with the purely clinical considerations of obstetric radiography are less complete and the illustrations are poorly reproduced. Drawings or diagrams would be more useful in a book used for reference than prints which do not reproduce clearly what may be seen in films when viewed in a shadow box. It is to be regretted that the authors did not elaborate more fully on the roentgen diagnosis of monstrosities and multiple pregnancy, as it has been emphasized repeatedly in the literature that therein lies its chief value. Triplets and even quadruplets have been diagnosed by means of roentgenography, and many cases of hydrocephalus and anencephalus have been reported with satisfactory roentgenographic reproductions.

Chapter XI, on the radiology of fractures, by Edward H. Skinner, is valuable to the radiologist, orthopedic surgeon and industrial surgeon. From the medicolegal point of view every physician and surgeon should read this chapter. The author has fortunately reproduced diagrams illustrating his diagnostic lines, such as the Shenton-Skinner line at the hip, and Skinner's lines at the wrist, elbow and ankle.

Basic knowledge of osseous anatomy, ossification and congenital variations serve to promote correct roentgen interpretations. The textural detail of certain spongy bones demands excellent negatives to note compression of the trabeculations where there is minimal change in the external contours of the bone, for example, vertebral bodies, lower end of the radius, astragalus, os calcis, scaphoid and os magnum. The normal joint contours, the weight-bearing lines of such joints and the advantageous atypical exposure angles become necessary elements in the radiographic examination of joints that fail to present an obvious and undeniable fracture line. The wrist, ankle and elbow are the principal joints that demand such meticulous attention, likewise they are the ones most frequently fractured. Better technical films of bones through plaster casts are made with very low kilovoltage (from 45 to 55), with low milliamperage (from 5 to 10), with double screens and long exposures (from ten to thirty seconds) and at increased distances (36 inches). The use of a Lysholm grid becomes invaluable in roentgenography of bed patients.

Ninth Annual Report of the Giza Memorial Ophthalmic Laboratory, Cairo 1934. Ministry of the Interior Department of Public Health. Paper. Price 25 P. T. Pp 150 with illustrations. Cairo: Schindler's Press, 1935.

This is divided into an administrative and a professional report. The former is completely but concisely stated. The professional report is considered under four subsections: postgraduate education, pathologic, clinical and research sections. In the postgraduate school a high standard of proficiency is maintained in both clinical and surgical practice, as attested by the fact that only twenty of thirty-five candidates were successful in the examinations for appointment in the government ophthalmic service of Egypt. During the year 571 pathologic specimens were submitted to the laboratory for examination, among which were 158 excised globes. Fifteen of the most interesting pathologic specimens have a not too lengthy but adequate description. This section is well illustrated. The staff

was freely used in a consultative capacity. The cases studied were most interesting and instructive. Five of the cases are detailed, and three colored plates in this section afford a pleasant surprise. The research section is subdivided into pathologic and bacteriologic research and clinical and therapeutic research. It is only natural that the major part of this work is devoted to phases of trachoma and the ophthalmias. The work is of high order and the conclusions drawn are conservative and justified. This year, as in past years, the clinical material was made available to a nonresident staff member for experimental purposes. The invited guest was Dr. Gardilic of Zagreb. He spent four months employing his method of applying "Arolid" to trachomatous lids. In the opinion of the staff of the Memorial Ophthalmic Laboratory, the results secured were unsatisfactory. The report is well arranged, well illustrated, interesting and instructive. It is worthy of thorough study not only by those who have to deal with reports but, because of its clinical value, by all ophthalmologists.

The Art of Public Health Nursing. By Edith S. Bryan, M.A., Ph.D., R.N. Chairman, Northern Branch of California League of Nursing Education. With an introduction by Elnora E. Thomson, R.N., Professor of Nursing, University of Oregon Medical School. Cloth. Price \$2. Pp 296. Philadelphia & London: W. B. Saunders Company, 1935.

This is a good reference book for more mature nurses who have had considerable experience in hospital or public health nursing work but who lack the art of discussing or writing about their work. The author puts little, if any, stress on good nursing care of the sick in their own homes. This is fundamental if one is to teach the well successfully, and undoubtedly Dr. Bryan believes that all public health nurses appreciate this fact. Nurses are not teachers until by maturity, experience and study they have gained an ability to share their useful knowledge with others who lack it, and, in putting so much emphasis on teaching, the author may have forgotten that she was writing primarily for nurses. In its emphasis on the dignity of human personality latent in every patient, the book makes its most valuable contribution to literature for nurses and friends of nursing. On many pages are dogmatic statements that may be questioned. The book is simple and helpful reading for the initiated, it is difficult reading for beginners who are not able to challenge its "musts" and many other positive statements. It is well worth its modest price and deserves a place in every book collection that aims to better public health nursing or to explain the work to people who may be responsible for the preparation of nurses who will enter homes as public health nurses, whether they give care to the sick or endeavor to teach personal and community hygiene and good health.

The Comparison Between the Visual Results Obtained by Various Methods Employed for the Treatment of Concomitant Strabismus. By T. Ab Travers. An essay for the Gifford Endowment Prize in Ophthalmology. Printed and published for The British Journal of Ophthalmology. Paper. Pp 127 with 21 illustrations. London: George Paulman & Sons, Ltd., 1936.

This booklet is a frank discussion of the modern methods of handling concomitant strabismus, based on an extensive experience by the author and a careful digest of the literature. In turn are dissected each of the four elements involved in such treatment, namely, the optical treatment, that of amblyopia, orthoptic training, and finally surgical intervention. Great emphasis is laid on retinal correspondence and the simpler methods of measuring that function. However, it is certain that there is no universal agreement with his statement that "abnormal retinal correspondence is a very common condition, occurring in 50-60 per cent of all cases of squint." Unfortunately some of his conclusions seem to be based on the blind acceptance of that statement. There is a full discussion of amblyopia together with suppression fields for which the author has developed an ingenious new technic. But the question as to whether the amblyopia is of central or peripheral origin is left open. In the matter of fusion, the author seems to adhere to the modified Worth dictates and concludes that "fusion training can improve a function already present but cannot usually develop the function." He also adds most properly that fusion training alone is likely to prove insufficient in squints of more than 20 degrees. Unfortunately, his results must be discounted because training was not attempted when the vision in the worse eye was less than 6/12 with correction. His surgical indica-

tions are sound and it is most gratifying to note the statement that "in all probability there is not a great deal to choose between the various methods [of operation]. The surgeon's skill and judgment are the most important factors in the result—not the method." The last thirty pages are devoted to tables, which goes to show that anything one wishes can be proved by statistics. But it is a good piece of work, well conceived and honestly done. The problem of concomitant strabismus is set forth clearly and simply without confusing cross arguments and the author shows the results he obtained in certain classes of cases with certain methods. It can be read profitably by all ophthalmologists and pediatricians.

The Doctor By Mary Roberta Rinehart Cloth Price \$2 Pp 500
New York & Toronto Farrar & Rinehart Inc 1936

Mrs Rinehart's ability to tell a story needs no encomium in these columns. She is a past master in the art of novel writing, and a long shelf of successful volumes attests her ability. Many of her stories deal with the atmosphere of the hospital and the medical profession, a reflection of her training as a nurse. The story of "K" is widely known as one of her most successful contributions. The present novel deals with a physician, with his devotion to his profession, with his admiration for the daughter of a rich manufacturer and political boss who lives on the hill, with his marriage to the daughter of his housekeeper, a response to his innate acceptance of responsibility for the sick and the needy. It describes his reaction to the usual epidemic of typhoid. As may have been expected, the wife of his first marriage fails completely in meeting her responsibilities, either to him or to his profession. Eventually an unnecessary motor accident deprives him of the use of one of his hands, and the latter portion of the novel is concerned with his gradual recovery and his final romance. Mrs Rinehart, it becomes clear, recognizes the individual character of the physician's work, the nature of the practice of the family doctor, and the hopelessness of the mechanized method as a solution for the medical problem. Her novel will take its place as one of the best fictional contributions in the field of medicine.

Les avortements mortels Par H Mondor professeur agrégé à la Faculté de médecine de Paris Paper Price 65 francs Pp 445 with 43 Illustrations. Paris Masson & Cie 1936

This book is in reality an encyclopedia of all the possible harmful effects that may result from abortions. It is based on a study of the world literature and the author's extensive experience with cases of abortion. The book is divided into twenty-seven chapters. Some of the important ones deal with the following aspects of fatal abortion: sudden death, especially that due to embolus, traumatic perforation of the uterus, intra-uterine instillations, infarction and necrosis of the uterus, gangrene of the uterus, abscess of the uterus, postabortal peritonitis, internal hemorrhage, septicemia postabortal tetanus attempts to produce abortion in the presence of an ectopic gestation and attempts to empty the uterus in women who are not pregnant. The book is well illustrated with material chiefly from the author's own cases. Numerous case histories are cited and most of these likewise are from Mondor's own experience. The book does not lend itself to a critical review because it is a volume of facts. However, special mention must be made of the considerable amount of space devoted to the treatment of each complication discussed. The author is to be commended most highly for this monumental work which is an invaluable reference book on the subject of fatal abortion.

Proposed The University of the United States By Edgar Bruce Wesley Associate Professor of Education University of Minnesota With an Introduction by Lotus D Coffman President of the University of Minnesota Paper Price 75 cents Pp 83 Minneapolis University of Minnesota Press 1936

The idea of a national university seems to have been current at the time of the Revolutionary War. Samuel Blodgett claims to have suggested it to Washington in 1775. The earliest detailed proposal on record however is that of Dr Benjamin Rush who in January 1787 on the eve of the constitutional convention, issued an "Address to the People of the United States" in which he urged the establishment of a federal university designed to prepare the citizens for the responsibilities of government. From that day to this, at intervals long or short, the conception has been revived, but, in the words of

the author, "nothing has ever been done about it," from which it may be inferred that the people either disapprove or are indifferent to the project. The second part of the book presents tentatively a plan of organization and administration for the proposed university if and when it is to be established.

High Wall By Alan R Clark Cloth Price \$2 Pp 280 New York Harrison Smith & Robert Haas 1936

This is a typical mystery story concerning the inmates of a sanatorium for psychiatric patients. The author has been able to maintain the atmosphere of the institution, to indicate the nature of the mental disturbances and to maintain at the same time the kind of intense interest that should be associated with a successful mystery story. The book is blunt and direct and much more real than esoteric. As a mystery story with a medical interest, it is more than worthy of medical attention.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Twin Pregnancy, Rupture of Uterus, Failure of Diagnosis—One of the defendants, Dr Anne West, was employed to care for Mrs Vergie Edwards during pregnancy and childbirth. In the course of her attendance she said several times that she thought that Mrs Edwards would have twins, and while labor was in progress the same possibility was talked of by some of Mrs Edwards' neighbors, apparently in Dr West's presence, if not with her participation. Labor came on about 6 p. m., February 7, and lasted until 7 o'clock the next morning, when a baby was born, at term. The account of the labor, published in the opinion of the appellate court, is meager. The presentation of the child is not stated. There was testimony concerning symptoms of a ruptured uterus, excessive loss of blood and paleness, and it was made to appear that the afterbirth had more "blood and stuff" in it than the afterbirths that had followed the deliveries of Mrs Edwards previous children, but there was nothing to show that the possibility of a rupture of the uterus was considered or acted on during delivery. In denying a rehearing, the court commented on the fact that Dr West had "pressed on" her patient over the womb, possibly intending to imply that that had something to do with the rupture of the uterus that was discovered later, but the decision of the court says that there was no testimony tending to account in any way for the rupture.

Immediately after the baby was born a large mass or knot was seen in the upper part of the abdomen, which in the next few hours found its way to the lower left side of the abdominal cavity. Although Dr West knew that Mrs Edwards' left ovary had been removed several years before, she concluded that this mass was an ovarian tumor. During the night following the delivery, Dr West concluded that Mrs Edwards was suffering from "locked bowels" and ordered an enema. Two days later she took her patient for diagnosis and treatment to the West Texas Hospital, at Lubbock, twenty-two miles distant. There Mrs Edwards seems to have been under the joint care of Dr West and of Dr C. J. Wagner of the hospital staff. Neither Dr West nor Dr Wagner used the x-ray apparatus present in the hospital, but apparently they diagnosed Mrs Edwards' trouble as inflammation, tumor and locked bowels, and sedatives were administered, enemas given, and hot packs applied to the abdomen to reduce the swelling. Mrs Edwards' condition did not improve and after eleven days she was returned to her home in Dr West's care with instructions from Dr Wagner to continue the treatment that had been used in the hospital. About one week later, March 3, she was taken to the Lubbock Sanitarium. It was realized there that an immediate operation was desirable but because of the patient's condition action was postponed until the following day. At the operation more than a gallon of pus and other fluid was withdrawn from the abdominal cavity, and then

a badly decomposed fetus was found one that apparently had been fully developed and ready for delivery, February 6 when its twin sister was born. The uterus had ruptured. There was no evidence of an ectopic pregnancy. Mrs. Edwards died March 11, about one month after the delivery of the first twin.

Mrs. Edwards' husband, her minor children and her mother sued Dr. West, the West Texas Hospital and Dr. Wagner, alleging negligence on the part of each of them. The trial court directed a verdict in favor of the defendants, and the plaintiffs thereupon appealed to the court of civil appeals, Amarillo. They alleged that the directing of a verdict by the trial court was error, because the evidence raised the issue of the defendants' negligence in failing to make a proper diagnosis and prescribe proper treatment. The appellate court reversed the judgment of the trial court and remanded the case for a new trial.

The defendant West Texas Hospital contended that it had in no manner attempted to interfere with or participate in the diagnosis and treatment of the case and that it undertook only to render such facilities and services for patients as are customarily furnished by hospitals to physicians with respect to patients in the institution. It contended that the owner of a hospital—whether an individual, firm or corporation—is not liable for damages for injuries resulting from negligence in diagnosis or treatment in the institution by physicians employed by the patient or any one other than the hospital. But the appellate court pointed out that the stationery used by the defendant hospital contained a list of the names of the hospital staff and that the name of Dr. Wagner, who treated Mrs. Edwards, headed the list. The business manager of the hospital, too, had referred financial matters to Dr. Wagner and had demanded from Mrs. Edwards' husband a note to cover Dr. Wagner's fees before he would consent to her leaving the hospital. It is not clear, said the court, why the manager of the hospital should in effect assert that the hospital had a pledgee's lien on the person of Mrs. Edwards and would hold her in pawn until "our doctor's fees are paid," if Dr. Wagner and the hospital were acting independently. The common use by Dr. Wagner and the business manager of the hospital of the pronoun "we" in discussing what would and would not be done tended to show a business connection between Dr. Wagner and the hospital. Moreover, if a partnership relation existed between Dr. Wagner and the hospital, or if he was the hospital's agent the hospital might be liable for damages for such negligence, if any, as might be proved against him. Although there was a sworn denial of partnership, the court thought the evidence sufficient to require the trial court to submit the issue to the jury. Parties, said the appellate court, may be bound as partners as to third parties, even in the absence of a partnership agreement.

Dr. West admitted that Mrs. Edwards had informed her that she had been operated on for an ovarian tumor several years before coming under her care, and that she nevertheless diagnosed Mrs. Edwards' trouble as an ovarian tumor. She did not know that a fetus remained in the abdominal cavity. She claimed that she had used ordinary skill, care, prudence and diligence in ascertaining Mrs. Edwards' condition and in having her brought to the West Texas Hospital for diagnosis and treatment by its physicians and nurses and in particular by Dr. Wagner. Dr. Wagner contended that he made a physical examination of Mrs. Edwards using all means which in his opinion and best judgment as a physician and surgeon were necessary to ascertain her ailment. He claimed to have diagnosed her case but what his diagnosis was he did not state. He did not believe an immediate operation was necessary and did believe that an operation either would result in Mrs. Edwards' death or would endanger her life. Neither Dr. West nor Dr. Wagner offered any explanation of their failure to use the facilities for an x-ray examination that were available in the hospital.

The defendant physicians and hospital sought to justify the trial court in its directing a verdict by pointing out that there was no testimony from any physician or surgeon or other witness qualified to testify as an expert that any act was done, or that there was any failure to do any act, from which act or omission the jury might infer negligence on the part of the defendants. The appellate court, however, refused to sub-

scribe to the doctrine that the issue of negligence is one that only experts can determine and that proof of bad results is no proof of negligence in any case. Moreover, the court pointed out that two physicians testified that x-rays would have shown that the supposed tumor was a fetus. Whether the failure of the defendants to use x-rays was or was not negligence was a question for the jury to decide. When Mrs. Edwards was operated on at the Lubbock Sanitarium there was nothing to show that the fetus then removed was the product of an ectopic pregnancy, one that had occurred outside the uterus. On the other hand, there was a rent in the wall of the uterus through which the fetus had passed from the uterus into the abdomen. From these facts the jury might have concluded that the defendants had failed to sustain their contention of the existence of coincident intra-uterine and extra-uterine pregnancies. Moreover, in the opinion of the court, the facts that after the delivery of the first child there was a swelling in the upper part of the abdomen, which a few hours later was lower down in or near the pelvic cavity, was inconsistent with the defendants' diagnosis of ovarian tumor, and from those facts the jury might have inferred negligence. The determination as to whether the degree of care and skill used is or is not such as to constitute negligence said the court, is the prerogative of the jury. The court below erred, in the opinion of the appellate court, in directing a verdict for the defendants—*Edwards v West Texas Hospital (Texas) 89 S W (2d) 801*

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine Boston Oct 20-22 Dr Franklio P Lowry, 313 Washington St Newton Mass. Secretary
American Academy of Ophthalmology and Otolaryngology New York, Sept 26-Oct 3 Dr William P Wherry 107 South 17th St Omaha Executive Secretary
American Association of Industrial Physicians and Surgeons, Atlantic City, N J Oct 5-6 Dr Volney S Cheney Armour and Co Union Stock Yards Chicago Secretary
American Association of Railway Surgeons Chicago, Nov 5-7 Dr Daniel B Moss, 547 West Jackson Blvd Chicago Secretary
American Clinical and Climatological Association Richmond Va Oct 26-28 Dr Francis M Rackemann 263 Beacon St Boston Secretary
American College of Surgeons, Philadelphia Oct 19-23 Dr George W Crile, 40 East Erie St Chicago Chairman Board of Regents
American Hospital Association Cleveland Sept 28-Oct 2 Dr Bert W Caldwell 18 East Division St Chicago Executive Secretary
American Public Health Association New Orleans Oct 20-23 Dr Reginald M Alwater, 50 West 50th St New York Executive Secretary
American Roentgen Ray Society Cleveland Sept 29 Oct 2 Dr Eugene P Pendergrass 3400 Spruce St Philadelphia, Secretary
Associated Anesthetists of the United States and Canada Philadelphia Oct 19-23 Dr F H McMechan 318 Hotel Westlake Rocky River Ohio Secretary
American Society of Tropical Medicine Baltimore November 18-20 Dr N Paul Hudson Department of Bacteriology Ohio State University Columbus, Ohio Secretary
Association of American Medical Colleges Atlanta Ga Oct 26-28 Dr Fred C Zappfe 5 South Wabash Ave Chicago Secretary
Association of Military Surgeons of the United States Detroit Oct 29-31 Dr H L Gilchrist Army Medical Museum Washington D C Secretary
Central Association of Obstetricians and Gynecologists Detroit Oct 15-17 Dr Ralph A Reis 104 South Michigan Blvd Chicago Secretary
Delaware Medical Society of Rehoboth Oct 12-14 Dr William H Speer 917 Washington St Wilmington Secretary
Indiana State Medical Association South Bend Oct 6-8 Mr Thomas A Hendricks 23 East Ohio St Indianapolis Executive Secretary
Inter State Postgraduate Medical Association of North America St Paul Oct 12-16 Dr W B Peck 27 East Stephenson St Freeport Ill Managing Director
Kansas City Southwest Clinical Society Kansas City Mo Oct 5-9 Dr J V Bell 1103 Grand Ave Kansas City Mo Secretary
Kentucky State Medical Association Paducah Oct 5-8 Dr Arthur T McCormack, 532 W Main St Louisville Secretary
Mississippi Valley Medical Society Burlington Iowa Sept 30 Oct 2 Dr Harold Swanberg 510 Maine St Quincy Ill Secretary
Ohio State Medical Association Cleveland Oct 7-9 Mr C S Nelson 79 East State St Columbus Executive Secretary
Omaha Mid West Clinical Society Omaha Oct 26-30 Dr J D McCarthy 107 South 17th St Omaha Secretary
Oregon State Medical Society The Dalles Oct 8-10 Dr Morris L Bridgman 1020 S W Taylor St Portland Secretary
Pennsylvania Medical Society of the State of Pittsburgh Oct 5-8 Dr Walter F Donaldson 500 Penn Ave Pittsburgh Secretary
Southern Medical Association Baltimore November 17-20 Mr C I Loranx Empire Building Birmingham Ala Secretary
Tri States Medical Society of Texas Louisiana and Arkansas Longview Texas Oct 26-27 Dr John M Ellis Mt Pleasant Texas Secretary
Virginia Medical Society of Staunton Oct 13-15 Mrs Ann Edwards 1200 East Clay St Richmond Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery 6 132 (July) 1936

The Importance of the Trained Physician to Modern Society the President's Message C A Thigpen Montgomery—p 1
A Debt the World Owes Medical Science the Jerome Cochran Lecture W D Partlow Tusculocsa—p 6
Formaldehyde in Fluids of Body Preliminary Report E Thames Mobile—p 13

American Journal of Tropical Medicine, Baltimore 16 383-498 (July) 1936

Filarial Parasites of Monkeys of Panama O R McCoy Rochester N Y—p 383
Complement Fixation Test for Chagas Disease Employing an Artificial Culture Antigen R A Kelsner Ancon Canal Zone—p 405
*Amoebiasis and Bacillary Dysentery in the Los Angeles County Hospital 1929-1935 J F Kessel L Blakely and Corine Cavell Los Angeles—p 417
Survey of Malaria in Cyprus M A Barber New York—p 431
Efficiency of Homologous Properties of Acquired Immunity to Plasmodium vivax M F Boyd and S F Kitchen Tallahassee Fla—p 44
Relative Importance of Anopheles Tarsimaculatus Anopheles Argenti and Anopheles Pseudopunctipennis as Vectors of Malaria in Windward Group of West Indies W C Earle New York—p 459
Rearing of Anopheles Allimanus Wiedemann in the Laboratory L E Rozeboom Panama Republic of Panama—p 471
Failure to Establish Virus of Endemic Typhus in Rats by Feeding Them Infected Guinea Pig Tissue H A Kemp Dallas Texas—p 49
Trypanosoma Dimidiata Latr Found Naturally Infected with Trypanosoma Cruzi Chagas in Panama L E Rozeboom Panama Republic of Panama—p 481
Some Observations on Nature of Thermoprecipitation Reaction in Trypanosoma Equiperdum Infection H A Poundexter with technical assistance of R I Bennett Washington D C—p 485

Amoebiasis and Bacillary Dysentery in Los Angeles County Hospital, 1929-1935—Kessel and his associates point out that in southern California both bacillary and amoebic infections are endemic and that there occur a variety of gastrointestinal symptoms associated with them, which range from a mild diarrhea to acute or chronic dysentery. On the basis of their investigations, the authors reach the following conclusions: 1 Dysentery in southern California is caused primarily by three types of micro-organisms, *Shigella* paradyenteriae and *Salmonella* morganii, together with several other species of *Salmonella* and *Endamoeba histolytica*. 2 Acute bacillary dysentery is encountered much more frequently than acute amoebic dysentery. These two types may often be differentiated by microscopic examination of the stool the bacterial type usually showing a prolific cellular exudate with a preponderance of polymorphonuclear leukocytes and the amoebic type showing a scanty exudate made up almost entirely of macrophage cells in addition to the trophozoites of amoebas. 3 Chronic amoebiasis is proportionately more common than chronic bacillary dysentery. The latter however, occurs more frequently than many think and should be suspected as being associated with *Shigella* or *Salmonella* rather than with *Bacterium streptococcus*. 4 Carriers of *Endamoeba histolytica*, *Shigella* and *Salmonella* have been observed the bacterial types being somewhat less common than the amoebic. 5 Recently an outbreak of bacillary dysentery occurred which was caused by the *Shigella* paradyenteriae Sonne. 6 Although the agglutination reactions are diagnostic the lactose fermentation is much slower and less regular in occurrence than such reactions commonly reported for 'Sonne' and also less regular than those produced by five other strains of Sonne with which they were compared. 7 Fermentation occurs first under anaerobic conditions, either in the Durham tubes of lactose

broth medium or at the bottom of a lactose agar slant. Fermentation, in mediums in which the Durham tube is not present, occurs more frequently in nutrient broth medium than in dibasic phosphate peptone medium. 8 Rough and smooth colonies and 'satellite' colonies may give rise either to rapid or to slow lactose fermentation. 9 These variations from the usual descriptions given for the 'Sonne' type of organism should be considered in the laboratory diagnosis of dysenteric bacteria, for certain non lactose fermenting strains which fail to agglutinate with the common antisera may be found to belong to the 'Sonne' type.

Annals of Internal Medicine, Lancaster, Pa

10 1146 (July) 1936

Treatment of Pneumonia R Cole New York—p 1
Role of Personality in Psychotherapeutics A F Riggs and H K Richardson Stockbridge Mass—p 13
*Total Leukocyte Counts in Human Blood During Pregnancy J B Carey and J C Litzenberg Minneapolis—p 25
Continuous Method of Treatment of Early Syphilis J E Moore Baltimore—p 30
Glanders R W Mendelson Albuquerque N M—p 43
Localization of Supratentorial Tumors of Brain by Olfactory Tests C A Elsberg New York—p 49
Errors in Clinical Application of Electrocardiography W B Breed and J M Faulkner Boston—p 58
Public Health Control of Syphilis T Parran Jr Albany N Y—p 65
*Clinical Aspects of Amyloidosis E Moschowitz New York—p 73
Adequate Tests of Curative Therapy in Man W D Sutliff Chicago—p 89

Leukocyte Counts During Pregnancy—Carey and Litzenberg made 977 leukocyte counts in 134 normal pregnancies. A count between 10,000 and 11,000 seems to be a medium value for pregnancy, irrespective of time in pregnancy. Fifty per cent of the counts were between approximately 8,700 and 12,500 throughout the nine months of pregnancy. Less than 50 per cent of the counts were below a high normal of 10,000. Seventy-five per cent of the counts were above 8,700. Twenty-five per cent of the counts were above 12,500 or below 8,700. There was no rise in the ninth month except in a few individual cases which were not numerous enough to lift the curve. Some patients remained consistently high throughout the nine months, others remained consistently low or normal. There did not seem to be any significant difference between curves of counts in primiparas and multiparas. There may be a physiologic leukocytosis of pregnancy, but it certainly is not invariable.

Clinical Aspects of Amyloidosis—Moschowitz says that generalized amyloidosis has heretofore been largely viewed as an ominous sequel of chronic suppuration with cachexia, anemia, swelling of the liver and spleen and albuminuria as the most prominent clinical expressions. In recent years new data have been established, which have widened the diagnostic basis of this disease. These are the recognition of primary amyloidosis of so-called atypical amyloidosis of the relation of general amyloidosis to nephrotic or better termed, hypoproteinemic states and the establishment of the Bence Jones red test. Pathologically amyloidosis usually represents an involvement of the reticulo endothelial system and the pericapillary and periglandular connective tissue. Almost any tissue except the cerebrospinal substance may be involved, with a special predilection for the muscles and skin. In addition to the conventionally known causes such as tuberculosis, chronic suppuration, syphilis, Hodgkins disease and necrotizing blastomas, amyloidosis, either general or localized, is frequently associated with multiple myeloma and its attendant Bence Jones proteinuria and with ulcerative lesions of the bowels. The clinical diagnosis of amyloidosis is dependent on the following signs: 1 The enlargement of the spleen and the liver. 2 The development of signs of the hypoproteinemic syndrome consequent on the involvement of the kidney. These are proteinuria, diminished blood proteins, hypercholesterolemia and generalized anasarca. In later stages, general arterial hypertension and azotemia may develop. The latter may occur without a coexisting hypertension, in contradistinction to other varieties of renal disease associated with hypertension. 3 Purpura of the skin. This sign has been less commonly observed but has been reported often enough to be regarded as a symptom of the

disease. 4 The Bennhold congo red test, which forms the most important confirmatory test of amyloidosis. A 100 per cent retention of the dye is diagnostic. There is abundant evidence that amyloidosis is clinically reversible, whether it is anatomically reversible has not yet been definitely proved. Atypical amyloidosis constitutes a diverse variety of anatomic lesions. Clinically they may thus far be classified into four groups: cases simulating scleroderma, cases simulating myotonia, cases simulating tumor of the tongue, and those associated with deforming arthritis.

Archives of Internal Medicine, Chicago

58:1186 (July) 1936

- *Identity of Sprue, Nontropical Sprue and Celiac Disease. F. M. Hanes and A. McBryde. Durham, N. C.—p. 1.
- Extensive Arterial and Venous Thrombosis Complicating Chronic Ulcerative Colitis. J. A. Bergen and N. W. Barker. Rochester, Minn.—p. 17.
- Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Failure and Angina Pectoris. XVIII. Cardiac Output Following Total Thyroidectomy in Patients With and Without Congestive Heart Failure with Comparison of Results Obtained with Acetylene and Ethyl Iodide Methods. M. D. Altschule and Marie C. Volk. Boston.—p. 32.
- Liver Therapy for Combined Sclerosis. W. F. Schaller and H. W. Newman. San Francisco.—p. 45.
- Experimental Renal Insufficiency Produced by Partial Nephrectomy. V. Diets Containing Whole Dried Meat. A. Chanutin and S. Ludewig. University, Va.—p. 60.
- Id. VI. Relation Between Kidney Function, Kidney Weight and Surface Area in Intact and Unilaterally Nephrectomized Rats Fed Whole Dried Meat Diets. A. Chanutin and S. Ludewig. University, Va.—p. 81.
- Id. VII. Relationship of Urine Urea, Blood Urea and Urea (Addis) Ratio in Rats on Whole Dried Meat Diets. S. Ludewig, E. T. R. Williams and A. Chanutin. University, Va.—p. 89.
- Id. VIII. Comparison of Urea (Addis) Ratio with Results of Other Tests of Renal Function. A. Chanutin and S. Ludewig. University, Va.—p. 95.
- Pneumonia Due to Type I Pneumococcus. Analysis of Deaths in Cases in Which Serum Treatment Was Used. M. B. Rosenbluth and M. Block. New York.—p. 102.
- Effect of Feeding of Thyroid or Salt and of Thyroidectomy on Fluid Exchange of Cats with Diabetes Insipidus. C. Fisher and W. R. Ingram. Chicago.—p. 117.
- Effect of Anoxemia on Emptying Time of Human Stomach. Influence of High Altitudes. E. J. Van Lier, with assistance of D. H. Lough and C. K. Sleeth. Morgantown, W. Va.—p. 130.
- Red Blood Cell Values for Normal Men and Women. Marjory I. Andresen and E. R. Mugrage. Denver.—p. 136.
- Primary Idiopathic Thrombophlebitis. N. W. Barker. Rochester, Minn.—p. 147.
- Treatment of Postoperative Parathyroid Insufficiency. Interpretative Review of Literature. W. M. Boothby and A. C. Davis. Rochester, Minn.—p. 160.

Identity of Sprue, Nontropical Sprue and Celiac Disease—Hanes and McBryde discuss a syndrome that has acquired many names during its curious history. "Tropical sprue" is an unfortunate name because it gives the erroneous impression that sprue does not occur in temperate climates. For many years, however, sprue has been known to be endemic in North Carolina and Virginia, and from the states farther south many cases have been recorded. When sprue was found to occur in temperate climates it was termed "nontropical sprue," and more recently the term "idiopathic steatorrhea" has been coined for the syndrome, to distinguish it from pancreatic and other steatorrheas. Gee in 1888 gave a brief description of a curious wasting disease of children which he termed "the coeliac disease." Herter, working with Holt in New York, published in 1908 a monograph entitled "Intestinal Infantilism," and Heubner in Germany described a condition in young children called by him "verdaunungsinsuffizienz" or "chronic intestinal indigestion." It is now universally recognized that Gee, Herter and Heubner were describing identical syndromes under different names. The authors agree with Thaysen that all these names are designations for the same underlying pathologic condition occurring both in adults and in children, and since the name "sprue" obviously has priority over all others, they think it best to adhere to the term "sprue" or (to broaden the conception somewhat) "the sprue syndrome." Within the past year nine patients with the sprue syndrome came under the authors' observation, the disease began in infancy in two and in adult life in seven, none of the patients

had ever resided in the tropics. Neither sprue nor celiac disease presents a definite and constant pathologic picture. The changes in the intestine are those of chronic inflammation and edema, possibly the result of secondary infection, and atrophy of the whole intestine. The other organs show simply the effects of chronic malnutrition. The great depletion of the panniculus adiposus, common to the two syndromes is the most striking pathologic change. The absence of pathologic changes at necropsy strongly supports the theory that a disorder of metabolism, or a deficiency state, is a probable etiologic factor. The stools both of patients with sprue and of those with celiac disease contain an excess of fat, the fat content being about three times greater than normal, but it is generally agreed that the fat-splitting function is normal, in contrast to the condition existing in steatorrhea due to pancreatic deficiency. The anemia of sprue is typically first hypochromic, later becoming hyperchromic and macrocytic. There are, however, exceptions to this rule. The typical anemia of celiac disease, or infantile sprue, is hypochromic and only rarely becomes hyperchromic and macrocytic. Low curves for sugar content of the blood (after the ingestion of 15 Gm. of dextrose per kilogram of body weight) have been found with greater than normal frequency in cases of "tropical" sprue, of "non tropical" sprue and of celiac disease. The authors believe that the constant low blood sugar curve is one of the most helpful differential signs in the sprue syndrome. They emphasize that whether one accepts celiac disease as the infantile analogue of sprue in adults is not a matter of indifference. Nothing is more certain than that the treatment of sprue with liver has completely altered the outlook in cases of this disease. Rhoads and Miller have shown that even the most severe and resistant sprue yields promptly to what Minot called "adequate liver therapy," and the authors' experience confirms this. They believe that equally favorable results will follow the application of adequate liver therapy to celiac disease.

Archives of Otolaryngology, Chicago

24:1124 (July) 1936

- Carcinoma of Tongue. Review of Fourteen Cases. F. R. Spencer. Boulder, Colo.—p. 1.
- Fifteen Years' Experience with Drainage Tube After Antrostomy in Children. J. J. Shea. Memphis, Tenn.—p. 14.
- Labyrinthitis Secondary to Meningococcal Meningitis. Clinical and Histopathologic Study. J. G. Druss. New York.—p. 19.
- *Septic and Aseptic Types of Thrombosis of Cavernous Sinus. Report of Cases. W. E. Grove. Milwaukee.—p. 29.
- Effects of Bacterial Toxins in Middle Ear. E. L. Ross and R. W. Rawson. Chicago.—p. 51.
- Moccasin Snake (Aneideson Piscivorus) Venom Therapy for Recurrent Epistaxis. J. L. Goldman. New York.—p. 59.
- Utriculo-Endolymphatic Valve. H. B. Perlman and J. R. Lindsay. Chicago.—p. 68.
- Average and Range of Acuity of Hearing of High School Pupils. Irene B. Young. Tenafly, N. J.—p. 76.
- Dislocation of Lower End of Nasal Septal Cartilage. Treatise Dealing with Dislocations of Lower End of Nasal Septal Cartilage in New Born (Injury Sustained at Birth) in Infants and in Young Children and with Their Anatomic Replacement by Orthopedic Procedures. M. Metzenbaum. Cleveland.—p. 78.
- Use of Extract of Nasal Mucosa in Treatment of Acute and Chronic Rhinosinusitis. Preliminary Report. N. Fox and J. W. Harned. Chicago.—p. 89.

Thrombosis of Cavernous Sinus—Although Groves' study concerns itself chiefly with the aseptic types of thrombosis of the cavernous sinus, he covers the anatomic aspects, the etiology, the symptomatology and the treatment. He discusses a number of case reports. He concludes that there are septic and aseptic types of thrombosis of the cavernous sinus. The aseptic types are caused by penetrating injuries involving the sinus by accidental injury to the sinus during an operation in its neighborhood and by fracture of the skull and injury to the head. In this group must also be included the marasmic types of thrombosis. In the septic types, in which the thrombosis or thrombophlebitis reaches the cavernous sinus by way of its afferent vessels, the mortality is practically 100 per cent. In those cases in which the condition is septic and of the restrained or chronic compensatory type, in which the thrombotic process reaches the cavernous sinus by retrograde action along its efferent vessels, there is some hope of recovery. In the cases of this group in which recovery occurred the thrombotic process in the cavernous sinus itself must have been aseptic, although originating from a septic source elsewhere.

The percentage of recovery from all types of thrombosis of the cavernous sinus is probably not greater than 7 per cent. The percentage of recovery from the purely aseptic types is considerably higher. Operations on the cavernous sinus have been extremely disappointing and have shown poorer results than nonoperative treatment. When the thrombosis originates from a septic source the focus should be vigorously treated and eradicated. The cavernous sinus itself should be let alone. As an exception to this general statement, it would seem that ligation of the carotid artery, as proposed by Cagleton, might prove beneficial.

Journal of Bacteriology, Baltimore

32 1130 (July) 1936

- Study of Methods for Determination of Reducing Sugars in Bacterial Cultures. Colorimetric Methods. Dorothea Klemme and C F Poe. Boulder Colo.—p 1
- Adsorption of Bacteria in Salt Lakes. L Rubensliik M B Roisin and F M Bieljansky Odessa U S S R—p 11
- Studies on Tetanus Toxoid. III Antitoxic Response in Guinea Pigs Immunized with Tetanus Alum Precipitated Toxoid Followed by Tetanus Spores. F G Jones and W A Jamieson Indianapolis—p 33
- Studies of Streptococci. IV Resistance of Enterococci. G H Chapman New York—p 41
- Bactericidal and Photochemical Properties of Irradiated Cod Liver Oil and an Oxide of Olive Oil. F A Stevens New York—p 47
- Effectiveness of Hot Hypochlorites of Low Alkalinity in Destroying Mycobacterium Tuberculosis. S M Costigan Philadelphia—p 57
- Hydrogen Sulfide Production as Differential Test in Colon Group. R Vaughn and M Levine Ames Iowa—p 65
- Ultraviolet Irradiated Carbohydrates and Bacterial Growth. J G Baumgartner London England—p 75
- Clostridium Botulinum Type C in Relation to Duck Sickness in the Province of Alberta. R M Shaw and Gretta S Simpson Edmonton Alta—p 79
- Life Cycle of Organism Causing Yeast Meningitis. Ramona L Todd and W W Herrmann Iowa City—p 89
- Study of Variation in Hemolytic Streptococci from Scarlet Fever and Erysipelas. II Comparative Virulence, Carbohydrate Fermentation, Toxin Production of the S and R Strains. Protective Power of S and R Vaccines. Reversion. Sophie Spicer assisted by Emily L Bloom and Mary F Gonsiorek, New York—p 105

Hot Hypochlorites for Destroying Mycobacterium Tuberculosis.—Costigan found that heating suspensions of Mycobacterium tuberculosis (human strain) to 60 C for five minutes does not destroy the organism. The hypochlorite solution of low alkalinity, containing 50 parts of available chlorine per million parts of water heated to 50 C, destroys Mycobacterium tuberculosis in two and one-half minutes heated to 55 C. It destroys it in one minute, and heated to 60 C it destroys it in one-half minute. The hypochlorite solution of low alkalinity containing 200 parts of available chlorine per million parts of water heated to 50 C destroys Mycobacterium tuberculosis in one minute, heated to 55 C and 60 C, it destroys it in one-half minute.

Journal of Biological Chemistry, Baltimore

114 567-824 (July) 1936 Partial Index

- Allocholesterol and Epiallocholesterol. R Schoenheimer and E A Evans Jr., New York—p 567
- Direct Microtitration Method for Blood Sugar. B F Miller and D D Van Slyke, New York—p 583
- Lactone Group of Cardiac Aglycones and Grignard Reagent. W A Jacobs and R C Elderfield New York—p 597
- Chemistry of Crystalline Substances Isolated from Suprarenal Gland. H L Mason C S Myers and E C Kendall Rochester Minn—p 613
- Studies in Muscular Dystrophies. Presence of Simple Guanidine Derivatives in Urine. M A Sullivan W C Hess and F Irreverre Washington, D C—p 633
- Prevention of Nutritional Encephalomalacia in Chicks by Vegetable Oils and Their Fractions. Mariaone Goettsch and A M Pappenheimer with assistance of Anna Hart New York—p 673
- Glycoproteins. II. Polysaccharides of Vitreous Humor and of Umbilical Cord. K Meyer and J W Palmer with assistance of Elizabeth M Smyth New York—p 689
- Oxalium. L F Fieser and M S Newman Cambridge Mass—p 702
- Proteolytic Enzymes. IX. Inactivation of Papain with Iodine. M Bergmann and L Zervas New York—p 711
- Id. X. Enzymes of Papain and Their Activation. M Bergmann and W F Ross New York—p 717
- Transfer of Inorganic Phosphorus Across Red Blood Cell Membrane. Lena Halpern, New Haven Conn—p 747
- Effect of Parenteral Injection of Amino Acids and Related Substances on Creatine Formation and Storage in Rat. H H Beard and T S Bogges with technical assistance of W Bourgeois A Flynn and L Horvitz, New Orleans—p 771

Journal of Immunology, Baltimore

30 403-494 (June) 1936

- Nature of Virucidal Substance in Normal Human Serum as Compared with Trypanocidal and Bactericidal Substances. P S Strong New York—p 403
- Studies on Activity of Cephalin as It Relates to Coagulative and Complementary Properties of Blood. A Wadsworth F Maltaner and Elizabeth Maltaner Albany N Y—p 417
- Procedure for Serologic Determination of Blood Relationship of Ancient and Modern Peoples with Especial Reference to American Indians. I. Procedure for determination of Iso Antigens in Saliva. G A Matson and E O Brady, St. Louis—p 445
- Procedure for Serologic Determination of Blood Relationship of Ancient and Modern Peoples with Especial Reference to American Indians. II. Blood Grouping of Mummies. G A Matson St. Louis—p 459
- Significance of Age of Rabbits for Elicitation of Schwartzman Phenomenon. E Witebsky and E Neter, New York—p 471
- General and Cerebral Anaphylaxis in Monkey (Macacus Rhesus). N Kopeloff, L M Davidoff and Lenore M Kopeloff New York—p 477

Journal of Pediatrics, St. Louis

9:1148 (July) 1936

- *Effect of Vitamin D on Linear Growth in Infancy. Genevieve Stearns, P C Jeans and Verva Vandecar Iowa City—p 1
- Premature Infant. W W Swanson V E Lennarson and F L Adair Chicago—p 11
- Mortality Among Prematurely Born Infants. Ethel C Dunham, Washington D C—p 17
- Pathogenic Significance of "Late Lactose Fermenting" Coli like Bacilli. L D Fothergill C A Krakower and D Freeman Boston—p 23
- *Treatment of Pertussis with Intranasal Antigen. Preliminary Report. H A Slesinger Windber Pa.—p 42
- *Prophylactic Pertussis Immunization. E Y Shorr, Brooklyn—p 49
- Calcium and Phosphorus Metabolism in Case of Intractable Rickets. W J Highman Jr and B Hamilton Chicago—p 56
- Carcinoma of Adrenal Cortex. A A Little Jr Houston Texas—p 62
- Hemorrhages Complicating Deep Pharyngeal Infection. I Frank and A F Abt Chicago—p 68
- Gangrenous Vulvitis with Associated Mouth and Rectal Lesions in a Child. Case. W D Deuell and J F Landon New York—p 75
- Infantile Vomiting. Its Relief by Ray. R. A Higgins T West and Margaret Duryee Port Chester N Y—p 81
- Epidemic Vomiting and Diarrhea. R M Greenhal Milwaukee—p 87
- Congenital Obstructive Jaundice. I H Kass and F P Osgood Toledo, Ohio—p 91

Effect of Vitamin D on Linear Growth in Infancy.—Stearns and her associates report investigations on the effect of vitamin D on the growth of infants carried on for a period of seven years. The rate of growth in length of infants given one teaspoonful of high grade cod liver oil (from 340 to 400 U S P units of vitamin D daily) was compared with the rate of linear growth of infants given the same type of diet but with the source of vitamin D from irradiated milk (from 60 to 135 U S P units of vitamin D daily) or its vitamin D equivalent as cod liver oil or cod liver oil concentrate milk, and with standard growth rates reported in the literature. A review of the growth standards shows that the rate of linear growth in infancy is increasing. Standards reported in 1929 and 1933 show rates of growth definitely increased over those of older standards. Infants given from 340 to 400 U S P units of vitamin D daily grow at rates definitely more rapid than those of even the recent standards. Infants ingesting from 60 to 135 U S P units of vitamin D daily grow at the same rate as the recent standards. Exposure to sunlight increased the rate of growth in the few infants in whom this measure was tried and who were receiving the lower of the two stated amounts of vitamin D. The increased rate of linear growth is ascribed chiefly to the increased intake of vitamin D and its resultant effect on skeletal growth. Although the influence of vitamin A has not been entirely excluded, certain of the observations recorded indicate that vitamin A was not the limiting factor in the growth of the infants studied.

Treatment of Pertussis with Intranasal Antigen.—During the interval between May 1935 and February 1936 Slesinger treated twenty-four active cases of whooping cough in various stages of the disease by the intranasal administration of a soluble antigen prepared from Haemophilus pertussis. The antigen consisted of a solution of soluble substances derived from recently isolated cultures of Haemophilus pertussis and represented the soluble protein of about 20,000 million organisms per cubic centimeter. The patient was placed in the recumbent posture with the head held in a dependent position below the level of the body. Ten drops of the antigen was

instilled in each nostril. The patient was kept in this position for two or three minutes in order to permit proper absorption. Treatments were usually given daily, in some cases they were given every second day. The total number of treatments varied from four to twelve. Summarizing his observation on the twenty-four cases treated in this manner, he says that of this series 45.8 per cent showed marked improvement, 29.2 per cent showed moderate improvement, and 25 per cent showed slight or no improvement. The antigen was used prophylactically in three cases; two patients developed mild attacks and one patient did not develop any symptoms. The antigen can be administered with ease. There are no reactions, and the nasal mucosa is not irritated.

Prophylactic Pertussis Immunization—Shorr checked the efficacy of larger doses of the Sauer vaccine and evaluated the prophylactic efficacy of a toxin developed by Mishulow, which was being distributed by the New York City Department of Health and which had been in general use therapeutically since 1930. Summarizing his observations, he says that of seventy-four children injected with the varying doses of pertussis vaccine and followed over a period of thirty months, eleven developed whooping cough, giving an incidence of 14.8 per cent. A comparable number of controls (seventy-two) followed over a somewhat shorter period (nineteen months) showed an incidence of 36.1 per cent of whooping cough developing during this time. The subcutaneous or intramuscular injection of pertussis vaccine in amounts of not less than 65 billion bacilli has apparently afforded complete protection of those children subsequently exposed or has resulted in a marked amelioration of symptoms in the few who developed whooping cough. The intracutaneous route of administration, although associated with rather marked local reactions, gave an agglutinin response comparable in titer with that found in children receiving from seven to eight times as much subcutaneously or intramuscularly, and even in small amounts (10 billions) was apparently able to modify the infection when it occurred. The use of the Mishulow vaccine compares favorably with that of Sauer in its prophylactic effect, and for large scale prophylactic usage eliminates the necessity of obtaining freshly isolated strains to be grown on culture mediums containing human blood.

Kansas Medical Society Journal, Topeka

37 265 308 (July) 1936

- Osteomyelitis of Spine. M. E. Pusitz, A. K. Owen, G. A. Finney, J. L. Lattimore and M. Gerundo. Topeka—p. 265
Pneumococcus Pneumonia with Especial Reference to Type Diagnosis and Serum Therapy. E. F. Roberts. New York—p. 282
Certified Milk as Source of Vitamin C. W. H. Riddell and C. H. Whitnah. Manhattan—p. 283

New England Journal of Medicine, Boston

215 101 138 (July 16) 1936

- Funnel Chest. P. E. Truesdale and G. T. Hyatt. Fall River, Mass.—p. 101
Dementia Paralytica at the Boston Psychopathic Hospital. Survey of 2,274 Cases. M. Moore and H. H. Merritt. Boston—p. 108
*Prophylactic Value of Vitamin D Irradiated and Vitamin D Yeast-Fed Milk. R. C. Eley and E. C. Vogt. Boston and Mary G. Henderson. Brookline, Mass.—p. 110
Tuberculosis of Urethra. Report of Case. I. N. Kilburn. Springfield, Mass.—p. 112
Review of Medical Legislation in Connecticut from 1911 to 1935. H. N. Costello. Hartford, Conn.—p. 114

215 139 176 (July 23) 1936

- Relief of Severe Angina Pectoris in Young People with Rheumatic Heart Disease. Remarks on Atypical Anginal Syndrome. E. F. Bland and J. C. White. Boston—p. 139
Silicosis. J. B. Hawes. 2d. Boston—p. 143
Psychobiology in General Medicine. A. J. Tillotson. Waverly, Mass.—p. 146
Roentgen Therapy of Acute Postoperative Parotitis. J. M. Robinson and J. Spencer. Boston—p. 150
Marriage and Mental Disease. N. A. Dayton. Boston—p. 153

Vitamin D Irradiated and Vitamin D Yeast-Fed Milk.—Elev and his collaborators studied the relative prophylactic values of two types of vitamin D milk when it was employed as the only source of antirachitic substances in artificially fed infants. During the period of observation which began in January, 1935 and extended through May, 1935, twenty-six infants were studied. All infants were placed on vitamin D milk within the same week and therefore it was possible to

follow the entire group for a period of five months. The age incidence of the patients at the beginning of the study varied from two to twelve weeks. With the exception of three infants who had received 1 drachm (4 cc.) of plain cod liver oil daily for four weeks, and three infants who had received a similar amount at irregular intervals for from two to three weeks, none of the infants had received any antirachitic substance. Ten were girls and sixteen were boys. The group contained one set of twins and three premature infants. In order to maintain a standard potency of the milk, biologic assays were made at regular intervals. The milk, which was delivered free to each family every morning, contained 135 U. S. P. and 432 U. S. P. vitamin D units, the former being obtained by irradiation and the latter by feeding the cattle known quantities of yeast. Thirteen infants received the irradiated and fourteen the yeast milk. The formulas consisted of whole milk, corn syrup and water and were altered only during infections or when it became necessary to increase the amounts on account of the increasing requirements of the babies. Antiscorbutic substances in the form of orange or tomato juice were added to the diet at appropriate periods as were cooked cereals and strained vegetables. Thus the diet met all the known nutritional, mineral and vitamin requirements with the exception of vitamin D, which was supplied solely from the milk. The results of this study showed that none of the infants developed rickets either by clinical or by roentgen examination, regardless of which milk they received. In the majority of instances the rate of growth was within the accepted curve of normal growth and development. In view of these observations it would appear that both the irradiated vitamin D milk and the yeast fed vitamin D milk were adequate as prophylactic measures.

New Orleans Medical and Surgical Journal

89 156 (July) 1936

- The Doctor as an Expert Witness. St. C. Adams. New Orleans—p. 1
Present Status of Fever Therapy. W. H. Slaughter and J. A. Trautman. New Orleans—p. 6
Pilonidal Sinus. M. Gage. New Orleans—p. 13
The Common Signs of Brain Tumors. G. C. Anderson. New Orleans—p. 17
Pyelitis. P. J. Kahle and H. T. Beacham. New Orleans—p. 21
Uterosalpingography and Uterotubal Insufflation in Sterility. W. H. Brandon. Clarksdale, Miss.—p. 25
Newer Methods in Diagnosing Early Carcinoma of Cervix. C. H. Tyrone. New Orleans—p. 29
Report of the Pasteur Institute of the Charity Hospital of New Orleans for the Year 1935. R. D. Aunoy and J. H. Connell. New Orleans—p. 32

Pennsylvania Medical Journal, Harrisburg

39:755 844 (July) 1936

- Treatment of Injuries of Head. W. E. Dandy. Baltimore—p. 755
Rationale of Electrosurgical Obliteration of Gallbladder. Clinical Study of Two Hundred and Thirteen Consecutive Unselected Cases Without Mortality. M. Thorck. Chicago—p. 759
Modern Methods of Preventing Measles. J. S. Baird and L. W. Humphrey. Pittsburgh—p. 765
Application of Thoracoplasty to Treatment of Pulmonary Tuberculosis. J. B. Ilick and J. H. Gibson, Jr. Philadelphia—p. 768
Closed Intrapleural Pneumolysis as Aid to Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. G. Willauer. Philadelphia—p. 772
Conservation of Vision in Child. G. E. de Schweinitz. Philadelphia—p. 774
Xanthomatosis. Hand-Schüller-Christian's Disease. H. A. Slesinger. Windber—p. 779
Macular Dystrophies. J. I. Gouterman. Philadelphia—p. 782
Sporotrichosis. L. G. Beinbauer. Pittsburgh—p. 787
*Treatment of Chronically Infected Prostate. L. F. Milliken. Philadelphia—p. 791
Use and Abuse of Methods Intended for Cure of Gonorrhea. E. S. Everhart. Harrisburg—p. 794
Arterial Embolism. J. C. Doane. Philadelphia—p. 797
Problem of Increased Intraocular Tension in Concussion Injuries of Eye. P. H. Decker. Williamsport—p. 800
School Physician and Pediatrician. A. M. Kerr. Pittsburgh—p. 807

Treatment of Chronically Infected Prostate.—Milliken presents some of the most promising ideas on the treatment of the chronically infected prostate that have been advanced during recent years. He shows that infection of the seminal vesicles must be assumed as nearly always concomitant with chronic prostatitis and must be treated at the same time. What ever may have been the origin of the infection and regardless of what particular organism may be demonstrated in the secretions, the treatment is the same. Any form of treatment in order to produce the best results must be supplemented by

measures calculated to improve the general health. Tonics, proper exercise in the open air, avoidance of the sedentary life and the eradication of all discoverable foci of infection are important aids to any other form of treatment. The intravenous injection once a week of from 0.3 to 0.45 Gm of neocarsphenamine has seemed to be of definite value in some cases. Any moderate form of exercise that improves the circulation of the perineum and pelvic organs is desirable, walking, especially as exemplified in golf, is probably the best. A sedentary occupation, long sessions at the card table, and prolonged automobile or train rides are certainly not conducive to a cure. Many cases disappear far more rapidly after an infection in tonsils or teeth has been eradicated. About the value of stock and autogenous vaccines, serums and foreign proteins, and the intravenous injection of various chemical antiseptics, the author says that it cannot be denied that any or all of these may have some supplemental value in certain cases, but none of them give results at all commensurate with the cost or the time involved. Of somewhat better promise is the injection of a dilution of 1:1,500 hydrochloric acid. Ten cc of this is injected every day for five days, then every other day until ten more doses have been given. No matter what other form of treatment may be employed, massage must be used. However, too early, too frequent and too vigorous massage after gonorrheal infection of the gland may be the cause of many persistent cases. To be effective in the chronic case, massage must be firm and thorough. In order that there may be complete recovery from whatever reaction is induced, intervals of from five to seven days, or in some cases even longer, are better than shorter ones. Other methods of local treatment that seem most logical are direct injection of the gland with 1 per cent mercurochrome solution, drainage of the prostate by transurethral resection, and direct application of heat to the gland by any means available. The author describes a double rubber bag, the construction of which makes possible the application of any degree of heat desired to the rectal side of the vesicles and prostate, while tepid fluid circulating in the posterior cavity protects the normal rectum against possible ill effects of heat. Each case of chronic prostatitis must be treated individually as the judgment of the experienced urologist may suggest.

Philippine Islands Med. Association Journal, Manila

16 329-394 (June) 1936

- Medical Services and Philippine Fellowship Sixto de los Angeles Manila—p 329
Pulmonary Tuberculosis and Its Treatment with Artificial Pneumothorax M. Quisumbing San Pablo Laguna—p 335

South Carolina Medical Assn. Journal, Greenville

32 163-184 (July) 1936

- Venular Eruptions of Hands J. M. van der Erve Charleston—p 163
The Question of Drainage in Abdominal Surgery C. B. Epps Sumter—p 166
Some of Fatal Accidents Incidental to Pregnancy H. W. de Saussure Charleston—p 171

Western J. Surg., Obst. & Gynecology, Portland, Ore

44: 387-454 (July) 1936

- Comparative Study of Impedance Angle and Basal Metabolic Rate in 325 Consecutive Cases: Physiologic Mechanisms Involved in Clinical Measure of Phase Displacement Preliminary Report. A. Barnett New York and C. S. Byron Brooklyn—p 387
General and Neurosurgical Consideration of Cerebral Birth Pains H. v. Briesen Los Angeles—p 404
Cholesteatomas of Choroid Plexus of Lateral Ventricle C. H. Manlove and A. J. McLean Portland Ore—p 422
Fate of Hernial Sac in Hernia Treated by Injection Method C. O. Rice and L. M. Larson Minneapolis—p 428
Little Bag of Tricks in Abdominal Surgery T. O. Burger San Diego Calif—p 430
Factor of Spasm in Etiology of Experimental Ulcer of Jejunum M. E. Steinberg W. E. Zeller and R. J. Lockitch Portland, Ore—p 434
Relief of Postoperative Intestinal Atony with Prostigmine K. Schlaepfer Milwaukee—p 437
Pressure Necrosis: Persistent Postoperative Complication H. G. Wetherill Monterey Calif—p 440
Lingual Thyroid Comprehensive Review Division VIII. M. L. Montgomery San Francisco—p 442

Relief of Postoperative Intestinal Atony with Physostigmine Derivative—Schlaepfer first used prostigmine (the dimethyl-carbamate ester of 3-hydroxy-phenyl-trimethylammonium methyl sulfate) as an injectable stimulant for postoperative peristalsis in the fall of 1932. He was able to confirm the experiences of other observers that he was dealing

with an excellent peristaltic agent—one without undesirable by effects. For injections, he always uses the intramuscular route. He gives the first injection from eight to ten hours after laparotomy. However, in cases in which he expects considerable stasis as a result of prolonged exposure of the open abdominal cavity and handling of the intestine, he feels justified in shortening the interval before the first injection. The second injection is usually given after an eight-hour interval. About fifteen to twenty minutes after the injection, increased peristalsis becomes noticeable by expulsion of flatus. The great majority of the author's patients did not complain of cramps. Half an hour after the injection, a glycerin-water enema (100 cc) is given. This usually is followed by a copious evacuation. He used and is using the physostigmine derivative as a preventive measure against atony following major abdominal operations, when other measures, such as the light arc or electric pad in conjunction with enemas would probably not suffice. Cases of acute abdominal conditions necessitating immediate surgery, such as appendicitis, perforated gastric or duodenal ulcer, or cholecystitis, are greatly benefited by the early and persistent postoperative use of the physostigmine derivative until normal peristalsis is reestablished. Following operations for hemorrhoids, anal fistula and fissures in which the peristalsis is checked for several days by opiates, it proves valuable in starting peristalsis. In paralytic ileus due to peritonitis, it is helpful in promoting and sustaining effective peristalsis. A change in technic, which proved superior to the original procedure, was the replacement of the glycerin-water enema by a slowly given enema of 100 cc of 15 per cent solution of sodium chloride.

Yale Journal of Biology and Medicine, New Haven

8 559-664 (July) 1936

- Early Fetal Activity in Mammals D. Hooker Pittsburgh—p 579
Carcinolytic Action of Serums G. H. Smith Elizabeth F. Jordan and Florence B. Mack New Haven Conn—p 603
Animal Parasitism in Connecticut and Adjoining States F. W. O'Connor New York—p 619
Goat's Milk Anemia J. M. Orten and A. H. Smith New Haven Conn—p 637
Note on Early History of Infantile Paralysis in the United States J. R. Paul New Haven Conn—p 643

Goat's Milk Anemia—Orten and Smith point out that several hypotheses have been advanced to explain the anemia-producing effect of goat's milk. One of these postulates the presence of toxic substances in the milk, perhaps certain types of fatty acids in the milk fat which promote an increased rate of erythrocyte destruction and thus cause an anemia. However, the fact that the administration of relatively large amounts of fatty acids prepared from goat's milk, or mixtures of pure fatty acids, to animals receiving either a mixed ration or a goat's milk diet had no noticeable effect on the composition of the blood seems to preclude the possibility of the presence of a hemolytic agent in the fat of goat's milk. Another explanation of the cause of goat's milk anemia is that this type of milk is deficient in some necessary hematogenic substance, such as iron, or as has been recently suggested, an essential organic substance perhaps related to the "extrinsic factor" said to be needed for the prevention of pernicious anemia in man. The evidence on which the latter view is based was obtained chiefly from experiments on young albino rats fed an exclusive goat's milk diet. A severe hyperchromic anemia developed and a prompt cure resulted from treatment with liver or liver extract or with an extract of yeast. As a result, the suggestion has been made that rats given goat's milk exclusively should serve as satisfactory test animals for the assay of preparations to be used in the treatment of pernicious anemia. The possible practical importance of this alleged relation between the anemia-producing deficiency of goat's milk and the "extrinsic factor" said to be involved in human pernicious anemia suggested the need of a further study of the problem. The authors made such studies on male albino rats and record their results in tables. They reach the conclusion that a diet composed exclusively of goat's milk supplemented with iron and copper supports good growth and permits the maintenance of a normal blood picture in rats for a period of at least ten weeks. This observation adds further to the evidence that goat's milk itself is not deficient in any necessary organic hematogenic substance, such as the alleged "extrinsic factor" related to pernicious anemia in man.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:156 (July 4) 1936

- Carcinoma of Rectum. Points on Pathology and Treatment. L. E. C. Norbury—p. 1
Common Obstetric Injuries and Their Sequels. D. Miller—p. 4
*Artificial Silk Keratitis. D. Rankine—p. 6
Infective Hepatitis with Fatal Recrudescence. T. E. Lowe—p. 9
Treatment of Recent Dislocation of Carpal Semilunar Bone. A. F. Goode—p. 11
Partial Thoracic Stomach. Report of Case. G. R. Ellis—p. 13

Artificial Silk Keratitis—Rankine observed 1,598 cases in two years. The earliest symptom was blurring of vision, with the appearance of halos round lights. This stamped the disorder as a corneal one from the first. In a comparatively small number of cases recovery took place without the development of further symptoms, and, there being no slit lamp available, the only objective sign was conjunctival injection, which was never very severe. In the great majority, however, the condition progressed, and the blurring was followed in from half an hour to several hours by a feeling of grittiness under the lids, photophobia, lacrimation, often blepharospasm, frequently drooping of the lids without spasm, dull aching at the back of the eyes and headache. In cases which went on to irritation, fluorescein staining showed more or less desquamation of the corneal epithelium on the center of the cornea. The destruction of tissue was essentially superficial. The keratitis was always accompanied by circumcorneal injection and by conjunctival injection of all degrees. The breath of those who were affected was pungent, the odor being suggestive of onions (at one stage of manufacture there is produced thioformaldehyde). Removal from the spinning room or acid house was almost always necessary, the most welcomed active treatment was the application of a weak cocaine ointment, such as 0.5 per cent in zinc ointment. The keratitis affected the spinners and the "cake changers" in about equal proportions. At this factory important points were noted which do not seem to have attracted attention elsewhere. First, about two thirds of the men appeared to be immune. Searching examinations revealed nothing that would explain this immunity. The method of onset of symptoms was given special study. Almost invariably at least two eight-hour exposures were necessary to produce symptoms. It seems that, given sufficient cause, three or four exposures will produce keratitis in susceptible workers. Symptoms frequently began not during exposure but after leaving work. Many workers even went home and to sleep without symptoms and found blurring present on awakening. The "droplets" theory of etiology was ruled out early in this investigation. A gaseous cause was decided as being the most probable. The ventilation was faulty in that fresh air was introduced at ground level and at roof level, while extraction was only through the spinning boxes, at waist level. It was suggested that, if the induction pipes on the ground level were made to act as extraction pipes, there would then be a uniformly downward system of ventilation. This suggestion was adopted and, when put in operation, produced a dramatic drop in the number of cases of keratitis. One outbreak of keratitis could not be attributed to any fault in the extraction system in the spinning room. On inquiry it was found that thioformaldehyde was responsible.

Lancet, London

1:1391-1450 (June 20) 1936

- Enlargement of the Heart. J. Parkinson—p. 1391
*Acute Toxemia of Burns. Extract of Suprarenal Cortex in Treatment. W. C. Wilson, G. D. Rowley and N. A. Gray—p. 1400
Effect of Oophorectomy and Splenectomy on Cancer of Breast and Uterus. P. Paterson—p. 1402
Counterirritation by Ultraviolet Light. A. Eidinow—p. 1404
Chemical Changes in Blood in Addison's Disease and Their Alteration in Response to Treatment. E. N. Allott—p. 1406
New Dystrophy of the Fifth Finger. A. R. Thomas—p. 1412
Abscess of Spinal Cord. R. M. Walker and S. C. Dyke—p. 1413

Acute Toxemia of Burns—Wilson and his associates used adrenal cortex extract as an adjuvant measure in the treatment of three cases of acute toxemia due to burns. A fatal issue

was predicted in two of the three cases. In man, adrenal cortex extract has been employed in a few instances in the treatment of bacterial infections and toxicosis, so far as the authors are aware, no reports are available of its use in burns. Regarding the mode of action of adrenal cortex extract in combating acute toxemia of burns, they have little positive information. Their observations indicate that it results in an increased efficiency of the circulatory mechanism. The only alterations found in the blood of burned individuals during extract therapy were in the sedimentation rate and (once) in corpuscular content. There is no satisfactory evidence that acute toxemia of burns produces a functional insufficiency of the suprarenals, changes in blood chemistry during the toxic phase of burns, though in certain instances they bear some resemblance to changes after adrenalectomy, are irregular and frequently insignificant. Moreover, pathologic studies have revealed little evidence of damage to the adrenals. Adrenal cortex extract should be considered an adjuvant measure and not a substitute for proved and recognized preventive treatment in acute toxemia of burns and also possibly, as future trial may show, in the stage of circulatory collapse (secondary shock). Some precaution against liver damage is advisable. Continuous intravenous infusion of dextrose saline solution from an early stage of extensive and severe burns may mitigate the injury to the liver cells. The quantities of extract required for maintenance of circulatory efficiency are evidently considerable. Of the concentrated extract now available, 1 cc. every two hours from the onset of acute toxemia will suffice for a child, while for an adult 2 cc. or more every hour is necessary. Injections should be continued for 100 hours after injury and should be renewed if toxic manifestations reappear.

Medical Journal of Australia, Sydney

1:803-834 (June 13) 1936

- Aberrant Renal Vessels. F. L. Gill—p. 803
Value of Rectal Administration of Glucose. A. B. Corkill—p. 807
Quantitative Effect of X Rays on Mitosis in Mouse Tumor S 37. W. H. Love—p. 814
Occupation and Leprosy. J. R. Innes—p. 815
*Increase in Diameter of Aorta with Age. J. B. Cleland—p. 818

Increase in Diameter of Aorta with Age—While doing postmortem examinations on young persons, Cleland noticed that the diameter of the aorta is definitely less than that of older persons. He decided to take measurements of the diameter of the aorta just above the aortic valve and an inch or so above the diaphragm, to see whether there was any regular increase in size with age. He shows with tables of males and of females that there is a definite and regular increase in diameter of the aorta with advancing years. The results are tabulated by decades. The aortas of 227 males and 147 females have been measured and tabulated. The table for males indicates that the average measurement above the valve in those who were below the age of 21 was 1.7 cm. and that the average above the diaphragm was 1.2 cm. For those between the ages of 21 and 30 the average measurements were 1.82 and 1.36 cm. respectively, between 30 and 40, 2.05 and 1.39, between 40 and 50, 2.21 and 1.6 cm. and so on, those over 70 years of age showing average values of 2.75 and 1.92 cm., and those over 80, 3.15 and 2.22 cm. The measurements in females showed slightly lower values, but here too an increase could be noted with the advance in years.

Medical Press and Circular, London

192:561-580 (June 24) 1936

- *Liver Function and Its Significance in Disease. W. D. W. Brooks—p. 564
Origin of Gallstones. C. Newman—p. 567
Hepatic Injuries. Clinical Study of Twelve Cases. C. P. G. Wakeley—p. 570
Nervous Disorders Associated with Excess and Lack of Blood Sugar. H. Dunlop—p. 574

Liver Function and Its Significance in Disease—Brooks discusses the function of the liver in fat, protein, carbohydrate and nucleoprotein metabolism. In the protective function of the liver, sulfur, derived largely from the cystine of the food, is in the course of protein metabolism removed in the liver, oxidized to sulfuric acid and neutralized with sodium and potassium. The inorganic sulfates so formed are excreted in the

urine. Some of the unabsorbed amino acids undergo putrefaction in the large intestine with the formation of indole, skatole and phenol. These are absorbed into the portal blood and conjugated with inorganic sulfates and glucuronates in the liver and are then passed on for excretion in the urine. Since indole, skatole and plicinol are extremely toxic bodies, while the ethereal sulfates and glucuronates are harmless waste products, this would seem a most important function. An increase in the phenol of the blood has been reported in an advanced case of cirrhosis, and it is of interest that Foster and Kalin have used the power of the organism to conjugate phenols as a test of liver efficiency. Other poisons, such as the heavy metals, dysentery toxin, ricin and abrin, are excreted in the bile. In this connection the actively phagocytic Kupffer cells probably play an important part. There is also reason to believe that bacteria are removed from the blood stream, killed and excreted by the liver. Vauthier, moreover, has collected evidence which suggests that the liver plays a protective part in anaphylactic conditions.

Archives des Maladies du Cœur, Paris

20:1369-432 (June) 1936

Complete Block and Auricular Flutter. D. Routier, H. Mamou and J. Lemant.—p. 369

*Experimental Study of Two Pathogenic Forms of Acute Pulmonary Edema. E. Coelho and M. Ribeiro.—p. 383

Forms of Acute Pulmonary Edema—According to Coelho and Ribeiro, acute pulmonary edema has been observed in four conditions, namely, in claudication of the left ventricle, venous stasis with acute pressure in the pulmonary veins, toxic reactions from various substances and nervous edema (accompanying cerebral disturbance). The mechanism, they believe, is of two types and they describe the two forms of experimental pulmonary edema. In dogs, after complete ligation of the ascending aorta, an immediate dilatation of the left ventricle accompanied by intense pulmonary edema could be observed. The second pathogenic form of acute pulmonary edema in dogs could be produced by the introduction into the circulation of various toxic substances. When the edema following ligation of the aorta was compared with that produced by injection of silver nitrate into the wall of the right ventricle, marked differences in the heart, in the appearance of the lungs and in the edema itself were noticed. In order to control the mechanical factors they injected alcohol into the right ventricle or into the pulmonary artery and were never able to produce edema with this substance. They concluded therefore that pulmonary edema produced by injections of a solution of silver nitrate into the saphenous vein or the right ventricle of the dog is an edema of toxic origin and identical with the toxic edema of man. The edema produced by ligation of the aorta or by partial necrosis of the left ventricle is of a mechanical origin, produced by the insufficiency of the left ventricle and is identical with that in man produced by failure of the left side of the heart.

Bull. et Mem. de la Soc. Med. des Hôpitaux de Paris

52:1031-1105 (June 29) 1936 Partial Index

*Acute Mercurial Nephritis. Study of Changes in Blood Chlorides. R. S. Mach and H. Oppikofer.—p. 1032

Lipoid Nephrosis Observed Four Years. Case. Pasteur Vallery-Radot, G. Maurice M. Laudat and Mlle P. Gauthier-Villars.—p. 1048

*Facial Paralysis in Course of Chronic Nephritis. P. Merklen and L. Israel.—p. 1064

Lipoid Nephrosis After Aurotherapy. R. J. Weissenbach, J. Martineau, J. Brocard and A. Malinsky.—p. 1076

Acute Mercurial Nephritis—Mach and Oppikofer report the case of a man, aged 32, after ingestion of 100 cc. of a 1 per cent solution of mercuric chloride. In the course of the secondary nephritis resulting from this poisoning the blood urea rose to a level of 6.55 Gm per thousand and was quickly lowered, returning to normal in about two weeks. After this recovery the patient showed no signs whatever of renal insufficiency. The nephritis developed in four periods: (1) a phase of onset, immediately after the absorption of the poison, characterized by severe lumbar pain and vomiting, (2) a phase of anuria beginning the day after the intoxication and lasting for eight days, (3) a first period of diuresis, in the course of which the level of blood urea continued to rise to

its maximum level on the sixteenth day after the intoxication, vomiting practically ceased during this phase, (4) a second period of diuresis, accompanied by lowering of the blood urea in the course of fourteen days to a practically normal level. The striking feature of the intoxication was that in spite of the large amount of the metal ingested the digestive disorders were insignificant. Furthermore, in spite of some retention of chlorides the plasma chloride continued to become lowered, and signs of disturbed chloride balance resulting from administration of the salt became apparent in spite of the low plasma chloride content. The authors believe that this fact indicates that the treatment of such intoxications by administration of chlorides is an individual matter and is not always indicated.

Facial Paralysis in Chronic Nephritis—Merklen and Israel report the case of a woman, aged 35, who belonged in the class of those having a chronic nephritis with azotemia and hypertension. On the basis of this condition, she developed a left facial paralysis which was inconstant and a right facial paralysis which was severe and developed in three attacks. Recovery from the last occurred after about three months except for the persistence of some stiffness in the movements of the forehead. The most probable explanation for this complication is as an accident accompanying the azotemia.

Paris Médical

1:509-568 (June 13) 1936 Partial Index

Surgical Treatment of Essential Arterial Hypertension According to Pende's Method. N. Pende.—p. 509

Neuromeningeal Drainage. Physiopathologic Concept. G. Boschi.—p. 520

Study of Personality. R. P. A. Gemelli.—p. 523

New Aspects of Vitamin Deficiencies. G. Lorenzini.—p. 539

*Studies of Anisocytosis of Erythrocytes and Their Applications to Diagnosis of Diseases of Liver. A. Archi.—p. 561

Anisocytosis and Diagnosis of Liver Diseases—Archi believes that an increase in the erythrocyte diameters is not encountered in all liver diseases but only in those in which there is a diffuse anatomic lesion of the entire liver parenchyma. Such changes are lacking in circumscribed lesions, as, for example, abscesses, hydatid cysts and metastatic neoplasms. The increase in diameter is observed in the chronic liver disorders of irreversible character as well as in the acute conditions, such as atrophic cirrhosis, pigmentary cirrhosis, interstitial hepatitis and cyanotic atrophy. In diseases of the biliary tracts, the erythrocytometric formula is usually normal. In retention icterus, on the contrary, increases in erythrocyte size may or may not be present. The increase in diameter of the erythrocytes is thus probably not due wholly to the presence of a clinically evident jaundice. In spite of these observations, some obscurity remains as to the relations between an increase in erythrocyte size and hepatic disorder. No clear cut diagnostic or prognostic significance can yet be applied to anisocytosis in liver disease.

Presse Médicale, Paris

44:1049-1064 (June 27) 1936

Peripheral Facial Paralysis. V. Andibert, C. Mattei and A. Paganelli.—p. 1049

Reflections on Present Tendencies in Phthisiotherapy. H. Barth.—p. 1050

*Rheumatic Disorders Caused by Chemotherapy. A. Tzanck, F. Layan, E. Sidi and H. P. Klotz.—p. 1052

Duret's Theory of Cerebrospinal Shock and Recent Studies on Cerebral Commotion. O. Berner.—p. 1055

Rheumatic Disorders Caused by Chemicals—Tzanck and his colleagues studied all the cases of rheumatism developing in the venereal disease clinic of the Broca Hospital and the St. Antoine Hospital with regard to rheumatism developing in the course of chemotherapy. Rheumatic symptoms developed almost always in young subjects who had never previously shown similar manifestations. Women were more frequently involved than men. The articular symptoms, however, could develop at any time in the series of the chemical treatments. The dose of chemical seemed to play little part. The remarkable feature was the apparent brevity of the incubation period. The attack usually occurred three or four hours after the injection, although it might be two or three days. Three main types could be distinguished: simple polyarthralgia was the most frequent, a form of hydrarthrosis, and a form of febrile poly-

articular type were also noted. Cutaneous or visceral manifestations were frequently associated with the joint symptoms. Any of the common complications of chemotherapy, however, could accompany the articular manifestations. According to the authors' observations, arthritic symptoms were encountered more frequently after the administration of arsenicals than after other forms of chemical therapy. Symptoms have been recorded, however, after bismuth, mercury and gold compounds, barbiturates and other chemical agents. The nature of the reaction introduced by chemical agents is difficult to determine. The infectious and the toxic theories have been advanced to explain them, but the authors feel that the most important factor is probably individual intolerance to the specific agent. From a clinical and physiopathologic standpoint the manifestations are similar regardless of the exciting cause. The mechanism is probably essentially vascular and reveals a sudden disturbance of the neurovegetative system.

Revue Française d'Endocrinologie, Paris

14 203 294 (June) 1936

*Influence of Sexual Hormone Preparations on Hypophysis—A Fischer and N. Engel—p. 203

Experimental and Clinical Observations Concerning Influence of Hypophyseal and Parathyroid Preparations on Secretory and Motor Functions of Stomach—D. M. Rossijsky, J. J. Kantorovitch, J. J. Karmasin and A. A. Jouravel—p. 226

Hemocriotherapy in Microbial Foci of Inflammation—L. Filderman and M. Filderman—p. 235

Near and Late Results of Endocrine Gland Grafts—Hélène Aouslender—p. 246

Sexual Hormone Preparations and Hypophysis—Fischer and Engel investigated the effects of injections of estrogenic substance on the estrual cycle of rats. Histologic examination of rats having received strong doses of estrogenic substance gave the following results. The ovaries contained more or less numerous corpora lutea, sometimes well vascularized new ones and sometimes old ones. The follicles were small and immature at the beginning of the cycle but enlarged progressively toward the tenth and twelfth days. The histologic aspect of the uterus corresponded to that of the vagina and remained essentially unchanged. It was concluded that observation of the genital cycle in selected rats is a good method for examining the hypophyseal function. No other hormone except estrogenic substance can change the cycle. Estrogenic substance given in large doses is capable of suppressing several estrual cycles and prolonging the duration of the intermenstrual period up to two weeks. This phenomenon is accompanied by some morphologic changes which suggest that the suppression of the cycle is the result of the absence of the hypophyseal gonad stimulating action necessary for the maturation of the follicles. The number of basophils is diminished in estrogenic substance treatment. The hypophysis of castrated rats is more active and that of animals treated with estrogenic substance less active than that of normal animals. The action of castration on the hypophysis can be prevented by estrogenic substance but not by other hormones. The inhibition of estrogenic substance on the hypophysis explains the action of this hormone on the genital cycle of the rat. It is probable that estrogenic substance exerts its action in physiologic conditions also, thus explaining the humoral hypophyseal ovarian automatism. The administration of estrogenic substance to nonmature rats represses their genital development and slows their growth. These two effects are explained by the inhibiting action on the production of the gonad stimulating hormone and the hormone of growth of the hypophysis. The thyroid hormone has apparently no influence on the gonad stimulating function of the hypophysis, but it exerts a depressing action on the ovaries. This action is one sided, since the gonads have no influence on the thyroid.

Strasbourg Medical

96 233 248 (June 5) 1936

*Premenstrual Elevation of Temperature in Pulmonary Tuberculosis—R. Weiller—p. 233

Premenstrual Elevation of Temperature in Tuberculosis—Weiller says that all the stages of genital life in young women exert a more or less damaging influence on the evolution of pulmonary tuberculosis. He reviews the literature

and discusses personal observations on temperature curves, especially around the menstrual period of normal women and those with pulmonary tuberculosis. He feels that one can say that, in tuberculosis of women having regular periods or those showing an active amenorrhea, a premenstrual elevation of temperature is observed with extraordinary frequency. The rise may start even as long as two weeks before the period begins depending on the activity of the pulmonary lesions. The elevation of temperature is slight in inactive cases and marked in active ones. All types of intermediate temperature curves were also observed.

Helvetica Medica Acta, Basel

3 219 327 (July) 1936 Partial Index

New Tuberculin—F. Cevez—p. 219

Studies on Function of Thyroid—F. Bruman—p. 227

Syndrome of Adie—Presentation of Case—J. Pelet—p. 238

*Pathology and Therapy of Cheyne-Stokes—O. Roth—p. 240

Electrocardiographic Aspects of Pericarditis—M. Holzmänn—p. 249

Changes in Renal Permeability for Dextrose—E. Martin and F. Seiclounoff—p. 258

Induced Hyperchloremia—R. S. Mach and F. Seiclounoff—p. 263

Simultaneous Bilateral Pneumothorax and Separation of Bands of Adhesions—J. H. Hounet—p. 274

Pathology and Therapy of Cheyne-Stokes—Roth states that it was pointed out in 1909 that by voluntarily increased respiration the Cheyne-Stokes respiratory phenomenon may be elicited in normal subjects. The author's own studies revealed that this is possible only in some persons, most readily in those who are predisposed to hyperventilation tetany. He further points out that nearly all investigators are agreed that a reduced irritability of the respiratory center plays a part in the Cheyne-Stokes respiration. It is his aim to give experimental proof that the respiratory center is severely impaired in the Cheyne-Stokes phenomenon. He cites tests which seem to demonstrate that the severity of the disturbance in the respiratory center differs in the individual cases. In 1916 he called attention to the fact that, in addition to the respiratory center, the center of the cardiac vagus may likewise be involved. He demonstrates electrocardiograms illustrating this. Then he evaluates the various therapeutic procedures, such as the injection of theophylline with ethylenediamine, lobeline or phosphatine, and so on. In some cases he obtained good results with oxygen treatment. In recent years however, he observed that an admixture of carbon dioxide to the oxygen had an even better effect, and since 1933 he has used the oxygen-carbon dioxide mixture regularly in Cheyne-Stokes cases. In trying to explain the favorable action of this gas mixture, he suggests that its administration probably results in a chemical composition of the blood that is capable of stimulating the function of even a severely impaired respiratory center.

Arch. Ital. di Mal. di App. Diger., Bologna

5 199 302 (May) 1936

Appendix and Pulmonary Tuberculosis—E. Frola and A. Oliveri—p. 199

Blood Modifications After Resection of Stomach—A. Vecchi—p. 237

*Idiopathic Chronic Steatorrhea—Further Studies—A. Allodi—p. 253

Cancer of Esophagus—Case—G. Böhm—p. 273

Technic and Indications of Finsterer's Gastric Resection—G. Cavina—p. 280

Reticulo-Endothelial Reaction Following Injection of Gastric Juice in Rats—L. Crosetti and G. Bajardi—p. 296

Idiopathic Chronic Steatorrhea—Allodi reports a case of idiopathic chronic steatorrhea in a patient, aged 33, who had never been out of Turin. In this case it was possible to make all clinical and laboratory examinations so that a definite diagnosis was established. The syndrome could be superimposed on that of tropical sprue with a picture similar to that of pernicious anemia, which was differentiable from typical pernicious anemia because of the presence of Castle's intrinsic factor in the gastric juice of the patient. The daily oral administration of 300 Gm. of liver extract brought about a rapid improvement in the general condition and resulted in complete recovery of the patient. The author believes that idiopathic chronic steatorrhea is caused by a lack of assimilation of fats and metals by the organism owing to the presence of inflammatory lesions in the duodenum and that anemia in such cases is probably the result of the absence of vitamin D in the gastric juice, which factor is found in the liver.

Folia Medica, Naples

22 625-672 (July 30) 1936

From Hypotensive Pneumothorax to Surgical Detention of Lung
F. Tobè—p. 627
*Group-Specific Properties of Vernix Caseosa F. Tarsitano—p. 642

Group Specific Properties of Vernix Caseosa.—Tarsitano made determinations of the group-specific properties of vernix caseosa of infants classified according to blood groups. The determinations were made on stains. The author concludes that vernix caseosa has group-specific properties as shown by the adsorption of specific iso agglutinins from the blood serum when the latter is placed in contact with the stained material. There is a perfect correspondence between the blood group to which the infant belongs and the group of the stain. The latter is evaluated from the intensity of specific adsorption of iso-agglutinins from the blood serum by the stain. The quantitative value of adsorption by vernix caseosa is low compared with that of the blood erythrocytes of the infant. The specific adsorption properties are retained in the stains for about twenty-five days and can be used in medicolegal procedures for identification and other aims.

Giornale di Clinica Medica, Parma

17: 841-908 (July 20) 1936

*Adrenal Cortex and Sodium Chloride Metabolism M. T. Malato—p. 841
Gastroduodenal Ulcer and Hyperglobulia W. Melocchi—p. 864
Alcohol Therapy in Nontuberculous Pulmonary Diseases in Native Soldiers of Eastern Italian Africa. E. Molinari—p. 873

Adrenal Cortex and Metabolism of Sodium Chloride—Malato's experiments are based on the fact that adrenal insufficiency is associated with a decrease of sodium chloride of the blood and increased elimination of the chloride through the urine. The purpose of the experiments was to verify the relation between the adrenal cortex and the sodium chloride metabolism. The experiments were performed on white rats a number of which were subjected to adrenalectomy and the other to acute dechloridation. The syndrome produced in the animals of the two groups was the same and consisted especially, in early spastic paralysis of the hind legs, diffuse hypertrophy of the lymphatic system structures, true hemorrhagic diatheses, especially in the gastric and intestinal mucosae, and great atonic dilatation of the stomach and intestine. From the results of the experiments the author concludes that probably primary adrenal cortex insufficiency produces secondary hypochloremia and increased elimination of the chloride through the urine in the same manner as primary chloropenia produces, secondarily, a miopragic condition of the adrenal cortex. The histologic studies of the adrenal glands of the chloropenic rats in the author's experiments showed the same type of lesions as those seen in clinical cases of acute adrenal insufficiency. The author concludes that his results have a clinical therapeutic value by pointing out the advisability of administering an associated treatment of sodium chloride and adrenal cortex extract in cases of a syndrome of primary adrenal insufficiency with secondary chloropenia (Addison's disease) as well as in the syndrome of primary chloropenia with secondary adrenal insufficiency (chloropenia caused by vomiting, diarrhea and similar conditions).

Minerva Medica, Turin

2 25-48 (July 14) 1936

Scurvy Due to Destruction of Vitamin C by Intestinal Bacteria P. Marin—p. 25
Value of Read's Formula for Determination of Basal Metabolism E. Andreucci—p. 29
Renal Lithiasis and Parathyroids A. Galluppi—p. 32

Scurvy Due to Destruction of Vitamin C by Intestinal Bacteria—Marin's patient aged 22 presented a clinical picture which was complicated by continuous persistent high fever, hemorrhagic gingivitis. A diagnosis of scurvy was made. The patient's diet did not lack vitamins especially vitamin C. During two weeks with an antiscorvy and orange juice together with vitamin C administration gave no relief. The administration

tion of liver extract and adrenal cortex extract by the intramuscular route resulted in the rapid, complete and permanent recovery of the patient. The author reviews Stepp's experiments in which the latter found that bacteria of coli and paratyphoid types destroy vitamin C. From this experiment the author concludes that in his case the predominance of coli or paratyphoid B bacilli in the patient's intestinal flora caused destruction of vitamin C which resulted first in development of avitaminosis and then in the failure of the antiscorvy treatment when the latter was administered by the mouth. The author states that scurvy is not as rare in Italy as is believed, that it may be due to disturbances of vitamin assimilation by the intestine and that it may develop into an atypical early period, as in his patient.

Riforma Medica, Naples

52: 917-948 (July 4) 1936

*Familial Porphyrinuria and Idiopathic Porphyrin S. Maugeri—p. 919
Semiferrous Carcinoma Developed in Retained Testicle Case. M. Sirolli—p. 925

Familial Porphyrinuria and Idiopathic Porphyrin—Maugeri states that the daily elimination of porphyrin through the urine, which normally amounts to 50 micrograms increases in cirrhosis of the liver, pernicious anemia, malaria, barbituric and lead poisoning and porphyria. The author reports a case of coproporphyrinuria and protoporphyrinuria in two brothers and a sister. In the three cases there was hyperchromia of the erythrocytes, bilirubinemia and intense elimination of urobilinogen and stercoral bilinogen. The globular resistance was normal. The health of the three members of the family was normal except for the presence of moderate splenomegaly. Two brothers in another family presented also porphyria associated in one with idiopathic abdominal porphyria. The author discusses the synthetic relations of porphyrin to the metabolism of hemoglobin and the similarity of the symptoms of porphyria with those of hemolytic jaundice, from which porphyria is differentiated by the existence of a porphyrinogenic factor that does not exist in hemolytic jaundice. The author admits from a clinical point of view, the existence of a condition of latent porphyria due to alterations of the metabolism of hemoglobin, which may remain latent until certain factors now unknown, change the latent condition into a syndrome of porphyria.

Archivos de Medicina, Cirugía y Espec., Madrid

39 461-496 (July 15) 1936

*Diagnosis of Spondylitis Deformans J. M. Muñoz Areños—p. 461
Metabolism of Creatine and Hypophysis. A. Fernández Cruz—p. 471
Diagnostic Erroneous Interpretation of Certain Roentgen Images of Thorax from External Shadows. L. González Rubio and C. Penzol y Vijande—p. 480
Cervitamic Acid in Organs of Animals in Experimental Scurvy A. Grouard and A. Santos Ruiz—p. 482

Diagnosis of Spondylitis Deformans—Muñoz Areños states that the diagnosis of spondylitis deformans early in the development of the disease, is difficult because of the fact that the first clinical symptoms appear late in the evolution of the vertebral lesion. Generally the patients place the cause of the condition on industrial trauma with purposes of compensation. There is always a history of vertebral insufficiency in the patient. The diagnosis is made by the roentgenogram of the involved vertebrae, which show atrophic alterations early in the disease. In more advanced stages of the disease there are zones of vertebral rarefaction, osteophytes, processes of synostosis and exostosis and deformation of the menisci and of the vertebrae, which take the characteristic aspect of a flat vertebra and in the forms of rapid evolution, processes of meniscal and vertebral destruction. The author made roentgen studies of the involved vertebrae in forty-five cases of spondylitis deformans. The majority of cases were in advanced stages. He concludes that there is no relation between trauma and spondylitis deformans. As a rule clinical symptoms of the disease appear after a period of rest not necessarily following trauma. The factors that account for the development of the clinical symptoms after a period of rest are unknown. It is plausible, however, that in patients who suffered from trauma the period of rest and not trauma in itself acted as the agent to bring the disease from a latent condition into one of evolution.

Klinische Wochenschrift, Berlin

15: 953 992 (July 4) 1936 Partial Index

Significance of Epipharynx for Human Pathology S Gräff—p 953
Question of Use of Digitalis in Paroxysmal Tachycardia G Lazzaro—p 961

*Qualitative Blood Picture of Thrombocytes in Acute Miliary Tuberculosis Arneth—p 964

Bacteriologic Serologic Diagnosis of Dysentery W Kan—p 967

Functional Test of Capillaries P Roboz—p 968

*Ide Reaction New Color Reaction for Demonstration of Syphilis S Ide and T Ide—p 973

Thrombocytes in Acute Miliary Tuberculosis—Arneth asserts that in acute miliary tuberculosis there always exists a more or less severe thrombopenia. He studied the behavior of the thrombocytes in six cases of acute miliary tuberculosis paying especial attention to the qualitative changes in the platelets. In the normal thrombocytic blood picture there are two distinct groups, a left one and a right one. The left group (always from the standpoint of the observer) contains the large, longish forms of platelets, which are subdivided into those without and those with division of the granulomere. The right group contains the roundish to oval platelets, which vary in size between 2.5 and 4 microns. In discussing the thrombocytic blood picture of the six patients with miliary tuberculosis, the author says that the thrombocyte values were reduced in all the number being always below 100,000 per cubic millimeter and as a rule even below 50,000. But even when the values were below 40,000 (the critical number), there never developed a hemorrhagic diathesis, from this the author concludes that thrombopenia cannot be the only cause of that disorder. Although the degree of thrombopenia varied in different cases, there usually was a further reduction as death approached. About the qualitative thrombocytic blood picture the author says that there usually is a reduction in the longish forms (left side of the hemogram) and an increase in the roundish forms (right side) that is, it may be said that the thrombocytic blood picture shows a deviation to the right. After giving a qualitative analysis of the thrombocytes of the six patients, the author stresses the inadequacy of the mere quantitative evaluation. He shows that the reduction in the number of platelets in miliary tuberculosis is combined not merely with a deviation to the right in the qualitative picture but rather with a combination of an external right and an internal left deviation, that is, a relative increase in the roundish forms and with a corresponding simultaneous internal shifting of size to the left. The defense reaction of the organism which is expressed in the latter manifestation, of course subsides when death approaches.

Ide Reaction, a New Color Reaction for Syphilis—In describing the technic of their new reaction the Ides first outline the preparation of the extract of ox heart. Then they prepare four different solutions: (1) a cholesterolized solution (100 cc of the ox heart extract with 0.2 Gm of cholesterol), (2) a 5 per cent acacia-benzoic solution of the ox heart extract, (3) a 1 per cent alcoholic (95 per cent alcohol) crystal violet solution and (4) a 1 per cent alcoholic solution of azure II. From these four solutions they prepare the 'Ide' antigen by adding to 100 cc of the first solution 5 cc. of the second and 0.6 cc. each of the third and fourth solutions. A drop of blood (from 0.02 to 0.03 cc) is placed on a hollow slide. Before the blood coagulates, one drop (0.05 cc.) of a 3 per cent solution of sodium chloride is added and mixed with the blood. A diluted reagent solution is prepared by putting 0.2 cc of the Ide antigen into a small tube and adding to this 0.6 cc. of a 2.5 per cent solution of sodium chloride and by shaking this mixture from twenty to thirty times. One drop of this diluted reagent is mixed with the drop of blood on the slide and the entire mixture is shaken for three minutes. Immediately after this the preparation is examined under the microscope with a magnification of 50 diameters. The reaction is positive when microscopy discloses between the blood corpuscles large violet-blue particles. If these particles are absent the reaction is negative. The authors made this test and control Wassermann tests on 2,350 serums. They obtained a positive Wassermann reaction in 235 cases and a positive Ide reaction in 235 cases. However if only the absolutely sure cases are considered 235 positive Wassermann reactions correspond to 229 positive Ide reactions that is there are about ninety-seven positive Ide reactions to every 100 positive Wassermann reactions.

Acta Medica Scandinavica, Stockholm

89 231 386 (Aug 4) 1936 Partial Index

Aminoacetic Acid in Muscular Dystrophy P W Brastrup—p 231

*New Method of Blood Transfusion P Hedenius—p 263

*Treatment of Diabetes Mellitus with Insulin Protamine E. Möller and Agnete M. Thomsen—p 308

*Tetany and Epilepsy Question of Late Spasmophilia G A Lindeboom and J E B Wientjes—p 376

Method of Blood Transfusion—Hedenius points out that at present either whole blood or citrated blood with or without a saline solution are used in blood transfusions. The whole blood method has the disadvantage that it requires the experience and skill of a trained surgeon. The citrate method provides for a more leisurely execution of the transfusion, but it introduces foreign substances into the body, which in large doses may have a poisonous effect. The author presents a new principle according to which the donor's blood is first treated so that it cannot coagulate during the time necessary for making the transfusion. This is made possible by heparinizing the donor. If the latter is intravenously injected with a dose of heparin sufficient to give him a coagulation time of twenty minutes, a similar amount of time is available for carrying out the transfusion. From the amount of heparin injected in the donor, a quantity proportional to the amount of transferred blood, that is, generally a tenth part at the most, goes over to the recipient in the transfusion. This amount of heparin has, however, proved in the transfusion experiments to be too little to lengthen the coagulation time of the recipient. This method, therefore, does not appear to lead to any inhibition of the recipient's coagulation mechanism, which one is often anxious to avoid hurting. Furthermore, this method does away with certain inconveniences, such as the possibility of coagulation in needles, tubes and so on. The author first determines the coagulation time of the donor and the recipient. At this time the donor is given an injection of heparin, and ten minutes later his coagulation time is again determined. Soon thereafter the transfusion is begun, which in some cases is purposely prolonged. Ten minutes after the completion of the transfusion, the coagulation time of the recipient is once more determined. In the author's cases the recipients always had the same coagulation time before as after the transfusion. In stressing the advantages of this heparin method, he says that even the simplest apparatus may be used. All a doctor need take along for a blood transfusion are a syringe and a heparin ampul.

Treatment of Diabetes Mellitus with Insulin Protamine—Möller and Thomsen point out that during the last few years two methods for retarding the effects of subcutaneously injected insulin have been reported. Clausen obtains the desired retardation by adding to the insulin solution minute amounts of epinephrine (1:50,000) and explains the effect as being due to the vasoconstriction caused by this substance. By changing the amount of epinephrine, the retarding effect may be graduated according to the exigencies of the individual case. Hagedorn, Jensen and others effect retardation in quite a different way, namely, by using insulin protamine. This preparation is injected as a suspension and is thought to become gradually dissolved or broken down. The authors describe their experiences with insulin protamine in the treatment of ten diabetic patients. They found that it acts more slowly than ordinary insulin (for about twice as long), reduces the oscillations of the average diurnal blood sugar curve, allows a considerable saving of insulin (in this series an average of 28 per cent) makes the hypoglycemic attacks less violent but more protracted, and makes it possible after careful adjustment completely to free the patient from these attacks.

Tetany and Epilepsy—After reviewing the literature on the subject Lindeboom and Wientjes describe the case of a patient with epileptiform convulsions. These attacks began from early childhood until the patient was 17 years of age. Whereas at first the condition had been regarded as epilepsy (prompt reaction to phenobarbital), the patient developed during his twenty-third year, in addition to the attacks the symptoms of a severe tetany. From the latter condition the patient was freed by the employment of a fraction of viosterol which was given in response to this not only but also the epileptiform attacks that the case is—

Adequate antepartum care should comprise supervision over the condition of the mother, beginning not later than the fifth month of gestation. It should include periodic blood pressure readings, regular chemical and microscopic examinations of the urine, Wassermann or Kahn tests, internal pelvic measurements, determination of the position of the fetus and of the existence of heart tones, a complete physical exami-

three, or 5.6 per cent, were positive. It is obvious from these figures that serologic tests are not carried out on pregnant women with anywhere near the frequency with which they should be done.

The making of a Wassermann and Kahn test early should be included as a necessary part of the antepartum care of the mother.

DELIVERY

Breech presentation was more frequent among premature infants than among full-term infants. Of the former, 18.6 per cent were breech, and of the latter, 11.6 per cent. The onset of labor was spontaneous for 88 per cent of the premature and for 91.3 per cent of the full-term. For both groups, 6.4 per cent were associated with cesarean section, 5.6 per cent of the premature deaths were in cases in which labor was induced.

The most frequent conditions assigned as indications for inducing labor were toxemia, placenta praevia and uterine bleeding.

The most frequent methods of inducing labor were the use of a bag, oxytocics, manual dilation, and artificial rupture of membranes as shown by table 3.

Forceps and version were more frequently used in the delivery of full-term infants than in delivery of the premature.

Cesarean operations were performed on fifty-one of the mothers of the 795 premature infants who died. The most frequent indications in the case of premature infants for cesarean section were toxemia and placenta praevia, as shown in table 4.

TABLE 6—Type of Operative Procedure in Delivery Other Than Cesarean Section

| Type of Operation | Premature Infants |
|------------------------------|-------------------|
| High forceps | 1 |
| Mid forceps | 7 |
| Low forceps | 28 |
| Version | 14 |
| Forceps to after-coming head | 6 |
| Total | 56 |

TABLE 7—Use of Analgesics

| Use of Analgesics | Premature Infants |
|---------------------|-------------------|
| None | 79 |
| Nonquestionable use | 38 |
| Questionable use | 41 |
| Unknown | 7 |
| Total | 795 |

The classic cesarean section was the type most frequently used, being employed in forty-seven of the fifty-one cases.

Table 5 shows the indications for operative procedures in the delivery of premature infants. It can be seen that operative delivery was employed as a prophylactic measure in eleven of the fifty-six cases, or in 19.6 per cent of those in which operative procedures were carried out.

Table 6 shows the types of operation used in the delivery of the fifty-six premature infants. As might be expected, low forceps was the most frequent method of operative delivery.

TABLE 4—Indications for Cesarean Section

| Indications | Premature Infants |
|---------------------------|-------------------|
| Previous cesarean section | 1 |
| Cardiac disease | 3 |
| Pelvic deformity | 5 |
| Placenta abruptio | 3 |
| Placenta praevia | 14 |
| Toxemia | 17 |
| Tumors | 3 |
| Hydrocephalus | 1 |
| Other | 3 |
| Not stated | 1 |
| Total | 51 |

TABLE 5—Indication for Operative Procedure in Delivery Other Than Cesarean Section

| Indications | Premature Infants |
|------------------------|-------------------|
| Pelvic deformity | 2 |
| Essential hypertension | 1 |
| Placenta praevia | 8 |
| Toxemia | 6 |
| Uterine bleeding | 1 |
| Uterine inertia | 4 |
| Fetal distress | 2 |
| Fetal malposition | 7 |
| Prolapsed cord | 4 |
| Prophylactic | 11 |
| Protracted labor | 2 |
| No progress | 1 |
| Breech presentation | 2 |
| Other | 3 |
| Not stated | 2 |
| Total | 56 |

nation the care of the nipples, attention to diet and elimination, and advice as to exercise, work, recreation and rest.

From the figures, it can be seen that the antepartum care given was not adequate in half the cases. In some instances the existence of a contracted pelvis or high sacral promontory, exostoses, tumors or other obstacles to normal delivery remained undiscovered until labor was in progress, notwithstanding a record of pelvic measurements. In many of these cases only external measurements were made. Because of failure to make internal measurements, obstructions resulting in the infant's death were not discovered. Toxemia was not discovered until it was well advanced.

Inadequate antepartum care is a large factor in producing deaths in premature babies. Unrecognized and untreated pathologic conditions in the expectant mother endanger the life of an infant. Early discovery of such conditions makes it possible to treat them. If they cannot be corrected at least pregnancy may be prolonged to as close to term as possible and the method of delivery that is safest for the child may be planned and carried out.

SEROLOGIC TEST FOR SYPHILIS

Information about the serologic reactions was obtained on 789 mothers of premature infants who died. Of 413 or 52.3 per cent who had the test, twenty-

ANALGESICS

It is shown by table 7 that in forty-one instances out of seventy-nine, or 51.9 per cent, in which analgesics were used, they were employed in a questionable way. The investigation revealed that in some of these instances the amounts used in all probability were a major factor in the death of the child.

TABLE 8—Pathologic Conditions in Mothers

| Condition | Premature Infants |
|----------------------------------|-------------------|
| None | 440 |
| Cesarean section (previous) | 1 |
| Cardiac disease | 12 |
| External injury | 54 |
| Deformity (pelvic) | 13 |
| Dystocia (nonosseous) | 1 |
| Hypertension (essential) | 8 |
| Infections | 30 |
| Membranes (premature rupture of) | 24 |
| Placenta abruptio | 21 |
| Placenta praevia | 35 |
| Polyhydramnios | 13 |
| Toxemia | 59 |
| Tumors | 5 |
| Surgery (nonobstetric) | 4 |
| Syphilis | 25 |
| Uterine bleeding | 10 |
| Uterine inertia | 1 |
| Other | 4 |
| Unknown | 2 |
| Total | 795 |

The employment of morphine, codeine, scopolamine and the various barbituric acid compounds during labor occurred in eighty-six out of the 795 cases. In forty-one instances the amounts given were beyond reason, and the infants of mothers thus drugged were born with the effect of the medication. When only moderate doses were given, the effect on the child was nevertheless that of diminishing his chances for living. Especially was this true when his vitality had been already reduced by other causes, such as atelectasis.

The danger from analgesics is greater in premature than in full-term infants. The peril to the child is especially grave when, as was observed, large doses of analgesics are given to abolish the pains of labor and then, in the same cases, solution of posterior pituitary in effective doses is given to incite or increase them.

OXYTOXICS

The use of solution of posterior pituitary, quinine, ergot and other oxytocics for inducing labor is considered a questionable procedure by many of the obstetricians who have a low mortality.

There were seventeen deaths of premature infants in cases in which solution of posterior pituitary was given before or during the second stage of labor in such circumstances and quantities as to be open to serious question.

ANESTHETICS

Of the deliveries of the 795 premature infants who died, 52.7 per cent were handled without the use of an anesthetic. Of the anesthetics, ether was by far the most frequently used.

No anesthetic is free from all objections when considered from the standpoint of its influence on the respiratory center of the fetus. Though the use of an anesthetic is usually unavoidable in operative or instrumental delivery, when the amount used is reduced to the minimum the figures show that the infant has the best chance of surviving. During the second stage of labor,

when the head has reached the perineum, it is generally agreed that the advantages of using ether outweigh the danger.

PATHOLOGIC CONDITIONS IN MOTHERS

Of 793 premature infants who died and for whom information was available, 44.5 per cent were subjected to some recorded pathologic condition in the mothers, as is shown by table 8. The most frequently observed conditions, in order, are toxemia, external injury, placenta praevia, infections and syphilis.

MORTALITY DURING FIRST TWENTY-FOUR HOURS

Of the 795 premature babies who died, eighty-five, or 10.7 per cent, died within an hour of birth, and 554, or 69.7 per cent, died within twenty-four hours. Of the full-term babies who died, sixty-one, or 10.8 per cent, died within an hour of birth, and 213, or 37.6 per cent, died within twenty-four hours. In other words, the mortality for the premature infants during the first day is almost double that of full-term infants.

AUTOPSIES

Table 9 shows that autopsies were done on 251 of the 795 premature infants and that 207 of these agreed with the statement of death appearing on the certificate. For 450 infants, prematurity was the only assigned cause of death on the death certificate. An autopsy was done on eighty-four of these, and for thirty-two children some condition other than underdevelopment

TABLE 9—Stated Cause of Death of Premature Infants in Relation to Autopsy

| Cause Stated on Death Certificate | Number of Deaths | | | Agreement of Autopsy with Stated Cause of Death | |
|------------------------------------|------------------|--------------|-------|---|-----------|
| | Without Autopsy | With Autopsy | Total | Agreed | Disagreed |
| Tuberculosis of respiratory system | 0 | 1 | 1 | 0 | 1 |
| Syphilis congenital | 3 | 1 | 4 | 1 | 0 |
| Disease of the thymus gland | 0 | 1 | 1 | 1 | 0 |
| Hemorrhagic purpura | 0 | 1 | 1 | 1 | 0 |
| Bronchopneumonia | 9 | 18 | 27 | 17 | 1 |
| Diarrhea and enteritis | 0 | 1 | 1 | 0 | 1 |
| Hernia | 0 | 1 | 1 | 1 | 0 |
| Intestinal obstruction | 2 | 0 | 2 | 0 | 0 |
| Other disease of intestine | 0 | 1 | 1 | 1 | 0 |
| Congenital hydrocephalus | 2 | 2 | 4 | 2 | 0 |
| Spina bifida | 3 | 1 | 4 | 1 | 0 |
| Congenital | 11 | 0 | 17 | 8 | 0 |
| Other congenital | 0 | 6 | 15 | 0 | 0 |
| Premature birth | 366 | 84 | 450 | 52 | 32 |
| Intracranial injury | 2 | 1 | 3 | 0 | 1 |
| Other injury | 2 | 0 | 2 | 0 | 0 |
| Cerebral hemorrhage | 16 | 42 | 58 | 41 | 1 |
| Atelectasis | 99 | 77 | 176 | 72 | 5 |
| Icterus | 5 | 0 | 5 | 0 | 0 |
| Sclerema | 2 | 2 | 4 | 1 | 1 |
| Asphyxia | 11 | 3 | 14 | 3 | 0 |
| Other diseases of early infancy | 2 | 1 | 3 | 1 | 0 |
| Infanticide | 0 | 1 | 1 | 0 | 1 |
| Total | 544 | 251 | 795 | 207 | 44 |

was involved. In the remaining 345 prematurely born infants, the conditions listed in the table appeared on the death certificates. The most frequent causes of death associated with prematurity were atelectasis (176), cerebral hemorrhage (fifty-eight), malformation (forty) and bronchopneumonia (twenty-eight).

In a large percentage of the cases, the death certificates were not written until the postmortem exami-